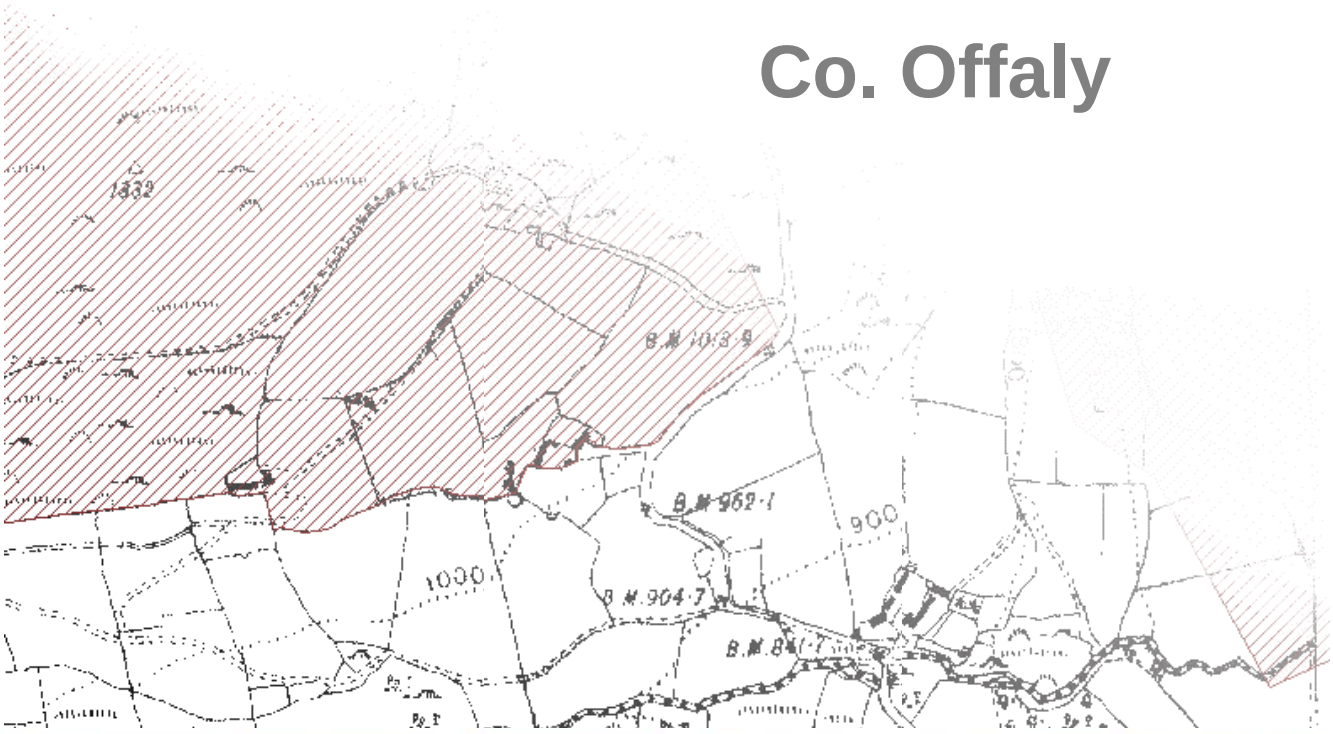
AN ROINN COMHSHAOIL, OIDHREACHTA AGUS RIALTAIS ÁITIÚIL
DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT

National Parks and Wildlife Conservation Plan for 2005-2010

Mongan Bog (Bogán na Móna Fionn) cSAC & SPA

580, 4017

Co. Offaly








SUMMARY

Site Description

Mongan Bog candidate Special Area of Conservation (cSAC) and Special Protection Area (SPA) is located in Co. Offaly, just east of the River Shannon and 12 km south of Athlone. The bog is believed to be about 9,000 years old and has formed in a basin between two east-west trending eskers. Typical midlands raised bog vegetation exists, although some species more indicative of western raised bogs are also found. A wet, central vegetation community has many bog pools and a range of the Bog Moss species that cause bog growth, including *Sphagnum auriculatum*, *S. fuscum* and *S. cuspidatum*. Cranberry grows on some hummocks. Cut-over bog, grasslands and scrub provide habitat diversity around the bog margins, and the relict of a bog-to-esker vegetation transition is found along the south side. *Active raised bog is listed as a priority habitat in Annex I of the E. U. Habitats Directive.

A number of bird species listed in Annex I of the E.U. Birds Directive occasionally use the bog: Greenland White-fronted Goose, Peregrine Falcon, Merlin, Short-eared Owl and Hen Harrier. Corncrake, also listed in Annex I, has been found on the bog margin.

The bog has a notable lichen community due to the absence of burning in the recent past. A number of notable invertebrate species have also been recorded in the site. These include three species that are new records for the country: a spider (*Gongyidiellum latebricola*, Order Arachnida) and two moths (*Biselachista serricornis*, and *Aristotelia ericinella*, Order Lepidoptera).

Much of the area of the high bog and cut-over bog is owned by An Taisce, a non-governmental conservation organisation. This area has been designated a statutory Nature Reserve, a Ramsar wetland and a Biogenetic Reserve. The remainder of the site is partly in the ownership of Bord na Mona and partly in private ownership. The site is part of the Heritage Zone proposed by Offaly County Council and the Area of Special Control designated by the same organisation. The former, proposed designation has led to the carrying out of an extensive and detailed research project on the bog. This has led to the bog ecology becoming one of the best known in the country.

Land Use

Much of the peat of the bog has been cut away over the past centuries, with an estimated 40.5% of the original dome remaining. Small-scale peat extraction continues at a number of locations and, along with drainage of the surrounding land, causes a gradual drying out of the bog. Some dumping of household and farmyard refuse takes place along the southern boundary.

Main conservation issues

- Fragility of the *active raised bog
- Drainage
- Turf cutting
- Hydrological works
- Habitat availability for Annex I bird species

Main management objectives

- To maintain and where possible, enhance the ecological value of *active raised bog (60% of the site).
- To maintain and increase where possible, populations of notable bird species, particularly those listed in Annex I of the E.U. Birds Directive - Greenland White-fronted Goose, Hen Harrier, Merlin, Peregrine Falcon, Corncrake and Short-eared Owl.
- To maintain and enhance where possible the conservation value of other habitats particularly cutover bog (17%), lowland wet and lowland dry grasslands (6%) and woodlands (1%).
- Support the provision of interpretative material for educational, research and recreational use.
- Initiate and continue effective liaison and co-operation with landowners/managers and relevant interest groups.

Main strategies to achieve objectives

- Control peat extraction
- Maintain dams along drains on high bog
- Evaluate need for blocking of drains on degraded bog and bog margin
- Protect roosting, feeding and breeding grounds of bird species
- Manage calcareous grasslands by grazing
- Consider altering grassland management on areas of reclaimed cutover
- Erect interpretative board
- Liaison/consultation with landowners and interested parties

ACKNOWLEDGEMENTS

Thanks to Ms. Ciara O' Mahony, who was the Plan Facilitator for Mongan Bog cSAC & SPA. Thanks also to regional staff and other NPW staff for their inputs.

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APPENDICES

MAPS

READER'S GUIDE

The Department of Environment and Local Government (DELG), 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 **Introduction** outlines the **policy background** to the site's designation and the relevant legislation.

The **Site description** contains **general information** on the site's boundaries, ownership and organisations involved. It also contains sections on the **physical aspects** of the site such as 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 **Ecological Assessment** assesses the main ecological attributes of the site.

The **Objectives, Strategies and Zoning 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 will be used to achieve the objectives as outlined. In cases where more information is required, general strategies are usually applied. Where sufficient data and knowledge is available, specific management prescriptions are outlined for the timescale of the plan. 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, a list of **notifiable actions** relevant to each habitat within the site, and additional information on the 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 Site Designation

The reason for the proposal to designate this site as a SAC is the presence of:

HABITAT LISTED IN ANNEX I OF THE E.U. HABITATS DIRECTIVE	
• *Active raised bog	This is an Annex I priority habitat. Mongan Bog was selected due to the presence of a well-developed pool system.

The reason for the designation of this site as a SPA is the presence of:

SPECIES LISTED IN ANNEX I OF THE E.U. BIRDS DIRECTIVE	
• Greenland White-fronted Goose (*Anser albifrons flavirostris*)	In addition to the presence of Greenland White-fronted Goose, Hen Harrier (*Circus cyaneus*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*), Corncrake (*Crex crex*) and Short-eared Owl (*Asio flammeus*) also use the site. All of these species are listed in Annex I of the Birds Directive.

As part of his responsibility in relation to biodiversity and wildlife under the Wildlife Acts, the Minister's objective is to protect important habitats and species even though they may not appear in the Annexes of the Habitats Directive. This may mean that they are included in SAC conservation plans.

General Conservation Objectives

Under Article 6 of the EU Habitats Directive, DELG is required to ensure the favourable conservation status of all Annex I habitats and Annex II species within cSACs. By preparing, implementing and reviewing this plan on a five year basis, DELG aims to achieve the objectives of the Habitats Directive in relation to this site. The general objectives DELG will apply to achieve this are:

- to maintain the Annex I habitat(s) for which the cSAC is selected
- to maintain the Annex II species for which the cSAC is selected
- to liaise with the landowners, relevant authorities and interested parties
- to increase the scientific knowledge of the site through further scientific research and development of monitoring programmes

Specific conservation objectives and strategies are outlined in the section, **Objectives, Strategies and Zoning**.

Implications for landowners and other site users

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

In cases where users 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 an owner, occupier or user of a site wishes to carry out certain activities within the designated area (that are not covered by licence or consent from another statutory body), they must consult with, and get consent from, the Minister for the Environment and Local Government. These activities are listed as “Notifiable Actions” for each habitat (see Appendix IV). Local Authorities are obliged to ensure appropriate assessment of the implications of any development permission sought that may have an impact on a designated area.

The designation of the site or any conservation actions can be appealed by landowners or right-owners on a scientific basis. Details of the appeals procedure are also given in Appendix V.

SITE DESCRIPTION

Mongan Bog (originally named Bogán na Móna Fionn, meaning The Soft White Bog) is situated less than 2 km east of the River Shannon and the monastic site of Clonmacnoise in Co. Offaly, and 12 km south of Athlone. The boundaries of the cSAC were drawn in a survey by Heery (1993). The boundary of the SPA follows the boundary of An Taisce ownership (see Maps 4 and 6). All information below and throughout the rest of the plan refers to the cSAC unless specifically stated as applying only to the SPA.

Grid Ref.:	N 03 30
Latitude:	54 12 35 N
Longitude:	09 29 13 W
Area cSAC:	208 ha
Area SPA:	129.3 ha
Altitude Range:	42 m to 45 m
Townlands:	Clonmacnoise, Clonascra, Clonfinlough, Tullaghbeg

(Map references are provided in Appendix II).

Site Boundaries and Infrastructure

The Clonmacnoise to Ballynahown third class road forms part of the southern boundary of the site and a by-road forms part of the north-eastern boundary. A Bord na Mona railway track for the transportation of milled peat runs along part of the eastern boundary. A private farm track provides access to the bog at the south-western edge. The Pilgrim's Road third class road runs along part of the boundary of the proposed inclusion. There are no facilities for the public in the site.

Legal Status

Ownership

Part of the site (119 ha) is owned by An Taisce and part by Bord na Mona. The remainder is in multiple private ownership (see Map 4). Stakes were inserted on the bog to mark An Taisce owned land in 1984. An Taisce has been attempting to acquire ownership of marginal parts of the bog but has been hampered by difficulties in locating the descendants of owners. A map of holdings is given in Tubridy and Jeffrey, Eds. (1987).

Designations of the Site

candidate Special Area of Conservation	Site Code: IE0000580
Special Protection Area	Most of the site (129.3 ha) has been designated a Special Protection Area (SPA) under the E.U. Birds Directive (Statutory Instrument no. 230 of 1987).
proposed Natural Heritage Area	Site Code: 580
Nature Reserve	The area owned by An Taisce (119 ha) has been designated a Nature Reserve (Statutory Instrument no. 230 of 1987) under section 16 of the Wildlife Act (1976) allowing recognition of the designation of non-state owned land.

Offaly County Council have proposed that an area around Clonmacnoise (of which this bog is a part) be declared a Heritage Zone (see Tubridy, Ed. 1984, and Map 5). Mongan Bog and the surrounding area is part of the River Shannon Callows and Clonmacnoise Area of Special Control designated by Offaly County Council in the Draft Development Plan (1995).

Mongan Bog Nature Reserve was designated a Wetland of International Importance under the terms of the Ramsar Convention (1971) and a Biogenetic Reserve as part of the Council of Europe network of reserves on 2nd June, 1988.

Management Infrastructure

Individuals and Organisations Involved

Landowners	An Taisce, a non-governmental conservation organisation, and Bord na Mona, a semi-state body responsible for the development of the peat extraction industry, are landowners in the site. The remainder of the land is in multiple private ownership (see Map 4). An Taisce has owned a large portion of Mongan Bog since 1979, when an agreement was reached with Bord na Mona for the transfer of ownership.
National Parks & Wildlife (NPW) of the Department of Environment and Local Government (DELG)	NPW is responsible for maintaining the nature conservation value of the site. The site is patrolled by the local Conservation Ranger, with input from other staff as necessary (see Appendix VII for further details of NPW regional staff).
Planning Authorities	Offaly County Council is the local authority responsible for planning and development in the area.

Physical Features

Climate

The following regional climatic data is taken from Rohan (1986) for the nearest Meteorological Office weather recording station at Birr, Co. Offaly, located *c.* 30 km from the site. All figures are mean annual for the period given.

Parameter	Period	Value (mean annual)
max. air temperature in excess of 20°C	1960 - 1984	29.2 days
max. air temperature in excess of 25°C	1960 - 1984	2.8 days
min. air temperature below 0.0°C	1960 - 1984	45.2 days
grass min. temperature below 0.0°C	1960 - 1984	98.0 days
degree day totals above 6°C	1958 - 1982	1624 days
rainfall	1951 - 1980	816 mm
no. of days with =1.0 mm rainfall	1960 - 1984	150 days
no. of days with =5.0 mm rainfall	1960 - 1984	56 days
no. of days with =10.0 mm rainfall	1960 - 1984	19 days
duration of rainfall	1960 - 1984	629.3 hours
mean hourly wind speed	1962 - 1984	3.7 m per sec
mean daily global radiation	1971 - 1984	946 joules / sq. cm
cloud amount	1960 - 1984	5.9 okta

Further meteorological data for Mongan Bog are given in Kelly *et al.* (1995), the summarised figures are given below:

Rainfall;	820 mm/yr.
Potential Evapotranspiration;	466.5 mm/yr.
Actual Evapotranspiration;	466.5 mm/yr.
Potential Recharge;	353.5 mm/yr.
Wetdays (1 mm at Athlone (1960-1984));	158 days/yr.

