PETTIGOE PLATEAU SAC
UK0016607

CONSERVATION OBJECTIVES

Document Details

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Version	Date	Summary of Changes	Initials
V1.0	June 2013	Internal working document	PC
V2.0	2015	Complete review	RMK
V2.0	01.04.2015	Effective date of Version 2	PC
V2.1	11.10.2017	Removed wording '*excluding recently burnt areas*' from bare peat target in all relevant Annex tables	PMC

Site relationships

To fully understand the conservation requirements of this site, it is necessary to also refer to the Conservation Objectives for Pettigoe Plateau SPA.

Pettigoe Plateau SAC boundary is identical to the boundary for Pettigoe Plateau SPA.

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives[1] to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

[1] 92/43/EEC and 2009/147/EC (codified version of Directive79/409/EEC as amended)

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition

- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.

- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long term basis.

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as "**the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site**".

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4. SITE INFORMATION

COUNTY: FERMANAGH

GRID REFERENCE: IH010650

AREA: 1,270 ha (in 2 blocks)

5. SUMMARY SITE DESCRIPTION

Pettigoe Plateau lies between Belleek and Pettigoe to the north of the western tip of Lower Lough Erne in Co. Fermanagh. The Plateau, with its mosaic of lakes peatlands and forests extends across the border into Co. Donegal. Within Northern Ireland Pettigoe Plateau occurs in a gently rolling landscape bearing much evidence of glaciation, with ridges, knolls and circular drumlins interspersed with flat plains and hollows, mostly below 150 m. A thin layer of boulder clay underlies the blanketing peat over most of the area. In contrast to the rolling terrain are the rocky peaks of Croagh and Mallybreen that rise above the surrounding land to more than 180 m. Topography is variable, although most slopes tend to be moderate or gentle and altitude does not vary a great deal.

The area around Croagh Mountain contains outcrops displaying a wide variety of lithologies and structures typical of the Lough Derg Group. This is a series of mainly siliceous psammitic rocks containing minor intrusive basic igneous components. Late-phase feldspar-rich pegmatite veins are represented.

The area of blanket bog has a wide range of the structural features associated with this habitat: including a large number of well-developed pool complexes, frequent acid flushes, basin mires, ladder fens and bog plains. The bog vegetation is characterised by luxuriant *Sphagnum* mosses, dwarf-shrubs with associated species demonstrating a strong oceanic influence. Amongst the lakes included in the designation, several are clean soft-water types supporting a well-developed isoetid component in their aquatic vegetation.

The site contains a number of other notably scarce plant species and is also important for birds. It provides breeding habitat for a number of species and is especially important as the Irish stronghold for breeding Golden Plover *Pluvialis apricaria*. In addition, amongst the over-wintering birds, Pettigoe Plateau frequently supports Greenland White-fronted Geese *Anser albifrons flavirostris*.

Further details of the site are contained in the ASSI Citation and Views About Management statement, which are available on the NIEA website (www.doeni.gov.uk/niea).

5.1 BOUNDARY RATIONALE

The boundary of The Pettigoe Plateau site has been drawn to include all areas of high quality blanket bog and associated semi-natural habitats, including cutover bog, wet and dry heath, acid flushes, flushed and wet grassland and dry grassland. Some of the peatland within the SAC has been modified to varying degrees, the semi-natural blanket bog vegetation remains in comparatively good condition.

The border between Co. Donegal and Co. Fermanagh demarcates about one third of the boundary of Pettigoe Plateau SAC. The remaining two thirds of the boundary is generally marked by the edge of the enclosed land that surrounds the open peatland. However, sometimes the peatland edge loses quality and does not justify inclusion within the SAC boundary. Separation between areas included within the SAC and those more degraded areas that are excluded depends upon the judgement of the surveyor. This was based on a variety of factors, such as *Sphagnum* moss cover, bare peat, and grass: dwarf-shrub ratio, frequency of dung and poaching, burning and drainage.

6. SAC SELECTION FEATURES

Feature type	Feature	Global Status	Size/ extent/ population
Habitat	**Active blanket bog**	**B**	804 ha
Habitat	**Natural dystrophic lakes and ponds**	**B**	pool complexes (c10 ha)
Habitat	**European dry heath**	**C**	123 ha
Habitat	**Northern Atlantic wet heaths with *Erica tetralix***	**C**	117 ha
Habitat	**Oligotrophic to mesotrophic standing water with vegetation belonging to *Littorelletea uniflorae* and/or of the *IsoUto-Nanojuncetea***	**C**	8 lakes = 133 ha (inc. that in the Republic) (c62.7 ha in N.I.)
Habitat	Transition mires and quaking bogs	D	5.0 ha
Habitat	Depressions on peat substrates *(Rhynchosporion)*	D	0.1 ha

Table 1. List of SAC selection features. Those with global status A-C will be referred to in ANNEX I.

The global status is an expert judgement of the overall value of the site for the conservation of the relevant Annex I habitat. Sites have been graded A, B or C - in the UK these gradings have been interpreted as follows:

A - Sites holding outstanding examples of the habitat in a European context.

B - Sites holding excellent stands of the habitat, significantly above the threshold for SSSI/ASSI notification but of somewhat lower value than grade A sites.

C - Examples of the habitat which are of at least national interest (i.e. usually above the thresholdfor SSSI/ASSI notification on terrestrial sites) but not significantly above this. These habitats are not the primary reason for SACs being selected.

D - Habitat present but not of sufficient extent or quality to merit listing as SAC feature.

There is therefore a distinction between the principal features for which sites have been selected (those graded A or B) and those which are only of secondary interest (those graded C). This is a useful distinction but it is important to note that all three grades are qualifying SAC interest features.

Click here to go to the Natura 2000 Standard Data Form for Pettigoe Plateau SAC.

6.1 ASSI SELECTION FEATURES

Pettigoe Plateau ASSI

Feature Type	Feature	Size/ extent/ population
Habitat	Blanket Bog	804 ha
Habitat	Dystrophic Lakes	10 ha
Habitat	Dry Heath	123 ha
Habitat	Wet Heath	117 ha
Habitat	Oligotrophic Lakes	62.7 ha
Species	Breeding Golden Plover	
Species	Breeding Bird Assemblage	
Earth Science	Dalradian	

Table 2. List of ASSI features.

6.2 ADDITIONAL ASSI FEATURES (subsequent ASSI standard features)

Feature Type	Feature	Size/ extent/ population
Earth science	Precambrian stratigraphy – psammites, intrusive basic igneous components, pegmatite veins.	Croagh Mountain
Species	Invertebrate assemblage	

Table 3. List of Additional ASSI Features

7. CONSERVATION OBJECTIVES

The Conservation Objective for this site is:

To maintain (or restore where appropriate) the

- *Active Blanket Bog*
- *Natural dystrophic lakes and ponds*
- *European dry heath*
- *Northern Atlantic wet heaths with Erica tetralix*
- *Oligotrophic to mesotrophic standing water with vegetation belonging to Littorelletea uniflorae and/or of the IsoUto-Nanojuncetea*

to favourable condition.

For each SAC feature, there are a number of component objectives which are outlined in the table below. These include a series of attributes, measures and targets which form the basis of *Condition Assessment*. The results of this will determine whether the feature is in favourable condition or not. The feature attributes and measures are found in the attached annex.

