



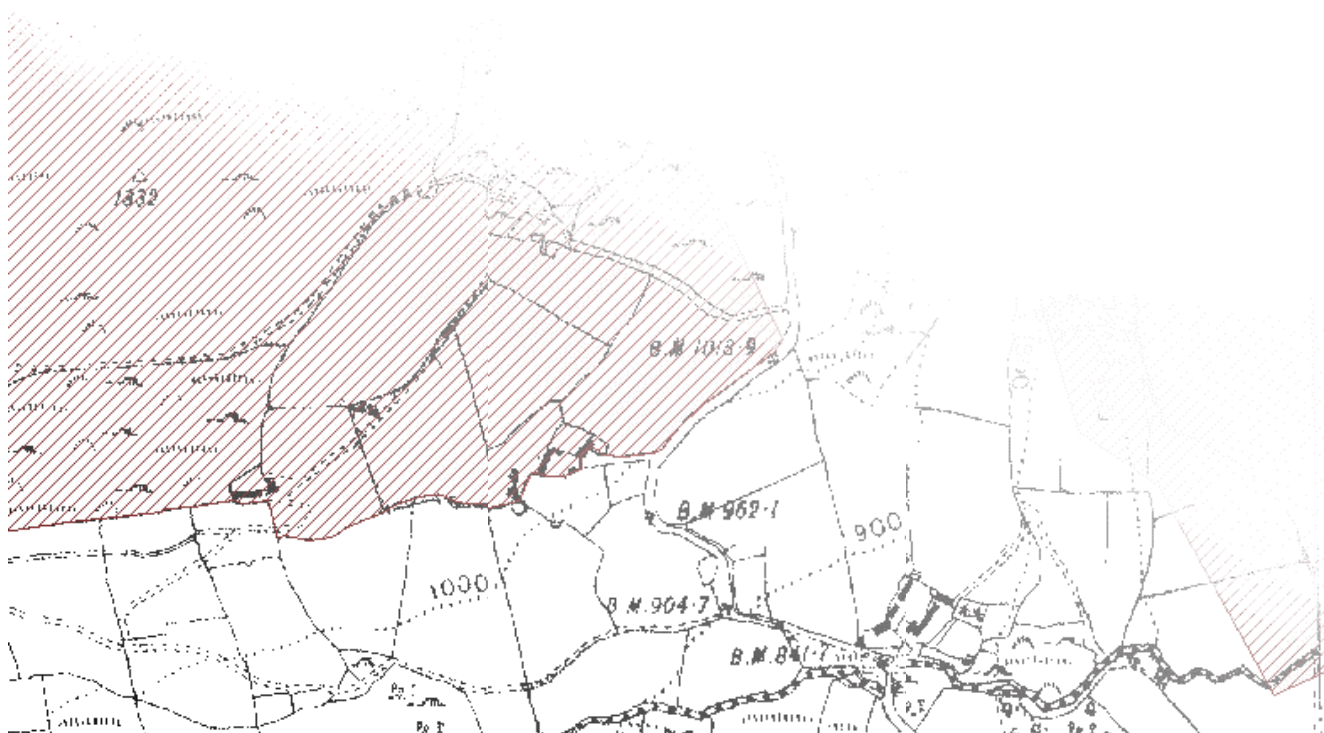
# National Parks and Wildlife Service Conservation Plan for 2005-2010



## Muckish Mountain cSAC

Site Code 1179

Co Donegal





# SUMMARY

## Introduction

Muckish Mountain cSAC has been designated as a candidate Special Area of Conservation under the EU Habitats Directive. The site has been listed due to the presence of two Annex I habitats listed on the EU Habitats Directive, namely alpine and boreal heath and siliceous rocky slopes with chasmophytic vegetation.

## Description of Muckish Mountain cSAC

Muckish Mountain cSAC is an upland site located in north Co. Donegal, approximately 7 km west of Creeslough. The site comprises the summit and slopes of Muckish Mountain - a large, flat-topped quartzite mountain reaching an elevation of 670m with notable deposits of fine quartz sand and a fossil rock glacier. These features have led to it being designated a geological site of regional importance.

The majority of the site is made up of wet and dry heath with small areas of blanket bog and a small area of upland grassland. There are large areas of exposed rock and scree slopes. Flushes, exposed sand and gravel, lakes and streams are also present, providing a diverse upland environment.

The alpine and boreal heath habitat occurring on the summit of Muckish Mountain is of particular interest and covers an estimated 99 ha. The alpine and boreal heath is of importance due to its typical dwarf heath vegetation of Dwarf Willow, Crowberry and Heathers, as well as a range of infrequent oceanic montane bryophyte (moss & liverwort) species and notable vascular plants, including Cowberry, Bearberry and Stiff Sedge. Its inaccessibility and remoteness means the habitat is relatively undisturbed, apart from natural wind erosion and sheep grazing.

The quartzite cliffs around the summit of Muckish Mountain comprise approximately 56 ha, 1% of the estimated national area of this habitat. This habitat, although species-poor and sparsely vegetated (as is typical for Irish examples), supports a number of notable vascular plant and bryophyte species, including one Red Data Book species – Alpine Saw-wort. Parts of the upland heath are notable for the rare heather hybrid *Erica stuartii*.

The site supports three species listed on Annex I of the EU Birds Directive, namely Golden Plover, Merlin and Peregrine Falcon. Peregrine Falcons regularly breed on the site; the other two species forage on the large area of upland heath. Irish Hare and Badger, which are both listed as Internationally Important Red Data Book species, occur on the site.

The main land use within the site is sheep and cattle grazing, which is particularly intense on small areas where the vegetation is eroded down to bare peat. An active quarry above Muckish Gap has damaged the scree and heath habitats here. Peat extraction (by hand and machine) occurs along the northern and western boundaries of the site. The cutting is, however, encroaching deeper into the site. The site is popular with hill-walkers, and frequent use has eroded a wide track of bare peat between Muckish Gap and the summit.

## **Main conservation objectives**

- To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status; alpine and boreal heath (7% of the site) and siliceous rocky slopes with chasmophytic vegetation (4%)
- To maintain other habitats at favourable conservation status: blanket bog, heath, scree, cut-over bog, flushes, lakes, rivers and streams, exposed rock, sand and gravel and upland grassland on peaty soil
- To maintain the populations of notable species on the site at favourable conservation status, particularly those listed in Annex I of the EU Birds Directive (Golden Plover, Peregrine Falcon, Merlin), Red Grouse, Ring Ouzel and the populations of rare and notable plant species
- To establish effective liaison and co-operation with landowners, legal users and relevant authorities

## **Main management issues**

- Burning
- Dumping
- Grazing
- Path erosion
- Quarrying
- Turf cutting

## **Main strategies to achieve objectives**

- Manage grazing on commonages and on privately owned land
- Minimise threat from quarrying
- Minimise impacts of peat extraction and peat erosion due to trampling pressures
- Maintain and protect bird species listed on Annex I of the Birds Directive
- Manage habitats for notable plant species
- Liaise with landowners, REPS planners and other relevant authorities and interested parties

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# READER'S GUIDE

The National Parks and Wildlife Service (NPWS) of the Department of the Environment, Heritage and Local Government (DEHLG) has produced this plan to provide ecological information about the site and to outline the main objectives for the conservation of the special features of the site. The purpose of this draft is to provide stakeholders the opportunity to input into the development of the plan.

The **Introduction** section outlines the **policy background** to the site's designation and the relevant legislation.

The **Site Description** section contains **general information** on the site's boundaries and ownership and on the statutory bodies with responsibility for its conservation. It also contains sections on the **physical aspects** of the site such as the geology and hydrology as well as the **biological features**, in particular, the habitats and species found there. **Land use** and cultural features are also described.

The **Conservation Value** section assesses the main ecological attributes of the site.

The **Management Framework** section outlines the management necessary for the conservation of the site. It starts with a set of specific **conservation objectives**. These are followed by the main **management issues** that may impact on the conservation of the site and the **strategies** that are proposed to achieve the conservation objectives. In the final section, the site is divided into management **zones** to indicate where each strategy applies.

The appendices include a **glossary** where scientific and technical terms are explained, **reference material** consulted in the preparation of the plan and a list of **notifiable actions** relevant to each habitat within the site.

By preparing, implementing and reviewing this plan on a five-year basis, DEHLG aims to achieve the objectives of the EU Habitats Directive in relation to this site.

# INTRODUCTION

## Legal Background for Conservation Plans

The legal basis for selection and designation of **Special Areas of Conservation** (SACs) is the **EU Habitats Directive**, which was adopted in 1992. Focusing on the conservation of natural and semi-natural habitats and species of flora and fauna, the Habitats Directive seeks to establish “Natura 2000”, a network of protected areas throughout the European Community. The Habitats Directive includes a list of habitats that require SAC designation and specific conservation measures. This list is known as Annex I and the habitats are referred to as Annex I habitats. On this list, habitats that require special attention because they are in danger of disappearance, are termed ‘priority habitats’. A second list, Annex II in the Habitats Directive comprises species that must be afforded special protection.

In Ireland, the habitats and species that must be afforded protection under the Habitats Directive include:

- 16 Annex I priority habitats that require particular attention – including raised bogs, active blanket bogs, turloughs and machair,
- 45 other Annex I habitats – such as certain types of heaths, lakes and woodlands,
- 25 Annex II species – including Otter, Freshwater Pearl Mussel and Killarney Fern.

It is the responsibility of each member state to designate SACs to protect the Annex I habitats and Annex II species. These sites, together with the **Special Protection Areas** (SPAs) designated under the **EU Birds Directive** (1979), form the European “Natura 2000” network.

The Birds Directive contains annexes, which are lists of birds that require particular conservation measures (Annex I), and also species that may be hunted, and species that may be sold. There are 28 Annex I species regularly occurring in Ireland including Whooper Swan, Greenland White-fronted Goose, Peregrine Falcon, Corncrake and Terns. Member states are also required to protect sites that are important for migratory species such as ducks, geese and waders.

The Habitats Directive was transposed into Irish law through the **European Communities (Natural Habitats) Regulations 1997**. The **Wildlife Act 1976** is the main statute governing the protection of wildlife in Ireland and was amended in 2000 to take account of European law, particularly the Habitats and Birds Directives. The **Wildlife (Amendment) Act 2000** also makes legal provision for the designation and protection of a national network of **Natural Heritage Areas** (NHAs). Over 1,100 proposed NHAs were published in 1995 and almost 400 of these are also selected as candidate SACs.



The European Communities (Natural Habitats) Regulations 1997 include the following points:

The Minister for the Environment, Heritage and Local Government must transmit a candidate list of sites to the European Commission for consideration.

Following adoption of this list by the Commission, the Minister will formally designate the sites as SACs.

Sites are legally protected once they are publicly advertised.

Landowners and other users with a legal entitlement should be notified of designation, and the Minister must make all reasonable efforts to do so. Notification also includes a list of activities that may alter, damage, destroy or interfere with the integrity of the site. A person who illegally damages a site may be prosecuted or required to repair damage.

Landowners and other users with a legal entitlement may appeal the designation of lands on scientific grounds.

Landowners and other users with a legal entitlement will be compensated for actual loss of income arising from restrictions imposed as a result of designation.

DEHLG is the government department with responsibility for the designation and protection of wildlife habitats, species and areas of conservation interest. As part of their responsibility in relation to biodiversity and wildlife under the Wildlife Acts (1976 and 2000), the Minister's brief extends far beyond the habitats and species listed in the annexes of the Habitats and Birds Directives. For this reason, cSAC conservation plans may deal with species that are not mentioned in these annexes.

## Reasons for Designation of Muckish Mountain cSAC

HABITATS LISTED IN ANNEX I OF THE EU HABITATS DIRECTIVE	CONSERVATION VALUE
<ul style="list-style-type: none"> <li><b>Alpine and boreal heath</b> (EU Habitat Code 4060)</li> </ul>	The 'nunatak' summit plateau supports a good example of this habitat including Bilberry and Crowberry.
<ul style="list-style-type: none"> <li><b>Siliceous rocky slopes with chasmophytic vegetation</b> (EU Habitat Code 8220)</li> </ul>	Muckish Mountain has extensive quartzite cliffs, supporting sparse vegetation with uncommon arctic-alpine flora and bryophytes.

## Implications of Site Designation for Landowners and other Site Users

In most areas designated as cSACs, current practices will not have to change significantly.

In cases where users with a legal entitlement are required to change practices or restrict activities to protect the wildlife interest of the site, compensation will be payable based on actual loss of income.

If a user with a legal entitlement wishes to carry out certain activities, not covered by licence or consent from another statutory body, within the designated area, they must consult with, and get consent from, the Minister for the Environment, Heritage and Local Government. These activities are listed as "Notifiable Actions" for each habitat (see Appendix IV).

The designation of the site can be appealed by landowners and legal users on scientific grounds. Details of the appeals procedure are also given in Appendix V.

# SITE DESCRIPTION

## Location Including Site Boundaries

Muckish Mountain is located in north Co. Donegal, approximately 7 km west of Creeslough (see Map 1).

<b>Grid Ref.:</b>	C 00 28
<b>Latitude:</b>	N 55°06'09"
<b>Longitude:</b>	W 08°00'00"
<b>Area:</b>	1411 ha
<b>Altitude Range:</b>	122 m to 670 m
<b>Townlands:</b>	Creenasmear, Faymore, Carrownamaddy, Ray, Moyra Glebe, Ballyboe Mountain, Gortnaleck and Meencoolasheskin

## Site Boundaries

The boundaries were established in a survey by Leach and Heardman (1994), and have subsequently been amended, with inclusions to the north-east and south-east and an exclusion on the northern boundary agreed in 2000 (see Map 1 for current boundaries).

## Site Infrastructure

The south boundary of the site runs near to, and in places coincides with, third class roads running from Muckish Gap to Falcarragh and from the junction near Muckish Gap to Creeslough. Other third class roads terminate near the northern and eastern boundaries of the site. From these public roads, "bog roads" extend up to and into the site at the north, west and south-east. A rough track extending onto the northern face of Muckish provides access to a quarry formerly worked for sand. An active quarry on the south face of Muckish has a broad, gravel track for vehicular access. Following inclusion, the north-east corner of the site now borders the railway line.

A religious shrine is found on the roadside verge at Muckish Gap. Here, parts of the verge provide makeshift parking spaces for two or three cars. A meandering track has been eroded through peat substrate intermittently between here and the summit plateau of Muckish, via the broad spur at the south. The summit of Muckish has many man-made constructions including one large summit cairn, many small cairns, the remains of a cross, a stone wall shelter and a triangulation point.

# Legal Status

## Ownership

Approximately 80% of the site is held as commonage, the remainder of the site is held in multiple private ownership (see Map 2).

## Designations of the Site

<b>candidate Special Area of Conservation</b>	Sitecode IE0001179	Published on 1 <sup>st</sup> March 1997.
<b>proposed Natural Heritage Area</b>	Sitecode 1179	Unpublished

## Past Status and Designation of the Site

Muckish Mountain was formerly listed as an Area of Scientific Interest (ASI; Young, 1973). The ASI survey also classified the site as a geological site of regional importance due to its interesting sand deposits (including a fossil rock glacier (Wilson 1990a)).

## Rights Pertaining to the Site

<b>Grazing</b>	Most of the site is held as commonage (see Map 2).
<b>Rights of way</b>	There is a miner's track running to the disused quarry on the north face of Muckish Mountain. The track along the Naboll Stream is also a right of way.
<b>Rights of turbary</b>	Many local people have turbary rights on and around the site, with rights to access these areas via bog roads.

# Government Departments and Agencies

<b>Department of the Environment, Heritage and Local Government (DEHLG)</b>	DEHLG is the government department with responsibility for the protection and conservation of Ireland's natural heritage.
<b>National Parks &amp; Wildlife Service (NPWS)</b>	NPWS is the section of the DEHLG responsible for maintaining the nature conservation value of the site. Periodic inspection of the site is carried out by the local Conservation Ranger.  Regional staff also participate in research and survey projects by collecting data on the site, provide advice to planning authorities on the impacts of development applications and provide an education and advisory service to the public (see Appendix VII) for further details of NPWS regional staff.
<b>Donegal County Council</b>	Donegal County Council is the planning authority for the site. As such they are obliged to ensure appropriate assessment of the implications of developments requiring planning permission that may have an impact, either individually or in combination with other developments on the designated area.

**Environmental  
Protection Agency  
(EPA)**

The EPA is an independent state sponsored body with a wide range of statutory duties including monitoring environmental quality and overseeing the performance by local authorities of their statutory environmental protection functions.