There are no weather recording facilities on the site. However, during a study by Doyle (1990), measurements of rainfall and temperature were taken over a one year period on the bog. Correlation analyses were then carried out for the data sets and climatic information from a Bord na Mona meteorological station at Boora. The correlations were found to be satisfactory in both cases and average monthly temperature and rainfall data from Boora was subsequently used throughout that study.

Madden (1990) states that figures for biomass and production at Mongan Bog are higher than those given in studies of ombotrophic peatlands in other geographical regions, and attributes this to more favourable climatic conditions at Mongan.

Geology & Geomorphology

Bedrock geological maps of the Irish Midlands (Hitzman, 1993 in Kelly *et al.*, 1995) show that Mongan Bog is underlain by Lower Carboniferous Argillaceous Bioclastic Limestones. This bedrock is overlain by dense, blue grey clay with occasional pebbles which is believed to have a low permeability. The site is located in a linear basin between two eskers, at the bottom of the River Shannon valley. The eskers coalesce to the west, closing off the valley. An area with silt and

stony till lies to the south-east of the bog. In plan, this bog has an approximate elliptical shape. Corings made by Bord na Mona show that the bog has formed in an area which was formerly an elliptical hollow with approximately the same shape and dimensions, and that the depth of peat is over 8.5 m in places. The bog has a typical watchglass topography i.e. it has a relatively steep gradient around its margins which becomes more gentle moving towards its highest point in the centre. (Information given and further details from Kelly *et al.*, 1995). A three dimensional image representing the surface and bottom of Mongan Bog has been created and reproduced in Tubridy and Jeffrey, Eds. (1987). A description of the vegetation history in the Quaternary period, derived from pollen in peat analysis, is given in Tubridy, Ed. (1984).

Hydrology & Geohydrology

The following is taken from Kelly *et al.* (1995)

"The site and its surroundings are found within the middle reaches of the Shannon Catchment (Area 11.689 km²)."

Geohydrological Overview

"The hydrology of the inorganic esker subsoils contrast strongly with that of peat covered areas. These deposits have a high permeability and are freely draining. Little of the water falling on these areas flows as runoff (probably less than 10%). Most of the effective rainfall on the esker complexes enters the water table as recharge. These areas are the main zones of groundwater recharge.

Hydrogeological investigations carried out at Clara Bog showed recharge mounds to develop below eskers where they are wide. The recharge mounds in the esker complexes are suspected to correspond to the broad zones of higher ground on the south western side of Mongan with groundwater flowing towards the bog on the bog side of the esker. Upwelling water has been noted between the bog and the underlying deposits. Fen vegetation has developed in this area reflecting the nutrient rich supply of groundwater. In situations where the eskers become thinner and narrow and there is a difference in water levels groundwater mounding may not occur. Groundwater may flow through the eskers to the north-east and south of the bog to the R. Shannon or Finn Lough."

Bog Regime

"The overall drainage pattern prior to drainage is suspected to have been broadly similar to that observed today. Water would have flowed through the eskers in roughly the same areas. Groundwater from the bog and the underlying deposits in the north part of the area would have discharged through the eskers to the Shannon, while that on the southern side of the bog would have flowed through the narrowest part of the southern complex and into Finn Lough. Nonetheless, it is notable that water levels at this time would have been higher.

(A detailed survey of groundwater sources in the area surrounding the bog, combined with details of the location of upwelling drains would allow the location of zones of groundwater recharge and discharge to be determined more confidently. A number of domestic well supplies have been noted in this area during a brief field visit.)

Based on available data it is suspected that most of the water flowing from the bog and the surrounding areas discharges into the marginal drains. However, it is suggested that groundwater in the northern esker and some of the water flowing in drain mA flow through the esker deposits to the Shannon rather than via the drain, as discussed above.

It is probable that the lowering of the water levels in Blackwater Bog may have increased regional groundwater flow from beneath the bog and the bog margins into the turlough area and also decreased the flow to the bog margins on the southern side of Mongan."

Two sets of drains cross Mongan Bog close to its north-eastern and western margins. Some drain blockage has taken place. The central part of the bog contains a very large number of narrow, elongated pools, which run parallel to the bog margins. The origin and function of these pools is

not known, but it is suggested that they may have formed as a result of the tensile stresses induced by drainage around the bog margins (see Kelly *et al.*, 1995).

Previous work on the hydrology of the site includes a study of the water balance in the bog catchment, details are given in Tubridy, Ed. (1984). Part of the results of this study were that, at points sampled, the peat needed between 55.6 and 293 mm precipitation per year to maintain the water balance. However in very dry years such as 1962, precipitation was below this level. Also, the proximity of pools to the edge of the high bog was related to the width of cut-over bog , with the southern side of the bog having wider cut-over bog and a greater distance between pools and high bog edge.

Soils and Soil Processes

The peat of the raised bog is surrounded by brown earths of the Baggottstown Series and grey-brown podzolics of the Patrickswell Series (Finch and Gardiner, in Madden, 1990).

Madden (1990) analysed the nutrient content of peat to a depth of 4 m (all of the acrotelm and the top of the catotelm) for five of the major nutrients; nitrogen (N), phosphorus (P), potassium (K), calcium (Ca) and magnesium (Mg). Preliminary quantitative nutrient cycle diagrams were drawn for each of these elements in the Mongan Bog ecosystem. The availability of phosphorus was found to be the principle nutritional factor limiting productivity, this contrasts with the findings of studies on other ombotrophic peatland systems that availability of nitrogen was more significant. The phosphorus concentration in peat in Mongan Bog was also found to be lower than that found in most ombotrophic peat studies. The total concentrations of nitrogen, phosphorus, potassium and calcium were found to decrease with depth of peat, when concentrations in each metre from the surface were considered, while the total concentration of magnesium peaked at between 1 and 3 m depth from surface. The range of values is given below:

Nitrogen;	8.30 to 18.8 mg/g
Phosphorus;	0.10 to 0.33 mg/g
Potassium;	0.04 to 0.34 mg/g
Calcium;	1.72 to 8.67 mg/g
Magnesium;	0.83 to 2.51 mg/g

Doyle (1990) also recorded peat substrate information; pH, ammonium/nitrate, magnesium, calcium, potassium, temperature at depth in peat to a depth of 50 cm, depth of water table, bulk density and stratigraphy of peat to a depth of 50 cm and oxygen availability in peat. These results were then related to the rates of decay for four identified micro-habitats on the raised bog; hummock decay rate > lawn > hollow > pool. Decay rates then decreased down through the peat profile except for pool habitats where there was no marked difference. The greatest influences on decay rate were found to be degree of water-logging and oxygen availability.

The accumulation rates of peat (as input into catotelm) were calculated using productivity figures in Madden (1990) and found to be 0.55 g/m^2/year and 1.61 g/m^2/year in two hummocks and 0.03 g/m^2/year in hollows. From this, it was concluded to be likely that the hummock/hollow system follows growth conducive to maintaining the same micro-topography over long periods of time.

Biological Features

Habitats and Vegetation

Note: Throughout the conservation plan, habitats are named and described under two different systems: the Annex I habitat(s) are as listed in the EU Habitats Interpretation Manual, while all other habitats are as listed according to the NPW NHA classification system.

The following table lists the habitats within the site. The Annex I habitat(s) of the Habitats Directive for which the site was selected is listed, with the relevant NHA category also shown. Annex I priority habitats are marked with an asterisk (*). The Gross Habitat map for the site is presented in Map 2. The percentage presented for each habitat type is based on the approximate geographic area of each habitat, as shown in Map 2.

Habitats Found within Mongan Bog (Bogán na Móna Fionn) cSAC & SPA

ANNEX I HABITAT TYPE	CORRESPONDING NHA CATEGORY	% AREA
*Active raised bog	Raised bog	60%
	Cutover bog	17%
	Lowland wet grassland	5%
	Lowland dry grassland	<1%
	Improved grassland	15%
	Scrub	1%
	Hedge	(not mapped, described with scrub)
	Dry broadleaved semi-natural woodland	1%
	Weedy wasteground areas	<1%
	Drainage ditches	<1%

Annex I Habitat:

***Active raised bog**
(60% of total site area)

Much documentary evidence exists on the vegetation of the bog, with the earliest known studies carried out by Dr. Matthias Schouten (University of Nijmegen, Holland). A complete account of this is included in Tubridy, Ed. (1984), as is more recent work on flora and fauna. Kelly *et al.* (1995) have also described the vegetation, recognising nine vegetation complexes on the high bog and concluding, as has previously been suggested, that the wet, central area is secondary following drainage episodes.

The raised bog is considered to be a midlands raised bog, although the presence of Carnation Sedge (*Carex panicea*), a moss (*Sphagnum auriculatum*) and a liverwort (*Pleurozium purpurea*) is more typical of western raised bogs.

The centre of the dome has a large area of tear pools with abundant Bogbean (*Menyanthes trifoliata*) and the moss *Sphagnum cuspidatum*, although some pools have dead *Sphagnum*, pointing to drying episodes. Hummocks with the mosses *S. imbricatum* and *S. fuscum* occur with high frequency and other species present include White Beak Sedge (*Rhynchospora alba*), Brown Beak Sedge (*Rhynchospora fusca*), Great Sundew (*Drosera anglica*) with common but not dominant Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Hare's-tail Cotton Grass (*Eriophorum vaginatum*), Bog Asphodel (*Narthecium ossifragum*) and Carnation Sedge. Cranberry (*Vaccinium oxycoccus*) can be found on hummocks. Radiating out from the central area, the tear pools have a higher algal population and towards the facebank the hollows are dominated by Bog Asphodel. Towards the edge of the high bog, the surface become more dominated by Ling Heather and Deer Grass (*Trichophorum caespitosum*) becomes abundant, although *Sphagnum* mosses are still present. Bog Myrtle (*Myrica gale*) can be found in some areas. At the facebank, quite tall and thick stands of Ling Heather are found and there is much *Hypnum jutlandicum* (a moss) present in the bryophyte layer. Further details of vegetation complexes are given in Kelly *et al.* (1995).

Much research has been conducted on the *active raised bog habitat. Madden (1990) analysed primary production and nutrient cycling. He found the net annual production for hummock and hollow sites was 591 g/m^2/year and 711 g/m^2/year respectively and found that these figures are greater than those calculated for many other ombotrophic peat systems, attributing the difference to a more favourable climate at Mongan. Nutrient cycles and budgets were drawn, see Soils and Soil Processes section. Decomposition has been studied by Doyle (1990). Preliminary food webs have been drawn in Tubridy, Ed. (1984).

Other Habitats

Cut-over raised bog

A number of different types of cut-over bog have been recognised by Tubridy, Ed. (1984) and Heery (1993), and the distinctions are still apparent. Along a narrow band of cut-over on the northern edge of the high bog, Purple Moor Grass (*Molinia caerulea*) is quite abundant and accompanied by Ling Heather and Cross-leaved Heath. Some *Sphagnum* species are occasionally present. Where cut-over has been abandoned for some time, scrub (described below) has developed, while new areas of cut-over are colonised by mosses such as *Hypnum jutlandicum* and *Campylopus introflexus*. At the west the cut-over bog is dominated by tall Ling Heather with an understorey of grasses, predominantly Purple Moor Grass. On the southern side of the bog, the cut-over bog has Purple Moor Grass flats with some Willow (*Salix atrocinerea* and other *Salix* spp.) and depressions with *Sphagnum* spp., Marsh Cinquefoil (*Potentilla palustris*) and Cuckoo-flower (*Cardamine pratensis*).

Lowland wet grassland

Some enclosed fields at the west of the site have wet grassland vegetation with clumps of Soft Rush (*Juncus effusus*). Cuckoo-flower, Sheep's Fescue (*Festuca ovina*) and Common Sorrel (*Rumex acetosa*) are among the other species present. Along the southern margin some enclosed fields have Yorkshire Fog (*Holcus lanatus*), Cuckoo-flower and Meadowsweet (*Filipendula ulmaria*) abundant, accompanied by Ribwort Plantain (*Plantago lanceolata*), Marsh Cinquefoil and Soft Rush. This species association occurs on partially reclaimed peat between the bog and the southern esker, Tubridy, Ed. (1984) notes that this may reflect a relict bog/esker margin community.

Lowland dry grassland

At the north of the site, calcareous grasslands are found on the lower slopes of the Pilgrim's Road Esker. In one area on the crest of a small hill and along slopes below the road, the grassland is unimproved. Species present on low-growing grassland include Cowslip (*Primula veris*), Sedges (*Carex* spp.), Common Mouse-ear (*Cerastium fontanum*), Daisy (*Bellis perennis*), Bird's-foot Trefoil (*Lotus corniculatus*), Yarrow (*Achillea millefolium*) and Sweet Vernal Grass (*Anthoxanthum odoratum*). In one area just below the road a few spikes of Early Purple Orchid (*Orchis mascula*) are present. On a steeply sloped area, the grassland is more rank and some Bracken (*Pteridium aquilinum*) or scrub of Hawthorn (*Crataegus monogyna*) and Ash (*Fraxinus excelsior*) is present in small patches.

Improved grassland

Enclosed fields at the west and north of the bog, on both peat and esker substrate, have apparently been fertilised and re-seeded with Perennial Rye-grass (*Lolium perenne*) and White Clover (*Trifolium repens*) dominant, patches of Rushes (*Juncus effusus* and other *Juncus* spp.) are also present.

Hedge/scrub

On cut-over bog at the north of the site, abandoned cut-over bog has undergone succession and scrub species such as Gorse (*Ulex europaeus*) and Downy Birch (*Betula pubescens*) are dominant. Hedges form part of field boundaries at the south, west and north of the site with a wide range of species present; Bramble (*Rubus fruticosus*), Downy Birch (*Betula pubescens*), Willow (*Salix* spp.), Germander Speedwell (*Veronica chamaedrys*), Bush Vetch (*Vicia sepium*), Lesser Stitchwort (*Stellaria graminea*) and Lords and Ladies (*Arum italicum*) are found along the southern side.