8. SAC SELECTION FEATURE OBJECTIVE REQUIREMENTS

Feature	Global Status	Component Objectives
Active blanket bog	B	Maintain the extent of intact blanket bog and actively regenerating blanket bog vegetation.
		Maintain and enhance the quality of the blanket bog community types including the presence of notable species.
		Seek to expand the extent of actively regenerating blanket bog vegetation into degraded (non-active) areas of cutover bog.
		Maintain the diversity and quality of other habitats associated with the blanket bog, especially where these exhibit natural transition to the blanket bog.
		Maintain the hydrology of the intact blanket bog peat mass.
		Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for blanket bog rehabilitation.
Natural dystrophic lakes and ponds	B	Maintain the open water area of ponds and lakes.
		Maintain the extent of pool complexes and the numbers of pools within.
		The lake water to remain poor in plant nutrients and not to fluctuate outside normal limits.
		Characteristic aquatic vegetation to remain present.
		Minimal negative impacts from artificial structures.
		Minimal negative impacts from recreation.
		Identify the main areas of transition mires and quaking bog and describe and delineate them with more precision.
Oligotrophic to mesotrophic standing water with vegetation belonging to	C	Open water area and water level regime to remain stable.
		The lake water to remain poor in plant nutrients and not to fluctuate outside normal limits.

Littorelletea uniflorae and/or of the *IsoUto-Nanojuncetea*		Characteristic aquatic vegetation to remain present.
European dry heath	C	Maintain the extent of existing European dry Heath vegetation.
		Maintain and enhance the quality of the European dry heath community types.
		Seek to expand the extent of the dry heath communities into degraded areas of species poor, dry acid grassland.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the dry heath.
		Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for dry heath rehabilitation.
Northern Atlantic wet heath with *Erica tetralix*.	C	Maintain the extent of existing Northern Atlantic wet heath vegetation.
		Maintain and enhance the quality of the existing wet heathland.
		Seek to expand the extent of the wet heath communities into degraded areas of species poor, wet acid grassland.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the Northern Atlantic wet heath.
		Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for wet heath rehabilitation.

9. ASSI FEATURE OBJECTIVE REQUIREMENTS

Feature	Component Objective
Blanket Bog	See SAC Selection Feature Objective Requirements Table
Dystrophic Lakes	See SAC Selection Feature Objective Requirements Table
Dry Heath	See SAC Selection Feature Objective Requirements Table
Wet Heath	See SAC Selection Feature Objective Requirements Table
Oligotrophic Lakes	See SAC Selection Feature Objective Requirements Table
Breeding Golden Plover	Breeding numbers stable or increasing
	Chick mortality due to trampling by livestock to be minimised
	Disturbance of nesting pairs minimised
	A suitable nest site available for each summer resident pair of adult or sub-adult plovers.
Breeding Bird Assemblage	To be finalised
Dalradian	To be finalised

9.1 ADDITIONAL FEATURE (subsequent ASSI standard features) OBJECTIVES

Feature	Component Objective
Precambrian stratigraphy at Croagh	Maintain extent and quality of exposure, together with access to the feature subject to natural processes - psammites, intrusive basic igneous components, pegmatite veins.
Invertebrate assemblage	Maintain abundance and distribution and if feasible, enhance population.
	Establish the status of these species and if appropriate, draw up further conservation priorities.

10. MANAGEMENT CONSIDERATIONS

Ownership

The ownership of the designated area is complex with some of the site in public ownership, under three different Agencies, and the remainder under private ownership much in commonage and even some of the publicly or solely owned areas have multiple turbary or grazing rights. Turbary rights extend to about 10%

of the area, and a small amount of hand-cutting for private use has been consented.

11. MAIN THREATS, PRESSURES AND ACTIVITIES WITH IMPACTS ON THE SITE

Both on-site and off-site activities can potentially affect SAC/ASSI features. The list below is not exhaustive, but deals with the most likely factors that are either affecting Pettigoe Plateau, or could affect it in the future.

Although **Active Blanket Bog, Natural Dystrophic Lakes and Ponds, Oligotrophic to mesotrophic standing water with vegetation belonging to *Littorelletea uniflorae* and/or of the *IsoUto-Nanojuncetea*, European Dry Heath and Northern Atlantic Wet Heath with *Erica tetralix*** are the qualifying SAC features, factors affecting ASSI features are also considered.

NOTE - Carrying out any of the Notifiable Operations listed in the ASSI schedule could affect the site.

Peat Cutting

There has been extensive peat cutting around the periphery of Pettigoe Plateau SAC in the recent past. Peat cutting by any method is a particularly damaging activity, including extrusion cutting which far from sparing surface vegetation, has very profound effects upon its ecology and hydrology. Although peat extraction has almost ceased within the SAC, there may be some localised peat still taking place within the boundary. There should be no peat cutting within the SAC.
ACTION: No peat cutting within the SAC.

Burning

Burning of the vegetation is evident in places right across the site, although whether this is an agricultural management practice or an incidental effect of turf cutting is often unknown. Excessive burning favours acid grasses, *Molinia caerulea* and *Trichophorum cespitosum* at the expense of dwarf shrubs and destroys mature communities of *Sphagnum* mosses and of lichens. Blanket bog and wet heath should not be burnt and dry heath should not be burnt more than once every 12-20 years, and not at all in areas where the gradient is > 25^{o} as this may result in erosion.

If burning is practised, it should only be carried out between late October and early March and preferably on days when the wind is light and the ground is frozen or damp. If it is too dry or too windy the fire will be too hot, if it is too wet, combustion will be poor and subsequent regeneration weak. Therefore burning of peatland should only be carried out under controlled conditions.
ACTION : No burning within the SAC

Drainage

There are a series of drains associated with many of the peat cuttings around the periphery of the SAC and many continue to carry water off the peat mass at an accelerated rate. In addition, extensive areas of the deeper peats have also been moor-gripped. All of these drains show up on the aerial photograph and are clearly apparent on the ground.

Many of the lakes on the plateau are very nutrient-poor and thus very vulnerable to nutrient accumulation. Without a hydrological assessment of water movement through the peat, it would be difficult to predict the lakes exact catchment, so artificial drainage could also lead to their eutrophication, where it is associated with afforestation etc. Any major drains that are currently carrying water away from or within the peat mass should be identified and blocked. Note that drainage works outside of the site's boundaries could potentially impact upon the bog's hydrology.

ACTION: Block active drains where appropriate.

Grazing

Inappropriate grazing, particularly over-wintering sheep exert the most pressure on a peatland as this is when vegetation growth is minimal and the forces of erosion, most effective. At the most damaging intensities, this can lead to soil exposure by vegetation removal and trampling which in turn can instigate erosion. Sheep are selective grazers and a less dramatic form of damage, at lower grazing intensities, is the decline in dwarf shrubs. Summer grazing intensity should be set at an appropriate level. Ling heather (*Calluna vulgaris*) can tolerate the removal by grazing of 40% of the seasons growth but heavier grazing begins to have more of an effect on the plant.

Autumn grazing is potentially more damaging to heather and particular care should be taken to avoid Autumn overgrazing. The commonage system tends to promote over-stocking. Other areas however, particularly blanket bog communities, have suffered severe damage from poaching and overgrazing by cattle. Ideally, cattle should not be permitted on blanket bog because of the trampling damage caused.

Under-grazing, or the cessation of grazing, may result in the prevalence of over-mature and degenerate Ling heather *Calluna vulgaris*.

ACTION: Fences around the periphery of the SAC should be maintained to prevent sheep and cattle from outside the area straying into the SAC. Ideally, all other sections of the boundary should be fenced and stock proof, particularly, the north - south border. Current management units should be identified and current grazing levels established. Where it occurs, overgrazing and poaching should be addressed by setting more appropriate grazing levels, excluding all grazing in the winter months between November and February inclusive. Active shepherding of stock onto the drier heathland communities may be appropriate in some instances. There will be a need to carefully monitor the blanket bog and

heathland communities to establish if the set grazing prescriptions are permitting the peatland communities to recover towards favourable condition.