## Local Authority Policy in relation to the Site

Donegal County Council policy towards Natural Heritage Areas, Special Protection Areas and Special Areas of Conservation is stated in the 2000 development plan as follows:

*“The proposed Natural Heritage Areas reflect the rich and diverse heritage resource which survives in the County. The Council views them in a positive rather than a negative light. Like other heritage resources they can contribute, in themselves, to the wealth of experience and opportunity which the County offers to residents and visitors.*

*“The Council will work with relevant authorities, voluntary and community groups, to optimise the contribution of these and other heritage resources to the sustainable development of the County”.*

Muckish is identified as a geological site of regional importance. The development plan states that the County Council will inform Dúchas [now NPWS] of any planning applications or proposed service works likely to impact on pNHAs, as well as geological sites designated as ASIs but not NHAs. It is also stated that the obligations of the Council in regard to planning applications and cSACs and SPAs are set out in the European Communities (Natural Habitats) Regulations 1997.

## Physical Features

### Climate

There are no weather recording stations on the site. Regional climatic data for the nearest synoptic weather recording station at Malin Head (located c. 40 km from the site) records a mean annual temperature of 9.3°C and mean rainfall of 1060.6mm per annum. Further details are given in Appendix III.

Given the distance inland and altitude of this site, local climatic conditions are certain to differ to some extent from Malin Head. Isotherm maps in Rohan (1986) indicate that the area is cooler in winter and warmer in summer. Two Meteorological Office rainfall recording stations are located closer to the site. Creeslough Brockagh (grid ref. C014256, c. 2 km south-east of the site) and Creeslough Carrownamaddy (grid ref. C028316, c. 2 km north-east of the site) give annual mean rainfall figures of 1810 mm and 1480 mm respectively (period 1961 - 1990). This is well in excess of the mean rainfall figure for Malin Head (1060mm) and indicates that all precipitation data from Malin Head may be under-representative of what is experienced in the Muckish Mountain area.

### Geology & Geomorphology

Muckish Mountain has been classified as a geological site of regional importance. The mountain rises sharply from the surrounding low lands and is separated from nearby peaks by the glacially breached col at Muckish Gap. Muckish Mountain itself is a large, flat-topped quartzite mountain with deposits of sand around it, formed from weathered quartzite. These deposits were formerly quarried. Schists underlie the lower areas. Further information is provided in Appendix III.

During the late Pleistocene Era, the area was affected by ice moving northward from the Derryveagh Mountains. However the ice failed to override Muckish Mountain (Whittow, 1974), leaving an exposed island or ‘nunatak’ where vegetation remained. The accumulations of sand and gravel on the southern slopes of Muckish Mountain support the most important geomorphological feature of the site - a fossil rock glacier, as described in Wilson (1990a).

## Soils & Soil Processes

Tracts of land at the north of this site have been classified as having peat soils of the low level Atlantic blanket bog type by Hammond (1979). These peat soils are described as occurring below 152 m above sea level, being extremely wet and very acid with low permeabilities and having variable peat depth according to underlying topography. Otherwise the site has generally very shallow peat soil on rock or scree substrate, which are nutrient-poor but not waterlogged. In level areas, some areas of peat are deeply hagged. A small area at the south of the site has a reclaimed peat soil.

A large landslide of sand and gravel occurred on the north face of Muckish Mountain in the 1960s. The cause is not known but the landslide occurred below one of the larger gullies during a very heavy rainstorm. There may previously have been quarrying activity in the vicinity of this gully.

## Hydrology & Water Quality

The principal hydrological input into the site is rainwater. The headwaters and uppermost reaches of many small streams are found on the steep, south-western slopes of the site. Tributaries of larger rivers including the Lough Agher and Carrownamaddy Rivers also originate in the site. The northern edge of the site supports two highly oligotrophic lakes, Lough Naboll and Lough Akeo – the former is abstracted for drinking water. Small flush areas occur by streams and on small terraces, suggesting that surface flow is also an important part of site hydrology.



*Northern slopes of Muckish Mountain, showing the siliceous slopes above blanket bog (cut-over areas in mid frame) and heath (foreground) (NHA file).*

# Biological Features

## Habitats and Vegetation

**Note:** Throughout the conservation plan, habitats are named and described under two different systems: the Annex I habitats are as listed in the EU Habitats Interpretation Manual Version 15/2(1999), while all other habitats are as listed according to the NPWS NHA classification system.

The following table lists the habitats within the site. The Annex I habitats of the Habitats Directive for which the site was selected are listed, with the relevant NHA habitat category also shown. Annex I priority habitats are marked with an asterisk (\*). The Indicative Habitat map for the site is presented in Map 3. The percentage area presented for each habitat type is based on the approximate geographic area of each habitat, as shown in Map 3.

### Habitats Found within Muckish Mountain cSAC

ANNEX I HABITAT TYPE	HABITAT CATEGORY	% AREA
Alpine and boreal heaths (EU Code 4060)	Heath	7%
Siliceous rocky slopes with chasmophytic vegetation (EU Code 8220)	Exposed rock	4%
-	Heath	78%
-	Blanket bog <sup>1</sup>	4%
-	Scree	3%
-	Cut-over bog	3%
-	Flush	<1%
-	Lakes	<1%
-	Rivers and streams	<1%
-	Exposed sand and gravel	<1%
-	Upland grassland on peaty soils	<1%
-	Quarries	<1%



*Looking east up a valley blanket bog towards Lake Akeo (NHA file).*

<sup>1</sup> The blanket bog within the site is not of sufficient quality to merit it being a qualifying interest for the site.



## Annex I Habitats:

### **Alpine and boreal heath (EU code 4060)** (7% of total site area or 99ha)

On the upper spurs and slopes of Muckish Mountain, the heath vegetation differs substantially from that on the rest of the site. Peat is absent or very thin over much of the surface, which supports a dwarf heath vegetation including Crowberry (*Empetrum nigrum*), Juniper (*Juniperis communis*), Bearberry (*Arctostaphylos uva-ursi*) and heather species (principally Ling Heather (*Calluna vulgaris*)). Mat-grass (*Nardus stricta*) and Bilberry (*Vaccinium myrtillus*) are also present. On the summit, vegetation is very sparse, with Thrift (*Armeria maritima*), Alpine Clubmoss (*Lycopodium alpinum*) and Dwarf Willow (*Salix herbacea*) on eroded quartzite rubble and Mat-grass and Heath Rush (*Juncus squarrosus*) occurring on peaty areas. Cowberry (*Vaccinium vitis-idaea*), Stiff Sedge (*Carex bigelowii*), and Silver-haired Moss (*Racomitrium lanuginosum*) also occur. Near the quarry on the north face of Muckish, some wind-blown, fine sand from the quarry has been deposited on the peat substrate.

### **Siliceous rocky slopes with chasmophytic vegetation** (4% of total site area or 56ha)

Muckish Mountain has an extensive area of base-poor quartzite cliffs above the scree slopes and below the summit plateau. These areas have been classified as the Annex I habitat “siliceous rocky slopes with chasmophytic vegetation”. The habitat supports relict arctic-alpine species, including the Red Data Book species Alpine Saw-wort (*Saussurea alpina*) and Mountain Avens (*Dryas octopetala*), which are a feature of this habitat in Ireland as noted by EU (1999).

This habitat is largely unvegetated, as is typical in Irish examples. Some of the large quartzite boulders near the summit provide shelter for St. Patrick’s Cabbage (*Saxifraga spathularis*), Heath Bedstraw (*Galium saxatile*) and Hard Fern (*Blechnum spicant*). Leach and Heardman (1994) describe finding Fir Clubmoss (*Huperzia selago*), St. Patrick’s Cabbage and the Red Data Book species Yellow Saxifrage (*Saxifraga aizoides*) in an area of fine, unstable material on the north face, close to the old quarry. Starry Saxifrage (*Saxifraga stellaris*) was later recorded here. Curtis and McGough (1988) note that it is frequently north-facing mountain cliffs that support the rare and relict arctic-alpine plant species found in Ireland. Other species recorded include Green Spleenwort (*Asplenium viride*), Opposite-leaved Saxifrage (*Chrysosplenium oppositifolium*), Blinks (*Montia fontana*), Marsh Hawksbeard (*Crepis paludosa*), a hawkweed (*Hieracium anglicum*) plus several notable bryophytes (see Lower Plants section below).

## Other Habitats:

### **Heath**

Much of the mountain slopes and summit supports heath that varies in form and species composition with abiotic factors such as altitude, exposure, moisture and substrate. On the lower slopes, sparse, low-growing Ling Heather cover occurs in a short grassy sward, generally accompanied by Mat-grass, Deer-grass (*Trichophorum caespitosa*) and Sheep’s Fescue (*Festuca ovina*). Tormentil (*Potentilla erecta*) is quite common in some areas and Bell Heather (*Erica cinerea*) also occurs. It is on these lower slopes that dense growth of the heather hybrid *Erica stuartii* was found by Leach and Heardman (1994).

**Heath (contd)**

Further up the slopes of the mountain the heath becomes more heather-dominated, with tall Ling Heather, sparse Bell Heather and a well-developed bryophyte understorey (see Lower Plants section).

Wet heath occurs on slopes on the northern, western and south-eastern edges of the site. Vegetation includes Ling Heather, Mat-grass, Purple Moor-grass (*Molinia caerulea*), Deer-grass, Bog Cotton (*Eriophorum vaginatum* and *E. angustifolium*), Cross-leaved Heath (*Erica tetralix*), *Cladonia* lichens, Hard Fern, Tormentil, Heath Rush and a variety of mosses. Flushed areas support Black Bog Rush (*Schoenus nigricans*) or Sharp-flowered Rush (*Juncus acutiflorus*). In more level areas at mid-altitude, the peat is deeply hagged in places and unvegetated pools are present.

The dry and wet heaths are overgrazed and eroded in places.

**Blanket bog**

Small patches of blanket bog occur in this site, in the more rolling terrain at lower altitudes. Tracts of blanket bog within the site were found to be mostly inactive and almost devoid of bog-forming mosses and typical microtopography. The few patches of remaining active bog are so small and isolated as to be considered insignificant. Although the peat deposits appear to be quite deep in places, most of the blanket bog is affected to a greater or lesser degree by active peat extraction and associated drainage.

Blanket bog occurs in three main areas; to the south of the site on a wide valley floor, in the narrow valley south-west of Lough Akeo and on shallow slopes along the western boundary. Species present include: Purple Moor-grass, Bog Cotton, Bog Myrtle (*Myrica gale*), Cross-leaved Heath, Bog Asphodel (*Narthecium ossifragum*), Deer-grass, Mat-grass and Ling Heather. Leach and Heardman (1994) describe a dense understorey of the bog mosses Papillose Bog-moss (*Sphagnum papillosum*) and Red Bog-moss (*S. capillifolium*) in some areas, and pools of Feathery bog-moss (*S. cuspidatum*) and low hummocks of Silver-haired Moss, Compact Bog-moss (*S. compactum*) and Red Bog-moss in others. However turf cutting activities have encroached on some of these active areas since that time.

Black Bog Rush is abundant adjacent to cut-over areas with Deer-grass, Bog Cotton and Ling Heather. The surface of the peat appears greasy and generally mosses are scarce. Some areas of bare peat occur, due to over-grazing and erosion.

**Scree**

Large areas of quartzite and schist scree occur on the steep slopes around the summit of Muckish Mountain, principally to the south and south-east of the summit and on the north face, surrounding the old quarry area. Most of the scree is unvegetated, but some areas support sparse heath vegetation, including Ling Heather and Bilberry.

**Cut-over bog**

The lower edges of the site generally correspond to the upper limit of peat extraction but in some areas small patches of cut-over bog occur within the site. Areas harvested by sausage machine generally have sparse vegetation of predominantly Deer-grass and Bog Cotton. Hand-cut banks exhibit the common form of re-vegetation: dry bog supporting dense Ling Heather with Heath Rush on the banks, while the bare peat of the cut-over flats is gradually colonised by Bog Cotton and other wet bog species.



<b>Flush</b>	Flushes occur in small patches in mosaic with heath and bog habitats, generally along streamsides or on small terraces. Black Bog Rush is common in some flushes while Soft Rush ( <i>Juncus effusus</i> ), Jointed Rush ( <i>J. articulatus</i> ), Sharp-flowered Rush and Bottle Sedge ( <i>Carex rostrata</i> ) are more prevalent in others. Bog Cotton may also occur. Thick mats of bog mosses ( <i>Sphagnum</i> spp.) exist in some flushes.
<b>Lakes</b>	<p>Two lakes, Lough Naboll and Lough Akeo, occur within the boundary of the site. Given their altitude and location in peatland habitats, both of these lakes are highly oligotrophic.</p> <p>Lough Naboll, used as a reservoir for a local water supply, has little vegetation but some sparse emergent Common Reed (<i>Phragmites australis</i>) occurs on the south side. The lake margins have a bare, stony substrate.</p> <p>Lough Akeo, at the north-east corner of the site, has well developed fringe vegetation described by Leach and Heardman (1994) as including Bottle Sedge and Water Horsetail (<i>Equisetum fluviatile</i>), with an area at the eastern edge supporting Water Lobelia (<i>Lobelia dortmanna</i>) and Shoreweed (<i>Littorella uniflora</i>) on stony substrate.</p> <p>A lochan supporting Broad-leaved Pondweed (<i>Potamogeton natans</i>) and Feathery Bog-moss occurs between the two lakes.</p>
<b>Rivers and streams</b>	<p>The headwaters and uppermost reaches of many small streams are found on the steep, south-western slopes of the site. Tributaries of larger rivers including the Lough Agher and Carrownamaddy Rivers also originate in the site. As with upper reaches of all rivers and streams, the channel is generally very fast flowing with rapids and pools. Riparian vegetation includes bryophytes and filamentous green algae. Sparse Birch (<i>Betula</i> sp.) and Holly (<i>Ilex aquifolium</i>) occur on the banks in places.</p> <p>A series of parallel streams in the south of the site supports Pondweed (<i>Potamogeton</i> sp.).</p>
<b>Exposed sand and gravel</b>	Areas of exposed fine silica sand occur to the south-west of the site, and below the northern face of the mountain. These deposits have historically been extracted and are closely associated with quarries.
<b>Upland grassland on peaty soils</b>	A small area at the base of the south-eastern slope was formerly enclosed and reclaimed. It now supports a more grassy sward than the surrounding heath. Species present include Sheep's Fescue.
<b>Quarries</b>	<p>Large bays in the extensive sand and gravel deposits near Muckish Gap continue to be excavated. The area is mainly unvegetated but some Ling Heather occurs in patches on upper and undisturbed slopes.</p> <p>Buildings associated with the quarry on the north face of Muckish are present on site.</p>

## Notable Flora:

### Lower Plants

In an assessment of the most important bryophyte sites in Ireland in an international context, Stewart (undated) listed Muckish Mountain being important for its oceanic montane bryophyte flora. Stewart catalogued the rare and unusual mosses in the country from historic records and herbariums; the following species were listed for Muckish Mountain:

Arch-leaved Whipwort (*Bazzania pearsonii*), Lindenberg's Featherwort (*Adelanthus lindenbergianus*), Schimper's Swan-neck Moss (*Campylopus schimperi*), Alpine Jagged Notchwort

(*Lophozia opacifolia*), Dented Silk-moss (*Plagiothecium denticulatum*), *Ptilidium ciliare*, the Feather-moss (*Rhynchostegium lusitanicum*), Horsethair Threadwort (*Sphenolobopsis pearsonii*), Arctic Fork-moss (*Arctoa fulvella*) and Zierian Hump-moss (*Plagiobryum zieri*).

Details of the locations where these mosses were found, the date of finding and the finder are also given in Stewart's catalogue (undated).

Leach and Heardman (1994) list some of the more common bryophyte species found in the site. Heath habitats: Glittering Wood-moss (*Hylocomium splendens*), Silver-haired Moss, Tamarisk moss (*Thuidium* sp.), Papillose Bog-moss (*Sphagnum papillosum*), Feathery Bog-moss (*S. cuspidatum*), Red Bog-moss (*S. capillifolium*), Haircap moss (*Polytrichum* sp.), Little Shaggy-moss (*Rhytidiadelphus loreus*), Springy Turf-moss (*R. squarrosus*), Straw Spear-moss (*Calliergon stramineum*), Cypress-leaved Plait-moss (*Hypnum cupressiforme*), Golden-head Moss (*Breutelia chrysocoma*), Broom Fork-moss (*Dicranum scoparium*).