Dry broadleaved semi-natural woodland

An area of Birch wood is found on a former area of cut-over peat. Examination of Ordnance Survey maps shows that the wood was in existence in 1912. Downy Birch is the dominant tree species with stems of widely varying ages, Holly (*Ilex aquifolium*) is present, some Scot's Pine (*Pinus sylvestris*) is found along the northern edge and the ground flora includes Bracken, Bramble and Male Fern (*Dryopteris filix-mas*).

Weedy wasteground areas

At the south-east corner of the site an area of cut-over peat adjacent to the railway line has species of degraded bog and calcicole species, the latter presumably due to some surfacing using gravel with a limestone base. There are areas of bare peat, areas of rank grass with Rough Meadow-grass (*Poa trivialis*), False Oat-Grass (*Arrhenatherum elatius*), Silverweed (*Potentilla anserina*), Cowslip and Tormentil (*Potentilla erecta*), areas of Ling Heather with Milkwort (*Polygala serpyllifolia*) and areas with Gorse scrub.

Drainage ditches

The vegetation of drainage ditches is described in Kelly *et al.* (1995). High Bog blocked drains have been colonised by mosses such as *Sphagnum cuspidatum* and *S. auriculatum*, some Bog Cotton (*Eriophorum vaginatum* and *E. angustifolium*) and Ling Heather can also be present. Drains around the margin of the bog have a range of species including Common Reedmace (*Typha latifolia*), Common Duckweed (*Lemna minor*), Water Horsetail (*Equisetum fluviatile*), Broad-leaved Pondweed (*Potamogeton reptans*), Soft Rush and Marsh Cinquefoil.

Notable Flora

Lower Plants

An exceptionally rich lichen flora is found on the bog in comparison with other Midland raised bogs e.g. *Cladonia impexa*, *C. arbuscula*, *C. tenuis*, *C. floerkeana* and *C. glauca*. Many of these occur on old Ling Heather (McCarthy *et al.*, 1985), and the abundance has been attributed mainly to a prolonged absence of burning over many parts of the bog.

Higher Plants

Brown Beak Sedge, a sedge species of limited distribution in the country and at the northern limit of its range of distribution, is found in the bog, in the centre of intermittently dry pools (Tubridy, Ed. 1984).

An extensive checklist of flora (including vascular plants, ferns and fern allies, mosses and liverworts and lichens) found on Mongan Bog is given in Appendices 3 to 5 of Tubridy, Ed. (1984). New records of species for the site are given in Tubridy and Jeffrey, Eds. (1987).

Fauna

An extensive checklist of the fauna of Mongan Bog, is given in Tubridy, Ed. (1984). New records of species for the site are given in Tubridy and Jeffrey, Eds. (1987).

Invertebrates

During intensive research on this bog, several invertebrate species of great interest have been found (Tubridy, Ed., 1984). These include:

- a spider (*Gongyidiellum latebricola*, Order Arachnida) (first Irish record)

- a moth (*Biselachista serricornis*, Order Lepidoptera), (first Irish record)
- a moth (*Aristotelia ericinella*, Order Lepidoptera), (first Irish record)
- a rare southern Horsefly (*Chrysops sepulchralis*, Order Diptera: Tabanidae)
- a fly (*Dixella serotina*, Order Diptera: Dixidae)
- a moth (*Coenonympha tullia*, Order Lepidoptera: Rhopalocera)
- a parasitic fly (*Tachina grossa*, Order Diptera)
- a moth (*Saturnia pavonia*, Order Lepidoptera).

Further details of populations, habitats and habits are given in the same study and in Tubridy and Jeffrey, Eds. (1987). These studies draw on reports by Bond (1984, 1987 and 1988), by Good (1985, 1987a and 1987b), by Higgins (1984) and by Reynolds (1984a and 1984b). Good (1985) attempted to identify species which were typical of raised bogs, suggesting that there is a peatland assemblage of Staphylinidae. Bond drew a table of Lepidoptera typical of raised bogs in Tubridy and Jeffrey, Eds. (1987). All of these were present on Mongan Bog.

Amphibians and Reptiles

Frogs (*Rana temporaria*) were abundant on cut-over bog and present on high bog at time of authors' field visit. This species is listed as Internationally Important in the Irish Red Data Book (Whilde, 1993).

Birds

The birds of Mongan Bog have been described in a report by Madden (1987). Surveying over one year (1985 to 1986), Madden recorded the presence of 12 species on the high bog and 36 species on the cut-over, of which 4 and 19 respectively were breeding, and noted that the avian fauna is probably typical of Irish raised bogs without woodland. A species list from this study is given in Appendix III.

Greenland White-fronted Goose (*Anser albifrons flavirostris*), a species listed in Annex I, uses the site, but on an irregular basis. In Madden's study the bog is described as forming "part of a complex of haunts within which the geese move about".

A number of other species listed in Annex I of the E.U. Birds Directive are included as present but not breeding in this list, namely:

Hen Harrier (*Circus cyaneus*)

Merlin (*Falco columbarius*)

Peregrine Falcon (*Falco peregrinus*)

Corncrake (*Crex crex*) and

Short-eared Owl (*Asio flammeus*)

There are no recent records for Corncrake the site.

Regularly occurring migratory birds, not listed on Annex I but noted as important in Article IV of the Directive include Redwing (*Turdus iliacus*) and Fieldfare (*Turdus pilaris*).

Red Grouse (*Lagopus lagopus*) have been recorded on the site in the past (Tubridy, 1984) but there are no recent records. Previous work on the avian fauna of the site includes a regular survey by the then local Conservation Ranger (M. Feehan) in 1984, details are in Tubridy, Ed. (1984).

Mammals

Foxes (*Vulpes vulpes*) and Badger (*Meles meles*), the latter species protected under the Wildlife Act (1976), are occasionally seen in the site. Irish Hares (*Lepus timidus hibernicus*), also protected under the Wildlife Act (1976), are found on the bog but the numbers appear low. Badger and Hare are listed in the Irish Red Data Book (Whilde, 1993) as being Internationally Important.

Cultural Features

Land use and impacts on the site

Drainage

Kelly *et al.* (1995) have noted that no drains were shown crossing the main dome on Mongan Bog in an 1830s map, hence all major drainage efforts are later than this. Bord na Mona, a previously major owner of the bog, originally intended to extract peat from the bog, and inserted drains at both ends in 1978. The eastern and western drains were dammed by Groundwork volunteers working for An Taisce between 1984 and 1986 and as part of an ECO training course in 1986. In 1980 Bord na Mona inserted a drain at the southern side of the bog to facilitate peat cutting. Since 1982, drains have been inserted to service the railway at the east of the site, and the northern drainage has been extended to aid in reclamation of cutover. Offaly County Council occasionally clear the main drain on the northern edge. Drainage has resulted in changes in vegetation cover on the high bog. Marginal drainage has significantly lowered the water table level in the peat of the high bog, with resultant decreased cover of *Sphagnum* mosses, increase in marginal slope, slumping and cracking at the facebank and the creation of tear pools (Kelly *et al.*, 1995).

Peat extraction

Peat cutting has been carried out around the entire perimeter of the bog, with an estimated 59.5% of the original dome cut over (Kelly *et al.*, 1995). Turf cutting was widespread and posing a serious threat to the bog in 1983 (Tubridy, Ed. 1984) but this has abated over the years, due in part to negotiation by An Taisce. At the request of An Taisce in 1985, Bord na Mona contacted all claimants to turbary to negotiate the issue. Facebanks vary in height from less than 1 m along the north-eastern margin to over 2.5 m along the western margin. Small scale peat cutting continues to occur at one point on the northern boundary and another at the north-east. The northern edge has suffered the least from cutting. The current peat boundary corresponds closely to the original bog edge.

Grazing

Enclosed fields around the margins of the bog, many on reclaimed cut-over, are now used as grazing for sheep and cattle. Current and past stocking levels are not known.

Cultivation (mowing/cutting)

Silage crops are taken from some of the more productive grasslands around the northern and western margins of the site.

Fertilisation

In connection with the grazing of domestic stock and the cutting of silage described above, fertiliser is applied to grasslands around the margins of the site.

Burning

This site is notable for the minor influence burning has had over the past few decades. Tubridy, Ed. (1984) used aerial photographs and ageing of Heather to establish the fire history of Mongan bog since 1970. A map was produced showing that five major fires had occurred at the site between 1970 and 1984. An Taisce contacted Bord na Mona staff in 1984 to make them aware of the risk to the bog from fires, and a prescription of the 1984 plan was to make an arrangement with the staff regarding mounting of a fire watch. One area was affected by fire between then and 1987. This was noted by Bord na Mona staff and brought under control. At the time of the current author's field visit, a small area of burnt vegetation was noted at the north-east corner of the bog.

Dumping

Sporadic incidents of dumping of agricultural and household rubbish occur on cut-over bog at the south of the site. In 1986 An Taisce dug drains at entrances to certain dumping areas to prevent access. These deterred dumping at two locations, but a third was infilled with agricultural waste.

Conservation management

An Taisce has owned a large portion of Mongan Bog since 1979, when an agreement was reached with Bord na Mona for the transfer of ownership. Since then, signs have been erected, a major research project has been completed, fencing has been placed along part of the northern margin, efforts have been made to reduce turf cutting, fire watches have been arranged, drains have been blocked using volunteer workers, and efforts have been made to involve the local community in management.

Numerous research projects have been carried out on the bog and some educational and recreational groups have visited the bog. Visitor use between May 1985 and February 1988 was documented in Tubridy and Jeffrey (1987). The known impact of research projects on the bog was described in the same study, and an exclusion zone from which future research activity and trespass would be forbidden was defined.

Land use adjacent to the site

Sand and gravel extraction

Some very small quarries for the extraction of sand and gravel are found on the esker that runs along the north of the site. All of these quarries appear disused. Some are within the Pilgrim's Road Esker cSAC (site code: IE0001776) which meets with Mongan Bog along parts of its boundary.

Peat extraction

Mongan Bog has been cut off from part of its original extent by a Bord na Mona railway. Bord na Mona are currently extracting peat from the bog to the east of the railway, and hence outside the site. This activity is part of a larger harvesting operation which is based in Blackwater Bog immediately to the south of the southern esker complex.

Agriculture

Domestic stock are grazed on improved grasslands and on esker grasslands around the site. The esker grasslands to the north of the bog contain the E.U. priority habitat *orchid-rich grassland, and are part of the Pilgrim's Road Esker cSAC. Since the eskers are recharge areas for groundwater, excessive nutrient application to these areas could influence nutrient budgets in areas of upwelling groundwater around the margins of the bog.

Conservation management

Mongan Bog is part of the proposed Clonmacnoise Heritage Zone. A major research project has been carried out on this area, and is used as reference material throughout this plan. Also, a number of other proposed Special Areas of Conservation and a Special Protection Area are found in close proximity to the site. These include Pilgrim's Road Esker cSAC, Shannon Callows SPA and Finlough cSAC. The boundary of the River Shannon Callows runs quite close to the boundary of this site. Dúchas has entered into management agreements with landowners in parts of the callows, to ensure that hay meadow management on these lands is compatible with conservation of the Corncrake.

Drainage

Drainage of the Blackwater Bog by Bord na Mona is thought to have had an impact on the flow of groundwater under Mongan Bog. Bord na Mona also have plans to alter the hydrological regime in the nearby Finlough wetland.

Past human use

The history of the Clonmacnoise area has been well documented, with information on the human influence on the landscape given in Tubridy, Ed. (1984). The ruins of the monastery of Clonmacnoise are located within 2 km of the site. From the time of its founding in 548 AD until the thirteenth century there were major settlements in the area.

In 1650 the Downs Survey mapped the area, showing that some of the margins of Mongan Bog had been cut for turf (Tubridy and Jeffrey, Eds. 1987). Bog Commissioners visited Mongan in the earlier part of the last century (Townsend, 1811), as part of a study to investigate the possibility of draining bogs in the area. The map they produced (reproduced in Tubridy, Ed., 1984) shows that the surrounding land had been cleared of forest and enclosed. Also, more extensive turf cutting was taking place with an estimated 25% of the original bog dome cut over. Further historical details of the name, ownership and use of the bog is given in Tubridy and Jeffrey, Eds. (1987) with information taken from the Downs Survey (1650), Townsend (1811), Ordnance Survey maps and Land Commission information.

It is noted from a local source that the bog was used for Grouse shooting until the 1950s, and that large mounds of peat ("Butts") were built as hiding places for hunters along the eastern side of the bog.

Recorded Monuments and Other Features

Recorded Monuments Found on Site from:
Recorded Monuments of County Offaly, 1995. OPW).

Monument No.	Nat. Grid Ref.	Townland	Classification
OF006 011	20340 23128	Clonascra	Enclosure site
OF006 007	20568 23112	Ballyduff, Clonaderg, Clonascra, Clonmacnoise	Road (*bordering this cSAC*)

ECOLOGICAL ASSESSMENT

Note: The following is an assessment of the ecological features of the site. It is largely based on information given in the explanatory notes which accompany the Natura 2000 form (compiled in 1995). Additional information, obtained since these notes were written may also have been used to make the assessment.

This site was selected as a cSAC as it has a high density of open water pools in its central vegetation complex. This is unusual on an easterly-located site in Ireland and is considered to be important for invertebrate fauna.

The principal conservation issues are peat cutting and drainage. It has been estimated that 40.5% of the 1848 extent of the bog remains today, with most cutting having occurred to the east and west of the bog, with some to the south. Least cutting has occurred along the north edge. Active peat cutting currently occurs at very low levels, but should be halted wherever possible.

There are 7, 737m of surface drains on the bog. Two concentrations of drains are seen at the east and west of the site. These have been partially blocked but need more substantial dams. Deep marginal drains run along the east side and parts of the north and south. These need to be blocked (this conservation plan does not recommend any drain blocking without first completing a hydrological survey of the site). Adjoining mineral soil (esker) will have to be bought to the north of the site if marginal drains are to be blocked. The blocking of marginal drains will require extensive works.

Overall, the structure of this site is poor due to the effects of past peat cutting. This has caused subsidence, thus the central vegetation complex is secondarily formed due to stresses on the peat surface which give rise to large numbers of tear pools. Conservation is possible but restoration to its original state would be difficult.

OBJECTIVES, STRATEGIES AND ZONING

Conservation Objectives

The nature conservation objectives for this site are:

Objective 1: To maintain and where possible, enhance the ecological value of *active raised bog (60% of the site).

Objective 2: To maintain and increase where possible, populations of notable bird species, particularly those listed in Annex I of the E.U. Birds Directive- Greenland White-fronted Goose, Hen Harrier, Merlin, Peregrine Falcon, Corncrake and Short-eared Owl.

