

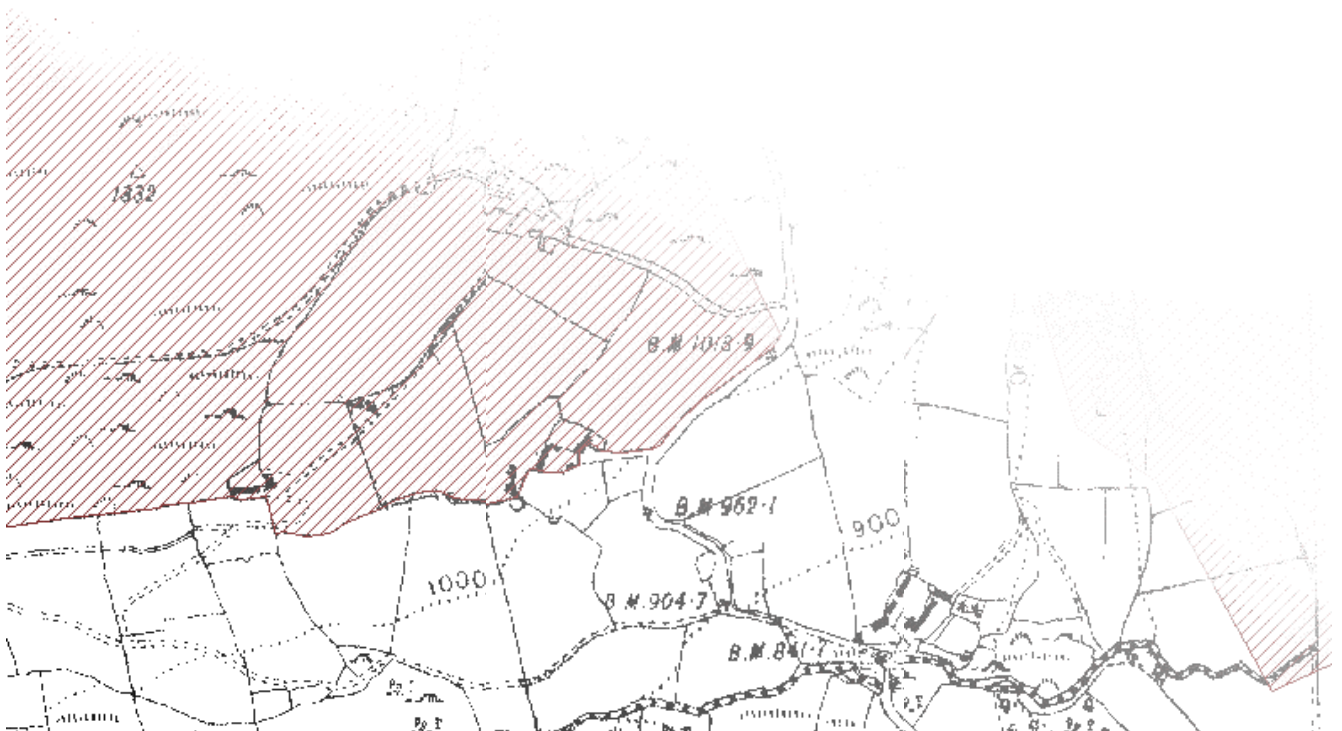


National Parks and Wildlife Conservation Plan for 2003-2008



Kilcarren- Firville Bog cSAC

Site Code 647
Co. Tipperary



SUMMARY

Site Description

Kilcarren-Firville Bog is a candidate Special Area of Conservation due to the presence of active raised bog, a priority habitat listed in the E. U. Habitats Directive. The site consists of two raised bog systems, Kilcarren and Firville, separated by a main road. Both bogs have some intact and semi-intact margin with little peat extraction occurring, and both have areas of wet surface and central vegetation. These bogs have been selected for conservation because they contain central vegetation complexes, they represent a range in the geomorphic setting of Irish raised bogs (being ridge basin type raised bogs) and also because of the presence of an infiltration lagg along parts of the northern boundary. The presence of Alder Buckthorn, a rare species listed in the Irish Red Data Book for vascular plants, is noteworthy. Some areas of semi-natural woodland occur on the west edge of Kilcarren.

Small numbers of Greenland White-fronted Goose and Whooper Swan, two species listed in Annex I of the E.U. Birds Directive, utilise the site. A number of other bird species, including Red Grouse, also use the site.

Land Use

Some mechanised peat cutting is occurring on Kilcarren, and networks of old, infilled drains are found on high bog of both Kilcarren and Firville. Much of the high bog surface is recovering from repeated burning. An area of cut-over has been planted with coniferous trees. Some hunting occurs and there are ongoing incidents of dumping of domestic rubbish along the edge of the main road.

Main conservation issues

- Peat extraction
- Drainage
- Succession to scrub and woodland
- Fertilisation
- Land reclamation
- Cattle gaining access to high bog and cutover

Main management objectives

- To maintain and enhance where possible the area of active raised bog (approx. 70% of the site).
- To restore areas of infiltration lagg.

- To maintain and where possible, enhance the ecological condition of other habitats: cutover bog (8%), lake system (2%), lowland wet grassland (6%), broadleaved woodland and scrub (3%).
- To maintain and where possible, increase the populations of Annexed and other notable species particularly Greenland White-fronted Goose, Whooper Swan, Red Grouse and Alder Buckthorn.
- To provide infrastructure for public access.
- To initiate and continue effective liaison with landowners/managers and relevant interest groups.

Main strategies to achieve objectives

- Minimise threat from peat extraction and drainage
- Prevent stock access to the high bog
- Minimise threat from burning, dumping, hunting
- Monitor active raised bog and lagg vegetation
- Habitat maintenance
- Liaison/consultation with landowners and interested parties

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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	
<ul style="list-style-type: none"> *Active Raised Bog 	<p>This is an Annex I priority habitat. Kilcarren-Firville Bog has notable features such as the presence of central vegetation complexes and an infiltration lagg along some parts of the bog margin.</p>

* indicates a priority habitat in Annex I of the Habitats 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

Location including site boundaries

Kilcarren-Firville Bog is situated approximately 10 km west/south-west of Birr, Co. Offaly.

Grid Ref.:	M 93 02
Latitude:	N 53 03 51
Longitude:	W 08 05 49
Area:	677 ha
Altitude Range:	60 m to 67m
Townlands:	Kilregane, Kilcarren, Kilgask, Derrybreen, Lisduff, Ballyhaugh, Dary, Kilfadda, Garrybaun, Ashpark

(Map references are provided in Appendix II).

Site Infrastructure

The L113 road linking Birr with Borrisokane passes through the site, separating Kilcarren and Firville. From this road two vegetated tracks extend approximately 150m into the bog, one into the Kilcarren side of the site and the other into the Firville side. There are no buildings or facilities for the public on the site.

Legal Status

Ownership

40 ha (8%) of Kilcarren Bog is owned by the Land Commission. The remainder of Kilcarren is in multiple private ownership. On Firville Bog, a valuer assessed the site on behalf of Dúchas in 1994 and Dúchas has since purchased a number of holdings. Dúchas now owns 18.84 ha of the high bog on Firville and a further 140 of 152 shares in the Kilgask townland commonage on the north of Firville. Certain conditions were attached to the purchase of these areas including retention of two rights of way onto the properties. The remainder of the Firville site is in private ownership. A large portion of the Sluggary Pool wetland has recently been purchased by Dúchas. A total of seventeen individual private landowners are currently recorded on Dúchas files for the whole site. See Map 6; Ownership.

Designations of the Site

candidate Special Area of Conservation	Site Code: IE0000647
proposed Natural Heritage Area	Site Code: 647

Past Status and Designation of the Site

This cSAC encompasses two former Areas of Scientific Interest; Kilcarren Bog and Firville Bog.

Management Infrastructure

Individuals and Organisations Involved

Landowners	The cSAC is owned by Dúchas, the Land Commission, and multiple private owners.
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 the by local Conservation Ranger, with input from other staff as necessary (see Appendix VII for further details of NPW regional staff).

Physical Features

Climate

No meteorological measurements have been made on the site. Using data from nearby weather stations (Lorrha and Birr), Kelly, Doak & Dromey (1995) summarise climatic information for the 1951 - 1980 period as follows;

Rainfall;	855 mm/yr
Actual Evapotranspiration;	446.5 mm/yr
Potential Recharge;	408.5 mm/yr
Raindays > 0.2 mm (annual 1951 - 1980);	207 days
Wetdays > 1 mm at Portumna (annual 1960 - 1984);	150 days

The following table gives the mean values for the given variables measured at Birr Meteorological Station (Grid reference: N074044) for the period 1990-1998.

Year	Temperature (°C)	Total rainfall (mm)	Total sunshine (hrs)	Mean wind speed (knots)
1990	10.1	845.1	1222.0	6.5
1991	9.7	801.0	1073.0	5.9
1992	9.8	820.3	1012.8	6.0
1993	9.3	867.6	932.0	6.2
1994	9.6	949.5	1049.7	7.2
1995	10.2	828.6	1321.4	6.0
1996	9.3	837.7	1174.5	5.6
1997	10.4	943.3	1173.3	5.5
1998	10.3	1003.1	1063.7	6.7
Average	9.9	877.4	1113.6	6.2

Geology & Geomorphology

Recent geological maps by Hitzman (Chevron /GSI, 1993 in Kelly *et al.*, 1995) show that the area is directly underlain by Waulsortian Carboniferous limestones (fossiliferous mudmounds). These limestones generally have a low permeability and are classed as poor aquifers. Depth to bedrock on-site is unknown, though it is thought to be quite close to the surface given the proximity of local outcropping.

Both Firville and Kilcarren are level bogs with shallow domes. Slopes are steepest towards the road, in the vicinity of old peat cuttings and towards the south-west of Kilcarren where a flush exits the bog. They were originally a single bog that developed in a basin and extended onto ridges to the north, forming a natural overlap of peat onto till. Initial topographical levelling (two transects) has been carried out on the site as part of the Raised Bog Restoration Project (the results of which are held in Dúchas Head Office).

Hydrology & Water Quality

The site lies mainly in a groundwater recharge zone and has a low density of marginal drains with little peat cutting. There is a natural infiltration lagg zone along sections of the northern boundary. There is artificial groundwater discharge in the north-centre, east and south-east of the site, where recently deepened drains intercept the water-table. For further details see Map 4 (Drains and Hydrochemistry) and also Kelly *et al.* (1995). The wetland to the north of the site has seasonally fluctuating water levels and may be classifiable as a turlough, subject to further investigation.

Soils and Soil Processes

The bog has formed as a result of peat accumulations over time. The subsoil is dominated by limestone till. Sections in drains on the cut-over areas indicate that the outer limits of the bog are underlain by poorly sorted clayey tills with relatively large sub-angular clasts composed of limestone. Till is close to the surface in some parts of the bog (Kelly *et al.*, 1995).

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 Kilcarren-Firville Bog cSAC

ANNEX I HABITAT TYPE	CORRESPONDING NHA CATEGORY	% AREA
*Active raised bog	Raised bog	70%
	Cutover bog	8%
	Drainage Ditches	>1%
	Lowland wet grassland	6%
	Lakes and ponds	2%
	Wet broadleaved semi-natural woodland	1%
	Scrub	2%
	Hedge (mapped and described with scrub)	.
	Improved grassland	9%
	Commercial forest	1%

Annex I Habitat:

Active raised bog (70% of total site area)

This occurs on the shallow domes of both Kilcarren and Firville. On Kilcarren the vegetation is dominated by Bog Asphodel (*Narthecium ossifragum*) flats with Ling Heather (*Calluna vulgaris*) hummocks and algal hollows. Some *Sphagnum cuspidatum* pools occur and the bog surface remains quite wet and soft. Other bryophytes recorded in these areas include *Sphagnum magellanicum*, *S. papillosum*, *S. imbricatum* and *S. capillifolium*, with bryophyte cover varying from 5% to 20%. In central areas of Kilcarren's north lobe and main bog dome, the bryophyte cover rises to 25% and there are lawns and pools with Bogbean (*Menyanthes trifoliata*), Sundew (*Drosera anglica*) and the scarce Brown-beaked Sedge (*Rhynchospora fusca*). A depression at the head of a flush on the main dome has 80-90% *Sphagnum* cover and abundant Bog Cotton (*Eriophorum angustifolium* and *E. vaginatum*). This is high quality raised bog habitat but is seen as secondary central vegetation development since it is in a subsidence hollow. Kilcarren was assigned a Bi status (the second highest quality category) during the survey to establish a network of bogs worthy of conservation (Cross, 1990).