Blanket bog habitats: Cypress-leaved Plait-moss, Red-stemmed Feather-moss (*Pleurozium schreberi*), Papillose Bog-moss, Feathery Bog-moss, Magellanic Bog-moss (*Sphagnum magellanicum*), Compact Bog-moss, Red bog-moss, Silver-haired moss, Spoonwort (*Pleurozia purpurea*).

Dotted Thyme-moss (*Rhizomnium punctatum*) and Shrap-leaved Blindia (*Blindia acuta*) have been recorded from the scree area north of the summit.

## Higher Plants

A number of noteworthy higher plant species are also found in the site. Descriptions and distribution data given below are from the rare plants database of NPWS and from the Irish Red Data Book for vascular plants (Curtis and McGough, 1988) unless otherwise stated.

- Alpine Saw-wort, a rare arctic-alpine species of mountain cliffs and ledges, has been found in the site. A grid reference for the location is available in the Rare Plants Database
- A rare heather hybrid *Erica stuartii* was also found by Leach and Heardman (1994), on the lower western slopes in the townland of Creenasmear
- Mountain Avens, an evergreen arctic-alpine plant, is locally abundant in Ireland in limestone pavement areas, but occurs more unusually in mountainous habitats such as this site
- An unusual Willow has been found “among moss on the top of Muckish” (Moore, 1870; 1871 in Synnott, 1983). Several specimens of the plant are held in the Botanic Gardens in Glasnevin. Synnott (1983) identifies the plant as a hybrid, *Salix x moorei*, stating that “there is no doubt that [the hybrid] did arise spontaneously where it was found”. The paper also describes a recent unsuccessful attempt at re-finding the plant; “*Salix herbacea* is common, but the only species of willow, on the top of Muckish Mountain for a distance of nearly half a mile.... *S. repens* and *S. aurita* both occurred on the lower slopes of the mountain”
- Bird Cherry (*Prunus padus*) has also been noted on site (Leach and Heardmen 1994). This species is locally frequent in north-western counties but rare elsewhere in the country. The location of this species was not recorded
- Alpine and boreal heath supports the notable species Bearberry, Alpine Clubmoss, Cowberry and Stiff Sedge

Leach and Heardman (1994) found Yellow Saxifrage, recorded in the Red Data Book as a rare species, on scree on the north face of Muckish Mountain. However, a second visit to this area to assess the Yellow Saxifrage population by Wyse-Jackson and Lockhart in 1998 recorded Starry Saxifrage (*Saxifraga stellaris*) and not Yellow Saxifrage. Starry Saxifrage is also a ‘species of interest’, occurring occasionally on wet rocks in the mountains, but it is not listed in the Red Data Book. The area is considered suitable for Yellow Saxifrage and the surveyors recommended further site investigation for the presence of this and other notable species.

## Fauna:

### Birds

The table below lists the notable species known to occur in the site and their legal status. Additionally, kestrel (*Falco tinnunculus*), skylark (*Alauda arvensis*), meadow pipit (*Anthus pratensis*), wren (*Troglodytes troglodytes*), wheatear (*Oenanthe oenanthe*), Hooded Crow (*Corvus corone cornix*), Raven (*Corvus corax*) and Snow Bunting (*Plectrophenax nivalis*) have been recorded from the site.

**Upland Bird Survey (UBS) data supplied by S. Newton (Birdwatch Ireland, pers comm Dec 2003).**

SPECIES NAME	BIRDS DIRECTIVE <sup>2</sup>	RED DATA BOOK STATUS	PROTECTED	HABITATS DETAILS	COMMENTS
Peregrine Falcon ( <i>Falco peregrinus</i> )	Yes	Internationally important	Yes	Nests on cliffs – three eyrie locations on site	Site supports ≥1 breeding pair annually
Merlin ( <i>Falco columbarius</i> )	Yes	Rare	Yes	Uses open moor on site as hunting territory	Nearest known nest is off-site
Red Grouse ( <i>Lagopus lagopus scoticus</i> )	No	-	Quarry species	Nests on open moor, grazes young heather	Breeding status unknown.
Golden Plover ( <i>Pluvialis apricaria</i> )	Yes	Vulnerable	Quarry species	Winters on open moorland.	>1 breeding attempt in mid-1980's
Ring Ouzel ( <i>Turdus torquatus</i> )	No	Rare	Yes	Nests on rocky mountain slopes	Recorded by UBS 2002 – may breed



*Peregrine Falcon (Falco peregrinus)*

<sup>2</sup> Birds Directive refers to species listed in Annex I of the EU Birds Directive.

## Mammals

Red Deer (*Cervus elaphus*) are occasionally present in small numbers, generally on the lower slopes of the mountain. Badger and Irish Hare (*Lepus timidus hibernicus*), which occur on the site, are Internationally Important Red Data Book species (Whilde 1993). The extent of the habitat used by these species in the site is not known. Feral Mink (*Mustela vison*), Stoat (*Mustela erminea hibernica*) and Fox (*Vulpes vulpes*) also occur.

## Land Use

### Land use on the site

#### Quarrying

Sand and gravel are taken commercially from a deep pit in the area north of Muckish Gap. This quarry has been in operation on a commercial basis for many years and sporadic removal of sand and gravel would have occurred prior to commercial use. The quarry is currently unlicensed (Feb 2004), however Donegal County Council has initiated proceedings to regulate the quarrying activity.



*Gravel quarry on the slope above Muckish Gap (NHA file).*

### **Turf cutting**

Extraction of peat is active at the south, west and north boundaries of the site. When the boundary of the site was first established in 1994, only three small plots of machine harvesting were noted as occurring within the boundary, although a fourth area had been drained, presumably in preparation for cutting (Leach and Heardman, 1994).



<b>Turf cutting (contd)</b>	<p>Most of the machine-cut plots now in existence within the site are recently established, with harvesting by sausage machines having begun since 1994. This is the case at the south tip of the site (Coolasheskin townland) and in the north of the site adjacent to Lough Naboll. A new track from Lough Naboll and up along the stream to the south has been created to facilitate the harvesting of the formerly intact deep peat in the Cloghbarrad area. Similarly, sausage machines have gained access to new areas on the westernmost tip of the site. In all cases the new plots are located in areas of deep peat that formerly supported blanket bog. Most of the blanket bog on site has now been cut, but turf cutting does not seem to be extending beyond those recorded by the Commonage Framework Plan Surveyors in 2000.</p> <p>Harvesting of peat by hand also still occurs within the site. There are hand cut facebanks at the west, at the south-east and at many locations along the north boundary.</p> <p>Drainage is associated with turf cutting. The NHA survey (1994) recorded drainage along the south-western boundary. It is not known whether this activity is still occurring on site.</p>
<b>Grazing</b>	<p>Extensive sheep grazing is practiced on the commonages that make up the majority of this site, as well as on privately owned land. The area is used for summer grazing of stock and few, if any, sheep are over-wintered on the site. Cattle also graze areas of the site and Red Deer forage on the lower slopes. The current stocking levels are not known or monitored. However, some signs of over-grazing are visible in places, including poaching, tracking and suppression of heath vegetation.</p> <p>An interim de-stocking level of 30% has been successfully adopted on the commonage areas since November. (In certain counties, including Donegal, compliance with this scheme is necessary to qualify for certain agricultural grants and schemes). Not all the private landowners are in REPS.</p> <p>Commonage Framework Plan (CFP) fieldworkers recorded supplementary feeding on the site (2000).</p>
<b>Hill-walking</b>	<p>Muckish Mountain is one of the most popular hill-walking routes in north Donegal. Walkers tend generally to use two well-known routes, one from the grotto at Muckish Gap to the summit and another to the summit via the gravel track and old quarry on the north face. As a result of the regular passage of many people, a track has been worn along parts of the former route, particularly the sections that pass through deeper peat. This has become apparent in the past eight years, and is continuing to worsen. The erosion damage has extended track width to &gt;2m across the site, with tracks as wide as 5m eroded when crossing wet bog. An annual long distance walking event, the Glover Mountain Challenge, takes in a route across Muckish Mountain.</p>
<b>Water abstraction</b>	<p>Lough Naboll is used as a reservoir for a group water supply scheme. Abstraction does not appear to be affecting water levels in the lake.</p>
<b>Dumping</b>	<p>Some isolated instances of illegal dumping of domestic refuse have occurred on the site.</p>

**Burning** Fires are not a regular occurrence in this site. Although areas have been burnt on occasion in the past, there have been no fires recorded in the last 10 years (D. Duggan, *pers comm* December 2003). One particularly intense fire, around 1980, affected much of the north face of Muckish. In this site, fires are likely to be lit to burn off old heather vegetation and encourage some grass growth for grazing stock. Uncontrolled burning is detrimental to the conservation of upland habitats.

## Land use adjacent to the site

**Turf cutting** Large tracts of lowland blanket bog along the northern and south-eastern boundaries of the site are used for turf cutting. A network of bog tracks crosses the area and provides easy access for machines. The sausage machine is used extensively, though there are a few remaining actively hand cut banks. The peat extraction in these areas covers, or has covered, almost all of the intact blanket bog. The boundary of Muckish Mountain cSAC was originally selected to exclude most of the areas damaged by peat extraction (see Leach and Heardman, 1994), and has been amended in 2000 to exclude cut-over areas on the northern edge.

**Dumping** A landfill site operated by Donegal County Council located near the western boundary of the site has now closed and been capped. Small flocks of Gulls (*Larus* spp.) and Crows (*Corvus* spp.) were noted in the vicinity of the landfill – presumably these would decline now that the landfill is closed. Illegal dumping of household refuse occurs along the disused railway track at the north of the site.

**Recreation/amenity/tourism** The north Donegal region is a popular tourist destination both for Irish and international tourists. Many overnight tourists use Dunfanaghy (to the north of the site) as a base, though others arrive on day excursions from further afield. Glenveagh National Park to the south is the main tourist attraction, receiving approximately 85,000 to 90,000 visitors annually, though scenic drives and seaside resorts are also popular.

**Agriculture** The agricultural practice in the area varies with the type of landscape. In the vicinity of the site, only extensive sheep grazing is practised. Enclosed fields to the south-east and the north are intensively managed for silage crops and aftermath-grazing. Fertilizers, including slurry, are used. Cattle (dry stock) are also kept on these lands. The intensively managed land to the north of the site corresponds with the richer and better drained soils of the end moraine of the most recent glaciation (Whittow, 1974).

**Quarrying** Two sand and gravel quarries are located to the north and west of the site respectively. Long and McConnell (1997) refer to an as yet unexploited deposit of a “milky quartz vein.... up to 15 m wide” in the Faymore townland, with samples indicating a silica content in excess of 99.8%. This could be used as a source of silica sand in the future. The MinLocs database gives a grid reference of 20370 43030 for this site (ref: 1319) (see Appendix II).

**Water abstraction** Donegal County Council use water from the stream flowing from the north face of Muckish into Lough Agher for water supply for the Creeslough – Dunfanaghy area.

## Past human use

Muckish and the nearby mountains are believed to have supported 300 to 400 sheep in the mid-nineteenth century, with the wethers kept on Muckish since its vegetation was believed to be unsuitable for milking ewes.

Until the 1950s, the fine, white silica sand deposits on the north slopes of Muckish were quarried and used for high quality glassware and optical purposes. The infrastructure associated with this quarrying (the washing tank, lorry bays and machinery) is still found below the quarry. Long and McConnell (1997) state that future development of this quarry is unlikely due to its remote location, limited reserves and environmental considerations.

## Recorded Monuments and Other Features

The following are Recorded Monuments occurring in the site and protected under Section 12 of the National Monuments (Amendment) Act, 1994.

MONUMENT NO.	DESCRIPTION	NAT. GRID	TOWNLAND
DG034-001	Cairn	C200320 428610	Gortnaleck
DG034-002	Cairn	C200150 428450	Gortnaleck



# CONSERVATION VALUE OF MUCKISH MOUNTAIN cSAC

Muckish Mountain has been designated as a cSAC due to presence of two Annex I habitats – alpine and boreal heaths and siliceous rocky slopes with chasmophytic vegetation. It also supports small areas of blanket bog, large areas of dry and wet heath, scree and two oligotrophic lakes as part of a diverse upland environment. Muckish Mountain is an important stronghold for relict arctic-alpine species, including mosses, which occur in the Annex I habitats. Its remoteness and isolation are now being encroached by turf cutting and quarrying, but its key habitats remain intact.

The alpine and boreal heath supports species typical of this habitat, such as Dwarf Willow, Crowberry and Heathers, as well as a range of infrequent oceanic montane bryophyte species and notable vascular plants, including Cowberry and Bearberry. The habitat is relatively undisturbed due to its inaccessibility and remoteness, although natural wind erosion and sheep grazing have some impact.

The quartzite cliffs around the summit of Muckish Mountain are classified as siliceous rocky slopes with chasmophytic vegetation. They comprise approximately 56 ha (1%) of the estimated national area of this habitat. These cliffs are species-poor and sparsely vegetated (as is typical for Irish examples) but support a number of notable vascular plant and bryophyte species, including the rare Red Data Book species – Alpine Saw-wort (Curtis and McGough 1988). However, most of the notable species occurring here are not typical, being localised to a small area on the northern side of the mountain with base-rich pelite (fine schisty mudstone) rocks. The habitat is largely intact, bar damage to small areas following quarrying on the northern face of the mountain and above Muckish Gap.

The upland heath to the north-east of the site is notable for its population of the rare heather hybrid *Erica stuartii*.

The site supports three species listed on Annex I of the EU Birds Directive: Golden Plover, Merlin and Peregrine Falcon. Peregrine Falcons regularly breed on the site, while the other two species utilise the large area of upland heath on the site for foraging. Two Internationally Important Red Data Book species, Irish Hare and Badger, occur on the site (Whilde 1993).

# MANAGEMENT FRAMEWORK

## Conservation Objectives

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as candidate Special Areas of Conservation. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, is stable or increasing, and
- the ecological factors that 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 below.

The favourable conservation status of a species is achieved when:

- population data on the species concerned indicate that it is maintaining itself, and
- the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

- |                     |   |
|---------------------|---|
| <b>Objective 1:</b> | To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status; alpine and boreal heath (7% of the site) and siliceous rocky slopes with chasmophytic vegetation (4%).   |
| <b>Objective 2:</b> | To maintain other habitats at favourable conservation status: blanket bog, heath, scree, cut-over bog, flushes, lakes, rivers and streams, exposed rock, sand and gravel and upland grassland on peaty soil.  |
| <b>Objective 3:</b> | To maintain the populations of notable species on the site at favourable conservation status, particularly those listed in Annex I of the EU Birds Directive (Golden Plover, Peregrine Falcon, Merlin), Red Grouse, Ring Ouzel and the populations of rare and notable plant species. |
| <b>Objective 4:</b> | To establish effective liaison and co-operation with landowners, legal users and relevant authorities.  |

# Management Issues

While many activities in or adjacent to the site have the potential to cause deterioration/disturbance, it is important to determine the significance of such activities relative to the conservation objectives at a particular site. To that end, all known potential environmental effects of the sites principal activities (in alphabetical order) have been listed and the biological and chemical impacts that may cause change to the biological communities present have been described.

- **Burning**
- **Dumping**
- **Grazing**
- **Path erosion**
- **Quarrying**
- **Turf cutting**

## Burning

Uncontrolled burns on the site are infrequent, but have the potential to damage large areas of vegetation.

## Dumping

The scale of illegal dumping of household refuse in this site is quite small and sporadic. The Commonage Framework Plan records dumping along bog roads on and surrounding the site.

## Grazing

The site has suffered from overstocking in the past, with some overgrazing of vegetation and erosion leading to a loss of vegetation cover. This is particularly the case at the north-east of the site, in the area known to support the rare heather hybrid (*Erica stuartii*).

The level of grazing on the blanket bog/heath habitats within commonage areas has been reduced by at least 30% since December 1998 to comply with interim measures while the Commonage Plans (CPs) for the site were finalised. The CPs for the site are now complete and a further stocking reduction is due in some stocking units. However, stocking levels on privately owned lands have not been reduced, and not all landowners are currently in REPS.

## Path erosion

Serious erosion of heath and blanket bog is occurring along the popular hill-walking route from Muckish Gap to the summit of Muckish Mountain. The track is now 2m wide, exposing bare peat, which accelerates subsequent erosion. In areas of wet blanket bog, the damaged area is as much as 5m wide. This damage is believed to have occurred within the last 10 years.