Objective 3: To maintain and enhance where possible the conservation value of other habitats particularly cutover bog (17%), lowland wet and lowland dry grasslands (6%), improved grassland (15%) and woodlands (1%).

Objective 4: Support the provision of interpretative material for educational, research and recreational use.

Objective 5: Initiate and continue effective liaison and co-operation with landowners/managers and relevant interest groups.

Management Issues

Note: The main issues that may impact on the conservation of the site are outlined below. The constraints that these may pose and the management potential for the site are discussed.

- **Maintenance and enhancement of the *active raised bog**
- **Fragility**
- **Drainage**
- **Turf cutting**
- **Dumping**
- **Hydrological works**
- **Habitat availability for Annex I birds**

Maintenance and enhancement of the *active raised bog

This is the only raised bog under the management of a non-governmental conservation organisation (An Taisce). As such, its conservation status is relatively secure but ongoing close liaison is needed between Dúchas and An Taisce and also with landowners/managers around the margins of the site. An Taisce has already prepared and implemented a management plan (Tubridy Ed., 1984) and a revised management plan (Tubridy and Jeffrey Eds., 1987). The following objectives were identified;

- research on bog hydrology and measures to maintain the water table,
- control of fires and turf cutting,
- development of the bog as a tourism and educational resource which is compatible with the principal objective,
- development of formal liaison with the local community through a Mongan Bog management committee.

Details of implementation of recommendations between 1984 and 1987 were given in the 1987 document. Throughout the course of An Taisce's management history and in the preparation of this management plan, contact has continued between Dúchas and An Taisce to co-ordinate objectives and efforts.

Little active management is needed on the high bog other than maintenance of dams on high bog drains. However, action outside of the active raised bog habitat, and thus bordering or on privately owned land, is necessary to conserve the hydrological integrity of the bog. Due to the impact hydrological management is likely to have, acquisition of affected land should be considered, otherwise close liaison and co-operation with landowners/managers will be necessary.

Initial research is needed on the issue of restorative work to re-create the "rand" and "lagg" features that are naturally a part of the raised bog hydrological system. Any such project would require hydrological management at the natural junctions between bog and surrounding mineral soil. The south-west edge seems to be the area in which this is most possible. The extent of manipulation of hydrological conditions necessary for such works indicates that acquisition of these lands would be the most appropriate method of carrying out such a plan.

Features of ecological value include the presence of Brown Beak Sedge and a high diversity of lichens. Both of these features can be maintained through the maintenance of the *active raised bog.

Fragility

The nature of a raised bog is such that it is extremely vulnerable to visitor pressure. Any recreational or educational facilities would need to be located and regulated carefully to prevent degradation of the raised bog habitat. An Taisce have recommended an "exclusion zone" in the core of the raised bog habitat, within which entry is barred except for monitoring purposes. This is to prevent damage through trampling and disturbance. Any recreational/educational use would thus need to be confined to the margins of the bog and have the approval of An Taisce. Also, it has been concluded that the central vegetation complex of the *active raised bog is secondary, resulting from reactions to drainage (Kelly *et al.*). Any hydrological management in the bog system needs to be assessed for possible impact on the secondary central vegetation complex.

Drainage

Drainage has occurred on the bog dome, on the bog margins and in the surrounding catchment area, all of which have had effects on the bog hydrology. Drainage resulting from peat cutting and land reclamation causes an increase in the speed with which water leaves the bog system, and causes subsidence, tearing and slumping of the raised bog habitat. Some high bog drains have been blocked, but not all dams are working effectively. Drying out of the margins of the high bog is occurring. Further survey and monitoring work is needed to quantify the extent of damage through desiccation to the high bog and any possibilities for regeneration. The blocking of marginal drains would cause some flooding to privately owned agricultural land, this currently prevents action to maintain the hydrological condition of the bog and to recreate rand and lagg features. Drainage in the adjacent Blackwater Bog area is believed to have affected the groundwater flow in the bog system already and further hydrological works, including the flooding of Finlough, could have additional effects.

Turf cutting

Although an estimated 59.5% of the original dome has been cut away, current peat extraction is at a low level. However, it is ongoing and causes direct destruction of *active raised bog habitat and also continues to affect the hydrology of the remaining active raised bog. A number of people still have turbary rights on Mongan Bog.

Dumping

Dumping of rubbish is unacceptable, as it may be a fire hazard, may cause nutrient enrichment of peat and localised increases in scavenger numbers, as well as being unsightly. The digging of drains to prevent access to dumping areas has been partly successful.

Hydrological works

Land uses outside of the site, in particular large scale hydrological engineering, could have profound impacts on the hydrology of the site and the ecological impacts of such actions need to be fully assessed. Pilgrim's Road Esker is in very close proximity to the site. The possibility of impacts of regenerative hydrological works along the northern boundary of the bog indicates that the intervening land would ideally be incorporated into the Mongan Bog site and managed accordingly. Much of the surrounding lands (Finn Lough, Shannon Callows, Lough Nanag Esker) have some protective designations and all form part of the proposed Heritage Zone. These sites could be incorporated into one large designated complex with one conservation plan and thus integrated management at some point in the future.

Habitat availability for Annex I birds

The area of the site is too small to be a complete territory for some of the Annex I birds present; Peregrine Falcon, Merlin, Hen Harrier and Short-eared Owl. The survival of populations of these species will thus depend on their ability to utilise habitats outside the site. These habitats may exist as part of other protected areas. The use of the Mongan Bog by Greenland White-fronted Geese is essentially as a roosting site and possibly with some feeding use, thus disturbance to the flock would be the main threat. There are no recent records for Corncrake on Mongan Bog (the most recent is Madden, 1987). Thus it is unlikely that a population of Corncrakes exists on the site on a regular basis. Current grassland management in the site is not suitable for Corncrakes as silage is harvested rather than hay. A change in this practise would make the habitat more suitable for this species and also for waders. The Shannon Callows provide a nearby source for colonisation. Other Annex I birds, in particular the raptors, will be likely to use the site as part of a larger feeding and breeding territory. No breeding records exist for birds within this site. Maintenance of the feeding habitat should be sufficient for the maintenance of these species.

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

DELG 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 DELG 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 Act.

Establish a monitoring regime

The monitoring regime for the site will comprise:

Scientific monitoring Monitoring of the favourable conservation status of the Annex I priority habitat and the Annex I bird species will be done by, or on behalf of, the staff of the Monitoring Section of the NPW or staff working to NPW in accordance with the procedures laid down by that section. The work, if any, to be done on this site in that respect will be prescribed by that section.

Site surveillance Patrolling of the site by the Conservation Ranger, with special attention to the Annex I priority habitat and the Annex I bird 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 are listed in Appendix IV of this plan. Permission from the Minister is required before these actions may be carried out within the designated area. For example, drainage works on the bog or within the local water catchment area.

Specific Strategies

Objective 1.

To maintain and where possible, enhance the ecological value of *active raised bog (60% of the site).

Strategies:

1.1.	**Control peat extraction**	Dúchas is seeking to purchase turbary rights and, where possible, fee simple ownership on raised bogs. €3451.41 per ha (£1100 per acre) for turbary rights and €4078.95 per ha (£1300 per acre) for fee simple turbary rights apply. Turf cutters who do not wish to avail of this package may cut for domestic purposes only until 2008, at which time, all cutting must cease. Cutting requires a permit from the Minister. Sausage machines may not be used, but face-bank and hopper machines may be used. In case of doubt, intending cutters should contact the local Conservation Ranger. On particularly sensitive areas of bog, the Minister may require that no cutting take place for any purpose.
1.2.	**Maintain areas of un-drained high bog by non-intervention**	In areas of high bog where there are no surface drains, no active management is needed. Actions to safeguard these areas will take place at or outside the facebank area.
1.3.	**Maintain dams along drains in high bog**	Inspection and maintenance of existing dams on high bog drains is needed and should be carried out as necessary, An Taisce hold maps of the locations of these dams.
1.4.	**Maintain "exclusion zone" established by An Taisce**	The area described as an "exclusion zone" in the revised management plan (Tubridy and Jeffrey, Eds. 1987) should be maintained as such i.e. recreational and educational users should not enter the area due to the likelihood of damaging bog vegetation. However, access for basic monitoring of the high bog by An Taisce and Dúchas representatives should be allowed to continue.
1.5.	**Acquire land**	Where management agreements prove inappropriate with private landowners or turbary rights owners, the option of land acquisition by Dúchas may be open, see strategy 1.1 above. No areas will be specifically targeted for acquisition but high bog not owned by An Taisce, cut-over bog, turbary rights and areas on the south boundary of the bog which are likely to be affected by hydrological restoration work will be the highest priority areas. Where possible, any acquisition of land should include rights of turbary, shooting and grazing. Once lands or rights have been acquired, all turf cutting and other damaging operations will be immediately discontinued.

1.6. Carry out topographic levelling and survey of bog hydrology

A complete topographic survey of the site, to produce an analysis of slopes on the bog surface, will be necessary. This is in order to make informed decisions on the appropriate conservation works for some areas of the site, particularly for selection of areas needing hydrological management and for modelling of the effect of any such works. Similarly, a survey and monitoring project on the hydrology of the bog should be carried out by appropriate experts, involving the use of piezometers to establish water table levels on the bog and its surroundings. If appropriate, this could follow the methodology described in Doyle (1990) for consistency.

1.7. Evaluate need for blocking of drains on degraded bog and bog margin

Some blocking of drains on degraded (cutover) bog and bog margins may be necessary to prevent further drying out of the high bog. The need for such actions can be established following completion of the topographic levelling and bog hydrology research. These drains can also be blocked using peat dams and should be regularly inspected. This conservation plan does not recommend any drain blocking without first completing a hydrological survey of the site.

1.8. Research possibility of regenerating lagg

In order to regenerate the lagg of the bog, blocking of marginal drains to raise the water table would be necessary. The southern edge of the bog has been found to be the most appropriate area for such a project. Further assessment of the possibility of such a project can take place following topographic levelling and survey of bog hydrology. Such regeneration would cause some raising of the water table on former peatland now used for agriculture. Also, modelling of the full effect of such actions and either full permission of all landowners likely to be affected, or acquisition of land is necessary. A measure such as this should have adequate monitoring to establish the full range of effects of actions, both to assess the need for further work and to assess the possibility of using the technique elsewhere. A monitoring programme such as a study on the change in bog margin vegetation should be undertaken prior to the initiating of any works. As for Strategy 1.7, this conservation plan does not recommend any drain blocking without first completing a hydrological survey of the site.

1.9. Minimise threat from fires

The continuation of the fire watch agreement made by An Taisce with staff of Bord na Mona at Blackwater Bog is desirable. Contact should be made by Dúchas with these organisations to ensure the operation of this invaluable service. The existence of a complete fire history from 1970 to 1987 on the bog is valuable, and efforts should be made to update and continue this record, by either An Taisce or Dúchas or both. Should Dúchas become aware of the cause of fires, preventative action should be taken. This could take the form of prosecutions under the Wildlife Act if such an approach were deemed necessary.

1.10 Minimise dumping

Fencing and digging of drains are the preventative actions used on this site in the past. These fences and drains could be maintained to continue to prevent access to areas where dumping frequently occurs. However, the most effective action is likely to be the identification of perpetrators and the use of appropriate warnings and referrals to the County Council.

1.11 Minimise threat from hydrological works in surrounding area

Further drainage in nearby peatlands and flooding of Finlough could have profound implications for the hydrology of the site. Such works should not be undertaken prior to a full environmental impact assessment being completed.

Objective 2.

To maintain and increase where possible, populations of notable bird species, particularly those listed in Annex I of the E.U. Birds Directive - Greenland White-fronted Goose, Hen Harrier, Merlin, Peregrine Falcon, Corncrake and Short-eared Owl.

Strategies:

2.1. Protect roosting, feeding and breeding grounds of bird species

Strategies that protect the habitats in the site (under objectives 1 and 3) will also safeguard the breeding, roosting and feeding areas of bird species. Populations, breeding status and nest locations of Annexed species will be recorded on a regular basis through patrol monitoring by the Conservation Ranger.

Objective 3.

To maintain and enhance where possible the conservation value of other habitats particularly cutover bog (17%), lowland wet and lowland dry grasslands (6%), improved grassland (15%) and woodlands (1%).

Strategies:

3.1. Manage dry calcareous grasslands by grazing

To maintain dry calcareous grassland in good ecological condition, grazing is required. Although the current management regime is not known, it would seem appropriate for the conservation of the habitat. Yearling cattle would be suitable for grazing in this habitat, since these are light and hence will cause less poaching of the soil. Liaison with landowners is necessary regarding minimising stocking rates during the winter. Ideally, no stock should be on this grassland from December to February. No supplementary feeding of stock should take place on *orchid-rich grassland at any time of year. Regular monitoring of all grazing will be needed to ensure that no damage such as trampling/poaching, scrub invasion or loss of floristic diversity is occurring. No inputs of lime, fertiliser and herbicides should occur.

3.2. Investigate possibilities for creation of pools and flats in cutover bog

Open water and flats could be created on abandoned cutover, to create the type of micro-habitat diversity found on high bog. This could be achieved during other conservation works e.g. creation of dams and regeneration of lagg, and appropriate areas could be selected at that time. However since intensive surveying and subsequent evaluation of options is needed, such works may not occur within the period of the plan. Some basic monitoring of scrub on abandoned cutover is needed to establish any trend in the extent of scrub cover. Any significant increase would be unwelcome, as it would decrease the area of secondary (cutover) bog habitat. However, raising of water levels as part of actions to protect the active raised bog would be likely to control any spread of scrub in these areas.

3.3. Manage woodland by non-intervention

No active management is needed to enhance the conservation value of woodland habitats present in this site. Liaison with landowners is necessary regarding restriction of stock access to woodland, as over-grazing reduces floristic diversity in the herb and field layers and may hamper woodland regeneration.

3.4. Consider altering grassland management on areas of re-claimed cutover

Areas currently supporting improved grassland and wet grassland could be managed by rotating grazing with hay production, in order to make these areas suitable habitats for Corncrakes. Such measures could also support waders. The following are the recommendations of Birdwatch Ireland for grassland management in the nearby Shannon Callows;

- hay must not be cut until 1st August,

- the meadows should be mown most years, if possible,

- in areas where Corncrakes have been recorded, mowing should be carried out by the "centre-out" method,

- certain small areas must be left uncut and un-grazed (they should be fenced if necessary)

- grazing the aftergrass up to 30th October is encouraged, (but optional). Poaching of the ground should be avoided.