The Firville dome has some quite wet areas with permanent pools containing Bogbean, Sundew, *Sphagnum cuspidatum* and some *S. auriculatum*. The wettest area is seen in the west of Firville and covers approximately 7.5 ha. Lawns and pools of *Sphagnum* cover approximately 70% of the area and the acrotelm layer is deep. This is regarded as another secondary central vegetation complex since it is located in a subsidence hollow. Another pool area in the south east has 40% *Sphagnum* cover and in the inter-pool areas *Cladonia portentosa* (a lichen) cover is high. Towards the east of Firville an area with 20% *S. cuspidatum* pools occur. The pools have an east-west orientation and can be as long as 50m. Most of the rest of the area of Firville is dominated by Bog Asphodel flats similar to those found on Kilcarren. Firville was assigned an A status (the highest quality category) during the survey to establish a network of bogs worthy of conservation (Cross, 1990), and the area of natural surface patterns on the bog is seen as a special feature of the site. See Appendix III for further details on the vegetation of the active raised bog.

Other Habitats

Cutover bog

Recently cut areas have much bare peat with Bog Cotton (*Eriophorum angustifolium*), Deer Grass (*Trichophorum caespitosum*), Purple Moor-grass (*Molinia caerulea*) and Ling Heather colonising. Various successional stages can be seen throughout the site with Soft Rush (*Juncus effusus*), Bog Myrtle (*Myrica gale*), Gorse (*Ulex europaeus*) and Birch (*Betula pubescens*) seedlings common.

Drainage Ditches

The vegetation of drains is dictated by water chemistry. In deeper marginal drains, exposure of till and iron staining is common and species include Marsh Cinquefoil (*Potentilla palustris*), Water Mint (*Mentha aquatica*), Bulrush (*Typha latifolia*), Reed (*Phragmites australis*), Common Duckweed (*Lemna minor*) and Pondweed (*Potamogeton polygonifolius*, *P. berchtoldii*). Drains with more acidic conditions have Bogbean, Bog Cotton and *Sphagnum* spp. See Map 4; Drains and Hydrochemistry.

Lowland wet grassland

This occurs on some areas of marginal cutover bog, probably due to desiccation and mineralization of the peat. Purple Moor-grass, Bent-grass (*Agrostis* spp.), Black Bog Rush (*Schoenus nigricans*), Devil's Bit Scabious (*Succisa pratensis*) and Tormentil (*Potentilla erecta*) are abundant. Enclosed fields where grassland improvement has not occurred or has been unsuccessful also retain similar vegetation, but with Rushes (*Juncus effusus*, *J. articulatus*) and grasses such as Wavy Hair Grass (*Deschampsia flexuosa*) and Crested Dog's-tail (*Cynosurus cristatus*) more dominant.

Land to the east and south of Sluggary Pool, marked liable to floods on the 1910 Ordnance Survey Map, has lowland wet grassland vegetation. Numerous drains cut through the area, more than are shown on the 1910 map. Though water levels are currently high in these drains, there appears to be little flow. The vegetation is largely dominated by Purple Moor-grass with abundant Rushes (*Juncus articulatus*, *J. conglomeratus*, *J. effusus*) and some Bent Grass and Yorkshire Fog (*Holcus lanatus*). The substrate is largely quite solid. Some wet and quaking depressions occur, particularly in the north-east of the area. Here Marsh Cinquefoil, Water Mint, Ribwort Plantain (*Plantago lanceolata*) and other herbaceous species occur. These depressions seem to be associated with infilling old drains. Adjacent to the road the water is deeper and there are stands of Reeds and Alder (*Alnus glutinosa*).

Lakes and ponds

An area of open water, Sluggary Pool, is found in the north of the site. The water level varies considerably between winter and summer, with the level at the time of authors' field visit (winter 1996) similar to the boundary of open water marked on the Ordnance Survey 1910 six inch map. Emergent patches of scrub indicate that the level drops by at least 0.5 m. The area marked as lake on Map 2 corresponds to the area of open water at the time of the authors' field visit. The lake is populated by wildfowl in winter. The Sluggary Pool may be a true turlough, but further studies are required to confirm this.

Wet, broadleaved semi-natural woodland

Downy Birch (*Betula pubescens*) dominated woodland in the north of the site adjoining the commercial plantation and in the west of Kilcarren would appear to be the result of succession on cut-over bog. Willows (*Salix* spp.), Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*), Oak (*Quercus petraea*), Elder (*Sambucus nigra*) and Holly (*Ilex aquifolium*) also occur in the understorey. The ground flora is predominantly Purple Moor-grass, Ling Heather, Gorse, Bramble (*Rubus fruticosus*) and Bracken (*Pteridium aquilinum*), with occasional Herb-robert (*Geranium robertianum*), Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*).

Hedge/Scrub

Field boundaries and the roadside verges have thick hedges with Downy Birch, Hawthorn, Holly, Brambles, Ivy, Gorse and Bracken. Stands of Gorse and Bracken are present around much of the bog margin and on some areas of cut-over. Hedge and scrub are not shown on the habitat map unless a substantial area is covered.

Improved grassland

Areas of former bog have been reclaimed and converted to productive grassland, with a dominance of Perennial Rye Grass (*Lolium perenne*) and White Clover (*Trifolium repens*), indicating that re-seeding has taken place. Similar grasslands on mineral soil are included in the site around the infiltration lagg in the north, and adjacent to the Sluggary Pool wetland area to the north-east.

Commercial forest Mature stands of Scot's Pine (*Pinus sylvestris*) and Sitka Spruce (*Picea sitchensis*) on either side of the road in the north of the site would appear to have been planted. The ground flora is predominantly Purple Moor-grass, Ling Heather, Gorse, Bramble and Bracken. An adjoining area of cut-over bog in Kilcarren has recently (within the past ten years) been planted with Lodgepole Pine (*Pinus contorta*) and Sitka Spruce.

Notable Flora:

Alder Buckthorn (*Frangula alnus*) is found at the exit point of a flush on Kilcarren. This small tree of rocky and boggy places is listed as Rare in the Irish Red Data Book for vascular plants (Curtis and McGough, 1988).

Both Kilcarren and Firville Bogs have been classified as Midland Raised Bogs and a number of species found here are notable as indicators of the east/west gradation in vegetation types amongst raised bogs. These include; the mosses *Sphagnum imbricatum*, *S. fuscum*, *S. magellanicum*, and *S. auriculatum*, Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccus*) (Kelly *et al.*, 1995).

Fauna:

Birds

Greenland White-fronted Geese (*Anser albifrons flavirostris*), a species listed in Annex I of the Birds Directive use the Sluggary Pool area during the winter. Other wintering wildfowl using this area include Whooper Swan (*Cygnus cygnus*) (also listed in Annex I of the Birds Directive), Mute Swan (*Cygnus olor*), Wigeon (*Anas penelope*), Teal (*Anas crecca*), Shoveler (*Anas clypeata*), Pintail (*Anas acuta*), Tufted Duck (*Aythya fuligula*) and Mallard (*Anas platyrhynchos*).

Snipe (*Gallinago gallinago*) are known to breed here and relative population censuses have been taken on a monthly basis by local Dúchas staff using transect counts across the high bog. Red Grouse (*Lagopus lagopus*) are also present on the site

A Hen Harrier (*Circus cyaneus*), another species listed under Annex I of the E.U. Birds Directive, was noted on the site and Barn Owl (*Tyto alba*) has also been recorded.

Mammals

Irish Hare (*Lepus timidus hibernicus*), a species listed in the Irish Red Data Book as Internationally Important, are found on the bog. Red Squirrels (*Sciurus vulgaris*) have been recorded in the pine plantation and Irish Stoat (*Martes erminea*) also occur in the site. Fallow Deer (*Dama dama*) may occasionally use marginal areas in the site for feeding or shelter.

Cultural Features

Land use and impacts on the site

Peat extraction

The present boundaries of peat are quite close to those shown on the Ordnance Survey 1910 six inch map, indicating that little recent peat extraction has occurred. However Kelly *et al.* (1995) state that 44% of the original Kilcarren dome and 40% of the original Firville dome has been cut away. Some small areas of active peat cutting are found on Kilcarren Bog, the largest being the one adjacent to the main road that bisects this site. The same study states that approximately 818 m (10.2%) of the Kilcarren margin is actively cut. The marginal drains in these areas are deep and wide and the facebanks up to 3 m tall. Some of the turf can be seen laid out adjacent to active cutting sites. On Firville there has been no active cutting since the 1970s. The relatively low level of active peat cutting throughout this site is seen as one of its most notable features, with 335 m (4.2%) of semi-intact edge on Kilcarren and 402 m (5.5%) of intact margin on Firville (also from Kelly *et al.*, 1995).

Drainage

Only one new drain has been excavated in the site since the 1970s; a short section of drain at the north of Kilcarren. Deepening/widening of old drains occurs in the site, primarily in marginal areas in connection with agricultural improvement. This is particularly noticeable at the west of the north lobe of Firville, and at the east of the north lobe of Kilcarren. There is slumping and cracking of the high bog surface towards these drains in places. Drains run on either side of the L113 Birr to Borrisokane road that passes through the site. Initial results from a topographic survey on the bog indicate that some depressions in the bog surface may be the result of past excavation of drains to mark townland boundaries. These are not all visible on the surface but may exist as subsurface drainage channels.

Agricultural improvement

Agricultural improvement including enclosure and enlargement of fields is ongoing around the site. On Firville, a comparative study of aerial photographs has shown that areas to the north-west, mid-north, west and east of the north lobe, as well as areas along the south-east and in the south-west corner, have been incorporated as agricultural land. Much reclamation has also occurred in the north and south-west of Kilcarren Bog, accompanied by the removal of field boundaries.

Burning

The site has suffered from regular burning episodes in recent years and the vegetation reflects this. Areas with a high proportion of bare peat or Bog Asphodel-dominated vegetation are found, such as west of the flush in the south of Kilcarren. In areas with active peat cutting, fires may be set to clear the facebanks of scrub. Burning incidents are likely to be accidental, or as a result of fire spreading from nearby scrub burning.

Grazing

Stock (predominantly cattle) are grazed on enclosed land around the margins of the site. In some areas, such as a small section along the north of Kilcarren and an area at the south east of Firville, stock can gain access to the cut-over and high bog. Where this occurs the peat is badly poached, to the extent that the ground is very rough and surface water is lodging in hollows. The placing of temporary electric fences across tracts of bog would seem to indicate that allowing stock access is deliberate in areas.

Fertilisation	Some grasslands are fertilised by spreading slurry and/or artificial fertiliser. At present any slurry being spread is thought to be from local farms and not imported from pig units located elsewhere.
Silage making	Silage crops are taken from some of the fields of improved grassland in the site.
Conservation management	The site is one of the bogs nominated for work under the Raised Bog Restoration Project run under the auspices of the National Parks and Wildlife division of Dúchas, and part-funded by the E.U. (Cohesion Fund). A small amount of drain blocking and restoration of the facebank has been carried out on the Dúchas-owned land on Firville. Further work will be carried out. The bog is to undergo survey by topographic levelling, as well as a drains/facebank survey.
Dumping	There is evidence of extensive dumping of household rubbish along the main road through the site. Recent efforts to prevent this have included the placing of signs by the County Council, removal of existing piles of rubbish and patrolling by the local Conservation Ranger.
Forest management	Some timber has been removed from the mature plantations of exotic tree species adjacent to the road in the north of the site. This seems to be primarily removal of windblown trees. Some recent planting (within the past decade) of commercial forestry has also occurred on cut-over in the north of Kilcarren.
Hunting	Occasional shooting occurs on the high bog; Snipe is the main quarry species for tourist hunters. Shooting is thought to occur on quite a regular basis in hunting season, to the point where some disturbance of bird populations may be taking place. Shooting has also occurred in winter in the Sluggary Pool wetland, with wildfowl the main target. However, it is Dúchas policy that no sport hunting occurs on Dúchas owned land.

