Derrinea Bog (SAC 000604), Co. Roscommon

Executive Summary

This survey, carried out in August & September 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 Derrinea 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 (ARB) covers 17.05ha (31.09%) of the high bog area and consists of central and sub-central ecotope and active flush. High quality raised bog, in the form of central ecotope and active flush, covers 45.28% of the total ARB, and in the case of central ecotope has an overall *Sphagnum* cover of 33-50%, with pools covering 26-33% of the total area. Pool cover varies throughout the different areas of central ecotope, but is as high as 40-50% in the north-west of the site. *Sphagnum* lawns, hummocks and hollows are also part of the micro-topography of the central ecotope.

Active flush consists partly of a large pool (or soak) with a high cover of *Sphagnum* (mostly *S. cuspidatum*), and numerous island hummocks that support other *Sphagnum* species, and species characteristic of active flush.

Degraded Raised Bog (DRB) covers 37.79 ha (68.91%) of the high bog area. It is drier than Active Raised Bog and supports a lower density of *Sphagnum* mosses - *Sphagnum* cover reaches 26-33% in the wettest of the community complexes recorded - and it has a less developed micro-topography with permanent pools and *Sphagnum* lawns generally absent.

Degraded Raised Bog at the site consists of sub-marginal, marginal and facebank ecotope and inactive flush.

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 Derrinea Bog, it was most common in the sub-central community complex 10/4.

The current conservation objective for Derrinea 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 35.85ha. 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 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 (0.30ha) at Derrinea Bog in the 2004 to 2012 period. This has occurred in the northern section of the bog within sub-central ecotope, where this small amount of habitat is thought to have degraded and is now classified within the adjacent sub-marginal ecotope. Despite the relatively small loss of ARB, there have been considerable changes to the mapped distribution of habitat at the site, although these are attributed mostly to the more comprehensive field mapping that took place in this survey.

A new peat forming area has been described at the site, which is also the result of the more comprehensive field mapping rather than an actual change.

Drainage, associated with the areas of former peat exploitation, is the most threatening of current activities at the site, although peat-cutting no longer takes place at the site and is believed to have ceased several years before the start of the current reporting period. The degradation of Active Raised Bog in the north-west of the site is considered to be largely due to the continuing functionality of drains. 1.49km of drains remain functional, including a number of particularly wide and deep drains, in which flowing water was observed during the field survey.

Active Raised Bog has been given an overall **Unfavourable Bad–Declining** conservation status assessment. Habitat Area has slightly decreased, while habitat quality remained unchanged in the reporting period. However, current area value and S&Fs are below favourable reference values. Future Prospects are considered Unfavourable Bad-Declining, as impacting activities (primarily

drainage) are continuing to threaten the habitat, and there have been no restoration works to counterbalance or outweigh the continuing negative impacts.

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 **Derrinea SAC** has been given an **Unfavourable Bad-Declining** assessment.

A series of **recommendations** have been also given, these include: the continued cessation of peat cutting; blocking of remaining functional drains; restoration works on the high bog and cutover areas; an assessment of the actual impact of a number of forestry plantations adjacent to the high bog; further hydrological and topographical studies to ascertain more accurate FRVs; and further botanical monitoring surveys.

Site identification

SAC Site Code	604	**6" Sheet:**	RN 13
Grid Reference:	M 54 88	**1:50,000 Sheet:**	32
High Bog area (ha):	54.84ha[1]		
Dates of Visit:	30/08/2012 & 07/09/2012		
Townlands:	Derrinea and Errit		

[1]The current extent of the high bog is 54.84ha, while that recorded in 2004 was 55.98ha (Fernandez *et al.*, 2005). This discrepancy is the result of more comprehensive surveying in 2012, which resulted in a section in the southwest of the high bog that was erroneously mapped as high bog in 2004, being re-classified as cutaway.

Site location

Derrinea Bog is approximately 10km northwest of Ballyhaunis, just east of the Mayo/Roscommon border. It lies close to the northern side of Cloonagh Lough and is bordered to the north and east by the River Anaderryboy. Derrinea Bog is approximately 5km north-northwest of Carrowbehy Bog (SAC 597). Kelly *et al.* (1995) grouped Derrinea with the raised bogs of northeast Galway/northwest Roscommon.

The site may be accessed from the small road that runs along the southern boundary.

Description of the survey

The survey was carried out in August and September 2012 and involved a vegetation survey of the high bog at Derrinea 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 photographical 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 Derrinea 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

Derrinea Bog is a small Western Raised Bog (Cross, 1990), which consists of a single peat body, geomorphologically classified as a Ridge River C type bog (Kelly *et al*., 1995). A small till mound is found towards the south of the site and there is a drumlin feature in the north-west. The Anaderryboy River forms much of the northern and eastern boundary of the site, while Cloonagh Lough lies close to the south of the site.

The bog has a roughly rectangular and relatively simple shape, and has been cut away most intensively along the southern edge.

Ecological Information

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

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

- Active Raised Bog (EU code 7110),
- Degraded Raised Bog (EU code 7120),

- Depressions on peat substrates of the Rhynchosporion (EU code 7150).

Active Raised Bog (7110)

The current area of Active Raised Bog at Derrinea Bog is 17.05ha (31.09% of the high bog), which is a decrease of 0.30ha since 2004. Active Raised Bog includes central ecotope, sub-central ecotope, and active flushes.

Central ecotope was found at five locations (**C1** to **C5**) (see Appendix IV, Map 1). Two of the five central ecotope areas – **C1** and **C3** – form a single continuous area, but are treated separately in this report, as they are joined only by a small, narrow strip of habitat and are substantially distinct entities.

A single community complex (35) was recorded within the central ecotope. Complex 35 consisted of low hummocks, hollows and occasional high hummocks. Interconnecting pools covered approximately 30% of the complex, with total *Sphagnum* cover estimated at 34-50%. Pools had a variable cover of *Sphagnum*, with *S. cuspidatum* dominant, and *S. denticulatum* also recorded. *Menyanthes trifoliata* and *Drosera anglica* were usually present in pools, with *Utricularia* sp. a rare feature.

Open water and significant algal cover was also a general feature of pools, particularly in those pools near the margins of the complex. Flats and low hummocks characterised the interpool areas, with the former often dominated by *Narthecium ossifragum*, while low hummocks of S. *capillifolium*, with lesser amounts of *S. tenellum*, *S. subnitens* and *S. papillosum*, were also a constant feature. *Sphagnum* cover in interpool areas was variable and occasionally quite low, with *Calluna vulgaris* (20%) and *Narthecium ossifragum* (10%) also significant elements of the flora. Occasional hummocks of *S. austinii* or *Racomitrium lanuginosum* were present in the complex, while the western indicators *Campylopus atrovirens* and *Pleurozia purpurea* were recorded.

Sub-central ecotope was mapped as a single entity (**Sc1**) over a large area of the site, mostly around the margins of the substantial central ecotope areas. Three community complexes – 6/35, 4/10 and 9/7/10 – were recorded, the most frequent of which - 6/35 - was characterised by the presence of interconnecting pools, covering approximately 20% of the total complex. Total *Sphagnum* cover, at 30%, was lower than in the similar central ecotope 35 complex, while interpool areas were frequently dominated by *Narthecium ossifragum*, the total cover of which was estimated as 26-33%. Low hummocks of *S. capillifolium*, with lesser amounts of *S. tenellum*, *S. papillosum* and *S. magellanicum* were found throughout the interpool areas.

Complex 10/4 consisted of low hummocks and hollows, and was characterised by a high total *Sphagnum* cover – up to 70% - and a generally high cover of *Rhynchospora alba*. There were no pools within the complex. *S. papillosum* dominated the hollows, some of which could probably be considered lawns, while other common *Sphagnum* species included *S. capillifolium*, *S. subnitens*, and *S. cuspidatum*. *Calluna vulgaris* was also a constant feature, with an overall cover of approximately 25%.

Complex 9/7/10 was characterised by the presence of *Sphagnum* species at a total cover of 34-50% and the co-dominance of *Calluna vulgaris* and *Eriophorum* species. In this case *E. vaginatum* was only slightly more abundant than *E. angustifolium* and their combined cover of approximately 20% was in the range normally associated with only *E. vaginatum* in this community complex. Much of the total *Sphagnum* cover was accounted for by hummocks of *S. capillifolium*, with other *Sphagnum* species – *S. papillosum*, *S. austinii*, *S. tenellum* and *S. subnitens* - also frequent at low cover throughout the complex.

An active peat-forming flush (flush **Y**) was present in the southern part of the site, to the east of the **C2** central zone. The south-west part of the flush consisted of hummocks and hollows with *S. capillifolium*, *S. papillosum* and *S. subnitens* present, while much of the remaining area consisted of a large infilling soak or pool. There was a high *Sphagnum* cover within the soak, with *S. cuspidatum* the dominant species, and *Drosera anglica* and *Menyanthes trifoliata* also present. Island hummocks within the soak were dominated by *S. capillifolium*, with *Aulacomnium palustre*, *Hypnum jutlandicum*, and *Calluna vulgaris* all present. *Empetrum nigrum* and *Carex limosa* (Bog Sedge) were also present around the edges of the soak, while *Molinia caerulea* and *Eriophorum angustifolium* were recorded, the latter being particularly frequent in places.