- fertiliser or slurry on species rich fields is not permitted. Twenty tonnes per acre of farm-yard manure may be applied every three years.

- pesticide and herbicide application is not permitted.

- re-seeding is not permitted.

3.5. Manage weedy wasteground by non-intervention

No active management is needed in this area.

Objective 4.

Support the provision of interpretative material for educational, research and recreational use

Strategies:

4.1. Erect interpretative board

Any lay-by identified for use as an access point for the bog should have adequate interpretative material. A board giving an outline of the location and ecology of the bog could be placed to inform visitors. This could also be used to explain the presence of an "exclusion zone" and any restoration work. Liaison is necessary with An Taisce and Offaly County Council in relation to this.

Objective 5.

Initiate and continue effective liaison and co-operation with landowners/managers and relevant interest groups

Strategies:

5.1. Liaise with interested parties

Dúchas will strive to initiate and maintain effective liaison with landowners (particularly through the Liaison Committee), relevant authorities and interested parties on achieving the objectives for conservation of the site.

5.2. Monitor development applications Dúchas will continue to monitor applications, including current applications, for planning permission and licenses for lands within and adjacent to the site. Appropriate bodies will be notified if developments are thought to conflict with conservation objectives.

5.3. Liaise with REPS planners REPS planners are required to consult with Dúchas staff when they are developing plans for land within the site.

Zoning

Note: Zoning is the division of a nature conservation site and neighbouring lands into a number of sub-units. There are four types of zones identified (not necessarily all occurring within a site): A, B and C within the site and D outside the site but impacting on it. The relevant strategies are listed for each site.

Zone A: Natural Zone

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

1A: NON-INTERVENTION AREAS

***1A1: Un-drained *active raised bog**

Maintain the area of *active raised bog without drains by non-intervention (strategy 1.2). The area within this zone set out by an Taisce as an "exclusion zone" should be maintained (strategy 1.4) The topographic survey and hydrological monitoring should be carried out here (strategy 1.6). Monitor *active raised bog (general strategy – scientific monitoring). No peat extraction to occur (strategy 1.1).

1A2: Dry broadleaved woodland

No intervention is needed in this area for conservation management (strategy 3.3).

2A: MAINTENANCE AREAS WITH LIMITED INTERVENTION

***2A1: *Active raised bog with drains**

Maintain dams along drains on high bog (strategy 1.3). The topographic survey and hydrological monitoring should be carried out here (strategy 1.6). Monitor *active raised bog (general strategy – scientific monitoring). No peat extraction to occur (strategy 1.1).

2A2: Grasslands on former bogland

Some blocking of drains may be needed to prevent drying out of the high bog (strategy 1.7), the area first requires surveying (strategy 1.6). Since this will cause raising of the water table, it can only occur following acquisition of or management agreement for affected land. Grassland management could be altered to low intensity grazing management, with rotation of hay production to improve the habitat for Corncrakes (strategy 3.4). Liaison with landowners will first occur (strategy 5.1).

2A3: Grasslands on esker

Esker grasslands, both those with dry, calcareous grassland vegetation and those that have been improved, should be managed by low intensity grazing (strategy 3.1).

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: Cutover raised bog and bog margins

Some drain blocking may be needed (strategy 1.7) as part of measures of conserve the *active raised bog, the area first requires surveying (strategy 1.6). However, blocking of marginal drains should await management agreements with adjacent landowners or acquisition of adjacent land (strategy 1.5). To provide additional bogland habitat, pools and flats could be created while any works are ongoing. Monitoring of the spread of scrub is needed (strategy 3.2).

B1: Lagg regeneration

This zone is marked as linear on the zoning map, and represents the bog margin along which lagg restoration is possible. Topographic levelling and a survey of bog hydrology (strategy 1.6) are necessary to investigate the possibility of lagg regeneration. On degraded raised bog at the west south-west of the bog there is a possibility of lagg restoration (1.8). This would also rely on management agreements or land acquisition and detailed monitoring of changes in vegetation would be necessary.

B3: Weedy wasteground

No intervention is needed in this area (strategy 3.5).

Zone D: Impact Zone

Areas outside the site, which are impacting on the site either as protective areas or as sources threats.

D1: Nearby bogland and wetland

The nearby cut-over bog and Finlough wetland represent possible sources of hydrological impact. The former is also a possible source for the spread of fire. Liaise with organisations involved (strategy 5.1), request environmental impact assessments where appropriate (strategy 1.11) and prevent fires from spreading into the site (strategy 1.9).

APPENDIX I: GLOSSARY

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

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.

ACIDIFICATION - The detrimental effect of acid rain on soils and freshwater.

ACROTELM - The living, actively growing upper layer of a raised bog, the surface of which is composed mainly of living Bog Mosses (Sphagnum spp.). The presence of the actrotelm is vital to a raised bog as this is the peat forming layer and water storing layer of the bog.

AFFORESTATION - The planting of trees (usually conifers) over an area of previously unplanted ground.

ALKALINE - When applied to soils it refers to soils of a calcareous nature and of a high pH, i.e. above 7. The term is often used to describe plant communities associated with such soils e.g. Alkaline Fens.

ALTITUDE - Vertical height above sea level.

AMMONIA - A chemical (NH3) which is often found in water as the result of discharge of sewage effluents, or from run-off due to the application of fertilisers (ammonia is a form of nitrogen found in fertilisers). High levels of ammonia adversely affect water quality.

AMPHIBIANS – A vertebrate group whose members spend part of their life cycle in water and part on land e.g. Frog.

ANGIOSPERMS - Flowering plants. Strictly, those seed bearing plants that develop their seeds from ovules within a closed cavity, the ovary.

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 which may be hunted.

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

ANNEX III - of the EU Habitats Directive gives the criteria for selecting sites to be designated as SACs.

ANNEX IV - of the EU Habitats Directive lists animal and plant species of Community interest in need of strict protection.

ANNEX V - of the EU Habitats Directive lists animal and plant species of Community interest whose taking in the wild and exploitation may be subject to management measures.

ANNUALS - Plants which complete their lifecycle in one year, germinating in Autumn or spring, flowering fruiting and dying by the following Autumn.

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

AQUIFER –A body of permeable rock that is capable of storing significant volumes of water, that is underlain by impermeable material and through which groundwater moves.

ARABLE LAND – Farmland that includes all areas growing cereals or other crops, ploughed and planted annually.

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

AVIFAUNA – Birds

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

BERN CONVENTION – Convention on the Conservation of European Wildlife and Natural Habitats. It obliges contracting States to protect a wide range of plant and animal species and their habitats through the formation of Biogenetic Reserves

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.

BIOGENETIC RESERVES - Reserves designated under the Bern Convention.

BIOSPHERE RESERVE - A unique category of protected area dedicated to helping discover the solutions combining both conservation and sustainable use of natural resources. There are only two of these reserves in Ireland - Bull Island in Dublin and the Killarney National Park.

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

BIOTOPE - An environmental region, defined by certain conditions characteristic organisms that typically inhabit it

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 - An NPW habitat classification which refers to bogs which carpet the landscape, following the underlying topography. They can cover extensive areas along the west coast and on uplands throughout the country.

BOG WOODLAND - A priority habitat listed in Annex I of the EU Habitats Directive. Coniferous and broad-leaved forests on humus to wet peaty substrate, with the water level permanently high and even higher than the surrounding water table. In Ireland most of these forests represent sub-types of raised bog, generally degraded and invaded by commercial forestry species: however those stands dominated by Birch (Betula pubescens) or Scots Pine (Pinus sylvestris) may be of interest.

BONN CONVENTION - The convention on the Conservation of Migratory Species of Wild Animals. Ireland ratified this Convention in 1983.

BRYOPHYTES - A group of simple non-vascular spore-bearing green plants comprising the mosses, liverworts and hornworts.

CALCAREOUS - Made of or containing calcium carbonate (CaCO3) and therefore alkaline. limestone for example

CALCAREOUS FENS WITH CLADIUM MARISCUS & CAREX DAVALLIANA – A priority habitat listed in Annex I of the EU Habitats Directive. Cladium mariscus beds of the emergent-plant zones of lakes, fallow lands or succession stage of extensively farmed wet meadows in contact with the vegetation of the Caricion davallianae or other Phragmition species.

CALLOWS – Species rich grasslands in river floodplains that are flooded during the winter.

CARR - Shrub or woodland communities growing in waterlogged ground.

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.

COLEOPTERA - Beetles.

COLONISATION - The entry and spread of a species into an area, habitat or population from which it was formerly absent.

COMMERCIAL FOREST - An NPW habitat classification which applies to plantations of coniferous trees, primarily Sitka Spruce, Lodgepole Pine, Douglas Fir, Japanese Larch and Norway Spruce. More than 90% of the canopy is formed by coniferous trees, although there may be broad-leaved trees, especially Birch present along the plantation edges.

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.

COPPICING - The process of cutting trees or bushes close to the ground to allow new shoots to grow from the stump, on a rotational basis.

CORINE - An information and mapping system, developed within the context of the Commission of the European Communities biotope project, which is used as a tool for the description of sites of importance for nature conservation in Europe. It catalogues recognisable communities of flora and fauna. The primary objective of this catalogue is to identify all major communities whose presence contributes to the conservation significance of a site. Included in this list of communities are interesting but rare natural or near-natural communities as well as the more widespread semi-natural ones.

CUTOVER BOG – An NPW habitat classification that describes 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.

DESICCATION - Drying out.

DETRITAL - Derived from reworking other material.

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.

DRAINAGE DITCHES - An NPW habitat classification which refers to water channel systems with moving or stagnant water bodies, artificial in origin. Most ditches are cleared cyclically, although this category also includes ditches that are overgrown with wetland plants.

DRUMLINS -A mound of glacial drift.

DRY, BROAD-LEAVED SEMI-NATURAL WOODLAND – An NPW habitat classification which refers to woodland which reaches a height more then 5 m in most places. If the cover of exotic trees within a block is more than 10%, the woodland should be classified as mixed woodland. Also see wet broad-leaved semi-natural woodland.

ECOLOGY - The study of the interactions between organisms, and their physical, chemical and biological environment.

ECOTOPE - The abiotic environment or habitat of a particular biotic system.

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.

ESKER - A ridge of sand/ gravel resulting from deposition by sub-glacial streams. Typically the soils of an esker are thin, calcareous and vary between sandy loams and gravels.

EUROPEAN BIRDS DIRECTIVE (79/ 409/ 2nd April 1979) - See Birds Directive.

EUTROPHICATION - The nutrient enrichment of aquatic ecosystems usually by phosphates and nitrates. It may occur naturally but can also be the result of human activity (fertiliser run-off/ sewage discharge/ seepage from silage etc.).

EVALUATION - A considered or measured assessment of available information leading to a ranking or valuing.

EVAPOTRANSPORATION - Water loss to the atmosphere from soil (evaporation) and vegetation (transpiration). The potential evapotranspiration may be calculated from physical features of the environment such as wind speed and temperature. The actual evapotranspiration will commonly fall below the potential depending on the availability of water from precipitation and soil storage.

EXOTIC SPECIES - Are those species which are considered to be non native.

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.

FENS AND FLUSHES - An NPW habitat classification. Fens are peatlands fed by calcium rich water, either from groundwater or from inflowing surface water. Flushes are wet areas maintained by the seepage of water down slopes of various gradient, and are usually local features. Both are characterised by an abundance of small Sedge forming species-rich mosaics with other species. Orchid species are particularly noticeable in fens and Butterworts are more typical of flushes.

FLORA - plant life.

FLORA PROTECTION ORDER - under the 1976 Wildlife Act, particular plants can be protected under a Flora Protection Order. Under such an order it becomes an offence to cut, uproot or damage these plants unless under licence from the Minister. The same order prohibits damage to the habitats of these species.

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.

FRESHWATER MARSHES – An NPW habitat classification are intermediate between swamps and wet grassland, and often occupy a zone between these habitats. They may have some prominent tall swamp species, but are not overwhelmingly dominated by them. They are distinguished from fens and flushes by a lower calcium status and are usually richer in nutrients. This habitat is characterised by a species-rich mixture of Sedges, small Grasses Reeds and other Reed like Grasses, wetland Herbs, as well as other Herbs and Grasses more typical of dryer ground.

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.

HERBACEOUS - Seed plants with non-woody green stems.

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.

HYDROCHEMICAL MONITORING - Observing the chemical composition of water over a period of time usually carried out for detailed studies of raised bogs.

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

IMPEDED DRAINAGE - A limited through flow of water.

IMPERMEABLE - Does not allow the passage of water.

IMPROVED GRASSLAND – An NPW habitat classification describing species poor grassland, distinctive by its even appearance and bright colour, usually heavily fertilised and re-seeded with fast growing grasses.

LAGG - a term used to describe the transition from bog to mineral soil around a raised bog.

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

LEVELLING - A process carried out to establish the gradient of sloping ground.

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 NPW 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 NPW.

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

LOWLAND DRY GRASSLAND - An NPW habitat classification describing grasslands which normally are below the 100m contour, on well drained soils and characteristically with a fairly complete cover of grasses.

LOWLAND WET GRASSLAND - An NPW habitat classification which refers to grasslands which normally below the 100m contour, with a vegetation characteristic of waterlogged soil. This category also includes rushy fields.

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.

MANAGEMENT AGREEMENTS - The Wildlife Act, 1976, enables Dúchas to enter into voluntary management agreements with private landowners. Under these agreements landowners

will manage their lands to ensure that desirable wildlife habitats and species are protected. Payment for such responsible management may be agreed. However, the number and type of such agreements will vary depending on the resources available to the National Parks and Wildlife at the time.

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).

MECHANICAL WEATHERING - The processes of weathering by which frost action, salt-crystal growth, absorption of water, and other physical processes break down a rock to fragments, involving no chemical change. See also chemical weathering.

MICRO CLIMATE -The climate within a very small area, usually close to the ground, where the ground surface affects the climate.

MICROHABITAT - The precise location within a habitat of an organism, usually distinguished by its own set of environmental conditions.

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

MINEROTROPHIC MIRE - A peatland system that is fed by ground water.

MIXED WOODLAND - An NPW habitat classification that describes woodland that is structurally similar to dry (& wet) broad-leaved semi-natural woodland, i.e. the canopy in most places must achieve a height of 5 m. In mixed woodland however, the cover of exotic species within a block exceeds 10%.

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.

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.

NATURE RESERVES (NRs) - Under National legislation, the Wildlife Act of 1976, a number of sites have been designated as Nature Reserves. These areas are mainly owned by the NPW and are managed for the purposes of conservation.