Land use adjacent to the site

Grazing/Fertilisation	Stock, predominantly cattle, are grazed on surrounding agricultural land. Grasslands around the site are fertilised, primarily by spreading slurry.
Agricultural improvement	Many field boundaries are being removed on existing agricultural land around the site as part of general agricultural improvements. Some drains along field boundaries have been infilled, others have been enlarged and deepened.
Silage making	Silage crops are taken from some of the fields of improved grassland around the site. This has become a widespread land use practice in the area in recent years.
Drainage	Surrounding agricultural land is drained. A drain maintained by the Office of Public Works (channel C1/2/2 of the Carrigahorig Catchment Drainage Scheme) forms the southern boundary to part of Firville and continues to the south of the boundary of Kilcarren, serving as a boundary to the proposed inclusion.
Protected areas	A number of other raised bogs, all proposed Natural Heritage Areas, are located within a short distance of this site. Arragh More Bog (site code 640) is the closest, being located within 1 km of the site boundary. Ballyduff/Clonfinane (641, also a cSAC), Lorrha Bog (1684), Redwood Bog (654), Killeen Bog (648), Scohaboy Bog (937) and Fiagh Bog (932) are all in north County Tipperary and within 10 km of the site.

Past human use

Hand cutting of peat occurred in the past, and accounts for most of the cutting away of the original dome.

Recorded Monuments and Other Features

A Recorded Monument protected under the Sites and Monuments (Amendment) Act 1994 is found near the southern boundary of the site.

Recorded Monuments Found on Site from:

Recorded Monuments of County Tipperary 1995. Office of Public Works).

MONUMENT NO.	NAT. GRID	TOWNLAND	CLASSIFICATION
Ti007 no.68	19383 20083	Ballyhaugh	Fulacht fiadh

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.

Both Kilcarren and Firville bogs exhibit a good variety of central vegetation complexes, and the presence of infiltration lagg along parts of the northern edge of the site is noteworthy.

Peat cutting occurs at a relatively low intensity on Kilcarren, where it is estimated that 56% of the bog has survived since the 1840s. There is no active cutting on Firville and it is estimated that 60% of the bog remains since the 1840s.

Both bogs have had surface drains cut some of which have infilled naturally. However, active blocking will be necessary to stop water flow in some drains. Blocking of surface drains, in terms of access and simplicity, will be relatively easy. However, this takes no account of the difficulties of establishing management control.

Infiltration lagg can be restored by blocking drains to raise the water table. However, this may impact on adjacent land.

OBJECTIVES, STRATEGIES AND ZONING

Conservation Objectives

The nature conservation objectives for this site are:

- Objective 1:** To maintain and enhance where possible the area of active raised bog (approx. 70% of the site).
- Objective 2:** To restore areas of infiltration lagg.
- Objective 3:** To maintain and where possible, enhance the ecological condition of other habitats: cutover bog (8%), lake system (2%), lowland wet grassland (6%), broadleaved woodland and scrub (3%).
- Objective 4:** To maintain and where possible increase the populations of Annexed and other notable species particularly Greenland White-fronted Goose, Whooper Swan, Red Grouse and Alder Buckthorn.
- Objective 5:** To provide infrastructure for public access.
- Objective 6:** To initiate and continue effective liaison 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.

- **Peat extraction**
- **Drainage**
- **Succession**
- **Burning**
- **Fertilisation**
- **Land reclamation**
- **Afforestation**
- **Grazing**
- **Hunting**
- **Greenland White-fronted goose habitat**
- **Dumping**
- **Roads**
- **Lagg zone**
- **Land acquisition**

Peat extraction

Small scale extraction of peat by machine continues to occur on Kilcarren, with an estimated 818 m (10.2%) of the bog margin actively cut (Kelly *et al.*, 1995). This causes deterioration through direct destruction and also through an increase in the overall rate of water loss from the whole bog system. Peat extraction is unsustainable in the context of maintaining the active raised bog habitat.

Kilcarren-Firville Bog cSAC is notable for the current absence of large scale peat extraction. For this reason, and for the long-term conservation of the active raised bog, all peat cutting should cease.

Drainage

Both bog domes contain areas of quite wet and quaking vegetation but the long-term trend seems to be that the bogs are drying out. This is particularly the case on Kilcarren where there has been succession from open water bodies to wet, soft areas in flush type vegetation.

High bog drains on Firville are mostly non-functional. However, though the drains are infilling, they still carry some water and will to some extent contribute to the overall drying out of the bog. There are 3298.8 m of functional drains on the Kilcarren part of the site (Kelly *et al.*, 1995).

Marginal drains are frequently quite deep and wide, slumping and cracking of the adjacent bog surface can be seen in places. Along the northern edge of the site, marginal drains have altered the hydrology and vegetation of the infiltration lagg, one of the noteworthy features of this site. Upwelling of groundwater in the vicinity of the road between Kilcarren and Firville indicates that this area may have had a natural groundwater-fed lagg zone, but drainage and road construction have altered the hydrology of the bog margin. There may be old drains with subsurface water flow along the line of townland boundaries. If these exist, they are contributing to drying out of the high bog.

The Office of Public Works (OPW) maintains the main drain, forming the boundary to the south of the site, by dredging.

High bog drainage channels and drains on cut-over to the south need to be blocked. If sub-surface drains along townland boundaries exist, these need to be blocked. However, the presence of central vegetation complexes is one of the reasons for selection of this site as worthy of conservation. Some of the central vegetation complexes are secondary, being located in subsidence hollows. Where this is the case, caution is required, as blocking of drains in the catchment area of these hollows could result in long term infilling of these hollows, causing overall drying out of the vegetation. For this reason, all drain blocking on high bog should await the results of detailed topographic levelling, which is due to be carried out as part of the Raised Bog Restoration Project.

The blocking of drains and creating of dams to maintain and restore raised bog can impact on surrounding agricultural land through a rise in the water table level on bog margins, particularly if the land is reclaimed from areas of former peatland. These areas can be predicted when full topographic survey has been carried out. Works on the drainage systems of the bog will thus have to await purchase or agreement of landowners, and will need adequate monitoring to quantify effects.

As drainage works are Notifiable Actions, the OPW must consult with Dúchas prior to such works being carried out.

Succession

On areas of abandoned cut-over, and where conditions are dry enough, there has been a succession to scrub and woodland. This is currently localised. Areas of wet, broadleaved semi-natural woodland can be seen as the result of succession and are valuable features in their own right, but represent a loss of bogland habitat. Any large scale succession on cut-over bog would thus be undesirable. Works such as drain blocking could halt succession to scrub through flooding.

Scrub along part of the northern boundary of the Kilgask commonage cannot be cut because of a condition of sale to Dúchas.

Burning

Fires, whether accidental or deliberate, are causing localised changes to vegetation and hydrology.

Fertilisation

Where fertilisation occurs on areas of former peatland, run-off could affect water quality in the bog hydrological system, particularly around bog margins in potential lagg areas. The importation of slurry from intensive pig production units practised elsewhere leads to excessive nutrient input and would not be acceptable in proximity to this bog. Fertilisation also leads to the possibility of airborne nutrient enrichment of the bog. Conversion to improved grassland through fertilisation also represents an overall loss of semi-natural habitat and species diversity.

Land reclamation

Areas around the bog margin are being drained and converted to improved grassland. Since these areas are former peatlands they are hydrologically connected to the bog system. The drainage affects bog margin hydrology, and run-off may occur from the application of fertilisers to the grassland. The reclamation also represents an overall loss in the area of bogland habitat.

Afforestation

Some commercial plantations have been established in the northern part of the site. Any afforestation of bogland habitats is undesirable, as associated drainage impacts on the hydrology of the system. Subsequent harvesting could cause disturbance and erosion.

Grazing

Livestock (cattle) are gaining access to cut-over and high bog in a number of areas, particularly the north part of Kilcarren high bog and the south-east part of Firville. The resultant trampling (poaching) is causing localised but severe damage to the bog surface. Dung from these animals causes enrichment of the peat and will alter the vegetation composition. Continued grazing by domestic stock on grasslands is compatible with site conservation if stock are not allowed access to the cut-over or high bog. Except in the Sluggary Pool area, the level of grazing is not seen as significant, though the input of lime, fertilisers and herbicides will need to be prevented.

Hunting

Shooting may be at a level that causes some disturbance to birdlife both on the high bog and in the Sluggary Pool wetland.

Greenland White-fronted Goose habitat

Greenland White-fronts prefer open territory as feeding grounds, Some potential areas around the Sluggary Pool are vegetated with scrub and hedgerow, which reduces the potential of such areas as feeding grounds. In order to increase suitable habitat for Greenland White-fronted Geese on grasslands, Dúchas can remove some of the encroaching scrub.

Dumping

Disposal of household refuse along the roadside verge is unsightly and may cause localized nutrient enrichment, and also increase in the numbers of scavenger species (e.g. rats, crows) in the area. The amount of refuse along the road is quite high at present.

Roads

The road and its associated drainage ditches may be causing some subsidence in the adjacent domes of both Kilcarren and Firville. Initial topographic levelling shows a gradual slope towards the road on both sides. Any deepening or widening of roadside drains would certainly further affect bog hydrology.

Lagg zone

The presence of bog margin that has not been cut over is a particularly noteworthy feature in this site, and leads to the possibility of infiltration lagg restoration. Along the northern section of the bog, where the high bog intercepts a mineral ridge, this could be achieved through blocking of marginal drains to bring up the water level. This will affect a minimal area of agricultural land to the north, so an initial baseline survey of hydrological conditions is required, followed by close monitoring of changes during and after restoration work. Long term management agreements with relevant landowners are also needed.

The presence of up-welling groundwater near the road at the north of Kilcarren leads to the possibility of lagg restoration here also. However, further research would be needed to establish possible results and effects.

Land acquisition

The conservation requirements of the bog are such that the main forms of profitable land use (peat extraction and agricultural reclamation) are incompatible. Outright purchase of the bog by Dúchas seems the most appropriate solution. Long term management agreements and Rural Environment Protection Scheme (REPS) plans can serve as means of implementing conservation measures where lands are not purchased. Where grasslands are affected as a result of drain blocking work, these lands should either be purchased by Dúchas or the subject of long term management agreements.

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 Annexed 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 Annexed 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 is a notifiable action for raised bogs.

Specific Strategies

Objective 1.

To maintain and enhance where possible, the area of active raised bog (approx. 70% of the site)

Strategies:

- 1.1. Purchase land** NPW is seeking to purchase turbarry rights and, where possible, fee simple ownership on raised bogs. €3451.41 per ha (£1100 per acre) for turbarry rights and €4078.95 per ha (£1300 per acre) for fee simple turbarry rights apply. Once lands or rights have been acquired, all peat cutting and other potentially damaging operations will be immediately discontinued.
- 1.2. Minimise threat from peat extraction and drainage** No further commercial peat extraction should take place within the site. All other cutting should be phased out. NPW is seeking to purchase turbarry rights (see above strategy). Turf cutters who do not wish to sell their land or rights may cut for domestic use only until 2008, at which time all cutting must cease. Cutting requires a permit from the Minister. Sausage machines may not be used on the bog, 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.