A small pool (**FZ**), of approximately 20m x 15m, was mapped within the marginal ecotope in the eastern side of the site. This infilling pool was dominated by *Sphagnum cuspidatum* and *Eriophorum angustifolium*, with *Menyanthes trifoliata* also present, and *Rhynchospora alba* frequent around the edges. The water level in the pool was approximately 0.7m below the surface of the surrounding bog.

Degraded Raised Bog (7120)

The current area of Degraded Raised Bog at Derrinea Bog is 37.79ha (68.91% 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. Two community complexes, 9/7 and 6+AP, (plus a number of variants of 9/7) were recorded within the sub-marginal ecotope. 9/7 was generally the wettest of the community complexes and variants. Pools were absent from this complex, and the *Sphagnum* cover of 26-33% mostly consisted of *S. capillifolium* and *S. papillosum* in low hummocks. Other frequent *Sphagnum* species at lower cover were *S. tenellum* and *S. subnitens*. *Calluna vulgaris*, *Eriophorum vaginatum*, *Narthecium ossifragum* and *Carex panicea* were the most common of the other species in the complex. Three variants of 9/7 - 9/7/6, 9/7/2 and 9/7+Cl (*Cladonia*) – were recorded, each of which was generally drier, and had a lower overall *Sphagnum* cover.

Pools were present in the complex 6+AP, although these pools had very low *Sphagnum* cover and were mostly covered with algae. The total *Sphagnum* cover within the complex - mostly comprised of hummocks of *S. capillifolium* with a small amount of *S. papillosum* also recorded - was 5-10%. *S. cuspidatum* comprised most of the meagre *Sphagnum* cover in pools. In addition to the algal pools, the micro-topography consisted of hummocks and hollows with *Narthecium ossifragum*, *Calluna vulgaris*, and to a lesser extent, *Carex panicea*, dominating the flats.

Marginal ecotope was slightly drier than sub-marginal ecotope and mainly occurred as a band around the high bog margin. Additional marginal ecotope was mapped on parts of the till mound in the southern end of the bog. The micro-topography consisted of low *Sphagnum* hummocks, *Calluna vulgaris* hummocks, flats and occasional hollows. *Sphagnum* cover (5-10% in each marginal community complex and associated variants) was lower here than in the sub-marginal ecotope, and the vegetation was characterised by a higher cover of *Carex panicea, Narthecium ossifragum, Trichophorum germanicum,* and *Calluna vulgaris*.

Facebank ecotope is characterised by very low *Sphagnum* cover, firm ground, tall *Calluna vulgaris* and a flat micro-topography. This ecotope covered much of the northern and eastern margins of the bog, and was generally associated with areas of past peat exploitation. It was also mapped over much of the large till mound in the south of the site.

An inactive flush (flush **V**), was mapped on the steep, south-facing side of the large mound in the south of the site. Characterised by tall *Calluna vulgaris*, with a cover abundance of 76-90%, the flush also had a small amount of *Molinia caerulea*, and a very low overall *Sphagnum* cover of 1-4%. Flush **W,** which had not previously been mapped – almost certainly due to the lack of survey in the extreme north-west of the site where it is found – was also dominated by *Molinia caerulea*.

Depressions on peat substrates of the Rhynchosporion (7150)

Rhynchosporion vegetation is widespread on Derrinea Bog. It is found in both Active and Degraded Raised Bog, but is best developed and most stable in the wettest areas of Active Raised Bog, particularly those in the sub-central complex 10/4, where it was most frequent. 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. papillosum*, *Eriophorum angustifolium* and *Drosera anglica*.

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

Detailed vegetation description of the high bog

A detailed description of high bog vegetation recorded during the 2012 survey of Derrinea 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 Derrinea 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
J02.07	Drainage	H	-1	1.488km [1]	Inside High Bog	**7110/7120/7150**
J02.07	Drainage	M	-1	n/av	Outside High Bog	**7110/7120/7150**
B01.02	Artificial planting on open ground (non-native trees)	L	-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 no longer takes place at Derrinea and no high bog was lost to cutting during the reporting period. Peat cutting was already described as having not taken place for over five years by Fernandez *et al*. (2005) in 2004. A limited amount of Difco and hand-cutting was reported by Kelly *et al*., (1994) who also noted that the high bog on the northern and eastern sides has been somewhat protected from turf-cutting due to its boundary with the River Anaderryboy.

Turf cutting continues across the road to the south of the high bog and north of Cloonagh Lough. This cutting is taking place outside of the SAC boundary.

Despite the cessation of peat cutting, old face banks and high bog and cutover drainage associated with cutting continue to cause negative impacts on the high bog habitats.

Drainage

High bog drainage

Table 6.2 shows no change on the status of high bog drains. The majority of drains in the high bog remain functional (1.488km), while 0.343km of non-functional drains also remain. Significant water losses through drains were noted along the interconnected bE and bG drains in the west of the site. These are particularly large drains and water flow to the northwest was noted during the field survey.

High bog drainage is considered to have high importance/impact on high bog habitats.

No blockage of drains has occurred to date.

Table 6.2 High bog drainage summary

Status	2004 (km) [1]	2012 (km)	Change
NB: functional	1.488	1.488	0.000
NB: reduced functional	0.000	0.000	0.000
NB: non- functional	0.343	0.343	0.000
B: functional	n/a	n/a	n/a
B: reduced functional	n/a	n/a	n/a
B: non- functional	n/a	n/a	n/a

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 Derrinea Bog, including any change in their functionality in the 2004 – 2012 reporting period (see Map 3)

Table 6.3 High bog drainage detail

Drain Name	Length (km)	2004 status	2012 status	Change	Comment
bA	0.077	NB: non-functional	NB: non- functional	No	Western section of bA remains functional
bA	0.288	NB: non-functional	NB: non- functional	No	
bB	0.144	NB: functional	NB: functional	No	This drain was wrongly classified as reduced functional in 2004
bC	0.055	NB: non-functional	NB: non- functional	No	
bD	0.056	NB: functional	NB: functional	No	This drain was wrongly classified as reduced functional in 2004
bE	0.432	NB: functional	NB: functional	No	Drain particularly impacting due to its dimensions (2.5mx3.00m approx.). Running water towards the north-west noted, this drains joins bG
bF	0.099	NB: functional	NB: functional	No	Drain already present in 2004 but not mapped
bG	0.136	NB: functional	NB: functional	No	Drain particularly impacting due to its dimensions (2.5mx4.00m approx.). Running water towards north-west noted. This drain is connected to bE.
bL	0.062	NB: functional	NB: functional	No	This drain was wrongly classified as reduced functional in 2004
bM	0.104	NB: functional	NB: functional	No	””
bN	0.110	NB: functional	NB: functional	No	””
bO	0.101	NB: functional	NB: functional	No	””
bP	0.105	NB: functional	NB: functional	No	””
bQ	0.062	NB: functional	NB: functional	No	””

Bog margin drainage

The cutover areas were not surveyed for drains during 2012.

Drains associated with discontinued peat cutting are present along the entire cutover, most of which is to the south and west of the high bog. These drains continue to drain the high bog and impacting on high bog habitats.

The Anaderryboy river was dredged some time prior to the last reporting period, resulting in a lowering of the water table (Fernandez *et al*., 2005). The river drains the northern and eastern side of the bog and there are natural erosion channels in the edge of the bog in these areas. There is also a drainage complex to the west, part of which includes drains bE and bG, which are 2.5m x 3m, and 2.5m x 4m, respectively, that carries water northwards to the river. Drainage in the south and southwest of the bog is believed to be somewhat inhibited by the large till mound that acts as a barrier against water moving south.

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

Fire history

No fire events have been reported on the high bog in the 2005-2011 reporting period and no significant burns were noted by Fernandez *et al*. (2005).

Invasive species

No invasive species were recorded on Derrinea Bog high bog

Afforestation and forestry management

There is no commercial forestry on Derrinea Bog high bog. However, there are coniferous forestry plantations on cutaway peat to the north and east of the site, across the River Anaderryboy. There is also a forestry plantation on cutaway peat to the south-west of the site. These were collectively judged to be exerting a negative influence, of medium intensity, on the high bog habitats by Fernandez *et al*., (2005). However, it is doubtful as to whether this activity is causing any significant impact on the high bog. As a result, plantations within cutover are thought to have only a negative impact of low intensity on high bog habitats. An assessment of the actual impact of these adjacent forestry plantations on high bog habitats is among the recommendations for further surveying made in this report.

Other impacting activities

No other significant impacting activities were noted or recorded in 2012 impacting high bog habitats in the 2005-2012 reporting period.

Conservation activities

Although no physical management actions such as the blocking of drains or the restoration of the former peat exploitation area, which would also require 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 and the practice has now been discontinued for several 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

There has been a recorded decrease of 0.30ha in the area of Active raised Bog in the current reporting period (Table 8.1). Despite the relatively minor loss of area, significant changes to the distribution of habitats have been recorded, largely as a result of the more comprehensive mapping that was a feature of the current survey.