NGOs - Non- Governmental Organisations.

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.

NO SHOOTING AREAS - These areas are also referred to as Wildfowl Sanctuaries and are areas that have been excluded from the “Open Season Order” so that game birds can rest and feed undisturbed. Shooting of game birds is not allowed in these areas.

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.

NPW - National Parks and Wildlife is the section of the Department of Environment and Local Government, which has responsibility for nature conservation and implements Government conservation policy as enunciated by the Minister for the Environment and Local Government.

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.

OMBROTROPHIC - A system (often used when describing raised bogs) which relies solely on precipitation for inputs to the system.

ODONATA – Dragonflies and Damselflies.

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.

PERENNIAL - Referring to plants that live for two years at least.

PERMEABILITY - The capacity of a rock to transmit fluid.

PETRIFYING SPRINGS WITH TUFA FORMATION - A priority habitat listed in Annex I of the EU Habitats Directive. This habitat is formed by hard water springs with active formation of travertine or tufa (this is a white chalk like substance). These formations are found in such diverse environments as forests or open countryside. They are generally small (point or linear formations) and are dominated by mosses.

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.

PIEZOMETERS – A instrument used for measuring the fluctuations of water levels in the acrotelm of a raised bog.

PLECOPTERA - Stoneflies.

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.

PREREQUISITE - A prior requirement.

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.

RAISED BOG - An NPW habitat classification characterised by an elevated dome of peat, the surface of which is isolated from the surrounding ground water table and receiving water solely from precipitation. The peat surface is wet, often with pools and hummock hollow systems and is usually dominated by Sphagnum mosses and bushy Heather, with Deer-grass, Bog Cottons and other associated species. Raised bogs can be distinguished from blanket bogs by their paucity of grasses which typify blanket bog.

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.

RECHARGE - The downward movement of water from the soil to the water table.

RECLAIMED LAND - this is applied to lands which have been modified from there natural state by intervention in the form of: a) drainage, b) bulldozed, c)clearance of scrub, d) infilling of wetland, e) ploughed and reseeded.

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

REEDBEDS AND OTHER SWAMPS - An NPW habitat classification. This habitat comprises tall, species poor, usually emergent vegetation, often found in a narrow fringe at the edge of open water or occupying more extensive areas in shallow basins which may become dry in Summer. The vegetation is species poor and overwhelmingly dominated by a single species, typically Common Reed (Phragmites australis).

REFUGE FOR FAUNA - Under the Wildlife Act, 1976, the Minister may designate Refuges for wild birds or wild animals and impose protective measures to conserve both the species and their habitats. A number of these refuges already exist; they are mainly islands and cliff faces.

REPS - Rural Environmental Protection Scheme. This is an Agri-Environmental programme which 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.

REPTILES - Cold-blooded vertebrates, most of which are terrestrial, having dry horny skin with scales or plates. Most reptiles lay eggs that have a leathery skin, although some are ovoviviparous.

RIVERS AND STREAMS - An NPW habitat classification describing linear channels of moving water. These are natural features that distinguish them from ditches and drainage channels.

RUDERAL VEGETATION - Refers to plants of waste places usually associated with human disturbance. They are only distinguished from weeds by the definition that weeds are a nuisance to human activities - the ruderal is not necessarily a nuisance.

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 NPW, whose function here is to ensure that the favourable conservation status of the site is maintained and where possible improved.

SCRUB – An NPW habitat classification which comprises areas with more than 50% cover of shrubs or small trees. There may be scattered standard trees, but in general the canopy height is 5 m or less. This category does not apply to stands of young trees which will eventually grow to a height of more than 5 m.

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.

SEMI-IMPROVED GRASSLAND - An NPW habitat classification which refers to grasslands which have been lightly fertilised but not re-seeded. These grasslands may still support a rich assemblage of grasses and herbs.

SOAK SYSTEMS - Used when describing vegetation on raised bogs. Relates specifically to areas of more nutrient demanding vegetation. These systems are now extremely rare due to the exploitation of most of Irelands larger raised bogs.

SPAs - Special Protection Areas for Birds are areas which 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 NPW 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.

STRATIFICATION - Arrangement in layers: differentiation of horizontal layers in soils.

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.

TAXON – Any grouping within the classification of organisms (plural = taxa)

TILL - Unconsolidated, unsorted glacial deposits.

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

TRICHOPTERA - Caddis-flies.

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

TURBARY – Refers to the right to harvest turf.

VASCULAR - Consisting of, or containing vessels adapted for the carriage or circulation of fluid, in plants refers to xylem and phloem.

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.

WILDFOWL SANCTUARIES - These sanctuaries are areas that have been excluded from the “Open Season Order” so that game birds can rest and feed undisturbed. Shooting of game birds is not allowed in these sanctuaries.

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: REFERENCES

Map References:

O.S. 1/2 inch (1:126,720) map: 15

O.S. Discovery (1:50,000) map: 47

O.S. 6 inch (1: 10,560) map: OY005, OY 006

Databases :

NHA database, Dúchas, 7 Ely Place, Dublin 2.

Natura 2000 database, Dúchas, 7 Ely Place, Dublin 2.

Corine database (site code 800000448)

Photographic Coverage:

Geological Survey of Ireland, 1973, black and white, 1: 30,000

Dúchas HQ Ely Place, Aerial photo No. 7265, Flight Line 38. Date: 1995.

Relevant Legislation:

S.I. No. 94/1997: European Communities (Natural Habitats) Regulations, 1997.

Local Government (Planning and Development) Regulations, 1994.

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APPENDIX III: THE BIRDS OF MONGAN BOG

(from Madden, 1987)

The symbol # denotes the species was confirmed as breeding in the study.

The symbol ^ denotes a species listed in Annex I of the Birds Directive.

Birds recorded between 29/1/85 and 9/1/86 on the intact peat dome

Mallard (*Anas platyrhynchos*) #

Kestrel (*Falco tinnunculus*)

Peregrine Falcon (*Falco peregrinus*) ^

Snipe (*Gallinago gallinago*) #

Curlew (*Numenius arquata*) #

Redshank (*Tringa totanus*)

Skylark (*Alauda arvensis*) #

Meadow Pipit (*Anthus pratensis*) #

Rook (*Corvus frugilegus*)

Hooded Crow (*Corvus corone cornix*)

Raven (*Corvus corax*)

Linnet (*Carduelis cannabina*)

Birds recorded between 29/1/85 and 9/1/86 on the cut-over bog

Grey Heron (*Ardea cinerea*)

Mallard (*Anas platyrhynchos*)

Hen Harrier (*Circus cyaneus*) ^

Kestrel (*Falco tinnunculus*)

Merlin (*Falco columbarius*) ^

Peregrine Falcon (*Falco peregrinus*) ^

Corncrake (*Crex crex*) ^

Pheasant (*Phasianus colchicus*)

Snipe (*Gallinago gallinago*) #

Cuckoo (*Cuculus canorus*) #

Short-eared Owl (*Asio flammeus*) ^

Skylark (*Alauda arvensis*)

Meadow Pipit (*Anthus pratensis*) #

Wren (*Troglodytes troglodytes*) #

Dunnock (*Prunella modularis*) #

Robin (*Erithacus rubecula*) #

Balckbird (*Turdus merula*) #

Fieldfare (*Turdus pilaris*)

Song Thrush (*Turdus philomelos*) #

Redwing (*Turdus iliacus*)

Whitethroat (*Sylvia communis*) #

Chiffchaff (*Phylloscopus collybita*) #

Willow Warbler (*Phylloscopus trochilus*)

Goldcrest (*Regulus regulus*)

Blue Tit (*Parus caeruleus*) #

Great Tit (*Parus major*) #

Magpie (*Pica pica*) #

Rook (*Corvus frugilegus*)

Hooded Crow (*Corvus corone corvix*)

Starling (*Sturnus vulgaris*) #

Chaffinch (*Fringilla coelebs*) #

Greenfinch (*Carduelis chloris*) #

Linnet (*Carduelis cannabina*) #

Redpoll (*Carduelis flammea*)

Bullfinch (*Pyrrhula pyrrhula*)

Reed Bunting (*Emberiza schoeniclus*) #

APPENDIX IV: NOTIFIABLE ACTIONS

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

2.2, 2.3, 4.1, 5.1, 5.2, 7.1

HABITAT TYPE 2.2

DRY LOWLAND GRASSLANDS

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 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	**SECTION B**
Please note that the activities listed in *Section A overleaf* are required to be notified to the Minister for The Environment and Local Government and should not be undertaken before consent.	Please note that the activities listed in *Section B* overleaf may, and in most cases do, require a Minister for the Marine and Natural license or consent from another statutory authority (e.g. the local planning authority, the 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 and Local Government.

HABITAT TYPE 2.2

DRY LOWLAND GRASSLANDS

Section A	Section B
THE MINISTER FOR THE ENVIRONMENT AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT	(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)
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	developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.
changing of traditional use from hay meadow (to either grazing or silage making), or from grazing to silage cutting	removal of soil, mud, gravel, sand or minerals
adding lime/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 mowing grass before the 30th June (*Note; if you have been notified that your lands hold breeding corncrakes, or certain rare meadows, special provisions will apply)*	developing roads or car parks
burning of vegetation /ploughing or cultivation of lands which have not been so managed for the last 20 years	construction of fences, buildings or
reclamation, infilling, or land drainage/ reseeding, planting of trees or any other species use of any pesticide or herbicide	embankments
dumping, burning or storing any materials	afforestation
alteration of the banks, bed or low of watercourses	
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	
any other activity of which notice may be given by the Minister from time to time	

In a very limited number of cases it may be necessary for the Minister for The Environment 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 and Local Government, an appropriate appeals procedure will be put in place.

HABITAT TYPE 2.3

WET LOWLAND GRASSLANDS

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

HABITAT TYPE 2.3

WET LOWLAND GRASSLANDS

Section A	Section B
THE MINISTER FOR THE ENVIRONMENT AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT	(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)
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	developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.
changing of traditional use from hay meadow (to either grazing or silage making), or from grazing to silage cutting	removal of soil, mud, gravel, sand or minerals
adding lime/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 mowing grass before the 30th June (*Note; if you have been notified that your lands hold breeding corncrakes, or certain rare meadows, special provisions will apply)*	developing roads or car parks
burning of vegetation	construction of fences, buildings or
reclamation, infilling, ploughing or land drainage/ reseeding, planting of trees or any other species use of any pesticide or herbicide	embankments
dumping, burning or storing any materials	afforestation
alteration of the banks, bed or low of watercourses	
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	
any other activity of which notice may be given by the Minister from time to time	

In a very limited number of cases it may be necessary for the Minister for The Environment 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 and Local Government, an appropriate appeals procedure will be put in place.

HABITAT TYPE 4.1

RAISED BOG, CUTAWAY BOG AND BOG WOODLAND

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

HABITAT TYPE 4.1

RAISED BOG, CUTAWAY BOG AND BOG WOODLAND

Section A	Section B
THE MINISTER FOR THE ENVIRONMENT AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT	(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)
grazing of livestock/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung	developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.
adding lime/adding fertiliser of any sort	removal of soil, mud, gravel, sand or minerals
creation of new tracks or paths	developing roads or car parks
burning areas of vegetation reclamation, infilling, or ploughing /reseeding, planting of trees or any other species/cutting trees or removing timber	construction of fences, buildings or
drainage works on the bog or within the local water catchment area	embankments
cutting turf or peat moss extraction	afforestation
use of any pesticide or herbicide, including sheep dip	erecting or operating a windfarm
dumping, burning or storing any materials	
alteration of the banks, bed or flow of watercourses	
operation of commercial recreation facilities (e.g. botanical tours)	
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	

In a very limited number of cases it may be necessary for the Minister for The Environment 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 and Local Government, an appropriate appeals procedure will be put in place.

HABITAT TYPE 5.1

WOODLANDS

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 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	**SECTION B**
Please note that the activities listed in Section A overleaf are required to be notified to the Minister for The Environment and Local Government and should not be undertaken before consent.	Please note that the activities listed in Section B overleaf may, and in most cases do, require a licence 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 and Local Government.

HABITAT TYPE 5.1

WOODLANDS

Section A	Section B
THE MINISTER FOR THE ENVIRONMENT AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT	(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)
grazing by livestock	developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.
adding lime	any activity which may cause pollution of the woodland
adding fertiliser of any sort	removal of soil, mud, gravel, sand or minerals
reclamation, infilling, ploughing or land drainage	developing roads or car parks
reseeding, planting of trees or any other species	construction of fences, buildings or
felling of trees, removal of timber	embankments
removal of foliage, moss or other materials	felling trees or reafforestation
killing ivy	
use of any pesticide or herbicide	
dumping, burning or storing any materials	
alteration of the banks, bed or flow of watercourses	
operation of commercial recreation facilities (e.g. bird watching tours)	
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	

In a very limited number of cases it may be necessary for the Minister for The Environment 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 and Local Government, an appropriate appeals procedure will be put in place.

HABITAT TYPE 5.2

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

HABITAT TYPE 5.2

SCRUB

Section A	Section B
THE MINISTER FOR THE ENVIRONMENT AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT	(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)
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	developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.
supplementary feeding of stock (as defined in approved farm plans)	any activity which may cause pollution of the site
adding lime /adding fertiliser of any sort	removal of soil, mud, gravel, sand or minerals
reclaiming land covered by scrub; if scrub is cut it must be allowed to regrow	developing roads or car parks
reclamation, infilling, ploughing or land drainage	construction of fences, buildings or
reseeding, planting of trees or any other species felling of trees, removal of timber	embankments
removal of foliage, moss or other materials	felling trees or reafforestation
killing ivy	
use of any pesticide or herbicide /dumping, burning or storing any Materials	
alteration of the banks, bed or flow of watercourses	
operation of commercial recreation facilities (e.g. walking tours)	
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	

In a very limited number of cases it may be necessary for the Minister for The Environment 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 and Local Government, an appropriate appeals procedure will be put in place.

HABITAT TYPE 7.1

DITCHES, HEDGES, CEREALS AND INTENSIVE GRASSLANDS, WALLS, BUILDINGS, WASTE GROUND, BARE SOIL, PARKLAND GRASSLAND, BRACKEN, CAVES, OR QUARRIES

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 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	**SECTION B**
Please note that the activities listed in Section A overleaf are required to be notified to the Minister for The Environment and Local Government and should not be undertaken before consent.	Please note that the activities listed in Section B overleaf may, and in most cases do, require a licence 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 and Local Government.