No further drainage should occur and no deepening or widening of existing drains should be undertaken. Drains on high bog and cutover bog should not be maintained, but roadside drains and the arterial drainage channel may need periodic maintenance.
- 1.3. Carry out topographic survey of site** A complete topographic survey of the site will be carried out under the Raised Bog Restoration Project. The survey will produce an analysis of slopes on the bog surface. This will be necessary in order to make informed decisions on the appropriate conservation works for some areas of the site.
- 1.4. Commence monitoring of the high bog** A monitoring system for water levels on the high bog and on bog margins, such as has been used on Raheenmore Bog and Clara Bog in Co. Offaly, should be in place prior to commencement of conservation works. This can function as a baseline survey and monitoring system for the effect of conservation works both on the bog and on agricultural land on bog margins.
- 1.5. Block drains on high bog** After acquisition, topographic levelling and commencement of monitoring, areas where drain blocking is advisable will be selected. Drains will be blocked using peat dams, and can be hand built if areas are too fragile for machine access. Methods of building peat dams tested as outlined by Streefkerk and Douglas (1994) have been successful and can be used here. A check will be carried out along townland boundaries for subsurface drainage. Where this exists, it may need blocking. Following all drain blocking, maintenance of dams will be needed.

- 1.6. Block drains on cut-over and grasslands** After topographic levelling and commencement of monitoring, areas where drain blocking is advisable will be selected. Blocking drains on some areas of cutover may raise the water levels in some nearby grasslands. These areas can be identified following the results of the topographic survey. Where flooding of agricultural land will occur, work will await the purchase of these lands or commencement of management agreements. Drains will be blocked using peat dams. Where deep and wide drains are being blocked, some synthetic material may be needed to reinforce peat dams. Following all drain blocking, maintenance of dams will be needed.
- 1.7. Non-intervention** In areas of high bog where there are no drains, or in areas of secondary central vegetation where drain blocking would cause deterioration, no active management is needed to maintain the active raised bog habitat. Patrols by the local Ranger and continuation of monitoring systems will show any change in conditions, which can be assessed accordingly.
- 1.8. Prevent stock access to high bog** Where stock can gain access to high bog or marginal areas, such as at the north part of Kilcarren high bog and the south-east part of Firville, action should be taken to prevent this. The removal of culverts may be sufficient in some areas but the possibility of dams in drains acting as culverts should also be considered. The second and more effective solution is to erect stockproof fences on the agricultural land boundary.
- 1.9. Minimise threat from burning, dumping, hunting** Site visits by the local Ranger will continue, to discourage dumping and illegal hunting on NPW land, and to monitor for outbreak of fires. However, this must be done with due reference to other tasks.
- Public information and education may be the most effective long term deterrent to such activities as fire setting and dumping. NPW staff, including the local Ranger, will continue to liaise with members of the public and particularly the local community on issues relating to the conservation of this site. As has been done before, an initial clean-up programme is needed to remove rubbish from along the main road. The absence of rubbish will then help to discourage further dumping. The County Council should be contacted regarding prevention and clean-up. "No Dumping" signs could be erected at strategic points along the road through the bog and those already present could be improved.

Objective 2.

To restore areas of infiltration lagg

Strategies:

- 2.1. Commence monitoring of bog margin hydrology at the north of Firville** A monitoring system for water levels in the bog margin, lagg area and adjacent agricultural land should be in place prior to commencement of conservation works. This can function as a baseline survey and monitoring system for the effect of works on the lagg and grasslands. Methods used should be the same as for monitoring of hydrology on the high bog (see strategy 1.4).
- 2.2. Block marginal drains at the north of Firville** After commencement of monitoring, marginal drains should be blocked to restore the infiltration lagg. Blocking of these drains could cause some re-wetting in adjacent areas of agricultural land, and so will also have to await land acquisition or commencement of management agreements. The drains are quite deep, and may necessitate the use of synthetic materials as well as peat, to make robust dams.

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| 2.3. Monitor lagg vegetation at the north of Firville | A monitoring system to record changes in lagg vegetation following restoration work should be implemented. This could be in the form of fixed location transects from high bog to mineral soil. |
| 2.4. Initiate research on lagg restoration along northern boundary of Kilcarren | Research should be initiated on the possibility of further lagg regeneration along the north-centre of the site, where up-welling of groundwater has been noted.. The exact nature of the research necessary will be determined. This could include using modelling to predict the result of raising water levels in the area. |

Objective 3.

To maintain and where possible, enhance the ecological condition of other habitats: cutover bog (8%), lake system (2%), lowland wet grassland (6%), broadleaved woodland and scrub (3%).

Strategies:

- | | |
|--|--|
| 3.1. Flood cut-over at north-east of Kilcarren | <p>After topographic survey, initiation of monitoring schemes, and land acquisition or management agreement, a decision can be made as to how to manage this area. A number of factors need to be taken into account:</p> <ul style="list-style-type: none"> • The presence of commercial planting which would have to be removed or flooded. The mature Pine present could be removed as a commercial crop but the new plantation would not have any commercial value. • Public access may be a consideration in this area. • The results of research on lagg restoration in this area (see strategy 2.4). If the water table is sufficiently high, blocking of drains may be sufficient to flood this area. Otherwise, a marginal dam such as has been constructed at Raheenmore Bog could be constructed to create a flooded area. Due to the proximity of this area to public access, adequate signage and interpretation will be needed throughout restoration work. |
| 3.2. Manage grasslands by grazing or cutting | Following blocking of drains around the margins of the bog, the agricultural productivity of some areas of marginal grassland and cut-over may be diminished due to flooding. Where flooding is not significant, land could be managed by low intensity grazing or for hay production. Due to the potential negative impact on water quality in the bog hydrological system, all inputs of lime, fertiliser, slurry, farmyard manure and herbicides should be avoided. To allow ground-nesting birds to complete their breeding cycle and tall herbs to seed, hay crops should ideally be cut after August 15th. On non-Dúchas owned land, liaison with landowners is required to agree to such management. |
| 3.3. Maintain permanent open water at Sluggary Pool by non-intervention | No active management is needed on areas permanently underwater or on some areas of degraded raised bog east of the Sluggary Pool. Management will involve prevention of damaging activities as described in other strategies. |
| 3.4. Block drains on wet grasslands at Sluggary Pool | After topographic levelling, areas where drain blocking is advisable can be selected. Drains will be blocked with peat dams, either by machine or hand as appropriate. |

- 3.5. Survey and monitor Sluggary Pool wetland** A full survey will be conducted on the Sluggary Pool area, to investigate more fully the ecological value of the area. Pending the results of this survey, the area may be classified as a turlough. Subsequently, a monitoring regime can be planned if deemed appropriate.
- 3.6. Maintain wetland area by low intensity grazing management** Areas of lowland wet grassland should be grazed at a stocking density similar to that occurring at the moment. No fertilisation or application of lime or herbicides should occur. Cattle are preferable to sheep, and the use of only cattle up to one and a half years old would minimise damage by poaching to the wet grassland. In the future, conversion to management by meadowing may be considered.
- 3.7. Remove scrub and tracts of unpalatable grasses from around Sluggary Pool** Certain areas of woody scrub will be removed from the Sluggary Pool area, to produce a more open landscape suitable for wetland birds. Where access is possible, invasive scrub will be cut during the winter season. Areas dominated by unpalatable species of plant such as Rushes and Purple Moor-grass will be mowed. Such mowing should be left until after the birds' nesting season, preferably until August/September. One initial mowing can be followed by monitoring, and further mowing can be recommended if necessary. This work will preferably occur prior to drain blocking work in the Sluggary Pool area.
- 3.8. Maintain woodland and scrub by non-intervention** Some areas of woodland and scrub can be retained as features adding habitat diversity to the site. No intervention is foreseen as these woodlands are the result of succession, and there is sufficient area undergoing succession to maintain various stages of the woodland cycle. Drain blocking work in connection with maintenance of the active raised bog habitat may impact on these areas in the long term by raising the water table, but this is acceptable.
- 3.9. Remove exotic tree species** Invasion by exotics is minimal in these woodlands, but some Sitka Spruce and Sycamore seedlings are found. If possible, these should be removed during the period of this plan, and the area should be monitored by the Ranger to note if any regeneration is occurring.

Objective 4.

To maintain and where possible, increase the populations of Annexed and other notable species particularly Greenland White-fronted Goose, Whooper Swan, Red Grouse and Alder Buckthorn.

Strategies:

- 4.1. Maintain habitats** Strategies described above that are designed to maintain Annexed and other habitats within the site will safeguard the important species occurring within it. NPW will therefore seek to maintain or increase the populations of important species through the implementation of these strategies, in addition to those that are applicable to the management of the site as a whole.
- 4.2. Create suitable habitat for Greenland White-fronted Goose** NPW will remove some of the scrub covering the vicinity of Sluggary Pool in order to encourage Greenland White-fronted Geese to forage in this area.

Objective 5.

To provide infrastructure for public access

Strategies:

- 5.1. Create parking area** A small parking area could be created on the eastern side of the road at the north edge of Firville Bog. This area is currently afforested with mature Pine. The Pine crop should be removed. The car park should initially be of a temporary nature, pending full implementation of strategies for hydrological management. If, within the period of the plan, all works are completed, a permanent public car park could be created with picnic benches and an interpretative board (see below).
- 5.2. Erect approach and interpretation signs** Approach signs alerting passers-by to the presence of a protected area should be erected on the main road on either side of the site. Interpretation boards giving some information on the value of the site and the nature of maintenance and restoration work being undertaken should be erected in the new car parking area.

Objective 6.

To initiate and continue effective liaison with landowners/managers and relevant interest groups

Strategies:

- 6.1. Liaise with interested parties** NPW 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.
- 6.2. Monitor development applications** NPW 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.
- 6.3. Liaise with REPS planners** REPS planners are required to consult with NPW 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: A Natural Zone

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

1A: NON-INTERVENTION AREAS

1A1: Active raised bog

NPW will purchase land and/or turbary rights, should they become available (strategy 1.1). There is currently no active peat cutting in this zone, though it adjoins areas of cut-over in places. No peat extraction or drainage should occur (strategy 1.2). Commence monitoring programmes; topographic survey of site (strategy 1.3), monitoring of bog hydrology (strategy 1.4), and monitoring of active raised bog (general strategy – scientific monitoring). Maintain by non-intervention (strategy 1.7). Erect stockproof fences on bog margins where required (strategy 1.8).

1A2: Active raised bog central vegetation complexes

Commence monitoring programmes; topographic survey of site (strategy 1.3), monitoring of bog hydrology (strategy 1.4), and monitoring of active raised bog (general strategy – scientific monitoring). Following results of topographic survey, establish areas where drain blocking is inadvisable (due to threat to central vegetation) and set boundaries for catchment of these areas as boundaries of zone. Maintain by non-intervention (strategy 1.7), continue monitoring and site patrolling. Central vegetation complexes in which drain blocking is required will be merged into zone B1 (active raised bog with drains).

1A3: Woodland and scrub

Maintain selected areas of scrub and woodland by non-intervention (strategy 3.8). Initially some removal of exotics is needed (strategy 3.9), followed by monitoring of regeneration. Impacts on these areas from re-wetting due to hydrological management in and around the bog, is acceptable.

2A: MAINTENANCE AREAS WITH LIMITED INTERVENTION

2A1: Sluggary Pool

After topographic levelling, choose areas for drain blocking (strategy 3.4) and initiate monitoring (strategy 3.5). Areas permanently under water, or too wet to consider grazing management i.e. east of the by-road, can be managed by non-intervention (strategy 3.3), all other areas can be used for summer grazing of stock (strategy 3.6). Encroaching scrub and tracts of unpalatable grassland will be controlled (strategy 3.7).

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: Active raised bog with drains

This zone includes areas of active raised bog with drainage networks and isolated drains running through the bog. There is currently no active peat cutting in this zone, though it adjoins areas of cut-over in places. No peat extraction or drainage should occur (strategy 1.2). Commence monitoring programmes; topographic survey of site (strategy 1.3), monitoring of bog hydrology (strategy 1.4), and monitoring of high bog vegetation (general strategy – scientific monitoring). Following results of topographic survey, commence blocking of drains (strategy 1.5). When drains are blocked, maintain drains and manage by non-intervention (strategy 1.7). Monitoring strategies are to be continued and regular patrolling of the site is required (strategy 1.9, general strategy – site surveillance). The boundary between this zone and zone 1A2 (central vegetation complexes) can only be established following results of the topographic survey.