C1 and **C3** are separately named in the present survey, as also in the previous survey by Fernandez *et al*. (2005), despite forming a continuous area over a substantial portion of the high bog. However, they are currently linked by only a narrow strip of habitat near the centre of the high bog, whereas previously they were more substantially recognisable as a single entity, with the two areas distinguished primarily on the basis of the community complexes of which they were comprised – 35 in the case of **C1**, and 6/35, in the case of **C3**. A single central community complex, 35, now accounts for all of the central ecotope mapped at the site.

C1 is now smaller than mapped in 2004, a change that is likely to be the result of the more comprehensive surveying, which has resulted in more accurate mapping in the present survey. There remains the possibility, however, that the decrease in area here may be at least partly due to the negative impacts of drainage, although there is insufficient evidence to confirm this.

C2 in the south-west of the high bog has seen some slight boundary changes, although these are attributed to the more comprehensive surveying and accurate mapping in the current survey.

C3 has some boundary changes, although this is likely to be the result of the more comprehensive surveying and accurate mapping in the present survey.

C4 is a new central ecotope area, surrounded by sub-central ecotope, in the northern extreme of the Active Raised Bog area that was previously mapped as active flush (FX). This change is likely to be the result of more comprehensive surveying and accurate mapping in the present survey, as well a re-interpretation of vegetation. Flush species were seen in the current survey to be only a relatively minor component of the vegetation of this area – too infrequent to be considered as characteristic of the vegetation.

C5 is a new central ecotope area, likely to have been missed during the 2004 survey, due to its small area and the marked absence of mapping points in the area in which it occurs. It is not, therefore, considered to be newly developed Active Raised Bog.

Sc1 now comprises the entire sub-central ecotope, which had previously been mapped as four separate areas (Sc1, Sc2, Sc3 and Sc4). This change is likely to be largely the result of the more comprehensive surveying in 2012, which resulted in more accurate mapping. However, there is likely to have been some losses in the north-western section associated with drainage. The interconnecting drains bE and bG, in the west and north-west, are particularly wide and deep, and likely to be exerting an on-going negative impact in this part of the bog. Flowing water was observed in both drains during the field survey for this report. In marginal ecotope (community complex 3/6) in the north of the site, and close to the area of degraded sub-central habitat, there were signs of damage to the high bog, with tear pools and erosion channels indicating water discharge from the bog.

Flush **X** is no longer present, as it has been re-classified as central ecotope and mapped as **C4**. This is mostly the result of a re-interpretation of vegetation, with more comprehensive surveying and accurate mapping accounting for minor changes to the boundary.

Flush **Y** has seen slight boundary changes, and is now marginally smaller than previously mapped. This can be attributed to the more comprehensive surveying and accurate mapping in the present survey.

Flush (Pool) **Z** has been mapped as a slightly smaller area than before, which is probably the result of the more comprehensive surveying and accurate mapping in the present survey. This small pool is apparently infilling, but in the absence of a comparable mapping approach in the 2004 survey, the minor changes cannot reliably be attributed to a real change.

In summary, there has been an estimated overall loss of 0.30ha of sub-central ecotope, all within the former **Sc1,** which is now incorporated into a much larger **Sc1** that encompasses all of the sub-central ecotope at the site. The other sections were all stable or had changes that could be attributed to more comprehensive surveying and increased mapping accuracy.

The favourable reference value (FRV) for Area is considered to be the sum of Active Raised Bog (central, 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 35.85ha (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 (17.05ha) is 52.08% below the FRV. A current Area value more than 15% below FRV falls into the **Unfavourable Bad** assessment category

A long term (1994/5-2012) trend indicates a reduction in the area of Active Raised Bog at the site (-0.24ha) (see table 8.1), while a more recent and short term trend analysis (8 years; 2004-2012) gives a result of 0.30ha decrease of Active Raised Bog. Therefore, the Area of ARB is given a **Decreasing** trend assessment.

The Area of Active Raised Bog at Derrinea 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 ecotope and active flush, i.e. the higher quality wetter vegetation communities. This value is 8.53ha (half of 17.05ha, the current area of Active Raised Bog). The current value is 7.72ha which is 9.50% below the FRV. A current value of between 5 – 25% below FRV indicates an **Unfavourable-Inadequate** assessment, which is, therefore, the assessment that applies in this case.

A long term (1994/5-2012) trend indicates a decrease in the area of central ecotope and active flush, whereas a short term (8 years; 2004-2012) trend indicates no change in the area of central ecotope and active flush. As the trend within the current reporting period indicated a **Stable** assessment, this is the assessment applies to S&Fs, and the overall S&Fs assessment is therefore **Unfavourable-Inadequate-Stable.**

Quadrats analysis (**Qc3 and Qsc2**) indicates the following:

Qc3: This quadrat in complex 35 differed in a number of ways compared to 2004. Most notably, the total *Sphagnum* in 2012 was 51-75%, compared to 4-10% in 2004. The latter is a curiously low figure, well below the lower limits of the generally prescribed range for this aspect of the particular community complex. Not surprisingly then, considering the very low *Sphagnum* cover of 2004, a number of *Sphagnum* species recorded in 2012 – *S. cuspidatum* at 11-25% cover, *S. papillosum* at 11-25% cover and *S. denticulatum* as 'a few individuals' – were all absent in 2004, although *S. magellanicum* was present at 4-10% cover in 2004, and absent in 2012. Pool cover was also quite different – 11-25% in 2004, compared to 34-50% in 2012, with *Sphagnum* pools having 4-10% cover in 2004 and 34-50% cover in 2012. Algae in pools had 34-50% cover in 2012, but was absent in 2004. There was also a substantial difference in the occurrence of low hummocks, as the 2012 cover was 11-25%, compared to <1% in 2004.

Qsc2: This quadrat was recorded as complex 6/35 sub-central in 2012, but was classified as 4/9+P in 2004. Similarly to quadrat Qc3, this quadrat differed markedly in a number of ways from that carried out in 2004. Total *Sphagnum* cover in 2012 was 34-50%, but in 2004 was only 4-10%, a

difference echoed in the cover of *Sphagnum* hummocks, which was 4-10% in 2004 and 34-50% in 2012. *S. cuspidatum* was absent in 2004, but had 4-10% cover in 2012. Pools had 11-25% cover in 2004, while the current survey had 11-25% cover. *Narthecium ossifragum* and *Rhynchospora alba* were more common in the earlier survey, both having cover values of 11-25%, compared to 4-10% and 1-3%, respectively, in 2012. *Calluna vulgaris* was present at 11-25% cover in 2004, but absent 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 Derrinea Bog are assessed as Unfavourable Inadequate-Stable (see table 8.5).

Future Prospects

Habitat area has slightly decreased and S&Fs are thought to be unfavourable-inadequate, which is almost certainly at least partly due to the continued functioning of drains on the high bog and also in the bog margins, such as those associated with cutover plots. There may also be ongoing impacts from the arterial drainage of the adjacent river. A functional drain complex in the west and north-west of the high bog has particularly wide and deep drains and appears to be part of the complex that drains to the Anaderryboy River in the north of the site. The loss of ARB (0.30ha) is attributed here to the on-going negative impacts of drainage.

A number of conifer plantations in cutaway bog, adjacent to the high bog, may be exerting a negative impact on the bog habitats, but the precise effects are difficult to assess and may be minimal.

Habitat **Area** is currently 52.08% below FRV (see table 8.4) and a Decreasing trend is expected in the following two reporting periods (12 years). The habitat Area is expected to more than 15% below FRV. Thus, habitat's **Area Future Prospects** are assessed as **Unfavourable Bad-Decreasing**. Habitat's **S&Fs** are currently 9.50% below FRV (see table 8.4). A Decreasing trend is also expected and thus the habitat's **S&Fs** are expected to be 5 to 25% below FRV in the following two reporting periods. Thus **S&Fs Future Prospects** are assessed as **Unfavourable Inadequate-Declining**.

The overall habitat's Future Prospects are Unfavourable Bad-Declining (see table 8.5). Although turf-cutting no longer takes place, there have not been any remediation works involving the blocking of drains at the site. The blocking of the remaining functional drains, both on the high bog and cutover, and the continued cessation of peat cutting is necessary for reaching FRVs. There is potential for the restoration of cutover bog, particularly in the southwest section of the site. This may be especially important as it may prove difficult or impossible to reach the ARB target on the

high bog alone. The actual impact of forestry plantations adjacent to the high bog should be assessed, so that measures to counter any negative impacts can be introduced. Any maintenance work on the adjacent river should not exacerbate damage already caused by previous arterial drainage works.