Supplementary stock feeding

Supplementary stock feeding causes localised overgrazing and poaching damage.

ACTION: Supplementary feeding should be avoided. If this not an option, it should be confined to less sensitive areas. Particularly avoiding denuded sloping areas and pockets of deeper level peat which are vulnerable to counter wind and gully erosion.

Land Reclamation

Reclamation of peatland involves drainage, liming and fertilisation, which will always damage a functioning peatland. Peatlands around the periphery of Pettigoe Plateau are particularly impacted by reclamation with the obtrusive bright green rectangles of re-seeded grass are commonly found adjacent to blanket bog and heathland landscapes throughout the area.

ACTION: There should be no reclamation of any lands within the SAC boundary. Any reclamation outside the boundary should be monitored to ensure the hydrology of the peatland habitats within the site is not affected.

Afforestation

Preparation for afforestation involves disturbing the surface by draining, ploughing, or mounding. Establishment of the trees involves fertilisation, pest control and often liming. A successfully established plantation will shade the peat surface and intercept airborne pollutants. Peatland that has been subject to these forestry operations has little potential to recover after harvesting.

Action: Afforestation is highly unlikely as Forest Service guidelines would preclude direct planting or grant-aid for planting within the SAC.

Damaging recreational activities

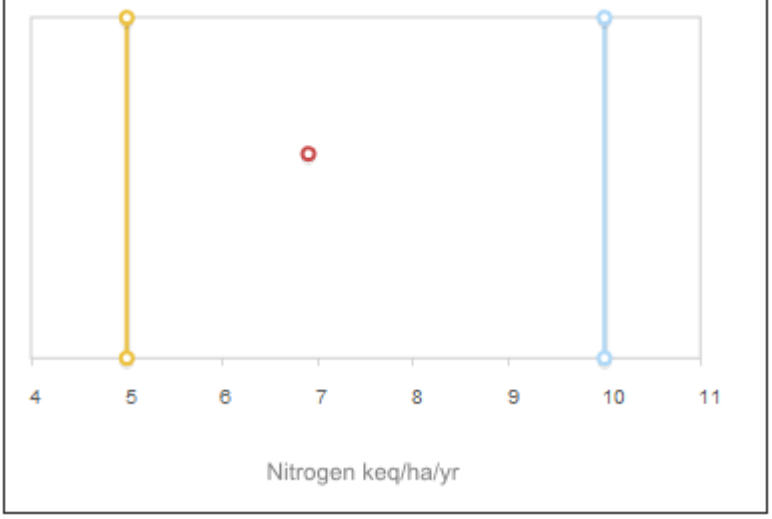
Four wheel drive access, can cause vegetation local loss which may lead to the cause significant erosion, particularly on sloping areas.

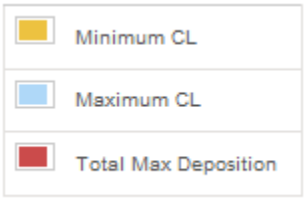
ACTION: No damaging recreational activities to take place within the site.

Nitrogen Deposition

Excess nitrogen deposition can favour the growth of competitive plants and lead to changes in ecosystem structure or function and to a reduction in biodiversity. National scale studies show the potential adverse effects of excess nitrogen on natural and semi-natural habitats to be widespread across the UK. Lower and upper critical loads have been calculated for Pettigoe Plateau SAC habitats.

Feature: Blanket bogs (* if active bog)
Critical Loads (kg N/ha/yr): 5-10
Nitrogen Deposition (kg N/ha/yr):
Maximum: 6.9 Minimum: 5.5 Average: 6.2



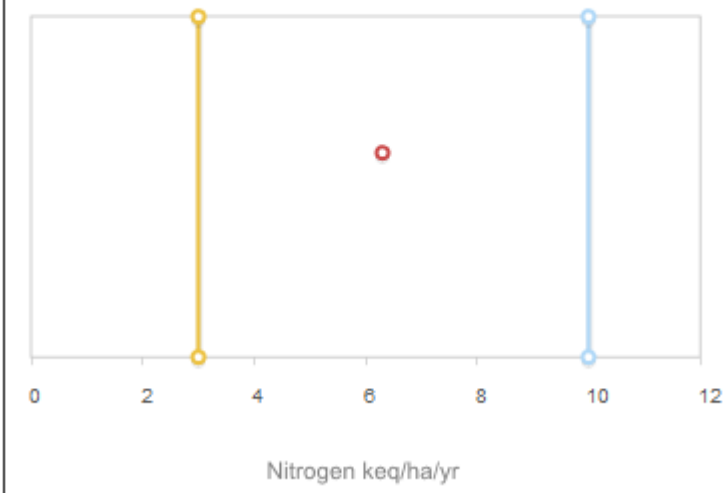


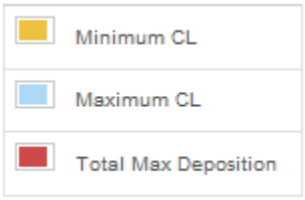
Feature: Natural dystrophic lakes and ponds

Critical Loads (kg N/ha/yr): 3-10

Nitrogen Deposition (kg N/ha/yr):

Maximum: 6.3 Minimum: 5.2 Average: 5.8



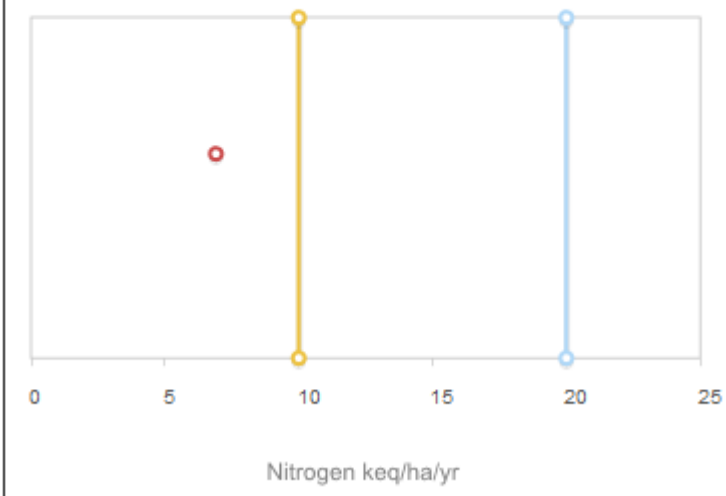


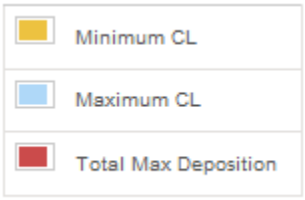
Feature: European dry heaths

Critical Loads (kg N/ha/yr): 10-20

Nitrogen Deposition (kg N/ha/yr):

Maximum: 6.9 Minimum: 5.5 Average: 6.2



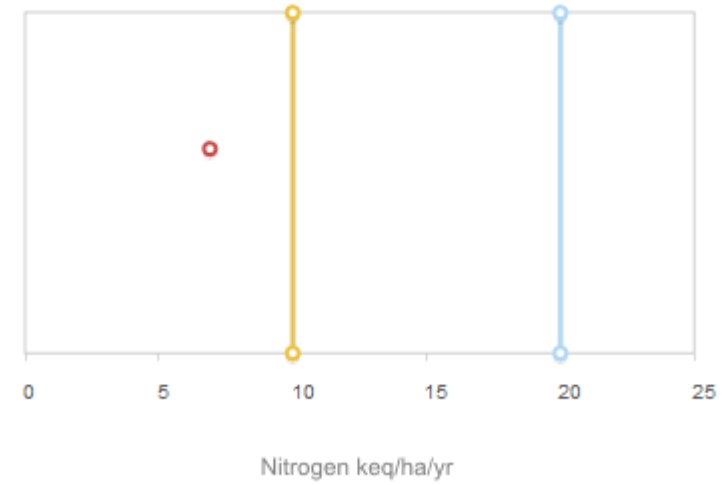


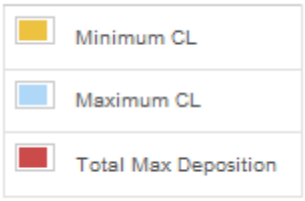
Feature: Northern Atlantic wet heaths with Erica tetralix