B2: Townland boundaries

This zone includes townland boundaries where subsurface drains may exist. Check for drainage. Where such exists, the drain should be included in zone B1 (active raised bog with drains) for possible blocking. If no drainage feature exists, the area can be merged into zone 1A1 (active raised bog).

B3: Firville Bog lagg restoration

Commence monitoring of bog margin hydrology (strategy 2.1) and lagg vegetation (strategy 2.3). Following completion of topographic survey and obtaining baseline information from monitoring programme, block marginal drains (strategy 2.2). Continue monitoring and site patrolling. Manage adjacent grasslands by grazing or cutting (strategy 3.2).

B4: North-central cut-over restoration

Initiate monitoring programmes; topographic levelling (strategy 1.3) and cut-over hydrological monitoring (strategy 1.4). Following this and land acquisition, decision-making can begin on the possibility of flooding the area (strategy 3.1) with due reference to results of the research on lagg restoration (strategy 2.4)

B5: Cut-over bog and reclaimed grasslands

Following results of topographic survey (strategy 1.3), areas of cut-over and grassland on which drain blocking can be carried out (strategy 1.6) are able to be selected. Where such blocking will flood agricultural land, work can only be carried out if the flood area is under NPW management. Prior to all work, monitoring programmes for bog margin hydrology (strategy 2.1) will be initiated. After drain blocking, monitoring will be continued. Rewetted bog margin grasslands can be used for low intensity grazing or for hay production (strategy 3.2).

Zone C: Intensive use Zone

Areas of low conservation value, managed for objectives other than nature conservation, but which are an important part of a nature conservation site (e.g. infrastructure).

C1: Road

Drains on either side of the public road should not be deepened or widened, due to the effect this would have on bog hydrology (strategy 2.1). Liaise with Tipperary Co. Council to ensure no road development that would negatively impact on the site takes place (strategy 6.1 and 6.2). Create car-parking area (strategy 5.1), and erect approach signs and interpretation boards (strategy 5.2), remove rubbish on either side of the road and erect “No Dumping” signs (strategy 1.9).

Zone D: Impact Zone

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

D1: Agricultural land

This is land outside the site that may be affected by works carried out on the infiltration lagg. The topographic survey (strategy 1.3) and monitoring systems for the lagg zone (strategies 2.1 and 2.3) will also be conducted on these areas to predict any effect. Where any effect is likely, purchase of lands or management agreements will be considered.

APPENDIX I: GLOSSARY

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

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

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

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.

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

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.

- 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.
- BASEFLOW** – The flow of water in a river or stream derived from groundwater or through-flow into the surface watercourse.
- BASIN** - A depressed area of the Earth's surface, in which sediments accumulate.
- BIODIVERSITY** – A general term used to describe all aspects of biological diversity, including: the number of species present in a given environment; the genetic diversity present within a species; the number of different ecosystems present within a given environment.
- BIOTIC FACTORS** – The influence of living components of the environment on organisms.
- 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.
- BREACH** - To make an opening, hole or incursion in.
- 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.
- 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.
- 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.
- COMMUNITY** - a well-defined assemblage of plants and/or animals, clearly distinguishable from other such assemblages.
- CONSERVATION STATUS** - The sum of the influences acting on a habitat and its typical species that may affect its long term distribution, structure and functions. Also refers to the long-term survival of its typical species within the European territory of the Member States.
- 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.

DELG - Department of Environment and Local Government

DENSE BRACKEN – An NPW habitat classification which refers to areas with 75% cover of Bracken (*Pteridium aquilinum*), a single branched fern with a characteristic small and bright green foliage dying to rich reds and russets in the Autumn.

DESICCATION - Drying out.

DEVELOPMENT PLANS - Local Authorities (Co. Councils & Corporations) are obliged under statute to produce a document which sets out the planned development of their areas for a given number of years. In the future Local Authorities will be asked to incorporate designated NHAs, SACs and SPAs classifications into their development plans.

DIVERSITY - see biodiversity.

DOMESTIC PURPOSES - Used in relation to the cutting of peat. Peat that is cut for domestic purposes is not for commercial sale and is cut at the rate of one year's supply for a household per year.

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 than 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.

ENCROACHMENT - The invasion of a species (usually plants) into areas previously uncolonised. This term is often used when an undesirable species advances at the expense of a desirable species or habitat.

ENVIRONMENT – The biological and physical conditions in which an organism lives.

EPA – Environmental Protection Agency

EROSION - The processes whereby the materials of the Earth's crust are dissolved, or worn away and simultaneously moved from one place to another by natural agencies which include weathering, solution, corrosion and transportation.

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

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.

EVAPOTRANSPIRATION - 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.

HEATH – An NPW habitat classification comprises of vegetation on relatively dry acidic mineral or peat soil usually dominated by Ericaceous shrubs, which include *Calluna vulgaris* (Heather), all Heathers (*Erica* spp.), *Vaccinium myrtillus* (Bilberry), *Empetrum nigrum* (Crowberry), *Arctostaphylos uva-ursea* (Bearberry), *Daboecia cantabrica* (St Dabioc’s Heath), or dwarf, cushion forming *Ulex* spp. These shrubs must form a minimum cover of 25% to fall into the heath category. This habitat is frequently found in mosaic with other upland habitats.

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.

INVERTEBRATES - Animals without backbones.

IUCN – World Conservation Union

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

LAKES AND PONDS - An NPW habitat classification describing enclosed bodies of fresh water, or semi-enclosed bays of larger bodies of fresh water. Only the open water body itself is included, so areas of standing with tall emergent vegetation are not included here but should be assigned to reedbeds and other swamps.

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

LEPIDOPTERA - Moths and butterflies.

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.

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

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 DELG 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.

MARGINAL VEGETATION - At or near the margin or border, often used to describe the vegetation at the edge of a lake or river.

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).

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.

NATIONAL PARKS & WILDLIFE (NPW) – the section of the Environment Infrastructure and Services division of the Department of Environment and Local Government with responsibility for nature conservation and implementation of Government conservation policy as enunciated by the Minister for the Environment and Local Government.

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

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

NATURALNESS - Refers to how much or little a site/habitat/species has been modified by mankind.

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.

NICHE – The functional position of an organism within its environment, i.e. where individuals of a species can survive grow and reproduce.

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.

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

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

NPW - National Parks and Wildlife

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.

OPEN SEASON – A specified period of time when a specified quarry species may be hunted.

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.

PERMEABILITY - The capacity of a rock to transmit fluid.

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.

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

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

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

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

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.

RARITY - Refers to how common or scarce a site/habitat/species is.

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*).

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.

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.

SCRAGH - a floating mat of vegetation.

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.

SEMI-NATURAL DRY GRASSLANDS (AND SCRUBLAND FACIES ON CALCAREOUS SUBSTRATES - IMPORTANT ORCHID SITES) - A priority habitat listed under the EU Habitats Directive dry to semi-dry calcareous grasslands of the Festuco-Brometea. This habitat in Ireland often supports rich Orchid flora.

SLUGGARA - A term used for swallow holes in some areas.

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 Ireland's 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).

SWALLOW HOLES - These are holes in a karstic landscape which allow water to drain from the surrounding land when groundwater levels are low, or conversely release water to the surrounding lands when the water table is high. They are often found in association with Turloughs. In some areas they are referred to as Sluggaras.

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

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

TERRESTRIAL - A term used to refer to living on land. The opposite of aquatic.

TERTIARY - Period in geological time stretching from 65 - 1.6 million years ago in the Cenozoic era.

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

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

TURBARY – Refers to the right to harvest turf.

VERTEBRATES - Animals with backbones.

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

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

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: 53
O.S. 6 inch (1: 10,560) map: TI 4 and TI 7

Databases :

- NHA database, NPW, Department of Environment and Local Government, 7 Ely Place, Dublin 2.
Natura 2000 database, NPW, Department of Environment and Local Government, 7 Ely Place, Dublin 2.
CORINE database (site code 800000487), NPW, Department of Environment and Local Government, 7 Ely Place, Dublin 2.
Rare plants database, , NPW, Department of Environment and Local Government, 7 Ely Place, Dublin 2.

Photographic Coverage:

- BKS, colour, Aerial photo No. 029 Flight Line 34, Date: 1993
Dúchas HQ Ely Place, Aerial photo No. 2344, Flight Line 43A. 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: DETAILED INFORMATION ON HABITATS AND VEGETATION

This Appendix contains further details regarding the vegetation found on the **active raised bog**.

An interesting feature is the recording of the Heath Spotted Orchid (*Dactylorhiza maculata*) throughout the active raised bog. Its presence is indicative of mineralization and may be related to the occurrence of a thin peat layer in places, particularly in the north of the site where the bog crosses a mineral ridge.

Around the edges of the bog domes some areas have a high percentage of bare peat with Carnation Sedge (*Carex panicea*), Bog Asphodel and low growing Ling Heather, it is likely that these areas have suffered from frequent burning. Elsewhere the bog surface is quite dry close to the facebank and Ling Heather growth is vigorous, with Deer Grass (*Trichophorum caespitosum*) and Bog Cotton (*Eriophorum angustifolium*). Common Reed (*Phragmites australis*) are invasive along parts of the northern edge of this habitat and abundant Heath Spotted Orchid has been recorded here.

The active raised bog habitat includes some areas of flush vegetation. A number of flushes are located in depressions on Kilcarren and appear to be interconnected. On the Ordnance Survey 1910 six inch map, open water bodies are shown where some of these flushes now occur. There are some wet, soft areas associated with these flushes which may be remnants of these water bodies. Alder Buckthorn (*Frangula alnus*), a Red Data Book species, occurs here. Numerous small flushes are found on Firville, the largest of which is dominated by Scot's Pine (*Pinus sylvestris*) with an understorey of Birch (*Betula* sp.). Crowberry (*Empetrum nigrum*) has been recorded from a flush on Firville. Predominant vegetation in the flushes is Purple Moor-grass (*Molinia caerulea*) and Ling Heather with Cranberry (*Vaccinium oxycoccus*), Frochans (*Vaccinium myrtillus*), Bog Rosemary (*Andromeda polifolia*), Cow-wheat (*Melampyrum pratense*) and bryophyte layers which can include *Polytrichum alpestre*, *P. commune* and *Aulacomnion palustre*.

More detailed descriptions of the vegetation of the above habitat is found in Kelly *et al.* (1995). A map showing the location of central vegetation complexes, one of the features used as a selection criteria for this site, is attached (see Map 3; Ecotopes).

APPENDIX IV: NOTIFIABLE ACTIONS

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

- Notifiable Action 2.3
- Notifiable Action 4.1
- Notifiable Action 5.1
- Notifiable Action 5.2
- Notifiable Action 6.2
- Notifiable Action 7.1

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.

<p><u>SECTION A</u></p> <p>Please note that the activities listed in <i>Section A overleaf</i> are required to be notified to the Minister for The Environment and Local Government and should not be undertaken before consent.</p>	<p><u>SECTION B</u></p> <p>Please note that the activities listed in <i>Section B overleaf</i> may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment and Local Government.</p>
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HABITAT TYPE 2.3

WET LOWLAND GRASSLANDS

<u>Section A</u>	<u>Section B</u>
<p>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</p> <p>grazing of livestock above a sustainable density (as defined in approved farm plans)/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>changing of traditional use from hay meadow (to either grazing or silage making), or from grazing to silage cutting</p> <p>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 (<i>Note; if you have been notified that your lands hold breeding corncrakes, or certain rare meadows, special provisions will apply</i>)</p> <p>burning of vegetation</p> <p>reclamation, infilling, ploughing or land drainage/ reseeded, planting of trees or any other species use of any pesticide or herbicide</p> <p>dumping, burning or storing any materials</p> <p>alteration of the banks, bed or low of watercourses</p> <p>operation of commercial recreation facilities (e.g. pony trekking)/introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>afforestation</p>

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.