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

Table 8.1 Changes in Active Raised Bog area

Active Ecotopes	1994/5[1]	2004	2004(amended)	2012	Change (2004-2012)	
	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	%
Central	13.11	10.56	7.29	7.29	0.00	0.00
Sub-central	3.01	6.04	9.63	9.33	(-)0.30	(-)3.12
Active flush	1.17	1.25	0.43	0.43	0.00	0.00
Total	**17.29**	**17.85**	**17.35**	**17.05**	**(-)0.30**	**(-)1.73**

[1]These 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	Qc3	Stable (possibly decreasing)	Smaller than mapped in 2004. This change is likely to be the result of more comprehensive surveying in 2011 which resulted in more accurate mapping. However, this section may also be decreased due to drainage, although there is insufficient evidence to confirm this.	Greatly increased total cover of *Sphagnum*, *Sphagnum* pools, and associated *Sphagnum* species. Likely to be the result of observer variation and difference in quadrat location, as features recorded in 2004 quadrat are not consistent with central ecotope.
C2	None	Stable	Slightly changes on boundary. However, this is the result of a more comprehensive surveying and accurate mapping in the 2012.	.

Area	Quadrats	Trend	Comment	Quadrats analysis
C3	None	Stable	Changes on boundary. However, this is likely to be the result of a more comprehensive surveying and accurate mapping in the 2012.	
C4	None	Stable	This central ecotope surrounded by sub-central ecotope was previously mapped as Active flush (FX). This change is likely to be the results of a more comprehensive surveying and accurate mapping in the 2012, as well a re-interpretation of vegetation.	
C5	None	Unknown	This specific area was not surveyed in 2004. Thus any ecotope map changes here are due to more accurate mapping in the 2012 survey.	
Sc1	Qsc2	Decreasing	Sc1 previously consisted of three sub-central areas (Sc1, Sc2 and Sc3) but is now mapped as a single sub-central ecotope section (Sc1). This change is likely to be the result of more comprehensive surveying in 2011 which resulted in more accurate mapping. Some losses have taken place along the NW section associated with drainage (drains bG and bE). Sub-central ecotope dots were previously recorded in a portion of habitat that has been re-classified as sub-marginal, indicating a real change.	Greatly increased total cover of *Sphagnum* and *Sphagnum* hummocks. Likely to be the result of observer variation and difference in quadrat location, as features recorded in 2004 quadrat are not consistent with ARB ecotope.
Sc2	None	No longer present	Mapped as part of Sc1. This is the result of a more comprehensive surveying and accurate mapping in the 2012.	
Sc3	None	No longer present	Mapped as part of Sc1. This is the result of a more comprehensive surveying and accurate mapping in the 2012.	
Sc4	None	No longer present	Mapped as part of Sc1. This is the result of a more comprehensive surveying and accurate mapping in the 2012.	
FZ	None	Stable	Slight changes on boundary (slightly smaller). This is the result of a more comprehensive surveying and accurate mapping in 2012	
FX	None	No longer present	Mapped as C4. This is the result of a more comprehensive surveying and accurate mapping in the 2012. Result of re-interpretation of vegetation.	
FY	None	Stable	Slight changes on boundary (slightly smaller). This is the result of a more comprehensive surveying and	

Area	Quadrats	Trend	Comment	Quadrats analysis
			accurate mapping in the	

Degraded Raised Bog (7120)

Area

The Degraded Raised Bog FRV for area is 19.26ha at Derrinea Bog. This value corresponds with the difference between the current high bog area (54.84ha) and the Active Raised Bog FRV (35.58ha) 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 96.21% bigger than FRV and therefore the habitat Area is given an **Unfavourable Bad** assessment (see table 8.4). Any current habitat Area value more than 15% above FRV falls into the Unfavourable Bad assessment category.

Table 8.3 shows a small change in the area of sub-marginal ecotope in the reporting period. This addition of 0.30ha to the sub-marginal total is attributable to the apparent degradation of some former sub-central habitat in the northern section of the bog.

Table 8.3 indicates that the increase in sub-marginal area of 0.30ha is also the total increase in the area of Degraded Raised Bog. As a result the habitat Area is given an **Increasing** trend.

The Area of Degraded Raised Bog at Derrinea Bog is assessed as Unfavourable Bad-Increasing (see table 8.5).

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 9.45ha (25% of 37.79ha, the current area of Degraded Raised Bog). The current marginal and face bank ecotopes area value (22.33ha) is 136.36% 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

no change in the area of marginal and face bank ecotope. Thus, the DRB's S&Fs at Derrinea Bog are given a **Stable** trend.

Quadrat analysis **(Qsm1)** indicates the following

Qsm1: This quadrat, classified in sub-marginal **6+AP**, differed in a number of ways from that of 2004, when it was also classified as **6+AP**. Low hummocks were absent in 2004, but considered to cover 51-75% of the 2012 quadrat. Total *Sphagnum* was 4-10% in 2004 and 11-25% in 2012, while *Sphagnum* hummocks were absent in 2004, but covered 11-25% in 2012. *Narthecium ossifragum* was present with a cover value of 11-25% in 2012, compared to 4-10% in 2004. The discrepancy in cover of low hummocks may be partly due to the interpretation of what constitutes a low hummock, as a total absence of such would be quite unusual, particularly when none of the other microtopographical features of the quadrat, such as pools, had a high enough cover to account for a significant portion of the total quadrat area. Other changes, such as *Narthecium ossifragum* cover, are likely to be due to quadrat location discrepancies, as the typical characteristics of complex **6+AP** would suggest a generally high cover of *Narthecium*.

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 Derrinea Bog are assessed as Unfavourable Bad-Stable (see table 8.5).

Future Prospects

The area of Degraded Raised Bog has increased slightly as a result of the degradation of an area of Active Raised Bog. Drainage on the high bog, particularly in the northwest, will continue to hinder the recovery of habitat to FRV's, as well as minimising the chances of converting Degraded Raised Bog into Active Raised Bog, or face bank/marginal ecotope into ARB or sub-marginal ecotope. Turf cutting is no longer taking place at the site, meaning there should be no imminent direct loss of habitat. However, drainage on the high bog and outside the high bog will continue to dry out the high bog and impacting on the habitats, as shown in the 2004-2012 reporting period, unless restoration works are undertaken.

Habitat **Area** is currently 96.21% above FRV (see table 8.4) and an Increasing trend is expected in the following two reporting periods (12 years) due to the ongoing impact from drainage. 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-Increasing**. Habitat's **S&Fs** are currently 136.36% above FRV (see table 8.4). A Declining trend is foreseen in the following two reporting periods,

S&Fs are expected to remain more than 25% above FRV. Thus, 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).

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

Table 8.3 Changes in Degraded Raised Bog area

Inactive Ecotopes	1994/5[1]	2004	2004(amended)	2012	Change (2004-2012)	
	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	%
Sub-marginal	18.29	11.59	14.81	15.11	(+)0.30	(+)2.03
Marginal	20.39	24.02	18.95	18.95	0.00	0.00
Face bank	n/a	2.52	3.38	3.38	0.00	0.00
Inactive flush	n/a	n/a	0.35	0.35	0.00	0.00
Total	**38.68**	**38.13**	**37.49**	**37.79**	**(+)0.30**	**(+)0.80**

[1]These 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 8.3 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.

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. However, this small loss of area was due to the degradation of some sub-central ecotope to sub-marginal. As result habitat Area is given a **Stable** 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. As peat cutting no longer takes place, and in the absence of other significant impacting activities, the continued existence of functional drains on the bog represents the major threat to Active and Degraded Raised Bog. As it seems likely that this will continue to have an on-going negative impact on the bog habitats (manifested in this reporting period in the degradation of a small amount of sub-central ecotope to sub-marginal).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 Inadequate-Stable** 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 Inadequate-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 Derrinea 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	35.85	17.05	52.08	8.53	7.72	9.50

[1] 1994/5 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 2011 Target (ha) [7]	2011 value (ha) [8]	% above target
7120	19.26	37.79	96.21	9.45	22.33	136.36

[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 Inadequate-Stable	Unfavourable Bad-Declining	Unfavourable Bad-Declining
7120	Unfavourable Bad-Increasing	Unfavourable Bad-Stable	Unfavourable Bad-Declining	Unfavourable Bad-Declining
7150	Unfavourable Bad-Stable	Unfavourable Inadequate-Stable	Unfavourable Bad-Declining	Unfavourable Bad-Declining

Conclusions

Summary of impacting activities

- Active peat cutting no longer takes place at the site and is believed to have been discontinued since at least 1999. There have, therefore, been no losses of high bog to this activity in the current reporting period.
- Almost 1.5km of drains on the high bog remain functional. Most of these are associated with former turf cutting plots in the south and west of the high bog. The most significant of these are the interconnected bE & bG in the west and north-west of the site – two

particularly wide and deep drains, in which flowing water was observed during the field survey.