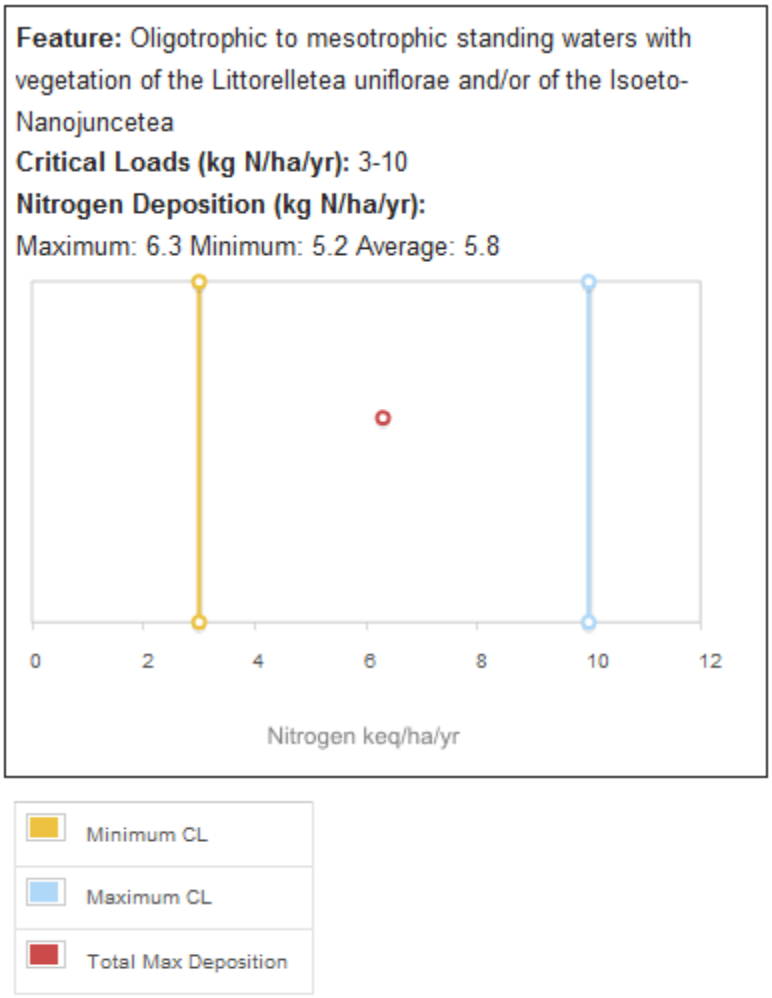
Critical Loads (kg N/ha/yr): 10-20

Nitrogen Deposition (kg N/ha/yr):

Maximum: 6.9 Minimum: 5.5 Average: 6.2







(Source: Air Pollution Information System (APIS) website- www.apis.ac.uk)

ACTION: Seek to maintain or where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant critical load.

Changes to surrounding land use

Any changes in local land-use e.g. drainage, road improvements, afforestation, agricultural intensification and development, may be detrimental to the SAC.

Action: Reduce the risk of surrounding agricultural intensification by encouraging the adjacent owner/occupiers to enter into agri-environment schemes. Use Habitats Regulations Assessments (HRAs), through the planning process, to minimise any development risks adjacent to the SAC.

Climate Change

Northern Ireland faces changes to its climate over the next century. Indications are that we will face hotter, drier summers, warmer winters and more frequent extreme weather events.

ACTION: When developing SAC management plans, the likely future impacts of climate change should be considered and appropriate changes made.

12. MONITORING

Monitoring of SACs takes place on using two monitoring techniques.

Site Integrity Monitoring (SIM) is carried out to ensure compliance with the ASSI/ SAC Schedule. The most likely processes of change will either be picked up by SIM (e.g. dumping, burning, turf cutting, grazing etc.) or will be comparatively slow (e.g. gradual degradation of the bog and associated habitats through desiccation).

These longer-term changes will be picked up by monitoring of the feature via **Site Condition Assessment** - this is carried out on a rolling basis to pick up subtle changes in the condition of the feature.

The method for Site Condition Assessment was agreed by the relevant JNCC-led Lead Co-ordination Network although the methodology has been modified to reflect individual site attributes in Northern Ireland.

12.1 MONITORING SUMMARY

1. *Monitor the integrity of the site (SIM or Compliance Monitoring)*
Complete boundary survey to ensure that the fencing, where present is still intact. Ensure that there has been no peat cutting, moor-gripping, dumping or inappropriate burning carried out within the SAC boundary. Evaluating stocking densities would also be desirable. This SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment)
Monitor the key attributes for all the SAC features. This will detect if the features are in favourable condition or not. See Annex I.

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any Habitats Regulations Assessment (HRA) that may be needed. It should be noted that completion of a HRA is a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

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ANNEX 1

Feature 1 (SAC) - Active blanket bog (Status B)

(* = primary attribute. One failure among primary attributes = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
* Area of blanket bog and upland raised mire (ha)	Maintain the extent of the intact bog surface.	Visual estimate in 2x2 m plots and across the blanket bog using a combination of aerial photographs, SIM and Condition Assessment structured walk.	The blanket bog communities include M17 – *Scirpus cespitosus Eriophorum vaginatum* blanket mire, M18 – *Sphagnum papillosum* raised and blanket mire and M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire.
* Area of mosaic communities and associated habitats	Maintain associated mosaic communities and habitats (wet heath, dry heath, upland fen, etc)	Visual estimate across the SAC using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring using condition assessment, SIM, and aerial photographs should indicate whether mosaics and associated habitats have changed or been lost.
* Pool/hummock system extent and complexity	The extent and complexity of pool and hummock systems at least maintained. Differentiation of *Sphagnum* species should be recorded with S. *cuspidatum* or S. *auriculatum* in the pools and S.	The extent of pool and hummock systems should be monitored using a combination of aerial photographs and SIM.	The extent of pool and hummock systems should be monitored using a combination of aerial photographs and Condition Assessment.

	papillosum and S. *capillifolium* forming the lawns and hummocks.		
Dwarf-shrub Height (cm)	Average ericoid height should be 15-30cm.	Visual estimate in 2x2 m plots.	On some areas of blanket bog, the dwarf-shrub height will largely reflect recent management patterns. However, on largely undisturbed sites with minimal or no grazing, dwarf shrubs should display no apparent growth forms with a fairly uniform height between 15-30cm.
* Bare Peat, or ground covered by algal mats (%)	Bare peat etc should occupy less than 2% of the intact blanket bog surface overall.	Visual estimate in 2x2 m plots.	Bare peat, or bare ground carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of peat cutting or excessive burning and/or grazing. Bare ground here represents bare peat etc. within the blanket bog vegetation rather than naturally eroded surfaces where bare ground forms a natural part of the erosion feature.
* *Sphagnum* cover/ abundance (% cover and frequency) Active Peat Formation (DAFOR)	*Sphagnum* moss species should have a minimum cover of 25% over at least 66% of the intact blanket bog surface. Thick, hummock forming species of sphagnum should be at least occasional. Species present should include a mixture of both thin species: - *S. capillifolium* and *S. tenellum* and the thick hummock	Visual estimate in 2x2 m plots.	A constant *Sphagnum* moss cover is indicative of active peat formation and is dependent on the maintenance of a high water table. *Sphagnum* moss is therefore used to measure the hydrological integrity of the blanket bog surface.