<p><u>SECTION A</u></p> <p>Please note that the activities listed in <i>Section A overleaf</i> are required to be notified to the Minister for The Environment and Local Government and should not be undertaken before consent.</p>	<p><u>SECTION B</u></p> <p>Please note that the activities listed in <i>Section B overleaf</i> may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment and Local Government.</p>
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HABITAT TYPE 4.1

RAISED BOG, CUTAWAY BOG AND BOG WOODLAND

<u>Section A</u>	<u>Section B</u>
<p>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</p> <p>grazing of livestock/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>adding lime/adding fertiliser of any sort</p> <p>creation of new tracks or paths</p> <p>burning areas of vegetation reclamation, infilling, or ploughing /reseeding, planting of trees or any other species/cutting trees or removing timber</p> <p>drainage works on the bog or within the local water catchment area</p> <p>cutting turf or peat moss extraction</p> <p>use of any pesticide or herbicide, including sheep dip</p> <p>dumping, burning or storing any materials</p> <p>alteration of the banks, bed or flow of watercourses</p> <p>operation of commercial recreation facilities (e.g. botanical tours)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>afforestation</p> <p>erecting or operating a windfarm</p>

In a very limited number of cases it may be necessary for the Minister for The Environment 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.

<p><u>SECTION A</u></p> <p>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.</p>	<p><u>SECTION B</u></p> <p>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).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment and Local Government.</p>
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HABITAT TYPE 5.1

WOODLANDS

<u>Section A</u>	<u>Section B</u>
<p>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</p> <p>grazing by livestock</p> <p>adding lime</p> <p>adding fertiliser of any sort</p> <p>reclamation, infilling, ploughing or land drainage</p> <p>reseeding, planting of trees or any other species</p> <p>felling of trees, removal of timber</p> <p>removal of foliage, moss or other materials</p> <p>killing ivy</p> <p>use of any pesticide or herbicide</p> <p>dumping, burning or storing any materials</p> <p>alteration of the banks, bed or flow of watercourses</p> <p>operation of commercial recreation facilities (e.g. bird watching tours)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>any activity which may cause pollution of the woodland</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>felling trees or reafforestation</p>

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.

<p><u>SECTION A</u></p> <p>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.</p>	<p><u>SECTION B</u></p> <p>Please note that the activities listed in <i>Section B</i> overleaf may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment and Local Government.</p>
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HABITAT TYPE 5.2

SCRUB

<u>Section A</u>	<u>Section B</u>
<p>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</p> <p>grazing of livestock above a sustainable density (as defined in approved farm plans)/grazing by livestock treated within the previous week with a pesticide which leaves persistent residues in the dung</p> <p>supplementary feeding of stock (as defined in approved farm plans)</p> <p>adding lime /adding fertiliser of any sort</p> <p>reclaiming land covered by scrub; if scrub is cut it must be allowed to regrow</p> <p>reclamation, infilling, ploughing or land drainage</p> <p>reseeding, planting of trees or any other species</p> <p>felling of trees, removal of timber</p> <p>removal of foliage, moss or other materials</p> <p>killing ivy</p> <p>use of any pesticide or herbicide /dumping, burning or storing any Materials</p> <p>alteration of the banks, bed or flow of watercourses</p> <p>operation of commercial recreation facilities (e.g. walking tours)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including golf courses, sports pitches, caravan or camping facilities.</p> <p>any activity which may cause pollution of the site</p> <p>removal of soil, mud, gravel, sand or minerals</p> <p>developing roads or car parks</p> <p>construction of fences, buildings or embankments</p> <p>felling trees or reforestation</p>

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 6.2

LAKES, PONDS AND CANALS

Under STATUTORY INSTRUMENT 94 of 1997, made under the EUROPEAN COMMUNITIES ACT 1972 and in accordance with the obligations inherent in the COUNCIL DIRECTIVE 92/43/EEC of 21 May 1992 (the Habitats Directive) on the conservation of the natural habitats and species of wild fauna and flora, all persons must obtain the written consent, (in circumstances prescribed at section A and B below) of the Minister for The Environment 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.

<p><u>SECTION A</u></p> <p>Please note that the activities listed in <i>Section A overleaf</i> are required to be notified to the Minister for The Environment and Local Government and should not be undertaken before consent.</p>	<p><u>SECTION B</u></p> <p>Please note that the activities listed in <i>Section B overleaf</i> may, and in most cases do, require a license or consent from another statutory authority (e.g. the local planning authority, the Minister for the Marine and Natural Resources, or the Minister for Agriculture and Food).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment and Local Government.</p>
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HABITAT TYPE 6.2

LAKES, PONDS AND CANALS

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

In a very limited number of cases it may be necessary for the Minister for The Environment 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.

<u>SECTION A</u>	<u>SECTION B</u>
<p>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.</p>	<p>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).</p> <p>If so, these notifiable actions do not apply.</p> <p>However, if such activities are not regulated by another statutory authority, the said activities are required to be notified to the Minister for The Environment and Local Government.</p>

HABITAT TYPE 7.1

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

<u>Section A</u>	<u>Section B</u>
<p>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</p> <p>disturbance of bats</p> <p>operation of commercial recreation facilities (e.g. bird watching tours)</p> <p>introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area</p> <p>any other activity of which notice may be given by the Minister from time to time</p>	<p>(NO REQUIREMENT TO NOTIFY IF ALREADY LICENSED BY ANOTHER MINISTER/BODY)</p> <p>developing leisure facilities including sports pitches, caravan or camping facilities.</p> <p>developing roads or car parks</p> <p>construction of fences, buildings and embankments</p> <p>afforestation</p>

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

Conservation Ranger

Vacant

District Conservation Officer

Mr. Stefan Jones
National Parks and Wildlife
Government Buildings
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Regional Manager

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Divisional Manager

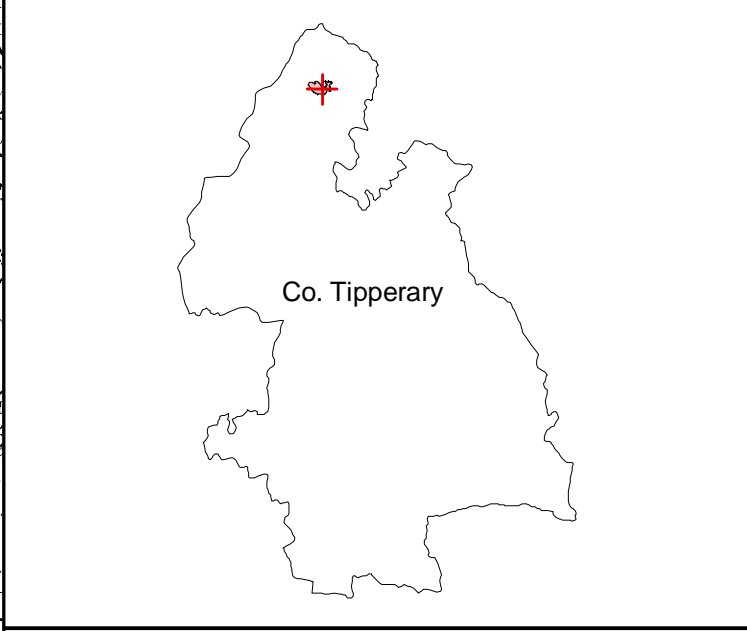
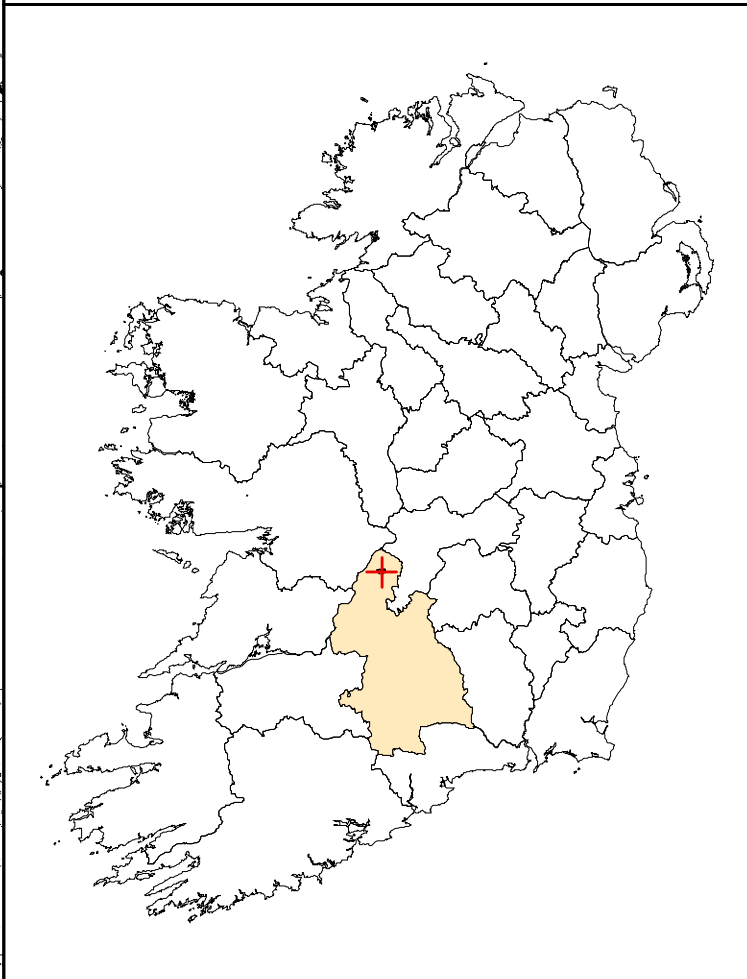
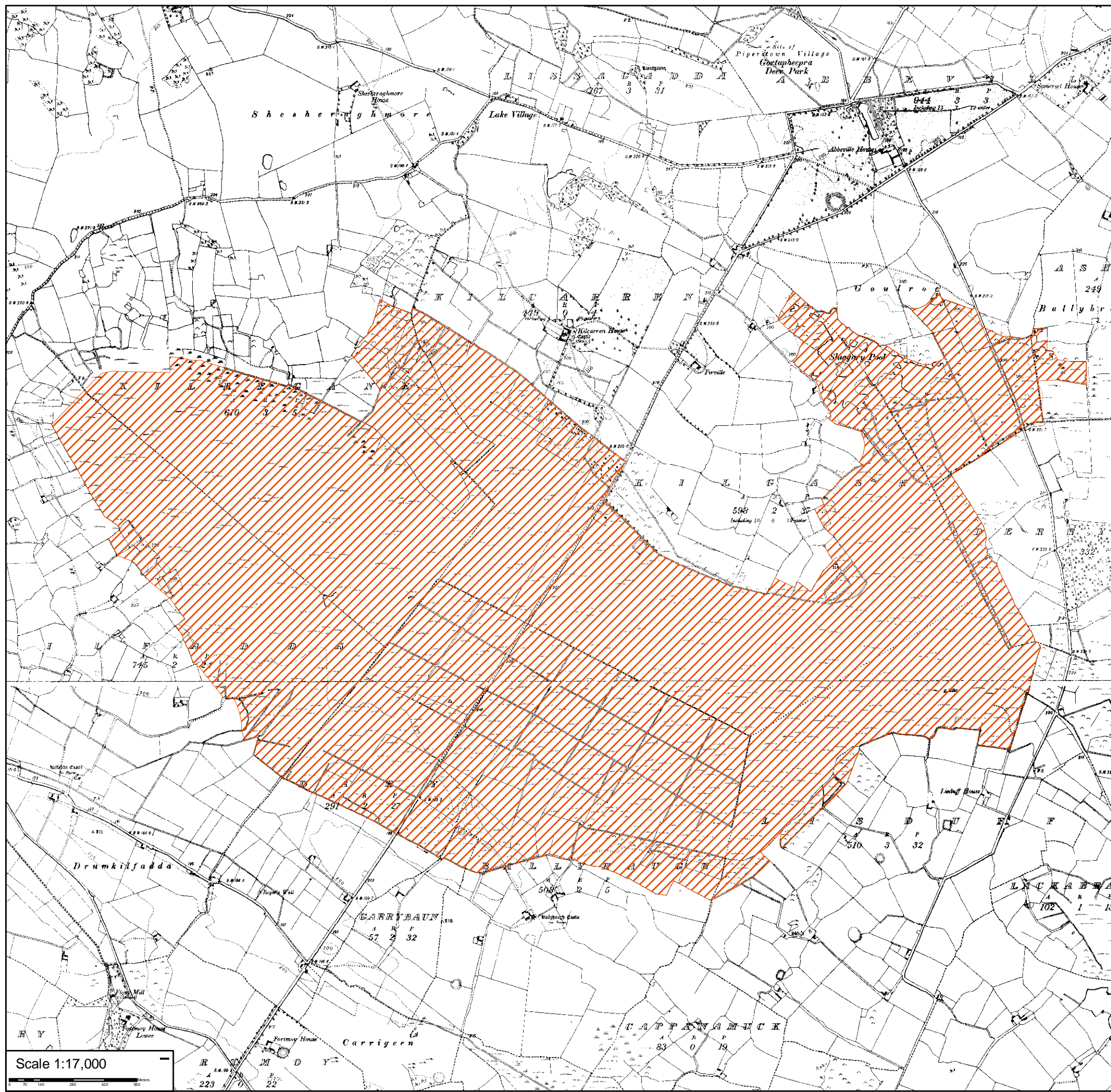
Rory Harrington
The Custom House
106 The Quay
Co. Waterford
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rharrington@duchas.ie