- Cutover drainage (peripheral drainage) associated with former peat cutting activities continues to impact on the high bog habitats.
- No fire events have damaged the high bog in the reporting period. The most recent significant burning event is thought to have pre-dated the 1994 survey of the bog, some evidence of which was observed in the southeast of the high bog in 2004 (Fernandez *et al.*, 2005)

Changes in active peat forming areas

- There has been a slight (0.30ha) decrease in the area of Active Raised Bog in the period 2004-2012, identified as having occurred in sub-central ecotope in the northwest of the high bog. Despite the relatively minor change in area, there have been considerable changes to the distribution of habitat in the site. All of the sub-central ecotope at the site, which was formerly mapped as four separate areas (**Sc1, Sc2, Sc3** and **Sc4**) is now within a single area, **Sc1**. This is due to more comprehensive surveying and accurate mapping.
- A new peat forming area, **C5,** has been described at the site. This new central ecotope area is the result of more comprehensive survey, rather than actual changes in Active Raised Bog.
- The former active flush '**X**' has been reclassified as central ecotope and labelled as **C4**. This change is due to a re-interpretation of the vegetation in the area, rather than a real change, while minor boundary changes to the area are attributed to more comprehensive surveying and accurate mapping.

Other changes

- The large till mound in the southern end of the site that was formerly all mapped as marginal ecotope has now been reclassified as marginal, face bank and inactive flush. The classification of habitat as face bank – atypical in that it is not on the high bog margin, nor associated with turf-cutting plots - reflects the dominance of tall *Calluna vulgaris* here. Flush **V** is mostly delineated by the dominance of *Molinia caerulea* in a small area on the south-facing slope of the mound.
- Flush **Y** in the south of the site has been remapped. The slight changes in its boundaries with adjacent ecotopes are due to the more comprehensive surveying that was carried out in 2012.

- Much of the southern section of the high bog that was formerly mapped as marginal ecotope, has now been mapped as sub-marginal. This is likely to be the result of more comprehensive surveying in 2012 which resulted in more accurate mapping, as indicated by the previous the lack of ecotope dots here in the 2004 survey.
- A previously unrecorded inactive flush, now named flush **W**, was mapped on the northwest margin of the high bog. The previous lack of ecotope mapping points in this area suggests that this flush is not a new feature, but rather a result of the more comprehensive mapping that accounts for many of the changes noted here.

Quadrats analysis

- **Qc3**: Greatly increased total cover of *Sphagnum*, *Sphagnum* pools, and associated *Sphagnum* species in 2012. Likely to be the result of observer variation and difference in quadrat location, as features recorded in 2004 quadrat are not consistent with central ecotope. 2004 quadrat location likely to have been sub-optimal, and unrepresentative of the wider area.
- **Qsc2**: Greatly increased total cover of *Sphagnum* and *Sphagnum* hummocks in 2012. Likely to be the result of observer variation and difference in quadrat location, as features recorded in 2004 quadrat are not consistent with sub-central ecotope. 2004 quadrat location likely to have been sub-optimal, and unrepresentative of the wider area.
- **Qsm1:** Low hummocks were absent in 2004, but had 51-75% cover in 2012. Total *Sphagnum* was 4-10% in 2004 and 11-25% in 2012, while *Sphagnum* hummocks were absent in 2004, but covered 11-25% in 2012. Differences may be due to the likely difference in quadrat location.

Restoration work

- No restoration works have been undertaken at the site.
- NPWS has engaged in negotiation with landowners in relation to peat cutting, which no longer takes place at the site, and is thought to have ceased since as long ago as 1999.

Summary of conservation status

- **Active Raised Bog** has been given an **Unfavourable Bad–Declining** conservation status at Derrinea Bog. Habitat area has slightly decreased, and although there has been no recorded decline in habitat quality, both Area and S&Fs are below the FRV's. Future Prospects are considered Unfavourable Bad-Declining as impacting activities (primarily drainage) continue to threaten the habitat, without any restoration works that may counterbalance these negative impacts.

- **Degraded Raised Bog** has been given an **Unfavourable Bad-Declining** conservation status at Derrinea Bog. Habitat Area has slightly increased due to a corresponding decrease in Active Raised Bog. However, the current habitat Area is substantially above the FRV, which is not desirable for the habitat, and this has resulted in an **Unfavourable Bad-Increasing** assessment. S&Fs were assessed as **Unfavourable Bad-Stable**, as the S&Fs are also above the FRV but no changes have been reported in the reporting period. Future Prospects were **Unfavourable Bad-Declining,** due to lack of habitat remediation works at the site and ongoing negative impacts from activities at the site.
- **Depressions on peat substrates of the Rhynchosporion** has been given an **Unfavourable Bad-Declining** conservation status at Derrinea Bog. Habitat Area and quality (S&Fs) are considered to have remained unchanged in the reporting period. However, Future Prospects are considered **Unfavourable Bad-Declining** as a result of threatening impacting activities.

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

Recommendations

- **The continued cessation of peat cutting**.
- **Restoration works** including the blocking of high bog functional drains. Of particular importance is the blocking of drains bE and bG, due to their large dimensions and the presence of flowing water within the drains.
- **The blocking of cutover drains** is also recommended, particularly as it may be necessary to restore some cutaway areas if it is not possible to achieve FRV's in the current high bog area. There is potential for restoration of cutover along the southwest section of site, where the cutover is relatively extensive.
- **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 change in habitat's conservation status, 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)

Central Ecotope Complex

COMPLEX 35

- **Location**: this complex represented the entire central ecotope on the high bog and thus characterizes **C1, C2, C3, C4** and **C5** (Initial description in the southeast of the central ecotope)
- **Ground**: quaking
- **Physical indicators**: absent
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 4-10%
- **Macro-topography**: flat or gentle slope to site to edges of the high bog
- **Pools**: interconnecting, 26-33% cover
- ***Sphagnum* cover**: 34-50%
- ***Narthecium* cover**: 5-10%
- **Micro-topography**: low hummocks/pools/hollows/high hummocks/flats
- **Tussocks**: absent
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (11-25%), *Sphagnum capillifolium* (H; 5-10%), *S. cuspidatum* (P; 5-10%); *S. papillosum* (L & P; 1-4%), *S. subnitens* (H; 5-10%), *S. austinii* (H; 1-4), *S. tenellum* (H; 1-4%), *S. denticulatum* (P; 1-4%), *Erica tetralix* (5-10%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (1-4%), *Narthecium ossifragum* (5-10%), *Rhynchospora alba* (11-25%), *Cladonia portentosa* (5-10%), *Carex panicea* (1-4%), *Drosera anglica* (<1%), *Racomitrium lanuginosum* (1-4%), *Utricularia* sp. (<1) (in pools).
- **Additional comments**: There was significant variation in the total cover of pools between the different Central ecotope areas. Pool cover was 26-33% in C1, but was as high as 40-50% in C3. Open water was common in pools, with the total cover of *Sphagnum cuspidatum* in the complex estimated as 5-10%. *S. denticulatum* was also present, but less frequent, in pools. C4, in the most northerly part of the site, is within the area formerly mapped - apparently in error - as an

active flush (flush X). There was no significant presence of flush species recorded in this area. *Pleurozia purpurea* and *Campylopus atrovirens* were also present in complex 35.

Quadrat **Qc3** was recorded within this complex, in central 1 (**C1**).

Sub-Central Ecotope Complexes

COMPLEX 6/35

- **Location**: present throughout much of the extensive sub-central ecotope on the high bog (**Sc1**). Initial description near the southern margin of the ecotope
- **Ground**: soft to very soft
- **Physical indicators**: none
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 5-10%
- **Macro-topography**: slight depression
- **Pools**: interconnecting, 11-25%
- ***Sphagnum* cover**: 26-33%
- ***Narthecium* cover**: 26-33%
- **Micro-topography**: Low hummocks/hollows & Pools
- **Tussocks**: *Trichophorum germanicum* 1-4%; *Eriophorum vaginatum* 1-4%
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Narthecium ossifragum* (26-33%), *Calluna vulgaris* (11-25%), *Sphagnum capillifolium* (H; 11-25%), *S. papillosum* (H&P; 11-25%), *S. magellanicum* (H&L; 4-10%), *S. tenellum* (H; <4%), *S. austinii* (H; <4%), *S. cuspidatum* (P&Hl; 4-10%), *S. denticulatum* (P; <1%), *Cladonia portentosa* (5-10%), *Carex panicea* (11-25%), *Rhynchospora alba* (4-10%), *Erica tetralix* (1-4%), *Pleurozia purpurea* (1-4%), *Campylopus atrovirens* (1-4%), *Menyanthes trifoliata* (1-4%).
- **Additional comments:** This complex accounts for most of the sub-central ecotope throughout the site, and is clearly distinct from the other sub-central complexes (9/7/10 & 10/4) that were mapped at the site. Pool cover varied somewhat, but was generally in excess of 20%.

Quadrat **Qsc2** was recorded within this complex.

COMPLEX 10/4

- **Location**: found in **Sc1** to the east of **C1**, in a narrow strip of sub-central ecotope between Central and sub-marginal complexes
- **Ground**: very soft to quaking

- **Physical indicators**: absent
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 1-4%
- **Macro-topography**: gentle slope
- **Pools**: absent
- ***Sphagnum* cover**: 51-75%
- ***Narthecium* cover**: 5-10%
- **Micro- topography**: Low hummocks/hollows/lawns
- **Tussocks**: absent
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Rhynchospora alba* (11-25%), *Calluna vulgaris* (11-25%), *Sphagnum capillifolium* (H; 5-10%), *S. papillosum* (H; 11-25%), *S. tenellum* (H; 1-4%), *S. cuspidatum* (Hl; 5-10%), *S. subnitens* (1-5%), *Menyanthes trifoliata* (1-4%).
- **Additional comments:** This complex, which was confined to a narrow area in the east of the site, where it occurred alongside sub-central complex 6/35, was dominated by *Sphagnum* and was very soft underfoot. Although pools may be associated with this complex, there were none present in this instance.