	forming species*: - S. papillosum* and *S. magellanicum* at least occasional over the surface.		
* Ericaceous Cover (%)	Ericoid cover frequent over the surface of the intact blanket bog. Dwarf-shrub cover greater than 33%. Less than 33% is only acceptable in wetter areas where *Narthecium ossifragum* or *Sphagnum* spp. are abundant and forming lawns.	Visual estimate in 2x2 m plots.	Ericoid (dwarf-shrub species) include *Calluna vulgaris*, *Erica tetralix*, *E. cinerea*, *Myrica gale*, *Vaccinium myrtillis and Empetrum nigrum*.
* Ericoid diversity (DAFOR)	At least two species of dwarf-shrub should be widespread and frequent. Where three or more species are present, but only one frequent and widespread, the abundance of the less abundant species may be combined and treated as if they are a single species.	Visual estimate in 2x2 m plots.	A mono-dominant sward of *Calluna vulgaris* may suggest that the surface of the intact bog is drying out – i.e. the water table is too low beneath the surface of the bog.
* Scrub/tree encroachment on any active peat surface (DAFOR)	Scrub/tree encroachment should be no more than rare on the intact bog surface, or in the actively regenerating cutover areas.	Visual estimate in 2x2 m plots.	Scrub encroachment should be checked using a combination of aerial photographs and Condition Assessment. Invasive exotic species such as *Rhododendron ponticum* should be removed immediately.
* Erosion Features associated with human impacts (% and DAFOR)	No gully erosion or bare peat associated with more concentrated human impacts (eg drainage, peat extraction,	Visual estimate in 2x2 m plots.	The extent of man induced erosion should be monitored using a combination of aerial photographs and Condition Assessment. Erosion is a natural feature of blanket bog, particularly marginal fretting

	ATV tracks or recreational activities). Man induced/enhanced erosion should occupy less than 2% of the total area of blanket bog other than very localised instances.		on breaks of slope. However, where natural erosion is exacerbated by human activity, the bog will not be in favourable condition, except where such erosion is very limited in nature.
* Graminoid Cover (%)	Total cover of graminoids should not exceed 50%, unless dominated by *Molinia caerulea* forming even swards over waterlogged areas with *Sphagnum* moss cover greater than 25%.	Visual estimate in 2x2 m plots.	Include true grasses, sedges, and rushes in this assessment. *Eriophorum vaginatum*, *Trichophorum cespitosum*, *Deschampsia flexuosa*, *Juncus squarrosus* or other graminoids (except *Molinia* in some instances) should not dominate over other species.
* Management – Peat extraction	No evidence of unconsented active peat extraction.	Visual estimate in 2x2 m plots.	In some instances areas of cut peat can re-vegetate with good blanket bog vegetation which meets the attributes for favourable condition.
* Management - Grazing (%)	Signs of moderate or heavy grazing by cattle or sheep should occupy less than 5% of the blanket bog vegetation within any grazing unit.	Visual estimate in 2x2 m plots.	The frequency of droppings, the extent of poaching and the presence of grazing induced *Calluna vulgaris* growth forms indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.
Molinia caerulea Cover (%)	Where *Molinia caerulea* cover is greater than 50%, it should form an even (not tussocky) sward in waterlogged conditions with *Sphagnum* moss cover greater than 25%.	Visual estimate in 2x2 m plots.	*Molinia caerulea* only occurs as a natural component of the bog vegetation in the extreme west of Northern Ireland where the climate is generally warmer and wetter i.e. more oceanic.
Presence of rare or scarce species specific to the site.	*Sphagnum imbricatum* and *Sphagnum fuscum*, where they have been recorded, should	Visual estimate in 2x2 m plots.	

	remain at least present along the length of each of the w-walks. If these species are not recorded on any one visit, it does not automatically make the SAC unfavourable.		

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 2 (SAC) – Natural Dystrophic Lakes and Pools (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Measure	Target	Comment
Extent	Assessment against baseline map. Aerial photographs may be used.	No loss of extent of standing water	This attribute is to assess changes caused by active management, such as infilling or channel diversion. Changes due to drying out or successional change are covered under other attributes.
*Composition of macrophyte community	Characteristic species composition	i). No loss of characteristic species present at the site (see Box 5)	In the UK dystrophic lakes are widespread in the north west and scarce in the south. These systems most often occur on blanket bog and may include isolated seasonal pools, random collections of irregularly shaped waters and ordered linear or concentric arrays of pools and small lochs. Dystrophic pools may also be found on raised bogs situated mainly on plains and valley bottoms. The water usually has a high humic acid content and is usually stained brown through exposure to peat. Some dystrophic lakes are completely devoid of all macrophytes, while others may be completely dominated by bryophytes. This does not necessarily indicate unfavourable condition. With increasing diversity the characteristic species are usually *Drepanocladus fluitans* and/or *Juncus bulbosus* as submerged macrophytes, with *Sphagnum* communities present around the edge or in the littoral zone. *Menyanthes trifoliata, Potamogeton polygonifolius* and *Nymphaea alba* may also be present and at richer sites, *Utricularia minor* and *Nuphar lutea.*

Attributes	Measure	Target	Comment
			There may be valid reasons why a characteristic species is not present at a site (such as biogeographic range or isolation from source populations) which need to be considered when applying targets to an individual site. As this interest feature covers a floristic range it is essential to establish which community type represents the feature for the site in question. If algal growth is excessive, check for inputs of point or diffuse sources of pollution. If mire communities surround the site, the mire vegetation will turn green in the presence of fertilisers. Increased growth of *Sphagnum* may indicate the occurrence of artificial acidification. Turbid water conditions can also give blue-green algae a competitive advantage in the phytoplankton, where artificial nutrient enrichment is taking place. *Juncus bulbosus* var. *fluitans* can naturally grow as the dominant plant i.e. > 40% cover in depths up to 1.75 m, and is not necessarily an indicator of a site in unfavourable condition.
	Negative indicator species	Non-native species should be absent or present at low frequency	Introduced species should be identified. A number of non-natives have such invasive potential that they should be assessed separately. Species of particular concern are: *Crassula helmsii*, *Hydrocotyle ranunculoides*, *Myriophyllum aquaticum* and *Azolla filiculoides*. If any of these species are present, a water body should be considered as being in unfavourable condition. This list is not exhaustive and should be updated as new threats become

Attributes	Measure	Target	Comment
			apparent. Colonisation since the previous field visit by *Elodea nuttallii* or *Elodea canadensis* at >5% frequency is indicative of unfavourable condition, as is dominance of naturalised non-native species, such as *E. canadensis*. Occurrence of such species, at >40% frequency in unproductive waters, is indicative of unfavourable condition. Excessive growths of filamentous algae on lake substrate or macrophytes are indicative of nutrient enrichment. Increased filamentous green algae may also indicate the occurrence of artificial acidification.
***Macrophyte community structure**	Distribution Extent Structure	Characteristic zones of vegetation should be present. Maximum depth distribution should be maintained. Maintain at least the present structure.	Zonation , depth distribution and structure will be site specific. Colonisation at depth may be limited by poor light penetration or unsuitable sediment type. Where present, well defined hydroseres should be maintained.
***Water quality**	Water Chemistry	Maintain dystrophic conditions The pH/ANC, and nutrient levels (P and N)	As a guide Stable nutrient levels: TP target/limit: Dystrophic = 10 μg L^{-1} Stable pH values: pH < 5.0 Adequate dissolved O_2 (>5 μg L^{-1})

