



Appendix C: Ecology

Prepared for

MALONE O'REGAN

by

*Biosphere Environmental Services
29 La Touche Park, Greystones, Co. Wicklow
Tel: 01-2875249 E-mail: maddenb@eircom.net*

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1.0 GENERAL

1.1 Background

Biosphere Environmental Services was commissioned by Malone O'Regan, Consulting Engineers to carry out an ecological assessment for the proposed Lough Macask Local Area Plan. The work involved an assessment of habitats, flora and fauna by field survey and literature review. However, detailed surveys for specific interests, such as bats, badgers, and breeding birds, were not carried out as part of the study.

The study area is to the north-west of Kilkenny city and extends over an area of approximately 2 kilometres from north to south and up to 1 kilometre from east to west. The eastern and northern sectors appear to drain directly to the River Nore, while the southern and western sectors drain to the Breaghagh River, a tributary of the Nore which continues through Kilkenny city. The area comprises mostly agricultural land, though parts of the eastern and northern sectors are already developed or being developed for residential housing. A substantial grain depot occurs in the southern sector.

1.2 Survey methods

A field survey of the site was carried out on 9th November 2005. This comprised a systematic walk-over of the study area. Habitats present were mapped according to the classification system recommended by The Heritage Council (Fossitt 2000). It is noted that the habitat survey was not intended as a comprehensive botanical survey of the area, which anyway would not have been possible at this time of year. Notes were made on bird species present within and around the site. For mammals, the main emphasis was on search for signs of activity or dwellings. During the survey, particular attention was given to the possible presence of habitats and/or species which are legally protected under Irish or European legislation (especially the Flora Protection Order 1999; Wildlife Act 1976; Wildlife Amendment Act 2000; EU Habitats Directive; EU Birds Directive).

The standard literature was checked for references to the site and locality, as were the listings and maps of sites of conservation importance in County Kilkenny held by the Department of the Environment, Heritage and Local Government.

Contact was made re. Lough Macask with Mr Jimi Conroy, NPWS Conservation Officer, and Mr Roger Goodwillie, ecologist based in Co. Kilkenny.

1.3 Designated sites for conservation in area

The study area includes a proposed Natural Heritage Area, Lough Macask pNHA (code 01914). This is a small wetland site. The NPWS site synopsis is given in Appendix 1.

Otherwise, the principal site of conservation importance in the general Kilkenny area is the River Nore which is part of the River Barrow and River Nore candidate Special Area of Conservation (code 02137). A tributary of the Nore passes just south of the study area.

2.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

2.1 Habitats, vegetation and flora

The following habitats are present within the study area:

- Eutrophic lake FL5 (Lough Macask, preliminary classification)
- Artificial ponds FL8
- Reed and large sedge swamp FS1 (within Lough Macask)
- Improved agricultural grassland GA1
- Amenity grass GA2
- Wet grassland GS4
- Scattered trees and parkland WD5 (Ayrefield House)
- Hedgerows WL1
- Arable crops BC 1
- Stone walls BL1
- Recolonising bare ground ED3
- Buildings and artificial surfaces BL2

The distribution of the habitats is shown in Figure 1. A photographic record is presented in Appendix 2.

As already noted, the majority of the site is agricultural land that is intensively managed for grass (i.e. Improved agricultural grassland GA1) or cereal production (i.e. Arable land BC1). The grassland is regularly fertilised and reseeded and as expected has a low species diversity, with the usual species present such as perennial rye-grass *Lolium perenne*, meadow buttercup *Ranunculus acris*, and clovers *Trifolium* spp. The arable land was in stubble at the time of survey. Common weed species were present, including knotweed *Polygonum aviculare*, groundsel *Senecio vulgaris*, common field speedwell *Veronica persica*, red deadnettle *Lamium purpureum* and common fumitory *Fumaria muralis*.

Hedgerows (WL1) are fairly frequent in the area. They vary a lot in ecological interest, from mere remnants to ones of moderate quality as regards structure and species diversity.

In the southern sector (Bishops Demesne, Kilcreen), all hedgerows are maintained at approximately 2 metres in height. Tree standards are largely absent. Hawthorn *Crataegus monogyna* is by far the principal species, with elder *Sambucus nigra* and blackthorn *Prunus spinosa* also present. These hedgerows are presently of limited ecological value.