COMPLEX 9/7/10

- **Location**: In a small area both north and south of flush Y within **Sc1**
- **Ground**: soft
- **Physical indicators**: absent
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 11-25%
- **Macro-topography**: gentle slope to north
- **Pools**: absent
- ***Sphagnum* cover**: 34-50%
- ***Narthecium* cover**: 1-4%
- **Micro-topography**: Low hummocks/hollows
- **Tussocks**: absent
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (34-50%), *Sphagnum capillifolium* (H; 34-50%), *S. subnitens* (4-10%), *S. papillosum* (H; 1-4%), *S. tenellum* (H; 1-4%), *S. austinii* (<1%), *Cladonia portentosa* (11-25%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (5-10%), *Rhynchospora alba* (<1%).

Additional comments: This complex is similar to the sub-marginal complex 9/7**,** with which it was generally fairly closely associated at the site. However, 9/7/10 had a higher *Sphagnum* cover, and was generally wetter and softer underfoot.

Active flushes

FLUSH/SOAK Y

- **Location**: in the south west of the site
- **Ground**: soft
- **Physical indicators**: absent
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 11-25%
- **Macro-topography**: gentle slope to site margin
- **Pools**: absent
- ***Sphagnum* cover**: 26-33%
- ***Narthecium* cover**: 1-4%
- **Micro-topography**: low hummocks/hollows
- **Tussocks**: absent
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Eriophorum vaginatum* (11-20%), *Calluna vulgaris* (26-33%), *Sphagnum capillifolium* (H; 11-25%), *S. papillosum* (H; 5-10%), *S. cuspidatum* (Hl; 1-4%), *S. subnitens* (H; 1-4%), *S. tenellum* (H; 1-4%), *Pleurozia purpurea* (<1%), *Racomitrium lanuginosum* (<1%).
- **Additional comments:** This flush consists partly of a large pool or soak, with high *Sphagnum* cover (mostly *S. cuspidatum*) and other species such as *Drosera anglica, Menyanthes trifoliata*, and *Carex limosa* (Bog sedge), which is found around the pool edge. In the southwest of the flush, there are smaller pools and hummocks, where *S. capillifolium*, *S. papillosum* and *S. subnitens* are the more common *Sphagnum* species. In the southeast section, the pool grades into the sub-central complex **9/7/10.** Numerous island hummocks within the large pool support species such as *S. capillifolium*, *Hypnum jutlandicum* and *Aulacomnium palustre*. *Empetrum nigrum* is present at the edges of the large pool.

POOL Z

- **Location**: Within Marginal ecotope in the east of the site; north of drain bA.

This small pool, of approximately 20mx15m, was dominated by *Sphagnum cuspidatum* and *Eriophorum angustifolium*. *Menyanthes trifoliata* was also present in the pool. *Rhynchospora alba* was common around the pool edges, and the pool appeared to be infilling. The pool was about 0.7m below surface of surrounding bog. The current description is very similar to that of the 2004 survey.

Degraded Raised Bog (7120)

Sub-Marginal Ecotope Complexes

COMPLEX 9/7

- **Location**: mostly in the south of the site; less common in the northwest
- **Ground**: soft
- **Physical indicators**: absent
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 11-25%
- **Macro-topography**: gentle slope to site margin
- **Pools**: absent
- ***Sphagnum* cover**: 26-33%
- ***Narthecium* cover**: 1-4%
- **Micro-topography**: low hummocks/hollows
- **Tussocks**: absent
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Eriophorum vaginatum* (11-20%), *Calluna vulgaris* (26-33%), *Sphagnum capillifolium* (H; 11-25%), *S. papillosum* (H; 5-10%), *S. cuspidatum* (Hl; 1-4%), *S. subnitens* (H; 1-4%), *S. tenellum* (H; 1-4%), *Pleurozia purpurea* (<1%), *Racomitrium lanuginosum* (<1%).
- **Additional comments:** none
  - Variant 1: 9/7/6: Higher cover of *Narthecium ossifragum* (>10%) and lower *Sphagnum* cover (<25%). *Carex panicea* was locally common in this complex and some habitat could, with equal justification, have been assigned to 9/7/3. However, as *N. ossifragum* was generally always at least as common as *C. panicea* in these situations, 9/7/6 was used to accommodate all such habitat.
  - Variant 2: 9/7/2: Present in the south of the site; similar to 9/7 (and 9/7/6), but with *Trichophorum germanicum* more common (10% +) and mostly in tussock form.
  - Variant 3: 9/7+*Cladonia*: Very rarely recorded complex at the site, describing sub-marginal 9/7 with a very high cover of *Cladonia* (mostly *C. portentosa*).

COMPLEX 6+AP

- **Location**: found in a number of different locations on the high bog, such as north of the large mound in the southern part of the site, east of **C4** and southwest of **Sc1**)
- **Ground**: soft
- **Physical indicators**: bare peat (1-4%)
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 5-10%
- **Macro-topography**: slight depression
- **Pools**: small algal pools, 10-15%
- ***Sphagnum* cover**: 5-10%
- ***Narthecium* cover**: 11-25%
- **Micro- topography**: low hummocks/hollows/algal pools
- **Tussocks**: *Trichophorum germanicum* (1-4%); *Eriophorum vaginatum* (4-10%)
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (11-25%), *Narthecium ossifragum* (11-25%), *Carex panicea* (11-25%), *Sphagnum capillifolium* (H; 4-10%), *S. papillosum* (H; 1-4%), *S. cuspidatum* (AP; 1-4%), *Erica tetralix* (4-10%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (<5-10%), *Rhynchospora alba* (4-10%).
- **Additional comments:** Occasional small hummocks of *Racomitrium lanuginosum*. *Campylopus atrovirens* occasional at pool edges; *Drosera anglica* and *Menyanthes trifoliata* in some of the pools. *Narthecium ossifragum* and *Calluna vulgaris* dominate the flats between algal pools and hummocks. *Rhynchospora alba* was also frequently common in flats. 6+AP is similar to 6+P (not recorded here), but had pools dominated by algae rather than *Sphagnum* species, and a generally poor micro-topography.

Quadrat Qsm1 was recorded in this complex

Marginal Ecotope Complexes

COMPLEX 7/6

- **Location**: south of the large mound, in the south end of the site
- **Ground**: firm
- **Physical indicators**: bare peat 1-4%
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 5-10%

- **Macro-topography**: gentle slope to south (site boundary)
- **Pools**: absent
- ***Sphagnum* cover**: 5-10%
- ***Narthecium* cover**: 11-25%
- **Micro-topography**: low hummocks, hollows
- **Tussocks**: *Trichophorum germanicum* 1-4%; *Eriophorum vaginatum* 1-4%
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (34-50%), *Narthecium ossifragum* (11-25%), *Sphagnum capillifolium* (H; 4-10%), *S. cuspidatum* (Hl; 1-4%), *S. papillosum* (H&HL; 1-4%), *S. subnitens* (H; 1-4%), *Erica tetralix* (1-4%), *Carex panicea* (1-4%).
- **Additional comments**: none

COMPLEX 3/6

- **Location**: throughout much of the Marginal ecotope at the site
- **Ground**: firm
- **Physical indicators**: absent
- ***Calluna* height**: 21-40cm
- ***Cladonia* cover**: 11-25%
- **Macro-topography**: gentle slope to site margin
- **Pools**: Tear Pools (1-4%) particularly in the NE of the site
- ***Sphagnum* cover**: 5-10%
- ***Narthecium* cover**: 11-25%
- **Micro- topography**: low hummocks/flats/hollows
- **Tussocks**: *Trichophorum germanicum* 1-4%
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (34-50%), *Carex panicea* (11-25%), *Narthecium ossifragum* (11-25%), *Sphagnum capillifolium* (H; 1-4%), *S. papillosum* (H; 1-4%), *S. subnitens* (1-4%), *S. tenellum* (1-4%), *S. cuspidatum* (1-4%), *Erica tetralix* (1-4%) and *Eriophorum vaginatum* (1-4%).
- **Additional comments**: *Pleurozia purpurea* and *Hypnum jutlandicum* were also present in this complex. In parts of the site, particularly the southwest, *Narthecium ossifragum* was more common than *Carex panicea*, and in these cases the complex could be termed 6/3. However, it is named 3/6 to differentiate it from 6/3 (sub-marginal), frequently found on raised bogs.
  - Variant 2: 3/6/2: in the north of the high bog, 3/6/2 was used to indicate a variant of 3/6 in which *Trichophorum germanicum* was common. There were numerous erosion channels in

the Marginal ecotope here, indicating water discharging to the northwest margin of the bog.