National Parks and Wildlife

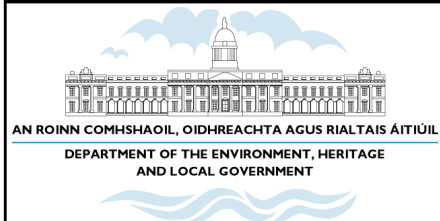
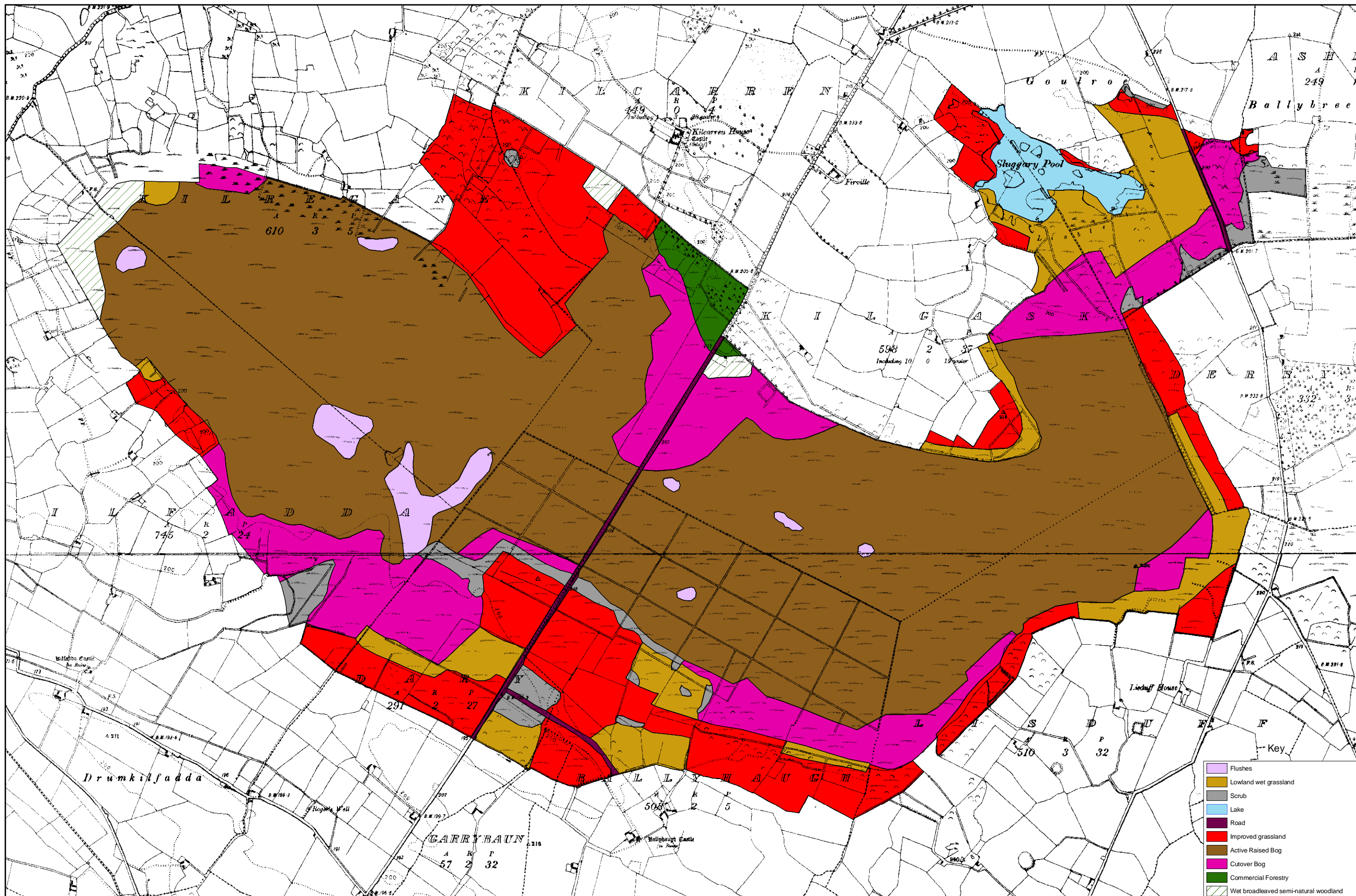
Department of Environment and Local Government,
7 Ely Place,
Dublin 2.
Phone Lo Call 1890 321 421, (01) 8883240/42
Fax (01) 8883276

CEANTAR SPEISIALTA CAOMHNATHE
 CANDIDATE SPECIAL AREA OF CONSERVATION
 KILCARRAN-FIRVILLE BOG SAC 000647
 Version 1.00

Féadtar athruithe a chur ar an gceantar / Sites subject to revision
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 Macasamhail d'ábhar na Suirbhéireachta Ordonáis le cead ón Rialtas (Ceadúnas Uimh 5953)



Map 1
 LOCATION MAP: KILCARRAN-FIRVILLE BOG SAC 000647



CEANTAR SPEISIALTA CAOMHNATHÉ
CANDIDATE SPECIAL AREA OF CONSERVATION

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision. Reproduced from Ordnance Survey material by permission of the Government (Permit number 5953).
 Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbheirtheithe a déanamh ar theorainneacha na gceantar comharthaithe. Macasamhail d'ábhar na Suirbhéarachta Ordonáis le chead ón Rialtas (Ceadúnas Uimh. 5953)

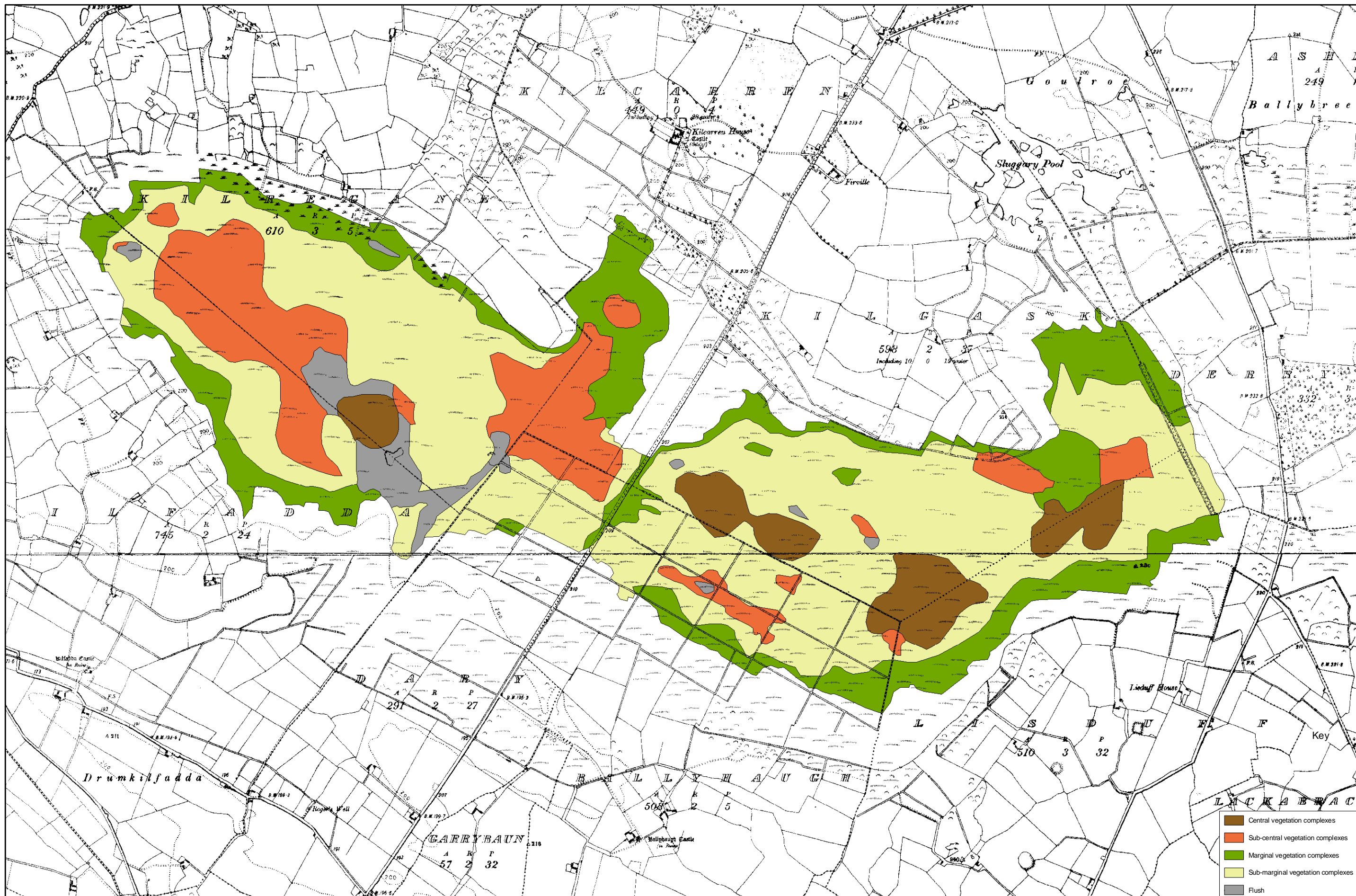
KILCARREN-FIRVILLE BOG
 TI 6" SHEETS 004, 007

0 175 350 700 M
 Scale 1: 13,000

Map 2
INDICATIVE HABITAT MAP

Map to be read in conjunction with conservation plan

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- Central vegetation complexes
- Sub-central vegetation complexes
- Marginal vegetation complexes
- Sub-marginal vegetation complexes
- Flush