## Quarrying

The active quarry near Muckish Gap has been exploiting the gravels of the fossil rock glacier and is gradually encroaching on areas of heath and scree. A small area of the site has been badly damaged by quarrying and may need to be excluded from the site (D. Duggan, *pers comm* December 2003). At present the quarry is unlicensed (Feb 2004) and Donegal County Council have initiated proceedings to regulate the quarrying activity.

## Turf cutting

Almost all the blanket bog habitat is affected by peat extraction. While small-scale hand cutting has a limited impact on the bog, the use of sausage machines is extremely damaging, since the machines target the deeper peat deposits - by definition the areas of blanket bog. The passage and operation of the machines also damages the bog surface in and around the area worked. A number of new tracks for access to blanket bog have been created in recent times to facilitate cutting in these areas. While the most damaged areas on the northern boundary have now been excluded from the site (2000), machine and hand cutting continues within the site.

## General Strategies

Specific strategies that relate to the above objectives are outlined below. However, there are a number of strategies that relate to the site as a whole. These are as follows:

### Implement plan

DEHLG will seek to ensure that the aims of this conservation plan are achieved through:

- liaison with the landowners, relevant authorities and interested parties
- implementation of REPS or DEHLG farm plans, which will use this document as a guideline for prescribing management on a farm by farm basis, and also will ensure that the agreed prescriptions for the relevant habitats are adhered to
- enforcement of Regulations under the Habitats/Birds Directives and the Wildlife Acts
- enforcement of other relevant legislation such as the Water Framework Directive

### Establish a monitoring regime

The monitoring regime for the site will comprise:

#### **Water quality monitoring**

Water quality is monitored at regular intervals by the EPA and/or local authorities.

Under the Water Framework Directive local authorities are obliged to establish River Basin District plans covering all inland and coastal waters that will lead to the identification and implementation of effective measures for improved water management.

NPWS will liaise with the EPA, the local authorities and other relevant statutory agencies and research organisations to:

- determine the quality and quantity of waters associated with water dependent habitats
- establish reference conditions necessary for monitoring the status of the habitats and species and to
- ensure that the sampling regime is adequate to detect changes in their conservation status

#### **Scientific monitoring**

Monitoring of the conservation status of the qualifying interests will be done by, or on behalf of, the staff of the Monitoring Section of the NPWS or staff working to NPWS in accordance with the procedures laid down by that section.

Protocols for monitoring Muckish Mountain cSAC will be developed, in consultation with other agencies where appropriate, to determine if the site is being maintained at favourable conservation status.

**Site surveillance**

Regular inspection of the site by the NPWS staff, with special attention to the qualifying interests, Annex I bird species and rare plant species will identify any major changes, damaging operations, or threats should they arise.

**Enforce notifiable actions**

Certain activities may be restricted in SACs. Notifiable Actions for particular habitats and species are listed in Appendix IV of this plan. Consent from the Minister may be required before these actions may be carried out within the designated area. For example, quarrying, intensifying agricultural practices, turf cutting, dumping and burning are notifiable actions relevant to this site.

# Specific Strategies

## Objective 1.

To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status; alpine and boreal heath (7% of the site) and siliceous rocky slopes with chasmophytic vegetation (4%).

### Strategies:

- 1.1. **Manage grazing on commonages** The impacts of grazing on commonage areas have been assessed by the Commonage Framework Planning Project (Commonage Plan (CP) DG16). These plans recommend de-stocking rates in areas that have been damaged by over-grazing. These rates will be incorporated into REPS plans and/or farm plans produced by the DEHLG for each farm and must be achieved within an agreed timescale from the beginning of the REPS farm planning period.  
  
No farmer's stock will be reduced to less than 25 ewes. If the CP specifies a de-stocking level of less than 10%, then no de-stocking is required. If the CP specifies a de-stocking rate of more than 10%, then de-stocking should occur as indicated. The relevant CPs (DG16h and i) recommends de-stocking levels between 0 and 10.1%, depending on the agricultural unit (i.e. the single stockproof area of land) concerned. The individual CP should be consulted for further details.  
  
The Zoning Map (Map No. 4) reflects the finding of the CP assessments, and these are specified in the prescriptions for each individual zone  
  
On commonages in six western counties, a stock reduction of 30% was implemented in December 1998 for farmers not already in REPS. This is taken into account when applying the Commonage Framework Plans.
- 1.2. **Managing grazing on privately owned land** For non-commonage land, NPWS will seek to ensure that sustainable grazing levels are established via REPS and DEHLG farm plans, using a similar methodology as that applied to commonage areas.

## Objective 2.

To maintain other habitats at favourable conservation status: blanket bog, heath, scree, cut-over bog, flushes, lakes, rivers and streams, exposed rock, sand and gravel and upland grassland on peaty soil.

### Strategies:

- 2.1. **Minimise threat from quarrying** No unauthorised extraction should occur from the quarries at Muckish Gap or on the north face of Muckish Mountain. Such extraction is a notifiable action (see Appendix IV).  
  
NPWS will survey the quarry at Muckish Gap and the surrounding area to assess the amount of damage to habitats on the site. If this is judged to be severe, the survey will be used to identify a new site boundary that excludes the quarry.

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| <p><b>2.2. Minimise impacts of peat extraction</b></p>             | <p>Most areas of active turf cutting are not included within the cSAC. Where areas of active cutting lie within less sensitive areas of the site, cutting may continue.</p> <p>Machine cutting other than the use of ‘sausage machines’ will normally be permitted. No new areas of bog should be cut and no new tracks created. Hand cutting can continue on existing banks only – these should not be cut down to the underlying rock.</p> <p>On particularly sensitive areas of bog, a complete halt to cutting may be required. In such cases compensation will be determined on a case-by-case basis, but would be in the region of €784.40 per ha (€317.43 per acre).</p> <p>NPWS will liaise with landowners to encourage the traditional practice of covering cut-over bog with vegetated sod from the surface of the bank – this aids recovery of bog vegetation and minimizes erosion.</p> |
| <p><b>2.3. Manage grazing across the site</b></p>                  | <p>See Strategies 1.1 and 1.2 above.</p>   |
| <p><b>2.4. Minimise peat erosion due to trampling pressure</b></p> | <p>NPWS will monitor the extent of path erosion. Consideration will be given to the range of soft engineering solutions available, including temporary diversion of the footpath to allow vegetation recovery. NPWS will draw up an appropriate strategy to prevent further damage and rehabilitate the area.</p>  |
| <p><b>2.5. Minimise threat from burning</b></p>                    | <p>Uncontrolled burning is not desirable. Where necessary, NPWS will communicate to landowners/managers the conservation value and fragility of the noteworthy plant species on site. Burning of areas of vegetation over 5 ha in size is a notifiable action (see Appendix IV). Should a fire occur, the area affected and extent of damage will be recorded.</p>   |
| <p><b>2.6. Minimise dumping on site</b></p>                        | <p>NPWS will liaise with Donegal County Council to ensure that rubbish and agricultural waste is disposed of responsibly.</p>  |
| <p><b>2.7. Maintain other habitats</b></p>                         | <p>Other than specified in the above strategies, the exposed rock, sand and gravel, lake and stream habitats will be managed by a policy of non-intervention, except to prevent damaging activities via the notifiable actions.</p> <p>NPWS will liaise with the group water scheme at Lough Naboll and with Donegal County Council to ensure that abstractions remain at a sustainable level.</p>   |

### Objective 3.

To maintain the populations of notable species on the site at favourable conservation status, particularly those listed in Annex I of the EU Birds Directive (Golden Plover, Peregrine Falcon, Merlin), Red Grouse, Ring Ouzel and the populations of rare and notable plant species.

#### Strategies:

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|---|--|
| <p><b>3.1. Maintain and protect bird species listed on Annex I of the Birds Directive</b></p> | <p>Strategies that protect the habitats (including breeding and feeding sites) of Annex I birds will contribute to maintenance of their populations using the site. Populations, breeding status and nest locations will, where possible, be recorded on an annual basis. Liaison with interest groups and other relevant people is necessary in order to co-ordinate work on bird counts and information gathering on breeding and wintering birds.</p> |
| <p><b>3.2. Manage habitats for notable plant species</b></p>                                  | <p>Strategies described above that are designed to protect the site from overgrazing and other damaging activities aim to protect the habitats of notable plant species such as Alpine Saw-wort, Bearberry, Cowberry, the rare heather hybrid <i>E. stuartii</i> and oceanic montane mosses. See Strategies 1.1-1.2, 2.3-2.5.</p>  |

### Objective 4.

To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

#### Strategies:

- |   |   |
|---|---|
| <p><b>4.1. Liaise with interested parties</b></p> | <p>NPWS will strive to initiate and maintain effective liaison with landowners, legal users (particularly through the Liaison Committee), relevant authorities and interested parties on achieving the objectives for conservation of the site.</p> |
| <p><b>4.2. Liaise with REPS planners</b></p>      | <p>REPS planners should consult with local NPWS staff when they are developing plans for land within the site.</p>  |



# Zoning

**Note:** Zoning is the division of a nature conservation site and neighbouring areas into a number of sub-units. Four types of zones are identified (not necessarily all occurring within a site): A, B and C are zone types within the site. D is a zone type outside the site where activities may have an impact on the site. The relevant strategies are listed for each site.

## Zone A: A Natural Zone

Areas of high conservation value, that require no or little management intervention.

### 1A: NON-INTERVENTION AREAS

#### 1A1: Lakes; rivers & streams; siliceous rocky slopes with chasmophytic vegetation; exposed sand and gravel north of summit

Strategy 2.7 and the general strategies apply.

### 2A: MAINTENANCE AREAS WITH LIMITED MANAGEMENT INTERVENTION

#### 2A1: Heath, blanket bog, flushes and grasslands (Commonage Unit DG16i)

This area has been identified in the Commonage Framework Plan as being undamaged (category U). See Commonage Framework Plan for full details.

Strategies 1.1, 2.3, 2.5, 3.1, 3.2 and the general strategies apply.

## Zone B: Active Management

Areas of high conservation value where high management input is needed to maintain, rehabilitate, restore to a more desirable state.

### B1: Alpine and boreal heath, wet and dry heath, scree, blanket bog, flushes and grasslands (Commonage Unit DGg16h)

These areas have been identified in the Commonage Framework Plan as overgrazed and require stock reductions. See Commonage Framework Plan for full details.

Strategies 1.1, 2.1-2.6, 3.1-3.2 and the general strategies apply.

### B2: Heath/blanket bog/flush mosaic (Privately owned)

Grazing assessments are required for these privately owned areas.

Strategies 1.2, 2.2-2.6, 3.1, 3.2 and the general strategies apply.

## Zone C: Intensive use Zone

Intensively used areas/infrastructure, which form an integral part of a nature conservation site.

### C1: Quarry

Strategy 2.1 applies.

### C2: Active turf cutting areas

Strategy 2.2 applies.

### C3: Eroded track and bog roads

Any alterations to roads, tracks or built infrastructure within the site should not be made without prior consultation with NPWS.

Strategies 2.4 and 2.6 apply.

## **Zone D: Impact Zone**

Areas outside the site where activities may have an impact on the site.

### **D1: Peat and mineral extraction**

Peat and mineral extraction adjacent to the cSAC may impact on the blanket bog habitat within the site. Patrol monitoring by the Conservation Ranger will identify turf cutting that threatens to encroach into the site.





## Summary of Specific Strategies

**Note:** It is implicit with all the strategies presented that their implementation is dependent on availability of adequate resources in terms of staff, expertise and financial resources. Also, that cooperation with landowners and other key stakeholders is key to achieving the stated objectives.

	Strategy	Action required	Who to implement	When/Duration/Frequency	Estimated Total Cost	Additional Resources needed
1.1.	Manage grazing on commonages	Implement Commonage Framework Plan recommendations.	REPS/NPWS			
1.2.	Managing grazing on privately owned land	Assess and establish sustainable grazing via REPS plans	REPS/NPWS			
2.1.	Minimise threat from quarrying	No quarrying should occur on site. NPWS will survey quarry area at Muckish Gap and assess impact.	NPWS			
2.2.	Minimise impacts of peat extraction	Machine and hand cutting of existing banks permitted. No new banks or bog roads to be established.	NPWS			
2.3.	Manage grazing across the site	See Strategies 1.1 and 1.2.	REPS/NPWS			
2.4.	Minimise peat erosion due to trampling pressure	Design and implement mitigation strategy.	NPWS			
2.5.	Minimise threat from burning	Liaise with landowners and record location and extent of any fire.	NPWS			
2.6.	Minimise dumping on site	Liaise with Donegal County Council regarding dumping.	NPWS			
2.7.	Maintain other habitats	No active management for lakes, streams, exposed rock, sand and gravel. Liaise with group water scheme.	NPWS			
3.1.	Maintain and protect bird species listed on Annex I of the Birds Directive	Maintain habitats – Strategies 1.1-1.2, 2.1-2.7. Record populations and breeding status annually. Liaise with interest groups for bird counts.	NPWS			
3.2.	Manage habitats for notable plant species	Maintain habitats – Strategies 1.1-1.2, 2.3-2.5.	NPWS			
4.1.	Liaise with interested parties	Liaise with landowners, relevant authorities and interested parties.	NPWS			
4.2.	Liaise with REPS planners	REPS planners will consult NPWS staff when developing plans for land within site.	REPS/NPWS			

# APPENDIX I: GLOSSARY

**ABIOTIC FACTORS** – Non-living factors such as geology and climate.

**ABSTRACTION** - The process of taking water from a river, stream, spring pond or lake or from ground water. This process is “abstracting” water or making an “abstraction”.

**ACIDIC** - When applied to soils, refers to soils which are of a low pH i.e. below 7. The term is often used in relation to the plant communities that an acid soil may support e.g. acidic grassland.

**ALGAE** - Simple plants that are not differentiated into roots, stems and leaves and have no true vascular system. They can be microscopic, or very large and are capable of photosynthesis. They can be found in most habitats but the majority occurs in freshwater or marine environments.

**ALTITUDE** - Vertical height above sea level.

**ANNEX I** - of the EU Birds Directive, lists birds that are strictly protected so that they cannot be killed, captured, disturbed or traded.

**ANNEX I** - of the EU Habitats Directive, lists habitats including priority habitats for which SACs have to be designated.

**ANNEX II** - of the EU Birds Directive lists birds that may be hunted.

**ANNEX II** - of the EU Habitats Directive is a list of species for which SACs have to be designated.

**AQUATIC ENVIRONMENT** – Rivers, streams, lakes, ponds, springs and features that depend on natural waters e.g. marsh, bogs and wetlands.

**ASI** - Areas of Scientific Interest. Areas that were identified in the 1970s as being of conservation interest. The NHA designation developed from ASIs.

**ATYPICAL** - Not typical/uncommon.

**BASE POOR SOILS** - Soils that only slowly release the dissolved chemicals or minerals contained within them.

**BIODIVERSITY** – A general term used to describe all aspects of biological diversity, including the number of species present in a given environment; the genetic diversity present within a species; the number of different ecosystems present within a given environment.

**BIOTIC FACTORS** – The influence of living components of the environment on organisms.

**BIRDS DIRECTIVE** (Council Directive 79/ 409/ 2nd April 1979) - Under this Directive Ireland is required to conserve the habitats of two categories of wild birds: 1) Listed rare and vulnerable species and 2) Regularly occurring migratory species. The Directive also obliges Ireland to conserve wetlands, especially those of international importance and regulates the hunting and trading of wildbirds. It was transposed into Irish legislation by the EU (Natural Habitats) Regulations, 1997.