Inactive flushes

FLUSH V

- **Location**: On the south side of the large mound in the south of the site
- **Ground**: firm
- **Physical indicators**: absent
- ***Calluna* height**: >60cm
- ***Cladonia* cover**: 5-10%
- **Macro-topography**: on steep, south-facing slope of tall mound
- **Pools**: absent
- ***Sphagnum* cover**: 1-4%
- ***Narthecium* cover**: none
- **Micro-topography:** Tall *Calluna vulgaris*/low hummocks
- **Tussocks:** None
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (76-90%), *Molinia caerulea* (4-10%), *Cladonia portentosa* (4-10%), *Eriophorum vaginatum* (5-10%), *Hypnum jutlandicum* (1-4%).
- **Additional comments**: Flush V was not mapped as such in the previous (2004) survey, although reference was made to the flush species present there, under a general description of the large mound on which flush V is located. The entire mound was included in Marginal ecotope in the earlier survey.

Face bank Complexes

COMPLEX 1

- **Location**: This complex was found along the northern and eastern margins of the bog and also on the large mound in the south of the site
- **Ground**: firm
- **Physical indicators**: bare peat (4-10%)
- ***Calluna* height**: >60cm
- ***Cladonia* cover**: 4-10%

- **Macro-topography**: on steep slope; also on tall mound
- **Pools**: absent
- ***Sphagnum* cover**: 1-4%
- ***Narthecium* cover**: none
- **Micro-topography:** Tall *Calluna vulgaris*/low hummocks
- **Tussocks:** None
- **Degradation or regeneration evidence**: absent
- **Species cover**: *Calluna vulgaris* (76-90%), *Molinia caerulea* (4-10%), *Cladonia portentosa* (4-10%) *Hypnum jutlandicum* (1-4%), *Hylocomium splendens* (<1%).
- **Additional comments**: none.

Depressions on peat substrates of the Rhynchosporion (7150)

The habitat occurs at Derrinea Bog in both Active and Degraded Raised Bog, but it is only occasionally found on degraded habitat. Only *Rhynchospora alba* was recorded within the 2012 survey at this site.

R. alba is found in all ecotopes in Derrinea, such as: central ecotope (35), sub-central ecotope (6/35; 10/4; 9/7/10); sub-marginal ecotope (9/7; 6+AP), marginal ecotope (3/6; 7/6) and face bank ecotope (1).

The species becomes very frequent within complex 10/4 (sub-central).

The species is always found associated with wet features such as *Sphagnum* pools, *Sphagnum* lawns and hollows, along with species such as *Sphagnum magellanicum*, *S. papillosum* and *S. cuspidatum.*

It was also recorded in more degraded areas of the bog particularly where tear pools or erosion channels were found.

Appendix II Photographical records

Photograph Number	Aspect	Type	Feature	Date
00225	NE	Overview	Qc3	07/09/2012
00226	NE	Overview	Qsc2	07/09/2012
1030031	NE	Overview	Qsm1	30/08/2012

Appendix III Quadrats

Ecotope type	**Central**	**Central**	**Sub-central**	**Sub-central**
Complex Name	**35**	**35**	**4/9 + P**	**6/35**
Quadrat Name	Qc3	Qc3	Qsc2	Qsc2
Easting	154552	154556.95	154450	154455.21
Northing	288544	288540.71	288534	288533.66
Date	16/07/04	07/09/2012	16/07/04	
Firmness	Quaking	Quaking	Firm-soft	Very soft
Burnt	No	No	No	No
Algae in hollows %	Absent	Absent	1-3 (many indiv)	Absent
Algae in pools %	Absent	34-50	4-10	51-75
Bare peat %	Absent	1-3 (several indiv)	Absent	1-3 (few indiv)
High hummocks %	na	Absent	Na	Absent
Low hummocks %	1-3 (many indiv)	11-25	4-10	34-50
Hollows %	1-3 (many indiv)	Absent	11-25	1-3 (few indiv)
Lawns %	Absent	4-10	Absent	Absent
Pools %	11-25	34-50	4-10	11-25
Pool type	Interconnecting	Interconnecting	Na	Interconnecting
S.austinii hum type	na	Absent	Na	Absent
S.austinii hum %	Absent	Absent	Absent	Absent
S.austinii height(cm)	na	Absent	Na	Absent
S.fuscum hum type	na	Absent	Na	Absent
S.fuscum hum %	Absent	Absent	Absent	Absent
S.fuscum height(cm)	na	Absent	Na	Absent

Ecotope type	**Central**	**Central**	**Sub-central**	**Sub-central**
Complex Name	**35**	**35**	**4/9 + P**	**6/35**
Leucobryum glaucum	Absent	Absent	Absent	Absent
Trichophorum type	Tussocks	Absent	Tussocks	Flats
Trichophorum %	4-10	Absent	4-10	1-3 (many indiv)
S.magellanicum %	4-10	Absent	Absent	Absent
S.cuspidatum %	Absent	11-25	Na	4-10
S.papillosum %	Absent	11-25	4-10	4-10
S.denticulatum %	Absent	1-3 (few indiv)	Na	1-3 (few indiv)
S.capillifolium%	4-10	4-10	4-10	11-25
S.tenellum %	na	1-3 (many indiv)	Na	1-3 (several indiv)
S.subnitens %	Absent	1-3 (many indiv)	Na	4-10
R.fusca %	Absent	Absent	Absent	Absent
R.alba %	Absent	1-3 (many indiv)	11-25	1-3 (many indiv)
N.ossifragum %	Absent	1-3 (several indiv)	11-25	4-10
Sphag pools %	4-10	34-50	4-10	11-25
Dominant pool Sphag	S.cuspidatum	S.cuspidatum	Na	S.cuspidatum
Sphag lawns %	Absent	4-10	Absent	Absent
Sphag humm %	1-3 (many indiv)	11-25	4-10	34-50
Sphag holl %	1-3 (many indiv)	Absent	4-10	Absent
Total Sphag %	4-10	51-75	4-10	34-50
Hummocks indicators	Absent	Absent	Absent	Absent
Cladonia portent %	1-3 (many indiv)	4-10	4-10	11-25
Other Cladonia sp	na	C. uncialis	Na	C. uncialis
C. panicea %	Absent	1-3 (few indiv)	Na	Absent
Calluna cover %	4-10	4-10	11-25	Absent

Ecotope type	**Central**	**Central**	**Sub-central**	**Sub-central**
Complex Name	**35**	**35**	**4/9 + P**	**6/35**
Calluna height(cm)	21-30	11-20	11-20	11-20
Other NotableSpecies		Utricularia sp.; Campylopus atrovirens; Pleurozia purpurea		Campylopus atrovirens; Drosera anglica; Pleurozia purpurea;
Other comment		Similar to 04/5, S. magellanicum maybe recorded in error; at edge of ecotope		Differences due to interpretation/location