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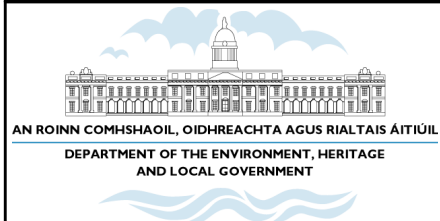
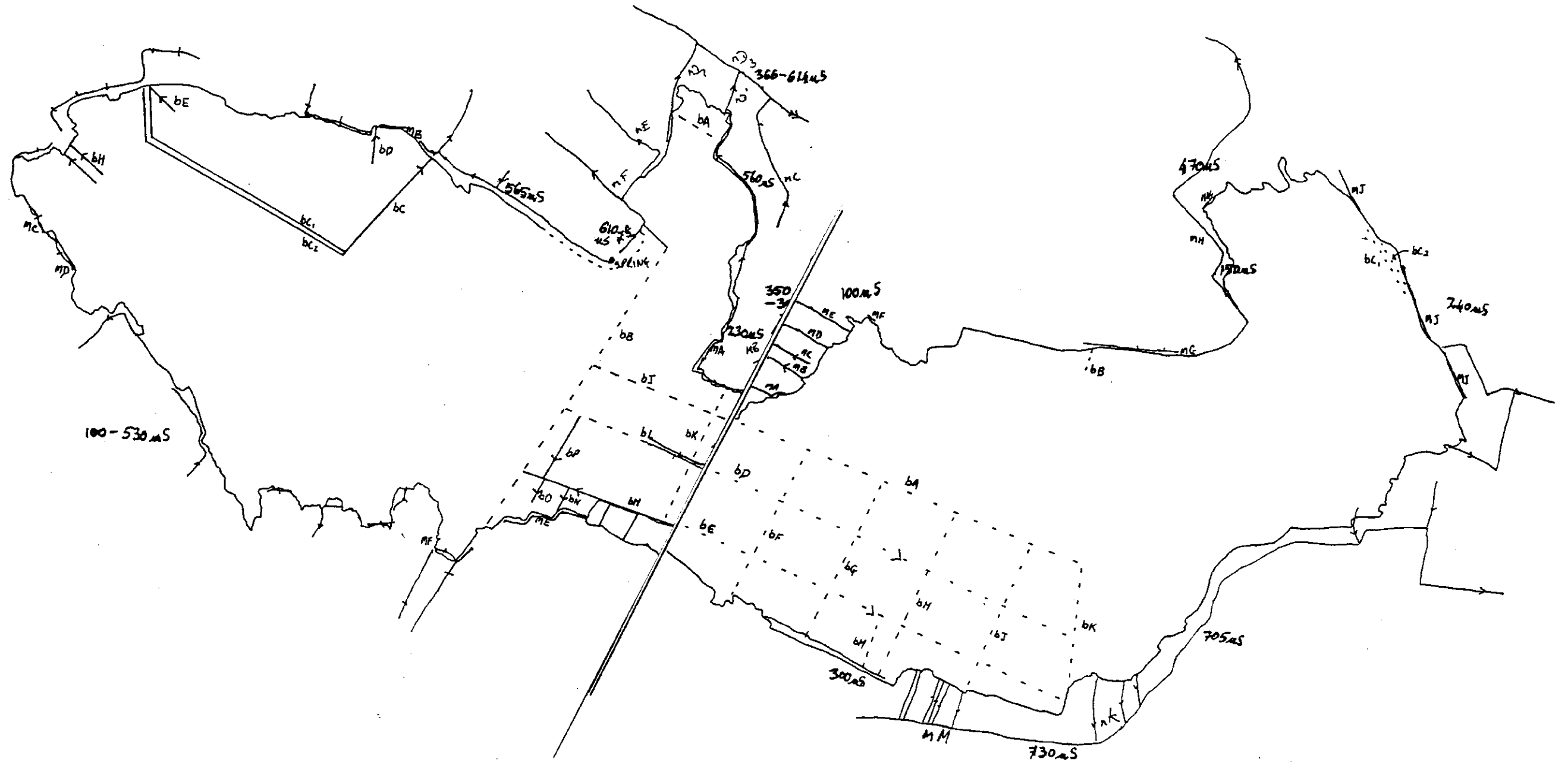
0 150 300 600
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Scale 1: 13,000

Map 3
Ecotopes

Map to be read in conjunction with conservation plan

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TI 6" SHEETS 004, 007

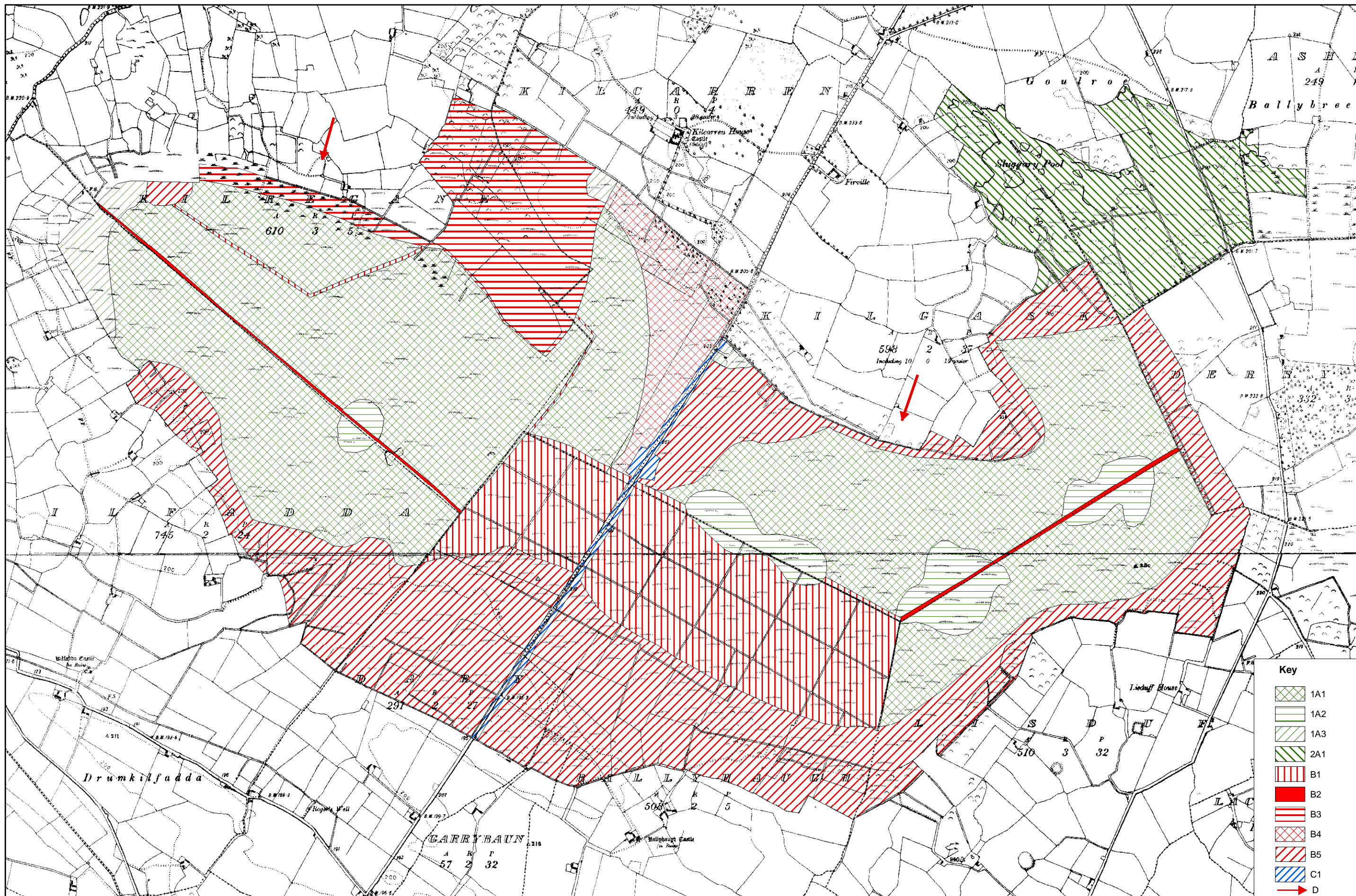
Map to be read in conjunction with conservation plan
MAP IS NOT TO SCALE

Map 4
DRAINS & HYDROCHEMISTRY

SITE CODE

000647

Version 1.00



Key	
	1A1
	1A2
	1A3
	2A1
	B1
	B2
	B3
	B4
	B5
	C1
	D



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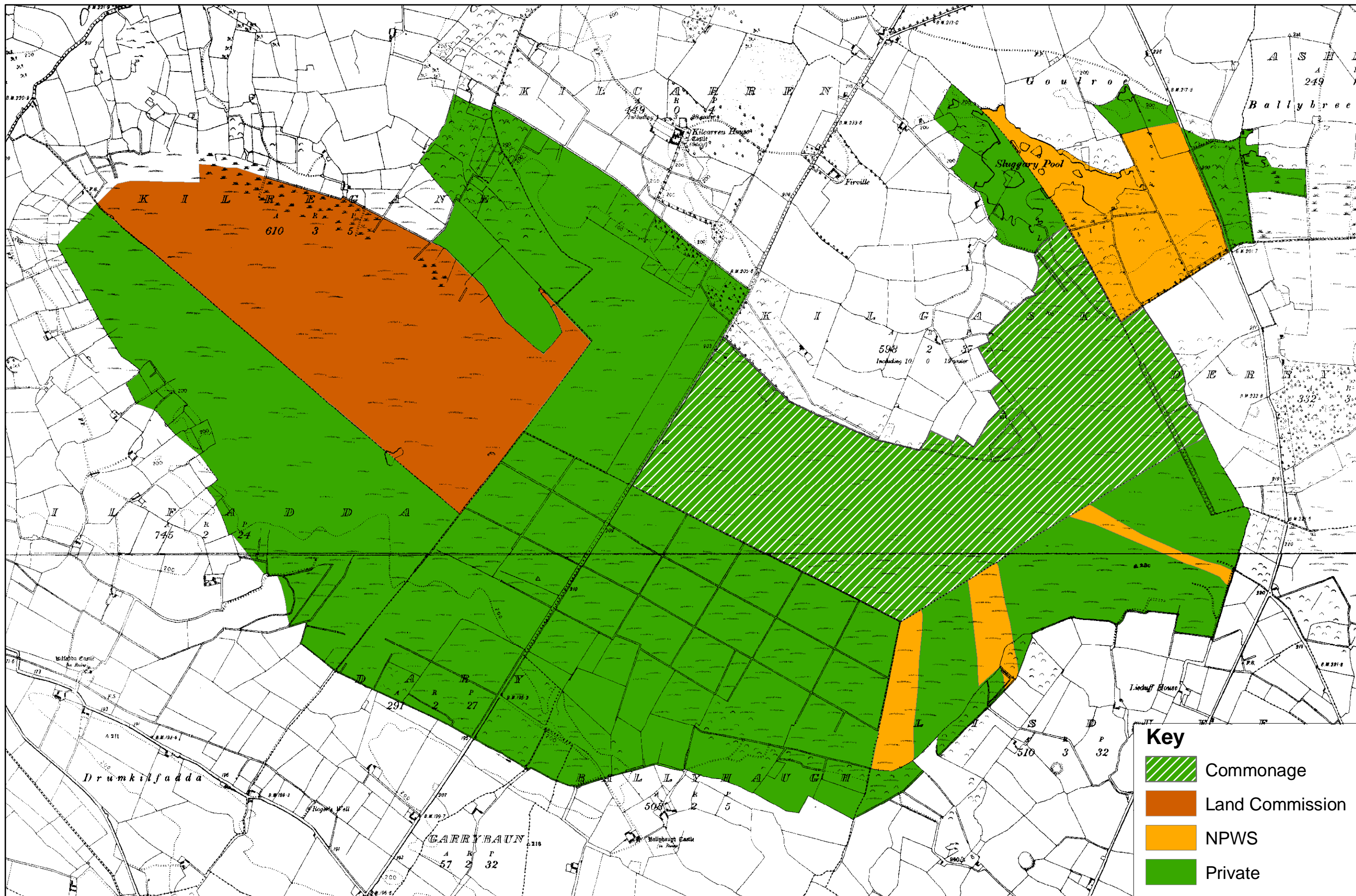
0 160 320 640
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Scale 1: 13,000





Map 5
MANAGEMENT ZONING MAP

Map to be read in conjunction with conservation plan

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Key

-  Commonage
-  Land Commission
-  NPWS
-  Private



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0 162.5 325 650
 Scale 1: 13,000

Map 6
OWNERSHIP MAP

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