In the vicinity of Lough Macask, some of the hedgerows are well developed, especially those immediately north and west of the lough. The average height here is 6-7 metres and some tree standards (ash) are present. Hawthorn is still the principal hedge former and ivy *Hedera helix* is frequent. Further hedgerows of moderate quality exist to the north-west of Ayrefield House and there are some intact remnants at the extreme northern point of the study area. All of these hedgerows are of some conservation value in a Local context.

Elsewhere in the central and eastern part of the study area the hedgerows are remnants of Negligible ecological value.

Walls provide the other main field boundary type in the area. Old stone walls BL1 are present but some of these are just remnants, such as to the south-east of Lough Macask. Overall the stone walls have limited ecological value. Other walls are modern block walls of no ecological interest.

Scattered trees and parkland WD5 occurs at Ayrefield House. The trees present are typical demesne species, notably lime *Tilia* spp., beech *Fagus sylvatica* and horse chestnut *Aesculus hippocastanum*. Some of the trees are of considerable maturity and could be expected to support bat roosts.

Amenity grassland GA2 is present as sports grounds to the south of the grain depot and within the various residential gardens.

A small pond (Artificial ponds FL8) is present along the southern boundary of the study area. This is approximately 15 m by 6 m in size. There is a retaining wall and inlet at one end. The pond is fairly stagnant and has a muddy base. Species present include watercress *Nasturtium officinale* and common bent *Agrostis stolonifera*. Two large alder *Alnus glutinosa* trees occur at the southern end of the pond (part of property boundary). Cattle have open access to the pond.

While small in size, Lough Macask is probably best accommodated in the category of Eutrophic lakes FL5. It appears to be fed principally by ground water as there are no inlets or outlets. Water depth is known to fluctuate through the year though it does retain permanent water in summer. There are two connected basins, both with muddy bottoms. The eastern basin supports extensive swamp vegetation which could be classified as Reed and large sedge swamp FS1. A single, large willow tree occurs in the eastern basin, which appears to be crack willow *Salix fragilis*. Overall, the lake has a fairly diverse vegetation (see Appendix 1 for full vegetation description), which includes greater duckweed *Spirodela polyrhiza*, a species not known elsewhere in the county. Cattle have complete access to the lake and have caused severe poaching to the marginal areas and have undoubtedly raised the trophic status of the system.

While showing characters of a turlough due to the water fluctuations and to some extent the vegetation, this could hardly be considered a true turlough as there is no exposed limestone or other karstic features visible (although it is understood that the underlying bedrock is karstic and recent public consultation revealed that this may be shallow in places). Also, the changes in water levels apparently occur at a relatively slow rate (unlike most turloughs) (R. Goodwillie pers. comm.).

As Lough Macask is a proposed Natural Heritage Area, it is of significant conservation importance.

In the arable field to the east of Lough Macask (to the other side of the public road) there is an area of damp ground that is largely overgrown with weedy vegetation and especially willowherbs *Epilobium* spp. There is a single willow tree here. At least part of this patch appears to have been cultivated in the past. Principal habitats are considered to be Wet grassland GS4 and Recolonising bare ground ED3. It appears probable that this area was formerly a wetland connected to Lough Macask as shown on the os-maps dating from the 1940's and the 1800's.

The remainder of the study area comprises built land which falls into the category Buildings and artificial surfaces BL2.

2.2 Fauna

Fox *Vulpes vulpes* was the only mammal species observed during the present survey though it is certain that ubiquitous species such as brown rat *Rattus norvegicus*, pygmy shrew *Sorex minutus*, long-tailed field mouse *Apodemus sylvaticus* and house mouse *Mus domesticus* occur. The pasture grasslands are suitable for badger *Meles meles*. Ayrfield House and its grounds appear suitable for roosting bats.

The common frog *Rana temporaria* is possible at the pond or in the vicinity of Lough Macask.