Attributes	Measure	Target	Comment
		should be stable and appropriate to the lake type Adequate dissolved oxygen levels for health of characteristic fauna. No excessive growth of cyanobacteria or green algae.	Water should be acid and poor in available nutrients. It should be stained by dissolved humic material, and will usually be visibly brown. As there is a wide clinal range of community types embraced by this feature, the acceptable range of chemical conditions (especially total P, other P fractions, pH/ANC, and where appropriate NO_3-N,) should be set for individual SAC lakes, from recent or historical water chemistry data. Acceptable ranges of values for each variable should be established. See main text. Mean annual TP concentrations (based on at least quarterly measurements), or spring TP levels, should meet the targets appropriate for the lake type documented in the guidance, unless site-specific targets are available. If palaeolimnological techniques or hindcast modelling have been employed to reconstruct natural background TP concentrations for a particular lake these can be used to set targets, although it may be necessary to accept a small deviation from these background conditions. Alternatively, historical water chemistry data may exist for individual lakes. Where existing, site-specific TP concentrations are consistently lower than the standard appropriate for the habitat type, a lower target should be applied to prevent deterioration from current status. Phosphorus and nitrogen values can be very variable, P is often in

Attributes	Measure	Target	Comment
			excess and plant development is limited by unavailability of N in the peat. Check for changes in catchment land-use in catchment causing diffuse pollution and/or siltation and check point sources of pollution. Aerially applied agro-chemicals have a high potential to change plant communities, and move them out of favourable condition. Other methodologies involving trophic scoring can contribute to the assessment of favourable condition. As a guide, pH < 5.00. Note that where water column pH is 4.5 or less, alkalinity will be 0. Levels of dissolved oxygen should support the invertebrate and vertebrate taxa associated with this lake type. There should be no evidence of excessive blue-green or green algal blooms.
Hydrology	Hydrological regime	No deterioration in hydrological regime compared to the baseline.	Natural flushing rate and seasonal pattern of fluctuation need to be considered. Maintain flushing rate of system. Modifications of inflows and outlets (where present), the creation

Attributes	Measure	Target	Comment
			of outlets, or changes in hydrology from flood control regimes, abstraction, peat harvesting and gravel removal, can lead to unnatural changes in lake levels.
Lake substrate character	Shore line and substrate	Maintain the natural shoreline of the lake. Maintain natural and characteristic substrate for lake type.	Sediment quality and quantity when enriched can cause excessive growths of *Juncus bulbosus* var. *fluitans* or growths of algae.
Sediment	Sediment Load	Maintain natural sediment load	Increases in siltation could result from increased lake productivity, changes in catchment land-use (particularly over-grazing, peat harvesting), lake level fluctuations, climatic fluctuations or changes in sewage treatment.
Indicators of local distinctiveness	Maintain distinctive elements (e.g. rare plant or invertebrate species, habitat features) at current extent/levels and/or in current locations.		This attribute is intended to cover any site-specific aspects of this habitat feature (forming part of the reason for notification) which are not covered adequately by the previous attributes, or by separate guidance (e.g. for notified species features). For species of local distinctiveness, which are documented on citations, or for which records are held for individual lakes, references such as LACON (Palmer, in prep.) should be consulted for current lists of species rare in the constituent countries of GB, and in EA and SEPA areas. For "notable" species (e.g. nationally scarce plants), it is not intended that a target is set for detailed species monitoring. It is intended that a rapid indication of presence/absence and /or approximate extent should be provided. Allowing for natural fluctuations in population size. The same approach applies to

Attributes	Measure	Target	Comment
			“notable” habitats.

Aspects of environmental disturbance to be noted as an accompaniment to assessing condition: Natural dystrophic lakes and ponds

Objective	Specified assessment method (if appropriate)	Comment
No introduction of non-native plants Minimal negative impact from artificial structures No peat cutting within the vicinity of the water body Direct application of lime to the water column as an acidification amelioration strategy should not be carried out		Artificial structures could include dams. Catchment area changes affecting the lake, such as land drainage and infrastructure schemes, should be considered. Efforts should be directed towards reducing atmospheric emissions and implementing catchment management strategies, especially in relation to coniferous forestry

Box 5. Characteristic species of natural dystrophic lakes and ponds

Characteristic species	Associates
Utricularia spp.	*Sparganium angustifolium*
Sphagnum spp.	*Eleogiton fluitans*
Juncus bulbosus	*Drepanocladus spp.*
Nymphaea alba	
Menyanthes trifoliata	
Potamogeton polygonifolius	

ANNEX I

Feature 3 (SAC) – European dry heaths (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
* Area of dry heath	Maintain the extent of dry heath.	Visual estimate in 2x2 m plots and across the dry heath using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Note that it may be possible to extend dry heath communities, provided this is into degraded areas and does not encroach into other habitats of scientific interest.
* Heath community diversity	Maintain the presence of the dry heath communities H7, H8, H10 etc. as established at base line survey.	Visual estimate in 2x2 m plots.	Repeat monitoring of plots using GPS should indicate whether dry heath communities have changed or been lost.
* Area of mosaic communities and associated semi-natural habitats	Maintain associated mosaic communities and semi-natural habitats.	Visual estimate in 2x2 m plots and across the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring of plots using GPS should indicate whether mosaics and associated habitats have changed or been lost.

Dwarf-shrub height	Average ericoid height should be 15–35cm with at least 25% of the dry heath in the late mature/degenerate growth phase (greater than 35cm).	Visual estimate in 2x2 m plots.	On some areas of dry heath (especially on gentle slopes), the ericoid age structure will largely reflect recent burning patterns. However, in dry heath, burning should only be carried out occasionally under carefully controlled and monitored circumstances. A varied heather age structure is reflected in the height of heather.
* Bare peat, or ground covered by algal mats (% cover)	Bare peat etc. should occupy less than 2% of the dry heath surface overall.	Visual estimate in 2x2 m plots.	Bare peat (NOT exposed rock) or peat carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of constant burning and/or grazing. Bare peat here represents bare peat etc. within the dry vegetation rather than naturally eroded surfaces where exposed rock can form a natural part of the dry heath community.
* Ericaceous cover (% cover)	Dwarf-shrub cover should be greater than 75% over at least 75% of the dry heath community; and Mean dwarf-shrub cover should be greater than 75%	Visual estimate in 2x2 m plots.	
* Ericoid diversity	At least two species of dwarf-shrub at least present in 90% of plots.	Visual estimate in 2x2 m plots.	Ericoid (dwarf-shrub species) include *Calluna vulgaris*, *E. cinerea*, *Vaccinium myrtillis*, *Erica tetralix*, *Ulex gallii*, *Empetrum nigrum* and *Myrica gale*.
* Cover of *Ulex gallii* (% cover)	*Ulex gallii* cover should be less than 50% in plots within H8 stands.	Visual estimate in 2x2 m plots.	Mean percentage cover should be assessed for stands of H8 only – i.e. exclude plots in other heath communities from the calculations.