HABITAT TYPE 7.1

DITCHES, HEDGES, CEREALS AND INTENSIVE GRASSLANDS, WALLS, BUILDINGS, WASTE GROUND, BARE SOIL, PARKLAND GRASSLAND, BRACKEN, CAVES, OR QUARRIES

Section A	Section B
THE MINISTER FOR THE ENVIRONMENT AND LOCAL GOVERNMENT IS REQUIRED TO BE NOTIFIED IN RELATION TO THE FOLLOWING ACTIVITIES AND SUCH ACTIVITIES SHOULD NOT PROCEED WITHOUT PRIOR CONSENT disturbance of bats operation of commercial recreation facilities (e.g. bird watching tours) 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	(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY) developing leisure facilities including sports pitches, caravan or camping facilities. developing roads or car parks construction of fences, buildings and embankments afforestation

In a very limited number of cases it may be necessary for the Minister for The Environment 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 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: NATIONAL PARKS AND WILDLIFE MANAGEMENT STAFF

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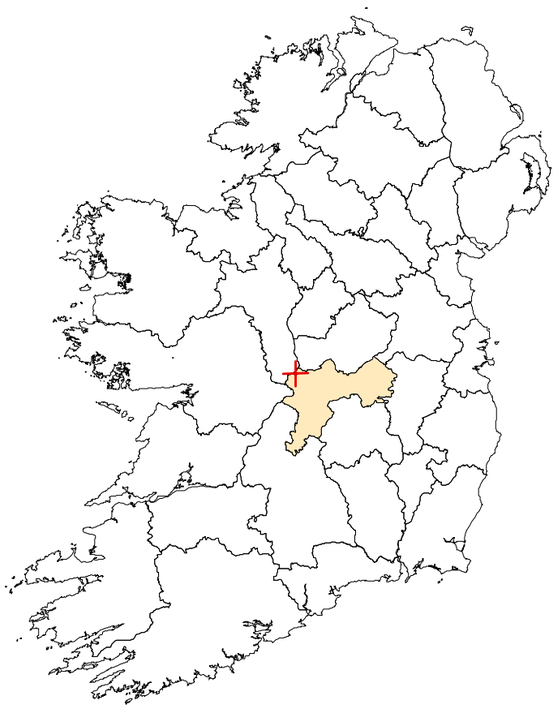
www.npws.ie

CEANTAR SPEISIALTA CAOMHNAITHE

CANDIDATE SPECIAL AREA OF CONSERVATION

MONGAN BOG 000580, SPA 004017
Version 1.00

Féadtar athruithe a chur ar an gceantair / Sites subject to revision
(Ní thaispéantar suímh gur de spéis géolaíoch amháin iad) / (Sites solely of geological interest not shown)

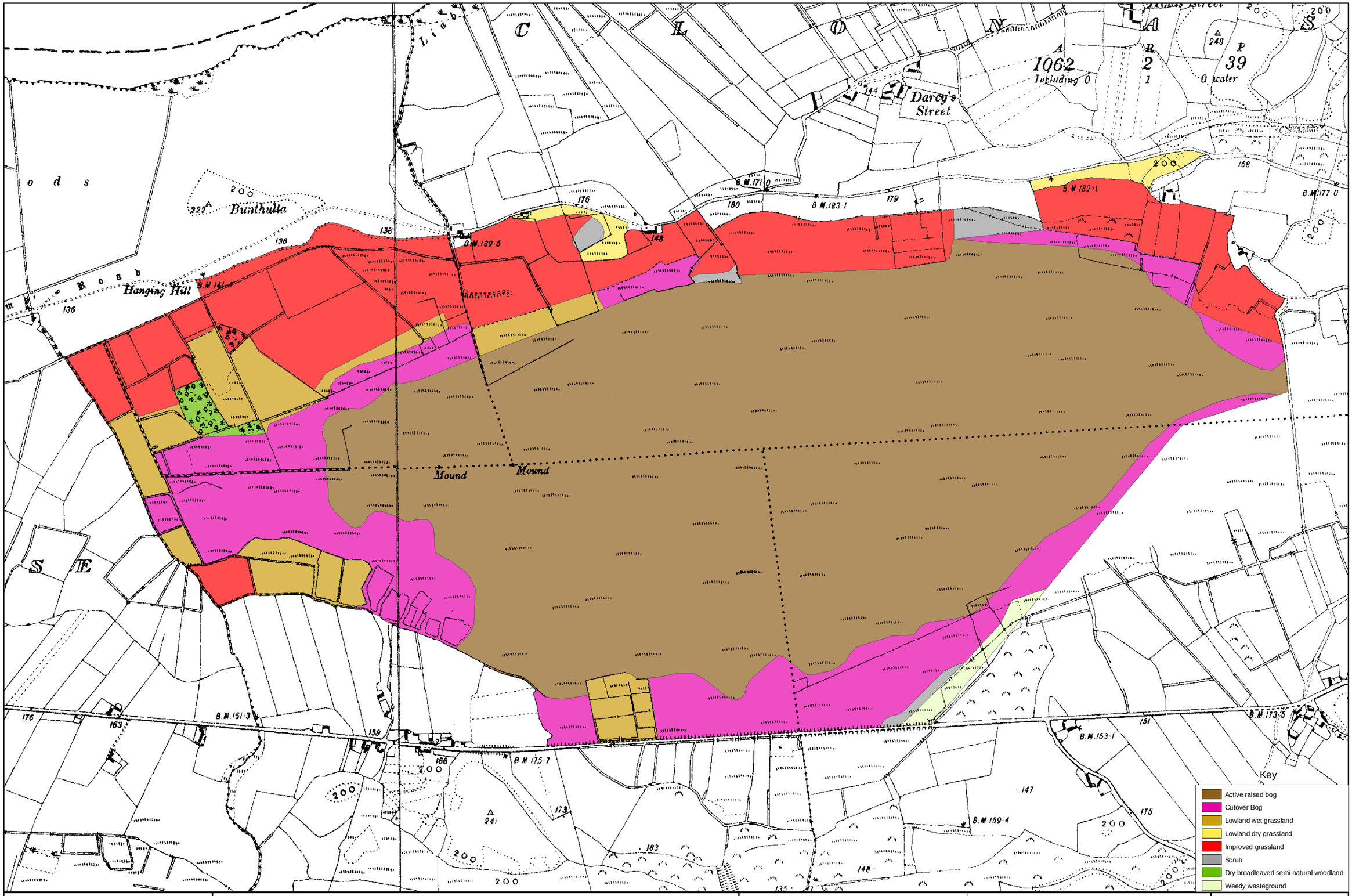


Map 1
LOCATION MAP: MONGAN BOG cSAC 000580, SPA 004017

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

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

Scale 1:10,000



AN ROINN COMHSHAOIL, OIDHREACHTA AGUS RIALTAIS ÁITIÚIL
DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT

CEANTAR SPEISIALTA CAOMHNAITHE

CANDIDATE SPECIAL AREA OF CONSERVATION

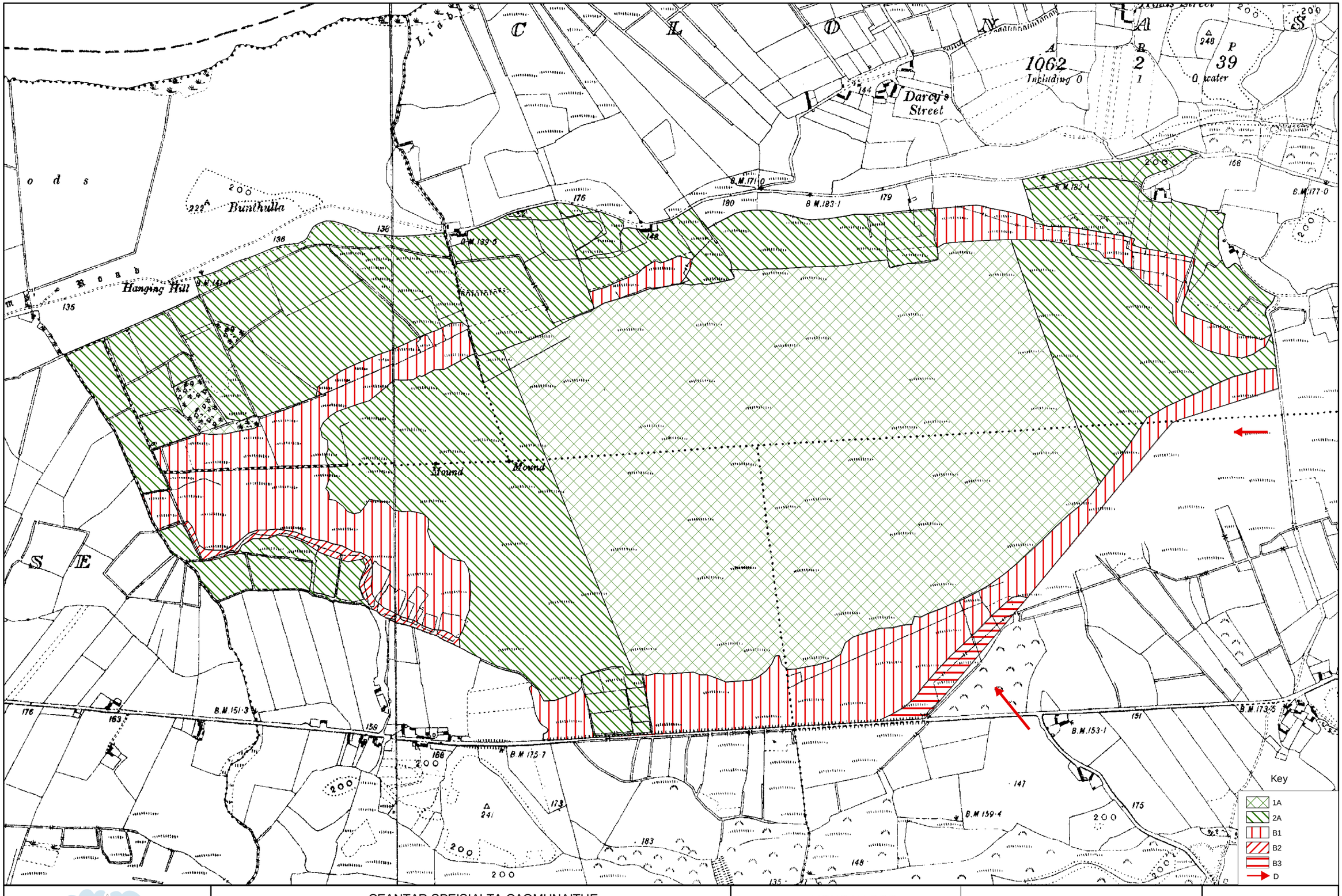
MONGAN BOG
6" SHEETS 005, 006

0 100 200 400 M
Scale 1: 7,500

Map 2
GROSS HABITAT MAP

Map to be read in conjunction with the conservation plan.

SITE CODE
000580
Version 1.00



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DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT

CEANTAR SPEISIALTA CAOMHNAITHE

CANDIDATE SPECIAL AREA OF CONSERVATION

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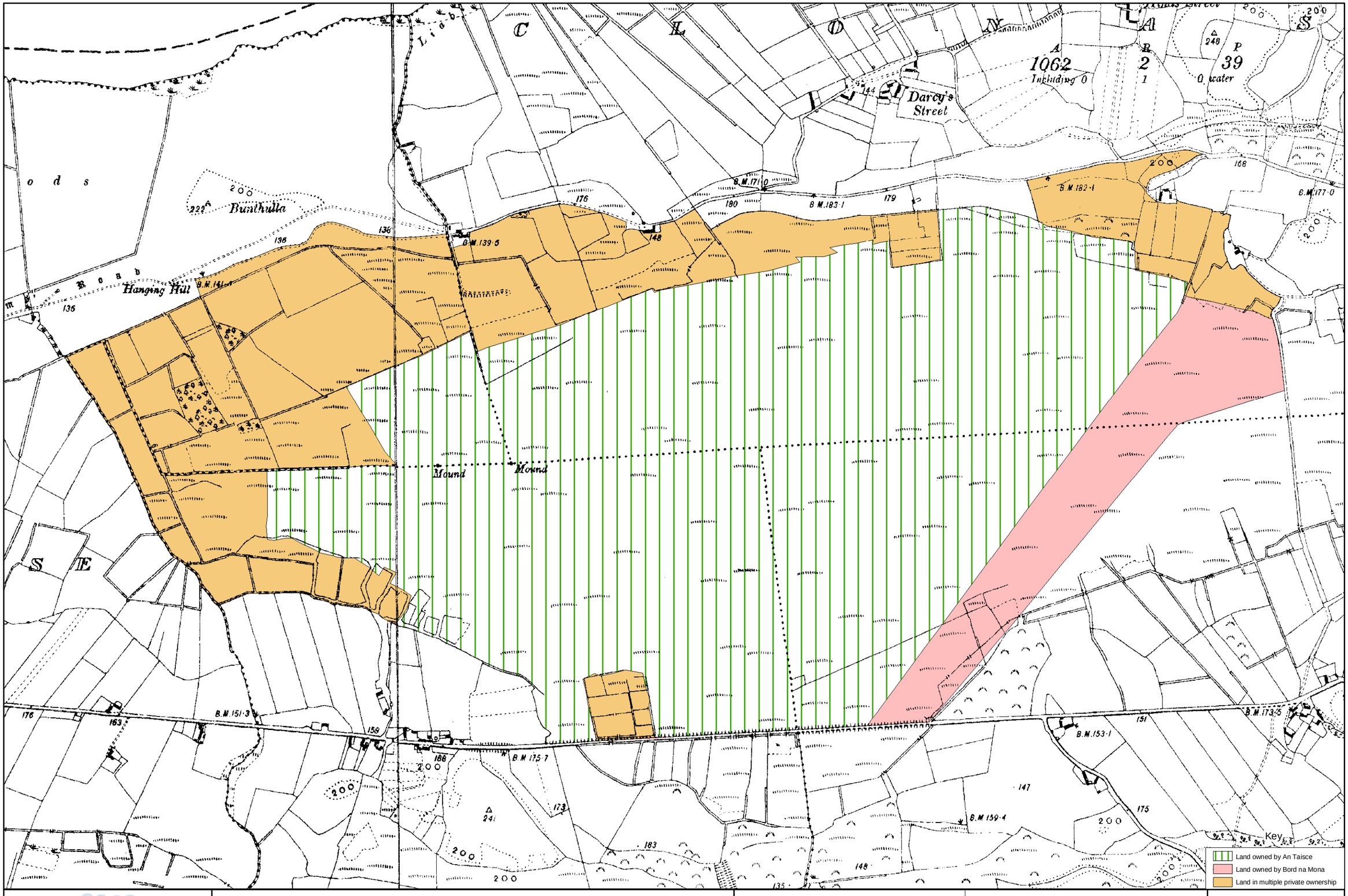
(Ni thaispéantar suímh gur de spéis géolaíoch amháin iad) / (Sites solely of geological interest not shown)