- BLANKET BOG** - Bogs which carpet the landscape, following the underlying topography. They can cover extensive areas along the west coast and on uplands throughout the country.
- BRYOPHYTES** - A group of simple non-vascular spore-bearing green plants comprising the mosses, liverworts and hornworts.
- CAIRN** - A mound of stones erected as a memorial or marker, some of which are of historical significance.
- CATCHMENT** - An area of land draining to a defined point. The term river catchment refers to the area of land that drains into a particular river system.
- COL** - The lowest point on a mountain ridge between two peaks.
- COLONISATION** - The entry and spread of a species into an area, habitat or population from which it was formerly absent.
- COMMONAGE** - An area of land which are undivided but are owned by more than one person / or the rights to use the land are owned by more than one person.
- COMMUNITY** - a well-defined assemblage of plants and/or animals, clearly distinguishable from other such assemblages.
- CONSERVATION STATUS** - The sum of the influences acting on a habitat and its typical species that may affect its long term distribution, structure and functions. Also refers to the long-term survival of its typical species within the European territory of the Member States.
- CORRIE** - A circular hollow on a hillside formed by glacial scouring.
- CUT-OVER BOG** - Areas of bog which have been previously cut, although not down to the marl layer or bedrock. Cut-over areas are normally a mosaic of cut areas, face banks, pools, drainage ditches, uncut areas of peat, scrub, grassland etc.
- DEHLG** - Department of Environment, Heritage and Local Government
- DEVELOPMENT PLANS** - Local Authorities (Co. Councils & Corporations) are obliged under statute to produce a document which sets out the planned development of their areas for a given number of years. In the future Local Authorities will be asked to incorporate designated NHAs, SACs and SPAs classifications into their development plans.
- DIVERSITY** - see biodiversity.
- DOMESTIC PURPOSES** - Used in relation to the cutting of turf. Peat that is cut for domestic purposes is not for commercial sale and is cut at the rate of one year's supply for a household per year.
- ECOLOGY** - The study of the interactions between organisms, and their physical, chemical and biological environment.
- ELEVATION** - The height of something above a given place, usually above sea level.
- ENCROACHMENT** - The invasion of a species (usually plants) into areas previously uncolonised. This term is often used when an undesirable species advances at the expense of a desirable species or habitat.
- END MORaine** - Linear accumulation of heterogeneous boulders, pebbles and clay deposited by a glacier sheet at its extremity and left behind as the glacier melts. Frequently exhibit sorting by meltwater where glaciofluvial processes have been active.
- ENVIRONMENT** - The biological and physical conditions in which an organism lives.
- EPA** - Environmental Protection Agency
- EROSION** - The processes whereby the materials of the Earth's crust are dissolved, or worn away and simultaneously moved from one place to another by natural agencies which include weathering, solution, corrosion and transportation.
- EUROPEAN BIRDS DIRECTIVE (79/ 409/ 2nd April 1979)** - See Birds Directive.

**FAUNA** - Animal life.

**FAVOURABLE CONSERVATION STATUS** - 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.

**FLORA** - plant life.

**FORMATION** – A geological term for a body of rocks having easily recognised boundaries that can be traced in the field, and large enough to be represented on a geological map as a practical and convenient unit for mapping and description.

**GEOMORPHOLOGY** – The study of the form and structure of the landscape, which is shaped by the underlying geology.

**GLACIOFLUVIAL** - Deposits laid down by glacial meltwater.

**HABITAT** - Refers to the environment defined by specific abiotic and biotic factors, in which a species lives at any stage of its biological cycle. In general terms it is a species home. In the Habitats Directive this term is used more loosely to mean plant communities and areas to be given protection.

**HABITATS DIRECTIVE** - (Council Directive 92/43/EEC). The Directive on the conservation of Natural Habitats and of Wild Flora and Fauna. This Directive seeks to legally protect wildlife and its habitats. . It was transposed into Irish legislation by the EU (Natural Habitats) Regulations, 1997.

**HAND CUTTING OF PEAT** . - Refers to traditional cutting of peat using a slean or spade.

**HUMMOCK** - A small hillock/mound. Often used to describe the surface of active bogs where the ground forms a pattern of mounds, hollows and pools. Such hummocks commonly comprise bog mosses.

**HYDROLOGY** - The movement of water through a catchment area including freshwater and seawater inputs, water level changes and drainage mechanisms that are all influenced by the underlying geology.

**INVERTEBRATES** - Animals without backbones.

**LATITUDE** – The angular distance measured in degrees north or south of the equator.

**LIAISON COMMITTEE** - This is a special group set up to discuss the contents of a conservation management plan and the implementation of the plan. The committee will include representation of landowners, right-holders and other interest groups. It shall be the function of the committee to advise NPWS managers on the interaction between site conservation management and local interests. The Liaison Committee will nominate a member to the official Appeals Board, which will consider appeals against site designation and other issues. The Liaison Committee will be independent from the NPWS.

**LICHENS** – An organism that consists of a fungus growing in close association (symbiosis) with an alga.

**LIMESTONE** - Sedimentary rock composed predominantly of calcium carbonate, often containing fossils.

**LOCAL** – A term used in ecology which is applied to distribution of species when assessed on a national grid reference system. The assessment is made on the basis of the number of occupied 10 km National Grid squares. Local applies to 26-75, 10 km squares in this context.

**LOCHANS** - An aquatic feature which comprises a thin peaty substrate overlying quartzite bedrock, with the only visible vegetation being filamentous green algae. These are commonly used by frogs for spawning.



**MANAGEMENT** - a) Controlling processes within a site (this can be actively carrying out work or can be doing nothing), preferably in accordance with a conservation plan. - b) The practical implementation of the management plan. - c) Undertaking any task or project identified in the management plan, including the identification of new opportunities.

**MECHANICAL PEAT EXTRACTION** - Refers to the use of machinery to cut peat. This includes extrusion cutting such as by sausage machine (e.g. Difco) or any other type of mechanical cutter (e.g. Hopper).

**MICROTOPOGRAPHY** - Very small-scale variations in the height and roughness of the ground surface.

**MONITORING** – A repeat or repeats of a survey using the same methodology. Designed to look for or measure specific changes and the rate or extent of change. Used to check the “health” quantity or quality of a habitat or species.

**MORAINE** - A mass of debris carried by glaciers and forming ridges and mounds when deposited.

**MOSAIC** - Used to describe habitats that occur together and cannot easily be mapped separately.

**MULTIPLE PRIVATE OWNERSHIP**- Lands that are divided into areas which are privately owned. There must be more than one private landowner under this heading. (lands in commonage are not described under this heading).

**NATIONAL PARKS AND WILDLIFE SERVICE (NPWS)** – the section of the Environment Infrastructure and Services division of the Department of Environment, Heritage and Local Government with responsibility for nature conservation and implementation of Government conservation policy as enunciated by the Minister for the Environment, Heritage and Local Government.

**NATURA 2000** - A network of sites across the European Community, selected for the purpose of conserving natural habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community. SACs and SPAs form the Natura 2000 network.

**NATURAL HABITAT** - Can be aquatic or terrestrial areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural.

**NHAs** - Proposed Natural Heritage Areas. These are areas that are important for wildlife conservation. Some of these sites are small, such as roosting areas for rare bats; others can be large such as a blanket bog or a sand dune system.

**NOTABLE SPECIES** - Plants or animals which are worthy of mentioning either because they are particularly typical of a habitat, or because they are rare/ scarce/ atypical.

**NOTIFIABLE ACTIONS** - Actions specified under the cSAC regulations and are listed in the appendices of a conservation plan. These are actions which could cause damage to the site, and for which prior approval is required before they can be carried out.

**NPWS** - National Parks and Wildlife Service

**NUNATAKS** - Islands standing out in a sea of ice during periods of glaciation and in which species may have persisted.

**OLIGO** – Prefix denoting few or little

**OLIGOTROPHIC** - Applied to waters that are relatively low in nutrients, as in lakes which are low in dissolved minerals and which can only support limited plant growth.

**ORGANISM** - Any living thing.

**OS** – Ordnance Survey

**PATROL MONITORING** - Regular monitoring of a site usually carried out by the Conservation Ranger to check for damaging activities and to carry out other activities such as to assess the vegetation, to assess the effectiveness of the management regime on the condition of the site, etc.

PEAT CUTTING BY HAND. - See hand cutting of peat.

PEAT CUTTING BY MACHINE - See mechanical peat extraction.

PER-ANNUM - Each year.

pH - A quantitative expression for the acidity or alkalinity of a solution or soil. The scale ranges from 0-14: pH 7 is neutral, less than 7 is acidic and greater than 7 is alkaline.

PLATEAU - A wide, mainly level area of elevated land.

PLEISTOCENE – Geological epoch incorporating the Quaternary Ice Age c.1.5 million years ago – 12,000 years ago.

POACHING - Damage caused to the vegetation by excessive numbers of large grazers.

PRECIPITATION - Water moving from the atmosphere to the ground in the form of rain, fog, mist, snow or hail.

PRIORITY HABITAT - A subset of the habitats listed in Annex I of the EU Habitats Directive. These are habitats which are in danger of disappearance and whose natural range mainly falls within the territory of the European Union. These habitats are of the highest conservation status and require measures to ensure that their favourable conservation status is maintained.

RARE - An ecological term applied to distribution of species when assessed on a national grid reference system. The assessment is made on the basis of the number of occupied 10 km National Grid squares. A species is described as rare if has been recorded in to 3-10, 10 km squares.

RED DATA BOOK – A register of threatened species that includes definitions of degrees of threat.

RED DATA BOOK (lower plants) - This Red Data Book deals with Stoneworts which are recognised as a separate class, Characea, of the Green Algae Chlorophyta). Many of these species are threatened by loss of habitat or pollution.

RED DATA BOOK 1 (vascular plants) This Red Data Book deals with rare and threatened flowering plants and ferns of Ireland with an account of their present distributions and conservation status.

RED DATA BOOK 2 (mammals, birds, amphibians and fish) - identifies those species threatened in Ireland or those species whose populations are considered to be of international importance, though not necessarily threatened in Ireland. It details the current state of Irish vertebrates and provides a concise summary of the various legislation for each species.

REPS - Rural Environmental Protection Scheme. This is an Agri-Environmental programme that seeks to draw up agreements with farmers, according to the type of farming, landscape and features on the land. The overall objectives of REPS are to achieve: the use of farming practices which reduce the polluting effects of agriculture by minimising nutrient loss- an environmentally favourable extensification of crop farming, and sheep farming and cattle farming; - ways of using agricultural land which are compatible with protection and improvement of the environment, the countryside, the landscape, natural resources the soil and genetic diversity; - long-term set-aside of agricultural land for reasons connected with the environment; - land management for public access;- education and training for farmers in types of farming compatible with the requirements of environmental protection and upkeep of the countryside.

SACs - Special Areas of Conservation have been selected from the prime examples of wildlife conservation areas in Ireland. Their legal basis from which selection is derived is The Habitats Directive (92/43/EEC of the 21st May 1992). SAC's have also been known as cSAC's which stands for "candidate Special Areas of Conservation", and pcSAC's which stands for "proposed candidate Special Areas of Conservation."

SCARCE - This is an ecological term, which is applied to distribution of species when assessed on a national grid reference system. The assessment is made on the basis of the number of occupied 10 km National Grid squares. Scarce applies to 11-25, 10 km squares in this context.

**SCIENTIFIC MONITORING** - this is carried out by the monitoring section of the NPWS, whose function here is to ensure that the favourable conservation status of the site is maintained and where possible improved.

**SEDIMENT** - Solid particles that can originate by the weathering and erosion of pre-existing rock, by chemical precipitation from water, or by the breakdown of organisms.

**SEDIMENTARY** - Formed by the deposition of sediment, i.e. rock particles or chemical precipitate, or pertaining to the process of sedimentation.

**SPAs** - Special Protection Areas for Birds are areas that have been designated to ensure the conservation of certain categories of birds. Ireland is required to conserve the habitats of two categories of wild birds under the European Birds Directive (Council Directive 79/ 409/ 2nd April 1979). The NPWS is responsible for ensuring that such areas are protected from significant damage.

**SPECIES** - the lowest unit of classification normally used for plants and animals.

**STRATEGY** - A course of action or a broad approach towards achieving an objective. It is the general thrust of management towards achieving an objective. It is a description of how the objective is to be achieved.

**SUCCESSION** - The non-seasonal, directional continuous pattern of colonisation and extinction on a site by populations.

**SUPPLEMENTARY FEEDING** - The practice of providing livestock with additional food, usually carried out in winter. This term is most often used when hay, silage or other foods are brought into a site to supply Cattle or Sheep with food during times when growing conditions are poor.

**SURVEY** - a) Study/visit to produce an inventory of what is present / record a situation. - b) Establishing a baseline (study).

**SUSTAINABLE** - The highest rate at which a renewable resource can be used without reducing its supply (without causing damage to the resource).

**SWARD** - Refers to the vegetation cover of low growing plants communities, such as grasslands.

**TOPOGRAPHY** - the study or detailed description of the surface features of a region.

**TRADITIONAL MANAGEMENT PRACTICES** Land management practices which were carried out prior to the 1950s. These practices were often less intensified than today's management practices. In REPS prescriptions traditional means an activity which has been carried out for a specified number of years on a site (usually 10 years).

**TROPHIC STATUS** - The nutrient status (i.e. a measure of the availability of nutrients).

**TURBARY** – Refers to the right to harvest turf.

**TURF CUTTING** – Extraction of peat by mechanical or traditional methods.

**UNDERSTOREY** - The plant layer below the tree canopy in a woodland.

**VERTEBRATES** - Animals with backbones.

**VERY RARE** - an ecological term, which is applied to distribution of species when, assessed on a national grid reference system. The assessment is made on the basis of the number of occupied 10 km National Grid squares. Very Rare applies to 1-2, 10 km squares in this context.

**WETLAND** - An area habitually saturated with water, and which may be partially or wholly covered permanently, occasionally, or periodically by fresh or salt water up to a depth of 6 m, and which includes bogs, fens, marsh, shallow ponds, river estuaries, and intertidal mud flats.

**ZONING** - The division of a nature conservation site (& neighbouring lands) into a number of sub-units. Within each zone the management prescriptions will be reasonably uniform and will differ in type or intensity from the other zones in the plan.

# APPENDIX II: REFERENCE MATERIAL

## Map References:

- O.S. 1/2 inch (1:126,720) map: 1
- O.S. Discovery (1:50,000) map: 2
- O.S. 6 inch (1: 10,560) map: DL025, DL026, DL034

## Databases :

- NHA database, NPWS, The Department of Environment, Heritage and Local Government, 7 Ely Place, Dublin 2.
- Natura 2000 database, NPWS, The Department of Environment, Heritage and Local Government, 7 Ely Place, Dublin 2.
- Rare Plants Database, NPWS, Department of Environment, Heritage and Local Government, 7 Ely Place, Dublin 2.
- MinLocs database, Mineral Section, Geological Survey of Ireland, Dublin.

## Photographic Coverage:

- Aerial photo No. 2173, Flight Line 6. Date: 11/05/2000. NPWS, The Department of Environment, Heritage and Local Government, 7 Ely Place, Dublin 2.