			Stands of H8 are generally restricted to the south-east of Northern Ireland.
* Cover of graminoids (% cover)	Total graminoid cover should be less than 33%.	Visual estimate in 2x2 m plots.	Include true grasses, sedges, and rushes in this assessment. *Nardus stricta, Deschampsia flexuosa*, *Juncus squarrosus* or other graminoids should not dominate over other species.
* Frequency and % cover of bryophytes and bushy lichens (esp *Cladonia* spp.) (DAFOR and % cover)	Bryophytes (excluding *Polytrichum* spp. and *Campylopus* spp. on bare ground) and/or Cladonia species should be at least frequent. At least frequent is equivalent to greater than 41% occurrence in recorded plots. Combined mean cover should be greater than 5%.	Visual estimate in 2x2 m plots.	Generally only bryophytes (mosses and liverworts) figure in this assessment, but occasionally bushy lichens can also be a prominent feature of the dry heath vegetation.
* Frequency and % cover of scrub/tree encroachment on dry heath communities (DAFOR and % cover)	Scrub/tree encroachment should be no more than occasional over the dry heath community. No more than occasional is equivalent to less than 40% occurrence in recoded plots.	Visual estimate within a 10 m radius of plots and across the feature using a combination of aerial photographs and Condition Assessment	Scrub encroachment should be checked using a combination of aerial photographs and Condition Assessment. Include invasive alien species in addition to *Betula pubescens, Prunus spinosa, Rubus* spp. Invasive exotic species such as *Rhododendron ponticum* should be removed immediately. Exclude *Ulex europaeus* (see below)

	Mean cover should be less than 5%.	structured walk.	
* Cover of Gorse *Ulex europaeus* (% cover)	Gorse (*Ulex europaeus)* cover should be less than 5%. During repeat surveys, Gorse cover should not exceed that of the baseline survey.	Visual estimate in 2x2 m plots and across the feature using a combination of aerial photographs and Condition Assessment structured walk.	Although a natural component of heath communities, Gorse can become invasive under both low and high grazing pressures. It is important to assess whether the relative quantities present in the site are increasing.
* Cover of Bracken (*Pteridium aquilinum*) encroachment (% cover)	Bracken cover less than 10% in dense canopy. During repeat surveys, Bracken cover should not exceed that of the baseline survey.	Visual estimate in 2x2 m plots and across the feature using a combination of aerial photographs and Condition Assessment structured walk.	Although a natural component of heath communities, Bracken can become invasive under both low and high grazing pressures. It is important to assess whether the relative quantities present in the site are increasing.
* Frequency and cover of undesirable agricultural grasses and weeds (DAFOR and % cover)	None of the following should be more than rare: *Cirsium arvense, C. vulgare, Senecio jacobaea, Urtica dioica, Plantago major, Phleum pratense, Trifolium repens, Holcus lanatus* and *Lolium perenne* No more than rare is equivalent to less than 20% occurrence in	Visual estimate in 2x2 m plot.	

	recorded plots. Combined mean cover of agricultural grasses and weeds less than 1%.		
* Management - Grazing (% cover)	Signs of moderate or heavy grazing should occupy less than 5% of the dry heath vegetation. The frequency of droppings, the extent of poaching, uprooting of dwarf shrubs and invasion by *Juncus squarrosus* etc. indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.	Visual estimate in 2x2 m plots.	
* Management - Burning (% cover)	Signs of recent burning should occupy less than 5% of the dry heath vegetation. Recent burning is represented by areas burnt within the last two years.	Visual estimate in 2x2 m plots and across feature using a combination of aerial photographs, SIM and Condition Assessment structured walk.	
Frequency and cover of erosion features associated with human impacts.	No gully erosion or bare rock associated with more concentrated human impacts (ATV tracks or recreational	Visual estimate in 2x2 m plots.	The extent of man induced erosion should be monitored using a combination of aerial photographs and Condition Assessment. Erosion is a natural feature of high mountain slopes. However,

(DAFOR and % cover)	activities). Man induced/enhanced erosion should occupy less than 2% of the total area of dry heath other than very localised instances.		where natural erosion is exacerbated by human activity, mainly hill walking, the heath will not be in favourable condition, except where such erosion is very limited in nature.
Herb diversity	Herbs (excluding negative indicators) at least frequent. At least frequent is equivalent to greater than 41% occurrence in recorded plots.	Visual estimate in 2x2 m plots.	

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

Feature 4 (SAC) – Northern Atlantic wet heath with *Erica tetralix* (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
* Area of wet heath	Maintain the extent of wet heath.	Visual estimate in 2x2 m plots and across the wet heath using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Any loss of wet heath, or fragmentation of this habitat is unacceptable. Note that it may be possible to extend wet heath communities, provided this is into degraded areas and does not encroach into other habitats of scientific interest.
* Heath community diversity	Maintain the presence of the wet heath community M15 as established at base line survey.	Visual estimate in 2x2 m plots.	Repeat monitoring of plots using GPS should indicate whether wet heath communities have changed or been lost.
* Area of mosaic communities and associated semi-natural habitats	Maintain associated mosaic communities and semi-natural habitats.	Visual estimate in 2x2 m plots and across the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring of plots using GPS should indicate whether mosaics and associated habitats have changed or been lost.
Dwarf-shrub height	Average ericoid height should be 15–35cm with at least 25%	Visual estimate in 2x2 m plots.	On some areas of wet heath (especially on gentle slopes), the ericoid age structure will largely reflect

	of the wet heath in the late mature/degenerate growth phase (greater than 35cm).		recent burning patterns. However, in wet heath, burning should only be carried out in exceptional circumstances. Heather height reflects the age structure of the Heather.
* Bare peat, or ground covered by algal mats (% cover)	Bare peat etc. should occupy less than 2% of the wet heath surface overall.	Visual estimate in 2x2 m plots.	Bare peat or peat carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of excessive burning and/or grazing. Bare peat here represents bare peat etc. within the wet heath vegetation.
* Ericaceous cover (% cover)	Dwarf-shrub cover should be maintained between 50–75%	Visual estimate in 2x2 m plots.	Although dominated by dwarf shrubs, the sward should be composed of a variety of higher plants and bryophytes.
* Ericoid diversity	At least two species of dwarf-shrub at least present in 90% of plots.	Visual estimate in 2x2 m plots.	Ericoid (dwarf-shrub species) include *Calluna vulgaris*, *Erica tetralix*, *Empetrum nigrum* and *Myrica gale*.
* Cover of graminoids (% cover)	Total graminoid cover should be less than 50%.	Visual estimate in 2x2 m plots.	Include true grasses, sedges, and rushes in this assessment. *Molionia caerulea, Trichophorum cespitosum, Deschampsia flexuosa*, *Juncus squarrosus* or other graminoids should not dominate over other species. Localised *Schoenus nigricans* flushes should not be included in this habitat assessment.
* Bryophyte cover and frequency of *Sphagnum* mosses (% cover and DAFOR)	Mean bryophyte cover (excluding *Polytrichum* spp. and *Campylopus* spp. on bare ground) should be at least 25%. *Sphagnum* moss species	Visual estimate in 2x2 m plots.	Bryophytes should include a range of pleurocarpus species forming patches below, or in more open swards beneath the dwarf-shrubs as well as *Sphagnum* moss species.

	should be at least frequent throughout the moss layer. At least frequent is equivalent to greater than 41% occurrence in recorded plots.		
* Frequency and % cover of scrub/tree encroachment on wet heath communities (DAFOR and % cover)	Scrub/tree encroachment should be no more than rare over the wet heath community. No more than rare is equivalent to less than 20% occurrence in recorded plots. Mean cover should be less than 2%.	Visual estimate within a 10 m radius of plots and across the feature using a combination of aerial photographs and Condition Assessment structured walk.	Scrub encroachment should be checked using a combination of aerial photographs and Condition Assessment. Invasive exotic species such as *Rhododendron ponticum* should be removed immediately.
* Frequency and cover of undesirable agricultural grasses and weeds (DAFOR and % cover)	None of the following should be more than rare: *Cirsium arvense, C. vulgare, Senecio jacobaea, Urtica dioica, Plantago major, Phleum pratense, Trifolium repens, Holcus lanatus* and *Lolium perenne*. No more than rare is equivalent to less than 20% occurrence in recorded plots.	Visual estimate in 2x2 m plot.	