MONGAN BOG
6" SHEETS 005, 006

0 100 200 400 M
Scale 1: 7,500

Map 3
MANAGEMENT ZONING MAP

SITE CODE
000580
Version 1.00



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DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT

CEANTAR SPEISIALTA CAOMHNAITHE

CANDIDATE SPECIAL AREA OF CONSERVATION

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(Ni thaispéantar suímh gur de spéis géolaíoch amháin iad) / (Sites solely of geological interest not shown)

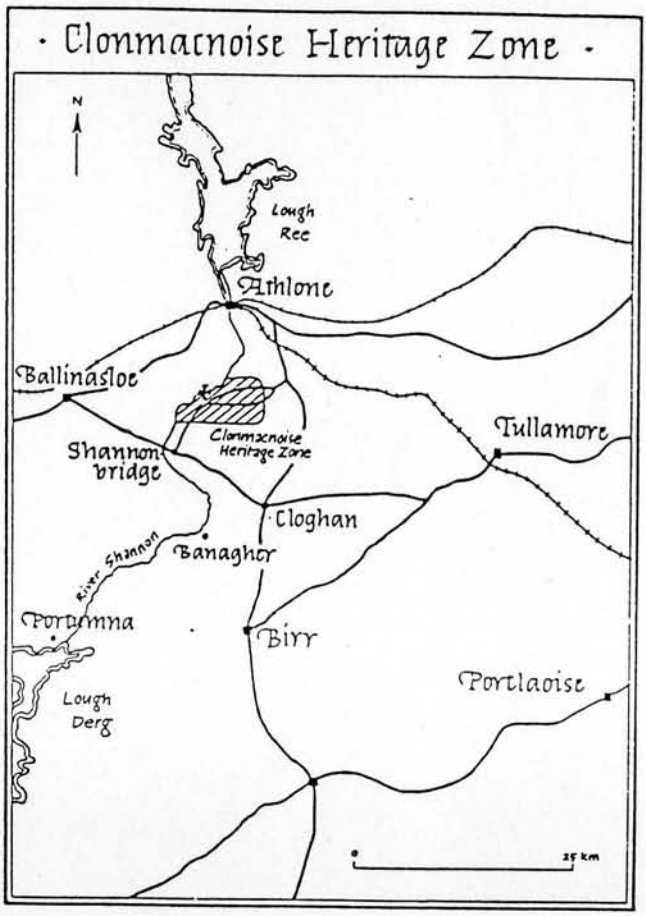
MONGAN BOG
6" SHEETS 005, 006

0 95 190 380 M
Scale 1: 7,500

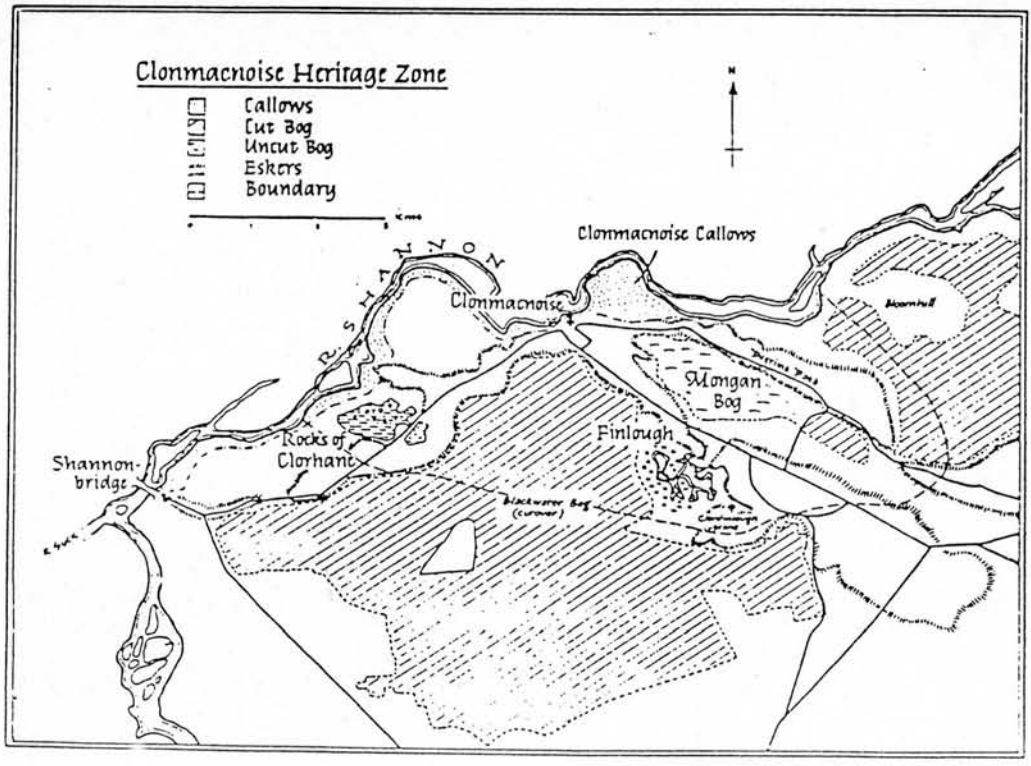
Map 4
OWNERSHIP MAP

SITE CODE
000580
Version 1.00

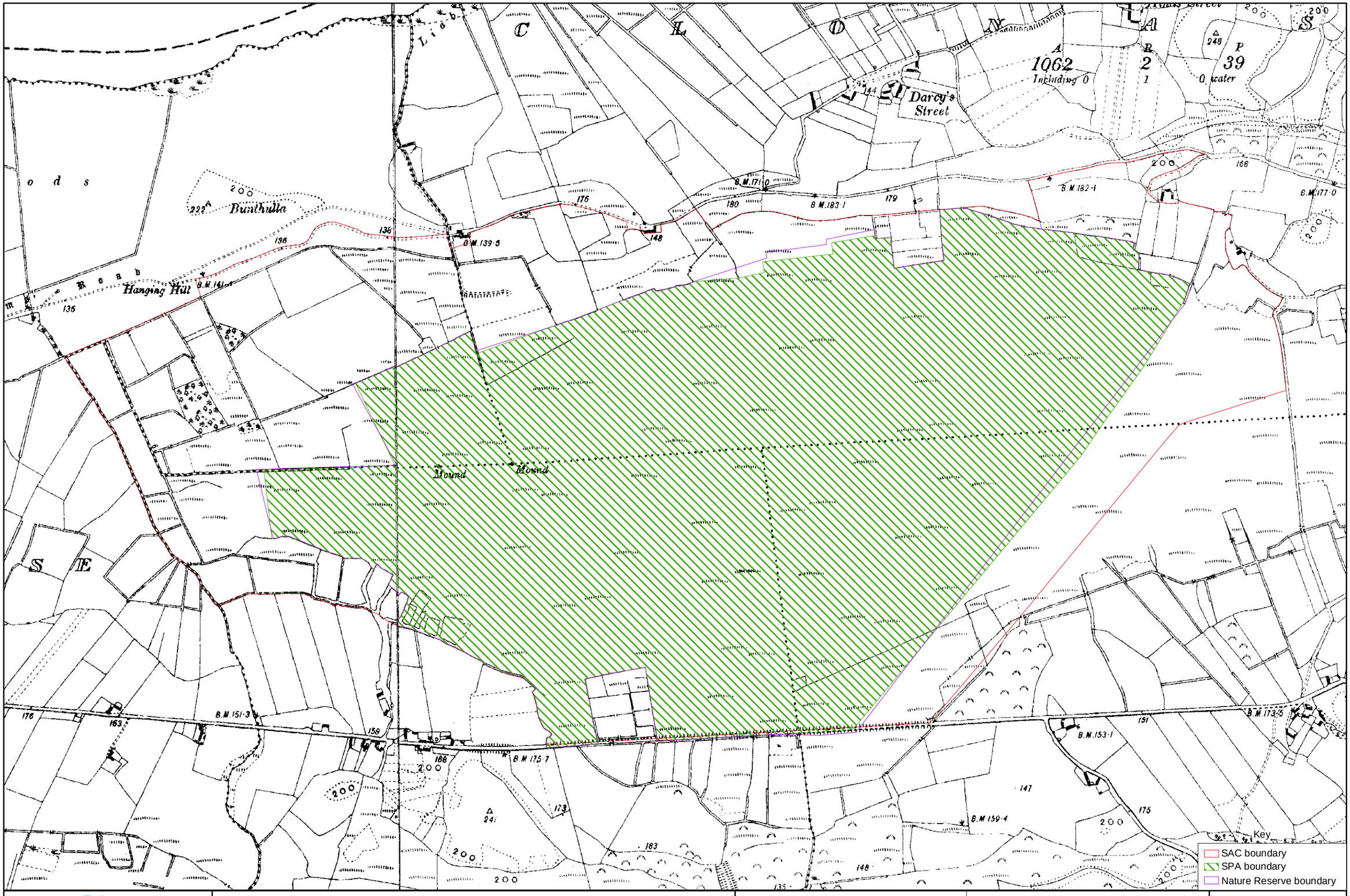
MAP NO. 5; CLONMACNOISE HERITAGE ZONE (TUBRIDY, ED., 1987)



The Clonmacnoise Heritage Zone



Sites of particular importance within the Heritage



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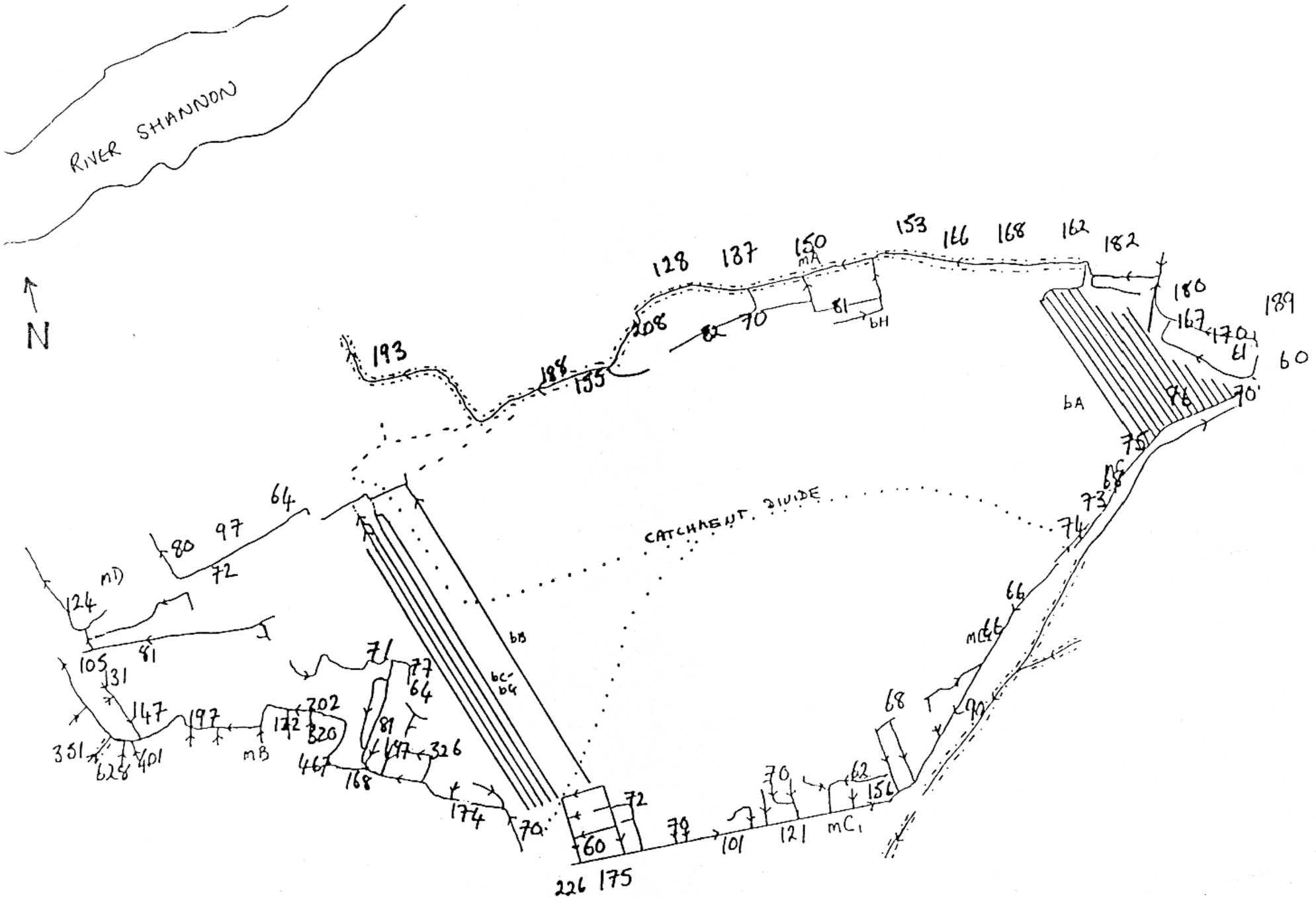
MONGAN BOG
6" SHEETS 005, 006

0 90 180 360 M
Scale 1: 7,500

Map 6
SPECIAL PROTECTION AREA AND NATURE RESERVE

SITE CODE
000580
Version 1.00



AN ROINN COMHSHAOIL, OIDHREACHTA AGUS RIALTAIS ÁITIÚIL DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT	CEANTAR SPEISIALTA CAOMHNAITHE CANDIDATE SPECIAL AREA OF CONSERVATION	MONGAN BOG 6" SHEETS 005, 006	Map 7 DRAINAGE MAP after Kelly *et al.* (1995)	SITE CODE 000580 Version 1.00
	Féadtar athruithe a chur ar na gceantair / Sites subject to revision (Ni thaispéantar suímh gur de spéis géolaíoch amháin iad) / (Sites solely of geological interest not shown) Reproduced from Ordnance Survey material by permission of the Government (Permit Number 5953) Macasamhail d'ábhar na Suirbhéireachta Ordonáis le cead ón Rialttas (Ceadúnas Uimh 5953)	Map not to scale		