## Relevant Legislation:

- S.I. No. 39 of 1976: Wildlife Act 1976
- S.I. No. 38 of 2000: Wildlife (Amendment) Act 2000
- S.I. No. 94/1997: European Communities (Natural Habitats) Regulations 1997.
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# APPENDIX III: PHYSICAL PROCESSES AFFECTING THE SITE

## Climate

<b>MALIN HEAD</b>													
<b>monthly and annual mean and extreme values, 1961-1990</b>													
<b>TEMPERATURE</b> ( <i>degrees Celsius</i> )	<i>jan</i>	<i>feb</i>	<i>mar</i>	<i>apr</i>	<i>may</i>	<i>jun</i>	<i>jul</i>	<i>aug</i>	<i>sep</i>	<i>oct</i>	<i>nov</i>	<i>dec</i>	<i>year</i>
<i>mean daily max.</i>	7.6	7.5	8.7	10.3	12.7	15	16.2	16.6	15.3	13	9.8	8.4	<b>11.8</b>
<i>mean daily min.</i>	3.2	2.9	3.7	5	7.1	9.6	11.4	11.4	10.1	8.3	5.2	4.2	<b>6.8</b>
<i>mean</i>	5.4	5.2	6.2	7.6	9.9	12.3	13.8	14	12.7	10.7	7.5	6.3	<b>9.3</b>
<i>absolute max.</i>	13.9	13.8	19	19.5	24.7	25	27	25.3	23.2	19.6	16	15.1	<b>27</b>
<i>absolute min.</i>	-6.2	-6.2	-4.4	-1.8	-0.5	2.6	5.6	5.2	2	1	-2.5	-5.5	<b>-6.2</b>
<i>mean no. of days with air frost</i>	3.4	3.3	1.6	0.4	0	0	0	0	0	0	0.4	1.8	<b>11</b>
<i>mean no. of days with ground frost</i>	9.6	9.8	7.4	4.3	1	0	0	0	0.1	0.3	3.7	6.7	<b>42.9</b>
<b>RELATIVE HUMIDITY</b> (%)													
<i>mean at 0900UTC</i>	83	82	81	79	79	81	84	84	83	83	82	83	<b>82</b>
<i>mean at 1500UTC</i>	80	77	76	76	76	78	80	79	78	78	79	81	<b>78</b>
<b>SUNSHINE</b> ( <i>hours</i> )													
<i>mean daily duration</i>	1.2	2.2	3.1	5.1	6.2	5.7	4.3	4.3	3.5	2.4	1.5	0.9	<b>3.4</b>
<i>greatest daily duration</i>	7.5	9.2	11.1	14.1	15.5	16.2	16.1	14.8	11.9	9.4	7.6	6.7	<b>16.2</b>
<i>mean no. of days with no sun</i>	11	7	6	3	2	2	3	3	4	6	8	12	<b>67</b>
<b>RAINFALL</b> ( <i>mm</i> )													
<i>mean monthly total</i>	114.4	76.3	85.9	58.4	59.2	64.4	72.4	91.3	102.1	118	114.9	103.2	<b>1060.6</b>
<i>greatest daily total</i>	36.9	24.1	26.3	36.1	29.8	32.5	26.2	41.5	53.5	63.2	56.1	33.5	<b>63.2</b>
<i>mean no. of days with <math>\geq 0.2\text{mm}</math></i>	22	17	21	17	17	18	19	20	21	22	22	23	<b>237</b>
<i>mean no. of days with <math>\geq 1.0\text{mm}</math></i>	19	13	16	12	12	13	13	15	16	18	18	18	<b>182</b>
<i>mean no. of days with <math>\geq 5.0\text{mm}</math></i>	9	6	7	4	4	4	5	6	7	8	8	7	<b>76</b>
<b>WIND</b> ( <i>knots</i> )													
<i>mean monthly speed</i>	19	18.4	17.9	15.1	14.2	13.2	13.2	13.2	15.7	17.5	18.3	19	<b>16.3</b>
<i>max. gust</i>	91	86	90	69	71	74	74	67	98	76	76	88	<b>98</b>
<i>max. mean 10-minute speed</i>	64	57	67	47	49	52	55	45	66	57	56	59	<b>67</b>
<i>mean no. of days with gales</i>	11.2	8.6	8	3.4	2.3	1.3	0.8	1.5	3.8	6.7	8.7	9.7	<b>66</b>
<b>WEATHER</b> ( <i>mean no. of days with...</i> )													
<i>snow or sleet</i>	6.6	6	4.6	2.4	0.2	0	0	0	0	0.1	1.9	3.9	<b>25.8</b>
<i>snow lying at 0900UTC</i>	0.9	1	0.5	0.1	0	0	0	0	0	0	0	0.8	<b>3.3</b>
<i>hail</i>	8.6	5.8	7.9	4.7	1.9	0.4	0.1	0.1	0.6	3.1	7.9	7.3	<b>48.4</b>
<i>thunder</i>	0.6	0.4	0.4	0.3	0.4	0.8	0.6	0.4	0.4	0.6	0.6	0.6	<b>5.9</b>
<i>fog</i>	0.4	0.5	0.7	1.9	1	2	2.2	1.3	0.6	0.4	0.2	0.4	<b>11.8</b>

Source: Met Eireann

# Geology and Geomorphology

The following information and further details are found in Long and McConnell (1997).

## Solid Geology

The landscape surrounding Muckish Mountain has fragments of formations of many rock types, folded and sheared to produce a varied and complex geology. Generally bedrock of the area is metamorphic rock; schists, quartzite and pelite, deposited during the Dalradian and metamorphosed, sheared and folded during the Grampian mountain building (Ordovician) period.

Muckish Mountain itself is formed from a well-bedded and massive feldspathic quartzite (part of the Ards quartzite formation) and the surrounding slopes and lower ground have quartzite, pelite, schist and dolomitic marble. Bedrock to the north-west of the mountain is classified within formations of the Creeslough succession and includes an outcrop of the Clonmass Limestone member (dolomitic marble, calcareous and pelitic schist) of the Sessiagh-Clonmass Formation. To the south-east, rocks fall within the younger Kilmacrenan succession, being black pelitic schist of the Ards Pelite Formation. Around the Lough Akeo area some bands of Silurian-Devonian microgranite and related rocks are found.

The rocks of the north Donegal area have undergone much folding and shearing. The main Donegal granite shear zone is found at the south-east of this site. It developed principally during the late Silurian to early Devonian, during episodes of deformation in northern Donegal (classified by Long and McConnell, 1997 as D4 to D6). The D6 episode is described as the main shearing, causing development of upright to steep cleavage and north-east to south-west trending folds. This episode also caused emplacement of the Donegal granite to the south of this area.

## Drift Geology

During the late Pleistocene Era, the area was affected by ice moving northward from the Derryveagh Mountains. The road through Muckish Gap at the south of the site is an example of glacial breaching, with the col lowered by 400 feet. However the ice failed to override Muckish Mountain (Whittow, 1974). On the north face of Muckish, weathering has leached out calcareous cement, which formerly bound together the quartzite grains. The resulting white silica sand is extremely pure (99.5% silica) and the grains so even that it has been worked for high quality glassware and optical purposes (Whittow, 1974).

Much attention has been paid to the accumulations of sand and gravel on the southern slope of Muckish Mountain. Wilson (1990a) states that the talus foot feature previously thought to be a glacial moraine is actually a fossil rock glacier, and provides a model of the development of the feature (in the late glacial period). In a separate report, Wilson (1990b) outlines how variations in joint spacings in the talus source have led to lateral variations in talus clast size. Wilson (1988) also pays attention to the small accumulations of sand in the lee of small cairns on the summit plateau of Muckish Mountain, describing them as formed by sand transport and deposition by north-westerly winds.

# APPENDIX IV: NOTIFIABLE ACTIONS

The notifiable actions relating to the habitats that occur within the site are listed below:

- Notifiable Action 2.1 Upland grasslands, scree, inland cliff
- Notifiable Action 3.1 Blanket bog
- Notifiable Action 3.2 Heath (including juniper scrub)
- Notifiable Action 6.1 Rivers or streams.
- Notifiable Action 6.2 Lakes, ponds, canals



## HABITAT TYPE 2.1

### UPLAND GRASSLAND, SCREE, AND INLAND CLIFF

Under STATUTORY INSTRUMENT 94 of 1997, made under the EUROPEAN COMMUNITIES ACT 1972 and in accordance with the obligations inherent in the COUNCIL DIRECTIVE 92/43/EEC of 21 May 1992 (the Habitats Directive) on the conservation of the natural habitats and species of wild fauna and flora, all persons must obtain the written consent, (in circumstances prescribed at section A and B below) of the Minister for The Environment, Heritage and Local Government before performing any of the operations on, or affecting, the following habitats where they occur on lands / waters within the candidate Special Area of Conservation.

Please note that where a landowner has a current approved plan under the Rural Environmental Protection Scheme or any scheme which the Minister considers to be equivalent s/he need only notify the Minister of activities not covered in the plan.

<b><u>SECTION A</u></b>	<b><u>SECTION B</u></b>
<p>Please note that the activities listed in Section A overleaf are required to be notified to the Minister for The Environment, Heritage and Local Government and should not be undertaken before consent.</p>	<p>Please note that the activities listed in Section B overleaf may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment, Heritage and Local Government.</p>

## HABITAT TYPE 2.1

### UPLAND GRASSLAND, SCREE, AND INLAND CLIFF

<u>Section A</u>	<u>Section B</u>
<p>THE MINISTER FOR THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT</p> <p>grazing of livestock above a sustainable density (as defined in approved farm plans)/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>changing of traditional use from hay meadow (to either grazing or silage making), or from grazing to silage cutting/adding lime</p> <p>adding fertiliser of any sort to areas not previously fertilised, applying fertiliser which would increase the level of nitrogen in the soil, applying fertiliser which would increase the level of phosphorous in the soil, applying phosphorous to soils which already have in excess of the REPS index 2 levels</p> <p>using fertiliser on slopes over 25 degrees</p> <p>creation of new tracks or paths</p> <p>burning of vegetation</p> <p>reclamation, infilling, ploughing or land drainage, reseeding, planting of trees or any other species, rock removal</p> <p>use of any pesticide or herbicide</p> <p>dumping, burning or storing any materials</p> <p>alteration of the banks, bed or flow of watercourses</p> <p>operation of commercial recreation facilities (e.g. pony trekking)/ introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>afforestation</p> <p>commercial turf cutting</p> <p>erecting or operating a windfarm</p>

In a very limited number of cases it may be necessary for the Minister for The Environment, Heritage and Local Government to restrict existing activities. In these cases compensation will be payable for actual losses arising out of any such restriction. In the event of restrictions being imposed by the Minister for The Environment, Heritage and Local Government, an appropriate appeals procedure will be put in place.

## HABITAT TYPE 3.1

### BLANKET BOG

Under STATUTORY INSTRUMENT 94 of 1997, made under the EUROPEAN COMMUNITIES ACT 1972 and in accordance with the obligations inherent in the COUNCIL DIRECTIVE 92/43/EEC of 21 May 1992 (the Habitats Directive) on the conservation of the natural habitats and species of wild fauna and flora, all persons must obtain the written consent, (in circumstances prescribed at section A and B below) of the Minister for The Environment, Heritage and Local Government before performing any of the operations on, or affecting, the following habitats where they occur on lands / waters within the candidate Special Area of Conservation.

Please note that where a landowner has a current approved plan under the Rural Environmental Protection Scheme or any scheme which the Minister considers to be equivalent s/he need only notify the Minister of activities not covered in the plan.

#### **SECTION A**

Please note that the activities listed in *Section A overleaf* are required to be notified to the Minister for The Environment, Heritage and Local Government and should not be undertaken before consent.

#### **SECTION B**

Please note that the activities listed in *Section B overleaf* may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).

If so, these notifiable actions do not apply.

However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment, Heritage and Local Government.

## HABITAT TYPE 3.1

### BLANKET BOG

<u>Section A</u>	<u>Section B</u>
<p>THE MINISTER FOR THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT</p> <p>grazing of livestock above a sustainable density or type of stock (as defined in approved farm plans)</p> <p>grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>supplementary feeding of stock, except as defined in REPS guidelines/ introduction of stock to formerly ungrazed areas</p> <p>adding lime/adding fertiliser of any sort</p> <p>creation of new tracks or paths/burning of vegetation/ reclamation, infilling, ploughing or land drainage</p> <p>reseeding, planting of trees or any other species</p> <p>rock removal/cutting turf except from existing banks; no cutting from intact (uncut) areas</p> <p>commercial peat moss or turf extraction</p> <p>use of any pesticide or herbicide, including sheep dip/ dumping, burning or storing any materials</p> <p>alteration of the banks, bed or flow of watercourses</p> <p>operation of commercial recreation facilities (e.g. pony trekking)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>afforestation</p> <p>erecting or operating a windfarm</p>

In a very limited number of cases it may be necessary for the Minister for The Environment, Heritage and Local Government to restrict existing activities. In these cases compensation will be payable for actual losses arising out of any such restriction. In the event of restrictions being imposed by the Minister for The Environment, Heritage and Local Government, an appropriate appeals procedure will be put in place.

## HABITAT TYPE 3.2

### HEATH (INCLUDING JUNIPER SCRUB)

Under STATUTORY INSTRUMENT 94 of 1997, made under the EUROPEAN COMMUNITIES ACT 1972 and in accordance with the obligations inherent in the COUNCIL DIRECTIVE 92/43/EEC of 21 May 1992 (the Habitats Directive) on the conservation of the natural habitats and species of wild fauna and flora, all persons must obtain the written consent, (in circumstances prescribed at section A and B below) of the Minister for The Environment, Heritage and Local Government before performing any of the operations on, or affecting, the following habitats where they occur on lands / waters within the candidate Special Area of Conservation.

Please note that where a landowner has a current approved plan under the Rural Environmental Protection Scheme or any scheme which the Minister considers to be equivalent s/he need only notify the Minister of activities not covered in the plan.

#### **SECTION A**

Please note that the activities listed in *Section A overleaf* are required to be notified to the Minister for The Environment, Heritage and Local Government and should not be undertaken before consent.

#### **SECTION B**

Please note that the activities listed in *Section B overleaf* may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).

If so, these notifiable actions do not apply.

However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment, Heritage and Local Government.

## HABITAT TYPE 3.2

### HEATH (INCLUDING JUNIPER SCRUB)

<u>Section A</u>	<u>Section B</u>
<p>THE MINISTER FOR THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT</p> <p>grazing of livestock above a sustainable density or type of stock (as defined in approved farm plans)/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>supplementary feeding of stock, except as defined in REPS guidelines</p> <p>introduction of stock to formerly ungrazed areas</p> <p>adding lime/fertiliser of any sort</p> <p>Creation of new tracks or paths</p> <p>burning areas of vegetation over 5 ha, or burning any area more often than once every 15 years</p> <p>reclamation, infilling, ploughing or land drainage</p> <p>reseeding, planting of trees or any other species</p> <p>rock removal/cutting turf except from existing banks; no cutting from intact (uncut) areas</p> <p>commercial peat moss or turf extraction</p> <p>use of any pesticide or herbicide, including sheep dip</p> <p>dumping, burning or storing any materials</p> <p>alteration of the banks, bed or flow of watercourses</p> <p>operation of commercial recreation facilities (e.g. pony trekking)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area/any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>afforestation</p> <p>erecting or operating a windfarm</p>

In a very limited number of cases it may be necessary for the Minister for The Environment, Heritage and Local Government to restrict existing activities. In these cases compensation will be payable for actual losses arising out of any such restriction. In the event of restrictions being imposed by the Minister for The Environment, Heritage and Local Government, an appropriate appeals procedure will be put in place.

## HABITAT TYPE 6.1

### RIVERS OR STREAMS

Under STATUTORY INSTRUMENT 94 of 1997, made under the EUROPEAN COMMUNITIES ACT 1972 and in accordance with the obligations inherent in the COUNCIL DIRECTIVE 92/43/EEC of 21 May 1992 (the Habitats Directive) on the conservation of the natural habitats and species of wild fauna and flora, all persons must obtain the written consent, (in circumstances prescribed at section A and B below) of the Minister for The Environment, Heritage and Local Government before performing any of the operations on, or affecting, the following habitats where they occur on lands / waters within the candidate Special Area of Conservation.

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#### **SECTION A**

Please note that the activities listed in *Section A overleaf* are required to be notified to the Minister for The Environment, Heritage and Local Government and should not be undertaken before consent.

#### **SECTION B**

Please note that the activities listed in *Section B overleaf* may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).

If so, these notifiable actions do not apply.

However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment, Heritage and Local Government.

## HABITAT TYPE 6.1

### RIVERS OR STREAMS

<u>Section A</u>	<u>Section B</u>
<p>THE MINISTER FOR THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT</p> <p>grazing of livestock above a sustainable density (as defined in approved farm plans) within 30m of the river or stream/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung within 30m of the river or stream</p> <p>supplementary feeding of stock within 30m of the river or stream/adding lime within 30m of the river or stream/adding fertiliser of any sort within 30m of the river or stream</p> <p>extracting water for irrigation or other purposes</p> <p>operation of boat angling or shore angling business/restocking with fish</p> <p>reclamation, infilling, ploughing or land drainage within 30m of the river or stream/ reseeding, planting of trees or any other species within 30m of the river or stream/ removal of trees or any aquatic vegetation within 30m of the river/stream/ use of any pesticide or herbicide in the river or stream or within 30m of the river or stream</p> <p>dumping rubbish or other materials or disposing of any chemicals or wastes in streams/rivers or into water-courses running into them</p> <p>dumping, burning or storing any materials within 30m of the river/stream including the land spreading of used pesticides (e.g. sheep dip)/alteration of the banks, channel, bed or flow of the river or stream</p> <p>harvesting or burning of reed or willow.</p> <p>causing siltation/ operation of commercial recreation facilities (e.g. bird watching tours)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>any activity which might cause pollution of the river or stream</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>construction or operation of an aquaculture facility.</p> <p>fishing for eels or salmon</p> <p>bank maintenance and grading</p> <p>creation of weirs and dams</p>

In a very limited number of cases it may be necessary for the Minister for The Environment, Heritage and Local Government to restrict existing activities. In these cases compensation will be payable for actual losses arising out of any such restriction. In the event of restrictions being imposed by the Minister for The Environment, Heritage and Local Government, an appropriate appeals procedure will be put in place.



## HABITAT TYPE 6.2

### LAKES, PONDS AND CANALS

Under STATUTORY INSTRUMENT 94 of 1997, made under the EUROPEAN COMMUNITIES ACT 1972 and in accordance with the obligations inherent in the COUNCIL DIRECTIVE 92/43/EEC of 21 May 1992 (the Habitats Directive) on the conservation of the natural habitats and species of wild fauna and flora, all persons must obtain the written consent, (in circumstances prescribed at section A and B below) of the Minister for The Environment, Heritage and Local Government before performing any of the operations on, or affecting, the following habitats where they occur on lands / waters within the candidate Special Area of Conservation.