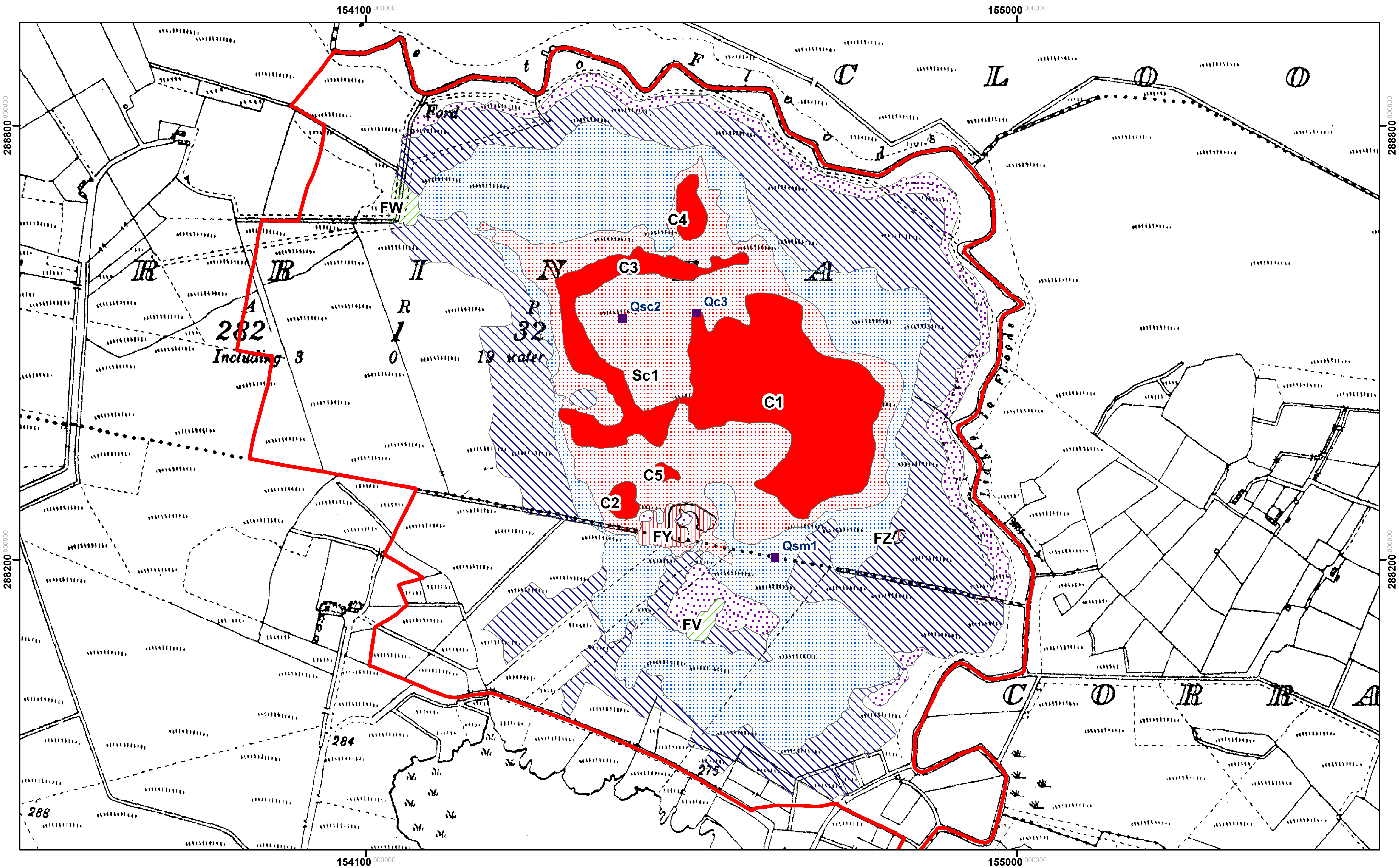
Ecotope type	**Sub-marginal**	**Sub-marginal**
Complex Name	**6+AP**	**6+AP**
Quadrat Name	Qsm1	Qsm1
Easting	154660	154665.42
Northing	288197	288203.09
Date	16/07/04	30/08/2012
Firmness	Soft	Soft
Burnt	No	No
Algae in hollows %	1-3 (many indiv)	Absent
Algae in pools %	11-25	26-33
Bare peat %	Absent	Absent
High hummocks %	na	Absent
Low hummocks %	Absent	51-75
Hollows %	1-3 (many indiv)	Absent
Lawns %	4-10	Absent
Pools %	4-10	4-10
Pool type	Tear	Regular
S.austinii hum	na	Absent

Ecotope type	**Sub-marginal**	**Sub-marginal**
Complex Name	**6+AP**	**6+AP**
type		
S.austinii hum %	Absent	Absent
S.austinii height(cm)	na	Absent
S.fuscum hum type	na	Absent
S.fuscum hum %	Absent	Absent
S.fuscum height(cm)	na	Absent
Leucobryum glaucum	Absent	Absent
Trichophorum type	Tussocks	Tussocks
Trichophorum %	1-3 (many indiv)	1-3 (several indiv)
S.magellanicum %	4-10	Absent
S.cuspidatum %	Absent	Absent
S.papillosum %	na	Absent
S.denticulatum %	Absent	Absent
S.capillifolium%	1-3 (many indiv)	4-10
S.tenellum %	na	1-3 (several indiv)
S.subnitens %	Absent	1-3 (many indiv)
R.fusca %	Absent	Absent
R.alba %	Absent	Absent
N.ossifragum %	4-10	11-25
Sphag pools %	4-10	Absent
Dominant pool Sphag	Absent	Absent
Sphag lawns %	4-10	Absent
Sphag humm %	Absent	11-25

Ecotope type	**Sub-marginal**	**Sub-marginal**
Complex Name	**6+AP**	**6+AP**
Sphag holl %	1-3 (many indiv)	Absent
Total Sphag %	4-10	11-25
Hummocks indicators	Absent	Absent
Cladonia portent %	na	11-25
Other Cladonia sp	na	C. uncialis
C. panicea %	Absent	4-10
Calluna cover %	4-10	Absent
Calluna height(cm)	21-30	21-30
Other NotableSpecies	Racomitrium lanuginosum, Menyanthes trifoliata	Racomitrium lanuginosum,; Pleurozia purpurea
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 given a different ecotope category in 2012; further detail justifying the re-classification is given within the report.

Appendix IV Survey maps



Raised Bog Monitoring & Assessment Survey 2013

Map 1: Ecotopes Map and Quadrats

Ecology and Environmental Consultants Ireland Ltd.

Derrinea SAC (000604)
Co. Roscommon

1:5,000

0 62.5 125 250 375 500 Meters

N

Legend

Quadrat

Ecotope type

- Central
- Sub-central
- Bog Woodland
- Active Flush
- Sub-marginal
- Marginal
- Inactive Flush
- Woodland
- Face bank
- Open water
- Conifer plantation
- Clear felled area
- SAC

154100 000000

155000 000000

288800 000000

288200 000000

Raised Bog Monitoring & Assessment Survey 2013

Map 2: Vegetation community complexes

Ecology and Environmental Consultants Ireland Ltd.

Derrinea SAC (000604)
Co. Roscommon

1:5,000

N

0 70 140 280 420 560 Meters

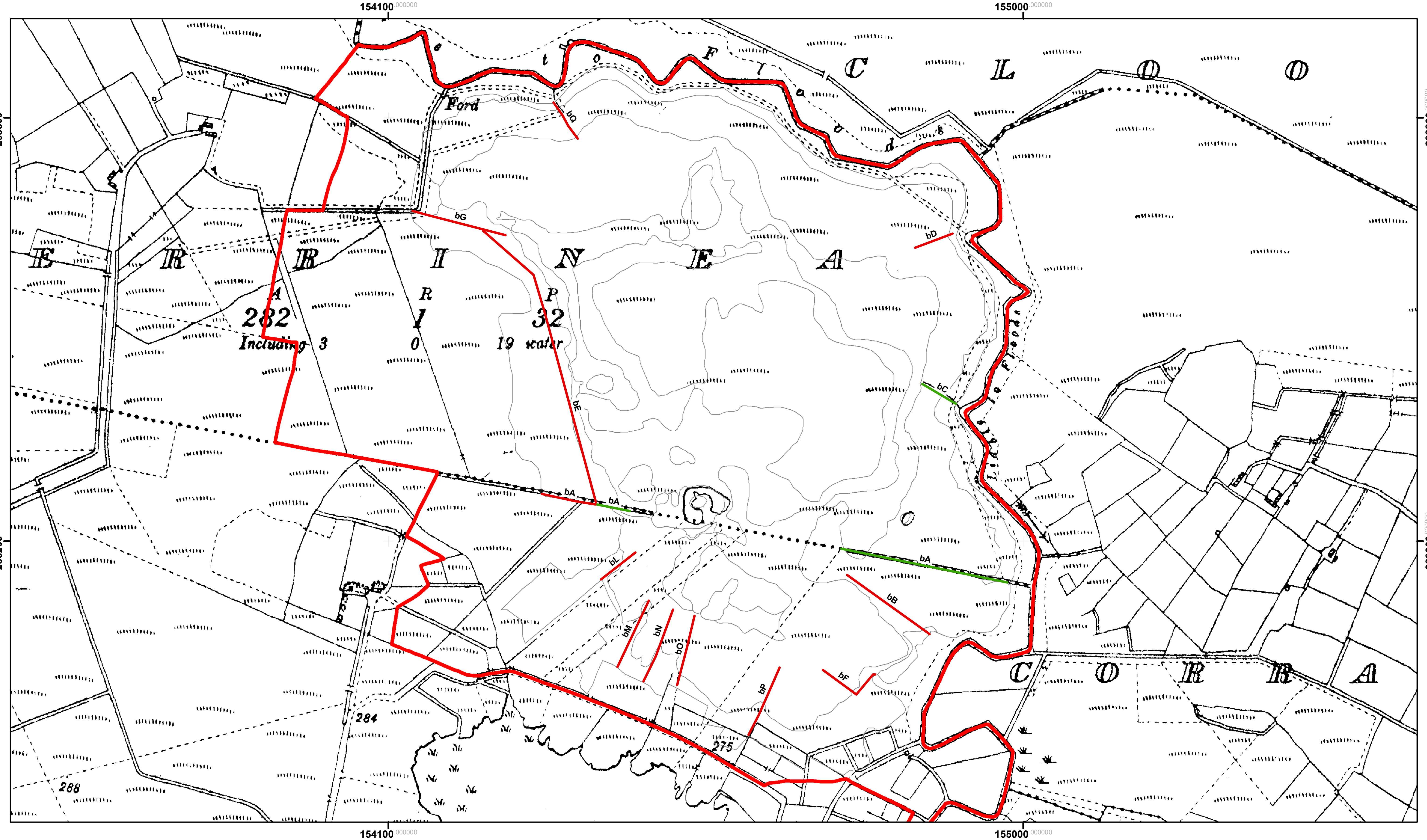
Legend

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)

Ordnance Survey Ireland Licence No EN 0059208

Ecology and Environmental Consultants Ireland Ltd.

Derrinea SAC (000604)

Co. Roscommon

1:5,000

N

0 70 140 280 420 560 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