	Combined mean cover of agricultural grasses and weeds less than 1%.		
* Management - Grazing (% cover)	Signs of moderate or heavy grazing should occupy less than 5% of the wet heath vegetation. The frequency of droppings, the extent of poaching, uprooting of dwarf shrubs and invasion by *Juncus squarrosus* etc. indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.	Visual estimate in 2x2 m plots.	
* Management - Burning (% cover)	Signs of recent burning should occupy less than 5% of the wet heath vegetation. Recent burning is represented by areas burnt within the last two years.	Visual estimate in 2x2 m plots and across the feature using a combination of aerial photographs, SIM and Condition Assessment structured walk.	
Frequency and cover of erosion features associated with human impacts (DAFOR and % cover)	No gully erosion, bare peat or rock associated with more concentrated human impacts (ATV tracks or recreational activities). Man	Visual estimate in 2x2 m plots.	The extent of man induced erosion should be monitored using a combination of aerial photographs and Condition Assessment. Erosion is a natural feature of high mountain slopes. However, where natural erosion is exacerbated by human activity,

	induced/enhanced erosion should occupy less than 2% of the total area of wet heath other than very localised instances.		mainly hill walking, the heath will not be in favourable condition, except where such erosion is very limited in nature.
Herb diversity	Herbs (excluding negative indicators) at least frequent. At least frequent is equivalent to greater than 41% occurrence in recorded plots.	Visual estimate in 2x2 m plots.	Wet heaths tend to be dominated by dwarf-shrubs and graminoids; however, some herbs should be present in most plots (albeit at a low cover).

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 5 (SAC) - Oligotrophic to mesotrophic standing water with vegetation belonging to *Littorelletea uniflorae* and/or of the *IsoUto-Nanojuncetea*

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Measure	**Target**	**Comment**
Extent	Assessment against baseline map. Aerial photographs may be used.	No loss of extent of standing water	
Composition of macrophyte community	Characteristic species composition	No loss of characteristic species present at the site	This type of water body occurs in the majority of Member States and is abundant in the more mountainous areas of Europe. In the UK this freshwater habitat type is largely confined to the mountainous regions of the north and west and is characterised by two intergrading types: oligotrophic and mesotrophic waters. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* being considered a defining component. There are two distinct community types, one extremely oligotrophic with the presence of *Subularia aquatica* as the main associate, with *Littorella uniflora* and *Isoetes lacustris*. *Myriophyllum alterniflorum,*

			Lobelia dortmanna and *Sparganium angustifolium* occur as associates. The other community has a clinal range of species as the trophic state increases. These richer trophic states cannot support *Subularia aquatica* but the presence of some or all of *Nuphar lutea, Persicaria amphibia, Sparganium minimum, Potamogeton perfoliatus, P obtusifolius* is indicative of an increased trophic state. (N.B. *Subularia* may be naturally absent from some regional areas.) Two nationally scarce plants *Luronium natans* and *Pilularia globulifera* occur at the interface between oligotrophic and mesotrophic water types. **As this interest feature covers a wide range of trophic states it is essential to establish which community type represents the feature for the site in question.** The presence of high cover of *Sphagnum* species and/or *Juncus bulbosus* var. *fluitans* above 40% level for oligotrophic waters and *Myriophyllum* or *Elodea canadensis* above 40% level or presence of *Elodea nuttallii* for mesotrophic waters is indicative of a site in unfavourable condition.
	Non-native plants	Non-native species should be absent or present at low frequency. No introductions of non-native species	e.g. Presence of *Crassula helmsii* is indicative of a site moving out of favourable condition; dominance of *C. helmsii* is indicative of a site in unfavourable condition.

*Macrophyte community structure	Distribution Extent Structure	Characteristic zones of vegetation should be present Maintain at least the present maximum depth distribution of *Isoetes* Maintain at least the present community structure	Characteristic zonation with increasing depth should be: *Littorella,* then overlapping zones of *Littorella* with *Lobelia,* then *Isoetes* ***L. uniflora*** **and** ***L. dortmanna*** **dominant in depths <1.5 m;** ***Isoetes*** **dominant > 1.5 m.** ***Isoetes*** **has been recorded in Waste Water at depths of 7 m. It is very sensitive to wave action, setting a shallow depth limit particularly in exposed sites.**
*Water quality	Water Chemistry	Maintain oligotrophic/mesotrophic conditions The pH/ANC, and nutrient levels (P and N) should be stable and appropriate for the interest feature	As a guide Stable nutrient levels: TP target/limit: Oligotrophic = 10 μg L^{-1} Stable nutrient levels: TP target/limit: Mesotrophic = 10 μg L^{-1} Stable pH values: pH – 5.5 to circumneutral Adequate dissolved O_2 (>5 μg L^{-1}) There is a wide clinal range of community types embraced in this feature. Water quality targets should be set for individual SACs and an acceptable range established. The acceptable range of chemical conditions (especially total P, other forms of phosphorus, pH/ANC, and where appropriate NO_3-N,) should be set for individual SACs from recent or historical water chemistry data Check for changes in catchment land-use in the catchment causing

			diffuse pollution and/or siltation and check point sources of pollution. Aerially applied agro-chemicals have a high potential to change plant communities, and move them out of favourable condition. Other methodologies involving trophic scoring can contribute to the assessment of favourable condition. There is a need to develop a UK-wide lake environment monitoring protocol, which includes biology, water chemistry, nutrients, aesthetic conditions and toxic substances.
Hydrology	Hydrological regime	No deterioration in hydrological regime compared to the baseline.	Natural flushing rate and seasonal pattern of fluctuation need to be considered. Maintain flushing rate of system. Modifications of inflows and outlets or changes in hydrology (e.g. from flood control regimes, abstraction and gravel removal) can lead to unnatural changes in lake levels. *L. uniflora* can tolerate extreme inter-annual fluctuations in water level and long periods of exposure. *L. dortmanna* is tolerant of short periods of exposure but intolerant of desiccation.
Lake substrate character	Shore line and substrate	Maintain the natural shoreline of the lake. Substrate should be	Substrate is typically sand, gravel, stones and boulders with low organic content but sometimes locally high peat content. Sediment quality and quantity when enriched can cause excessive growths of

		natural and characteristic of lake type.	*Juncus bulbosus* var. *fluitans* or growths of algae.
Sediment load	Sediment load	Minimal	Increases in siltation could result from increased lake productivity, changes in catchment land-use (particularly over-grazing), lake level fluctuations, climatic fluctuations or changes in sewage treatment.

Aspects of environmental disturbance to be noted as an accompaniment to assessing favourable condition

Objective	Specified assessment method (if appropriate)	Comment
Minimal negative impact from artificial structures Minimal negative impact from recreation Direct application of lime to the water column as an acidification amelioration strategy should not be carried out No impacts from fish farming		Artificial structures could include boat-mooring facilities, dams, fish reefs. Negative impacts from recreational activities can include enrichment caused by ground baiting, introduction of bottom feeding fish and other organisms not characteristic of the habitat, increased disturbance to SACs from water-sports. Efforts should be directed towards reducing atmospheric emissions and implementing catchment management strategies, especially in relation to coniferous forestry.

Catchment area changes affecting the lake, such as flood defences and infrastructure schemes should be considered.		