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#### **SECTION A**

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#### **SECTION B**

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## HABITAT TYPE 6.2

### LAKES, PONDS AND CANALS

<u>Section A</u>	<u>Section B</u>
<p>THE MINISTER FOR THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT</p> <p>grazing of livestock above a sustainable density as defined in approved farm plans) within 50m of the lake, pond or canal</p> <p>grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>supplementary feeding of stock within 50m of the lake, pond or canal</p> <p>adding lime within 50m of the lake, pond or canal /adding fertiliser of any sort within 50m of the lake, pond or canal</p> <p>extracting water for irrigation or other purposes</p> <p>operation of boat angling or shore angling business/restocking with fish.</p> <p>within 50m of the lake, pond or canal: reclamation, infilling, ploughing or land drainage</p> <p>reseeding, planting of trees or any other species /removal of trees or any aquatic vegetation/use of any pesticide or herbicide in the lake, pond or canal or within 50m of the lake, pond or canal</p> <p>dumping rubbish or other materials or disposing of any chemicals or wastes in streams/rivers or into water-courses running into them.</p> <p>dumping, burning or storing any materials within 50m of the lake pond or canal including the land spreading of used pesticides (e.g. sheep dip).</p> <p>alteration of the banks, channel, bed or flow of the lake, pond or canal or of watercourses running into or out of it</p> <p>harvesting or burning of reed or willow</p> <p>causing siltation</p> <p>operation of commercial recreation facilities (e.g. bird watching tours)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/ BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>any activity which might cause pollution of the lake, pond or canal</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>construction or operation of an aquaculture facility.</p> <p>fishing for eels or salmon</p> <p>bank maintenance and grading</p> <p>creation of weirs and dams</p>

In a very limited number of cases it may be necessary for the Minister for The Environment, Heritage and Local Government to restrict existing activities. In these cases compensation will be payable for actual losses arising out of any such restriction. In the event of restrictions being imposed by the Minister for The Environment, Heritage and Local Government, an appropriate appeals procedure will be put in place.

# APPENDIX V: COMPENSATION AND APPEALS PROCEDURES

## Compensation

The Government is committed, as part of the social partnership process, to the payment of a fair and proper level of compensation to landowners who have lands proposed as part of an SAC or SPA and to other users who have a legal entitlement in the site.

A landowner or user with a legal entitlement may seek compensation for actual losses incurred due to restrictions imposed as a result of designation. Eligible persons should submit to NPWS details of the losses incurred as a result of the inclusion of lands in an SAC/SPA and outlining the basis for the calculations. Documentary evidence of past earnings and the activities that produced these should be included with the claim. Should the applicant be dissatisfied with a compensation offer, the case may be referred to an independent arbitrator who will review the matter and make a final decision.

Where a landowner or user with a legal entitlement is restricted in carrying out an activity on their land or licensed area, the compensation due will exclude any payments that have been attracted under grant schemes.

For farmers, there are two options available for receiving compensation for possible restrictions to their farming practices. Farmers may also receive payments for carrying out actions that enhance a nature conservation area.

## Rural Environment Protection Scheme (REPS)

Lands within SACs, SPAs, NHAs or commonages are defined as 'Target Areas' under this scheme. A REPS plan usually covers an entire farm, but a farmer with land in a target area receives a higher payment for that area. Farmers with small areas of land in a designated area can get REPS payments for that part of their farm. In either case, the farmer is subject to certain conditions regarding farming and land use practices, set out in the REPS plan for the farm. REPS is administered by the Department of Agriculture, Food and Forestry.

## NPWS Farm Plan Scheme

Where a farmer chooses not to participate in REPS, and NPWS seeks to change the farm operation in some way or to restrict a particular activity, NPWS will pay for preparation of a farm plan. This scheme also applies to land within SACs, SPAs, NHAs and commonages.

An NPWS farm plan will normally be confined just to the designated land and will address the conservation requirements, as well as any costs arising. Payment may also be made for work carried out that enhances the nature conservation value of the designated area. The farmer will have a substantial input into the plan.

A list of trained and approved farm planners is available for farmers to choose from. For further information, contact NPWS.

## Appeals Procedure

Objection or appeal can be made against the inclusion of a piece of land in a cSAC or SPA. A person can only make objections if they have a legal interest in the site (i.e. an owner or legal user). They must be made on scientific grounds, e.g. a landowner would show that the relevant habitats/species/geological features were not present in such a condition as to warrant designation. Appeals can also be made for the inclusion of lands. Appeals should be accompanied by a map of the area of concern and be as informative as possible. There are two stages to the appeals process:

**Internal Appeals** are initially dealt with by regional staff. If necessary, they may refer the case to other NPWS staff. If there is no agreement following the internal appeal, the case becomes an external appeal.

The option of an **External Appeal** is available only where an internal appeal is unsuccessful. If so, the appellant may have the case referred to an Appeals Advisory Board, which is independent of NPWS. A grant to defray the cost of an expert scientific report is available to the appellant. The Board is comprised of equal representation of landowners/users and conservationists, with an independent chairperson. The Board makes a recommendation on each appeal to the Minister who then decides on the outcome of the appeal.

# APPENDIX VI: FARMING CONDITIONS UNDER REPS

## Conditions for the conservation of blanket bogs, heaths and upland grasslands to be applied under REPS

### General Provisions

The conditions for specific habitat types are supplementary to the agri-environmental plan requirements of the general REPS programmes. The conditions for the target areas under Supplementary Measure A apply. Planners may seek a derogation from the Regional Inspector to vary these conditions in individual cases. All REPS plans in respect of NHAs must be approved and signed by the Planning Agency's environmentalist/ecologist.

### Detailed Conditions

The conditions applicable to Supplementary Measure A apply; the guidelines set out below are complementary to these conditions.

#### Stocking Density

In all cases an environmentally sustainable plan must be prepared and adhered to for the total area of the farm. Sustainable optimum stocking rates must be set down by the REPS planner following careful assessment of the environmental conservation needs of the lands.

Where the stocking levels set down by the planner require a reduction in stock, this must be achieved within one year of the commencement of the plan.

There can be no increase in stocking levels, no introduction of stock to new areas and no changes in stock type during the period of the REPS plan without the prior approval of DAF.

The maximum number of sheep that may be kept on the farm as a whole must be set down in the REPS plan. The conditions set out for Supplementary Measure A areas must be followed. The following parameters apply:

- Where there is no damage, the current stocking levels are acceptable.
- If the level of damage is moderate, a stocking reduction must be prescribed by the planner at a level related to the damage and sufficient for the vegetation to recover
- If the level of damage is severe, a stocking reduction of between 70 % and 100 % of ewe numbers on the damaged area must be prescribed for a specified period.
- At the review of the REPS plan, the conservation status of the areas will be reviewed. A change in the stocking levels (increase or decrease) may be appropriate depending on progress.

Stocking levels apply to Scottish Blackface sheep or similar medium sized sheep breeds. Stocking levels for cattle or other stock should be at livestock unit applicable rates taking account of DAF conversion rates for the various stock types. The stocking levels recommended in this document are maximum sustainable rates for year round grazing. If shorter periods of grazing are used, the number of animals may be increased, though not necessarily pro rata.

### **Supplementary Feeding**

Supplementary feeding is permitted only on areas where it is currently practised. Locations of feeding points must be specified. To reduce heavy grazing, trampling, poaching and erosion problems, 'feeding points' should be moved every three weeks and sited on ground with least habitat and wildlife value, preferably on grassland well away from stands of heather. Feeding on steep slopes and on peaty soils should be avoided where possible. The total amount of feed used must not be increased.

### **Use of Fertilisers and Herbicides**

Neither organic nor inorganic fertilisers or lime can be applied on bogs, heaths or upland grasslands where they have not been used before. Fertilisers must not be used as a means of regenerating eroded areas. In the case of upland grasslands, fertilisers can only be applied on the basis of the results of a soil test. Where fertilisers are being applied, the initial soil sampling should be relatively intensive, with at least one sample per 2-4 ha. Target soil phosphate levels must not exceed the Index 2 level set out in the REPS specification.

Spraying or broadcast application of herbicides must be avoided. Spot application and wipe-on treatments to eradicate docks, thistles, ragwort and similar noxious weeds may be used. Rhododendron may be removed by cutting and herbicide treatment. Bracken control may be by rolling, cutting and/or by controlled cattle trampling in early summer. In exceptional circumstances, control of bracken by herbicides may be permitted.

### **Water Pollution**

The greatest care should be taken to observe the statutory requirements on water pollution. The hydrology of bogland areas is characterised by extremely nutrient poor surface waters which contain flora and fauna adapted to these conditions. These species would be adversely affected by nutrient enrichment. New sheep dip sites must be listed and located away from streams and flushes to reduce the possibility of water pollution and damage to flora and fauna.

## **Restricted and Prohibited Practices**

- The following practices must not be carried out on blanket bogs, heaths or upland grasslands
- The areas must not be drained, ploughed, cultivated or reseeded.
- There must be no infilling or rock removal.
- Turf cutting on unexploited bogs is not permitted. Turf cutting for domestic use is permitted on existing banks.
- Planting of trees or other crops is not permitted.
- No new tracks or paths can be created.
- Burning is only allowed as a planned management practice.
- Gorse may be controlled by cutting, spot spraying or exceptionally by burning outside of the bird nesting season (March 1st to August 31st).

## **Complementary Action**

### **(a) Measures to prevent damage by non REPS participants**

DAF should take measures to ensure that the environmental benefits achieved in degraded areas under REPS are not negated or diminished by non-participants in the Scheme

### **(b) Evaluating and Monitoring**

Monitoring and evaluating the effects of REPS on blanket bogs, heaths and upland and unimproved grassland is essential in determining the environmental impact of REPS on these habitats so that appropriate modifications can be identified and effected where necessary. The effect of the grazing regime on vegetation and wildlife should be monitored to assess recovery as well as any damage being caused by animals. To this end, DAF and NPWS of DEHLG, in consultation with Teagasc and private planners, will monitor the environmental impact of REPS on these habitats on an ongoing basis. Progress in this regard will be reported to the Consultative Committee on REPS.

### **(c) Farmer Education /Advice**

A REPS promotional campaign will be undertaken as soon as is practicable to inform farmers of the conservation needs of these areas and of the provisions of REPS. This campaign will be undertaken by DAF. Farming and environmental organisations will also be invited to assist in this promotional campaign.

### **(d) Seminars for Planners**

Seminars for REPS planners shall be held to advise on the interpretation of these conditions at ground level.

### **(e) Demonstration Farms**

A number of REPS participant demonstration farms will be set up in selected areas. Research work could also be carried out at these farms to assess the ability/rate of recovery of an area under different stocking conditions.

### **(f) Quota Rights**

Any REPS participant farmer is guaranteed that their quota rights are protected and in the event of a possibility of increasing numbers arising, such farmers would be allowed to do so, subject to the environmental condition of the participant farm.

### **(g) Scheme Extension**

The application of REPS in the target areas will apply for periods of five years renewable for 15 years.

### **(h) Local Co-ordination**

DAF will encourage co-ordination, at local level, of efforts to rejuvenate damaged areas.

# APPENDIX VII

## NATIONAL PARKS AND WILDLIFE SERVICE MANAGEMENT STAFF

### Conservation Ranger

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Glenveagh National Park  
Church Hill  
Letterkenny  
Co. Donegal  
Ph (074) 913 7090/ 913 7262  
Fax (074) 913 7072

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### Deputy Regional Manager

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### Regional Manager

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**Divisional Manager**

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**Divisional Ecologist**

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Co. Roscommon  
Ph: (090) 6661370  
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**National Parks and Wildlife Service**

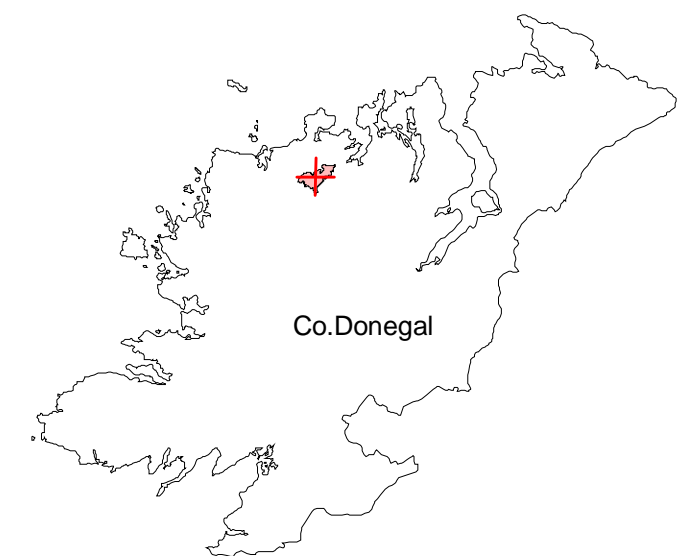
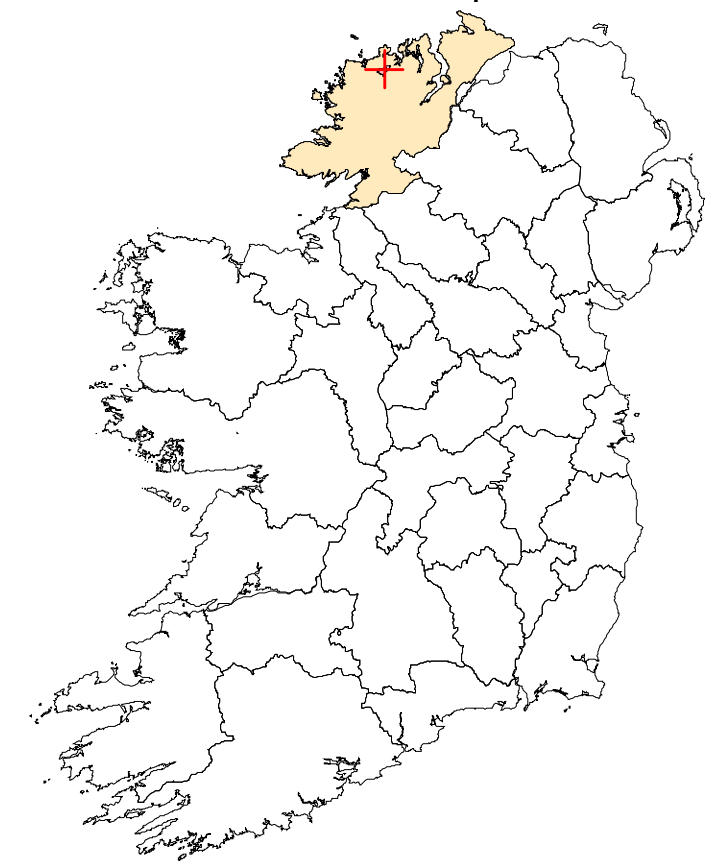
The Department of the Environment, Heritage  
and Local Government  
7 Ely Place  
Dublin 2  
Phone Lo Call 1890 202021, (01) 8882000  
Fax (01) 8883272  
[www.npws.ie](http://www.npws.ie)

CEANTAR SPEISIALTA CAOMHNAITHE  
CANDIDATE SPECIAL AREA OF CONSERVATION

MUCKISH MOUNTAIN 001179  
Version 1.01

The mapped boundaries are of an indicative and general nature only.  
Boundaries of designated areas are subject to revision.  
Reproduced from Ordnance Survey material by permission of the Government (Permit number 5953).

Nil sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta.  
Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaithe.  
Macasamhail d'ábhar na Suirbhéarachta Ordonáis le chead ón Rialtas (Ceadunas Uimh. 5953)



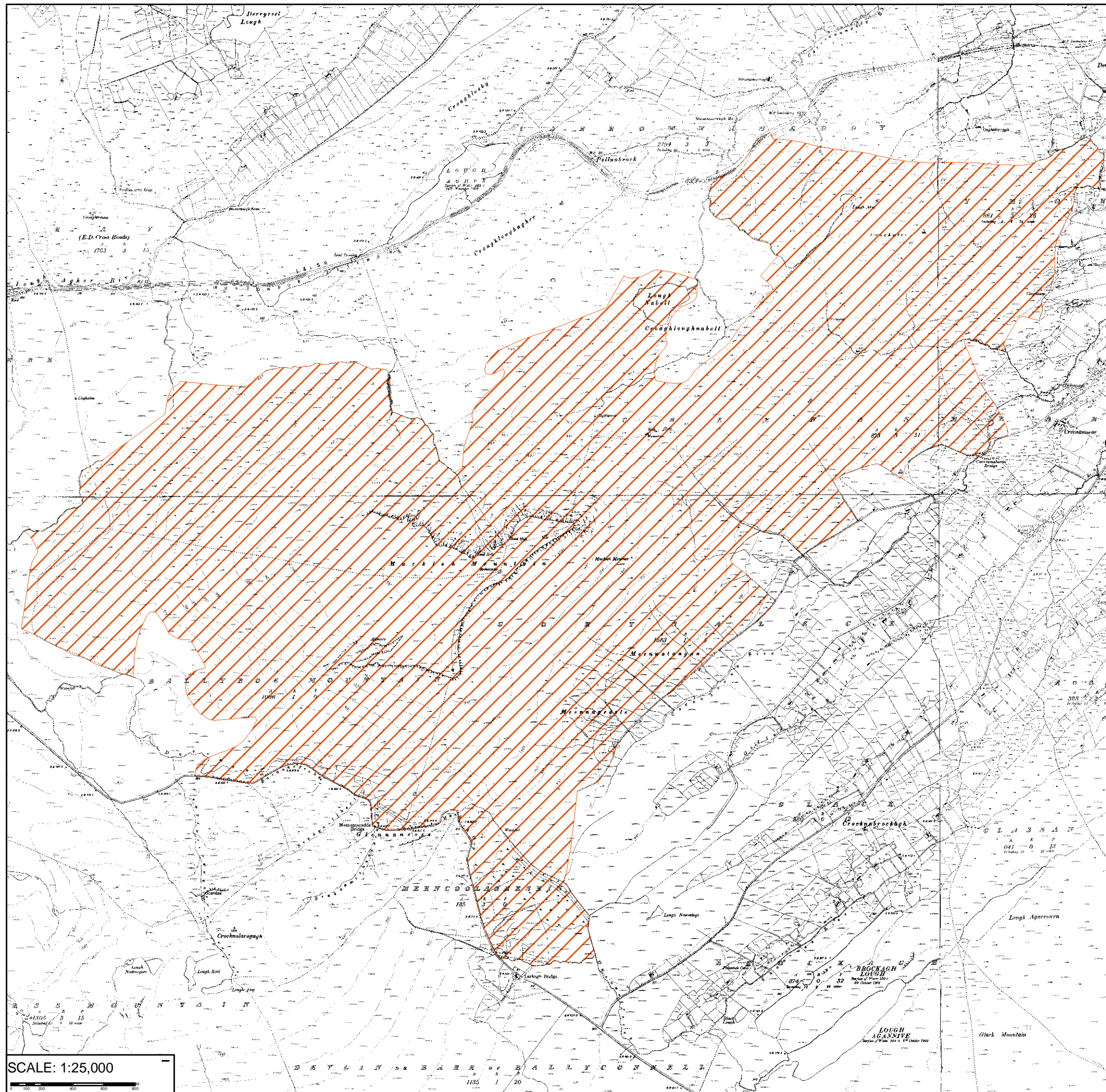
Map 1

LOCATION MAP: MUCKISH MOUNTAIN SAC 001179

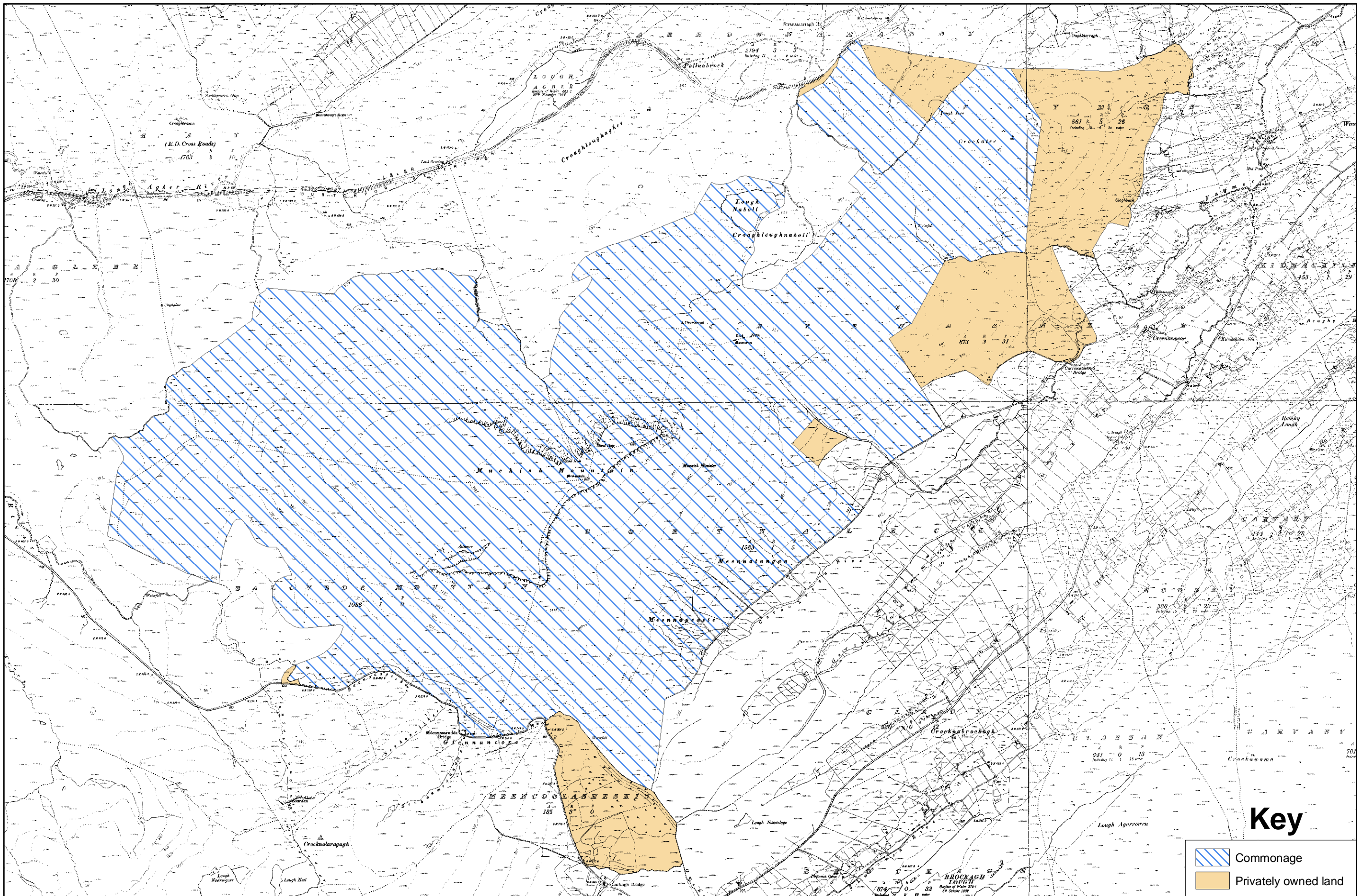
Department of Environment, Heritage and Local Government  
An Roinn Comhshaoil, Oidhreacht agus Rialtais Áitiúil





Co-financed through 'Life' EU funding  
Chomh-mhaoinithe trí chiste 'LIFE' an AE







Key

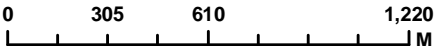
-  Commonage
-  Privately owned land



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MUCKISH MOUNTAIN  
6" SHEETS 025,056,034



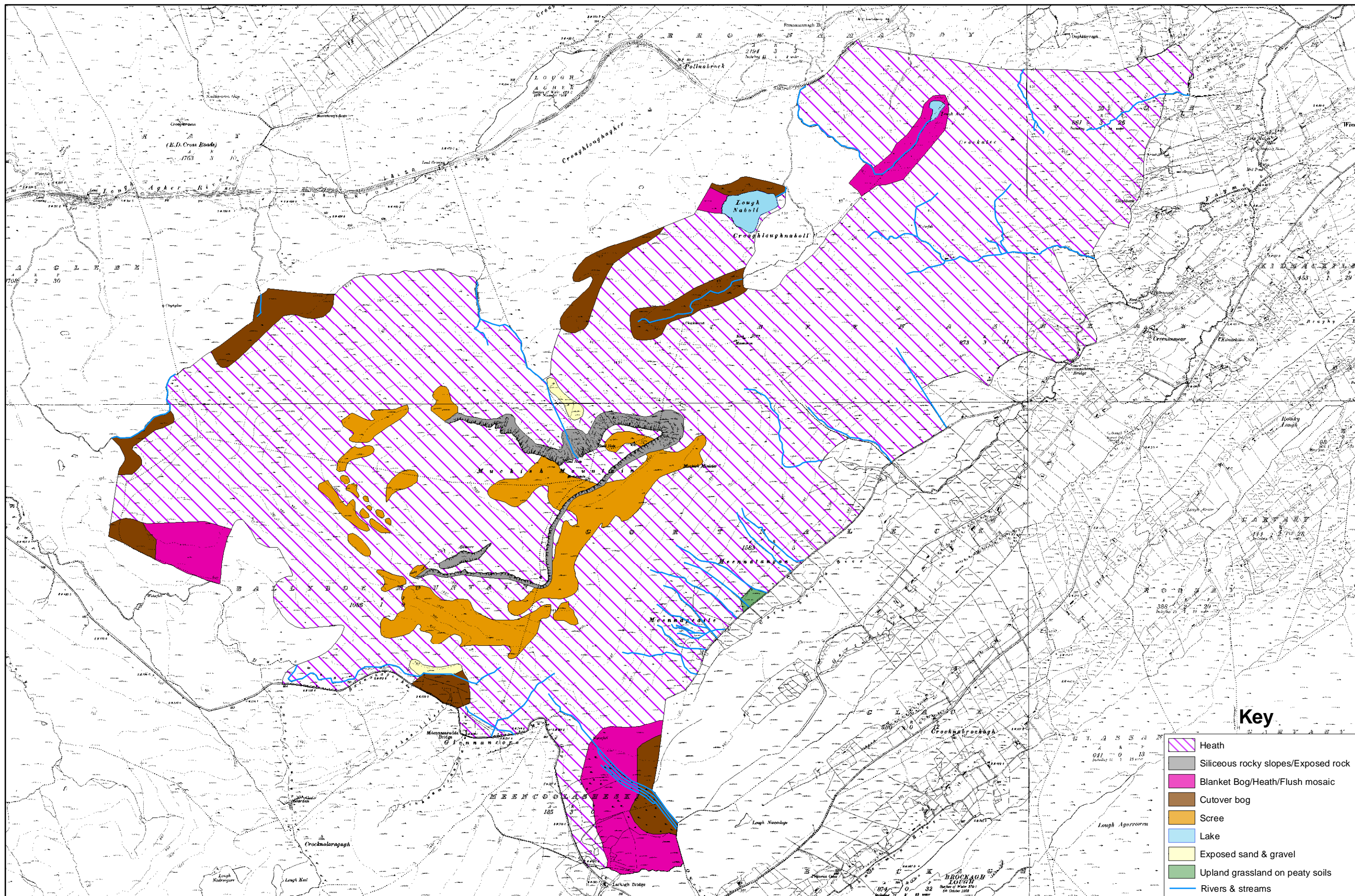
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MAP 2  
OWNERSHIP MAP

Map to be read in conjunction with conservation plan.

SITE CODE  
001179  
Version 1.01





Key

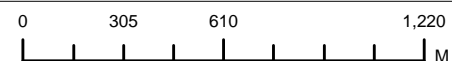
- Heath
- Siliceous rocky slopes/Exposed rock
- Blanket Bog/Heath/Flush mosaic
- Cutover bog
- Scree
- Lake
- Exposed sand & gravel
- Upland grassland on peaty soils
- Rivers & streams



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CANDIDATE SPECIAL AREA OF CONSERVATION

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MUCKISH MOUNTAIN  
6" SHEETS 025,056,034



Scale 1: 23,000

MAP 3  
INDICATIVE HABITAT MAP

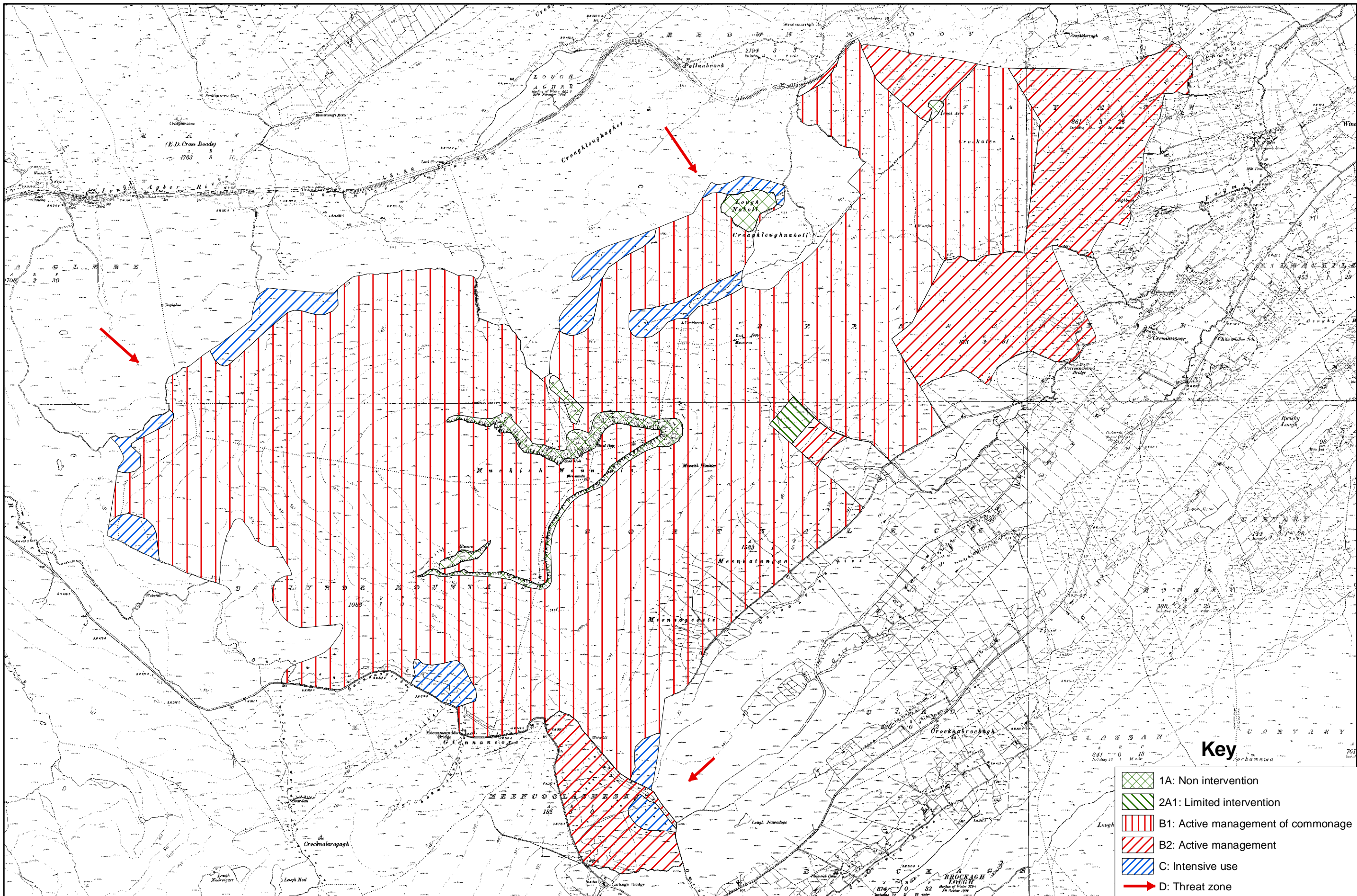
Map to be read in conjunction with conservation plan.

SITE CODE

001179

Version 1.01





Key

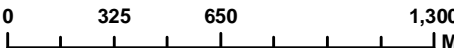
- 1A: Non intervention
- 2A1: Limited intervention
- B1: Active management of commonage
- B2: Active management
- C: Intensive use
- D: Threat zone



CEANTAR SPEISIALTA CAOMHNATHE  
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MUCKISH MOUNTAIN  
6" SHEETS 025,056,034



Scale 1: 23,000

MAP 4  
MANAGEMENT ZONING MAP

Map to be read in conjunction with conservation plan.

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Version 1.01