The bird species present within the study area are all common countryside species. Woodpigeons *Columba palumbus* were particularly numerous with one flock of several hundred in a stubble field. The stubble also attracted finch flocks, including chaffinches *Fringilla coelebs*, greenfinches *Carduelis chloris*, linnets *Carduelis canabinn* and goldfinches *Carduelis carduelis*. The usual range of hedgerow species was present, with robin *Erithacus rubecula*, wren *Troglodytes troglodytes*, blackbird *Turdus merula*, song thrush *Turdus philomelos*, dunnock *Prunella modularis*, coal tit *Parus ater*, great tit *Parus major* and starling *Sturnus vulgaris*.

Snipe *Gallinago gallinago* would be expected during winter in the damp ground around Lough Macask and it is probable that the lake may support a few mallard *Anas platyrhynchos* and teal *Anas crecca*. Apparently in past times it was a regular location for wildfowl (J. Conroy pers. comm.). Moorhen *Gallinula chloris* and grey heron *Ardea cinerea* would also be expected.

2.3 Overview of ecological interests within study area

Clearly, Lough Macask, a proposed Natural Heritage Area, is the focus of ecological interest in the study area. This small wetland has a good diversity of plant species, which vary from pure aquatic species to marginal wetland species in the flood zone. The lake also attracts insects such as dragonflies (J. Conroy pers. comm..) and probably some wetland bird species (though would not support concentrations of significance). The site, however, is presently severely compromised by cattle having complete access, resulting in heavy poaching and nutrient enrichment. Management is required urgently to preserve the remaining ecological interests at this site.

The small pond along the southern boundary of the study area is of minor ecological interest and could be a breeding site for the common frog. The quality and interest of the pond could be increased with management.

The hedgerows are not of particular note other than some of those in the central area which are rated of moderate quality (see habitat map) as regards structure and species diversity.

The mature trees associated with Ayrfield House could support roosting bats.

The remaining habitats within the study area are not of conservation value.

3.0 POTENTIAL CONSTRAINTS TO DEVELOPMENT AND RECOMMENDATIONS

1. The only significant constraint to future development in this area is Lough Macask. Presently, this wetland is a proposed NHA and may be designated as a NHA by the Department of the Environment, Heritage and Local Government under the Wildlife (Amendment) Act 2000. While the site has been greatly compromised in recent times, it is nevertheless still an important focal point for biodiversity in an intensively managed landscape and is considered of importance in a county context. It is noted that if cattle access was restricted, the quality of the wetland would probably improve in a relatively short time period. The site has obvious educational potential due to its proximity to the city.

For a full conservation assessment of the site, a botanical survey is required during summer. Also, investigation is required to determine the hydrological workings of Lough Macask. It is noted that construction activities in a wider vicinity than the field in which the lake is situated could have adverse impacts on this site should an underground water supply be disrupted.

2. If feasible, the small pond along the southern boundary of the study area should be retained as such ponds are becoming increasingly scarce. The source of water to the pond would need to be determined.
3. If feasible, the hedgerows indicated as being of moderate quality in the habitat map should be retained within future developments.
4. Should Ayrefield House and/or the mature trees in the grounds be demolished, a survey for bat presence would be required.

4.0 REFERENCES

Anonymous (2004) *Proposed Natural Heritage Areas, candidate Special Areas of Conservation and Special Protection Areas in County Kilkenny - listings and maps*. Department of the Environment, Heritage and Local Government (also see website www.duchas.ie.)

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Scannell, M.J. & Synnott, D.M. (1987) *Census Catalogue of the Flora of Ireland*. Stationery Office, Dublin.

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APPENDIX 1.

LOUGH MACASK SITE SYNOPSIS (SITE CODE 001914)

Lough Macask is a small pond north-west of Kilkenny that fluctuates in size over the year. It is isolated from the underlying limestone by glacial till with a shale content from the Slieve Ardagh Hills. The substrate is generally mineral without much content of peat, except, perhaps in the centre.

The permanently flooded part contains plant species such as Broad-leaved Pondweed (*Potamogeton natans*), Water Plantain (*Alisma plantago-aquatica*) and Water Crowfoot (*Ranunculus aquatilis*) with the floating duckweeds, *Lemna minor*, *L. trisulca* and *Spirodeia polyrhiza*. Towards the edge Bur Reed (*Sparganium erectum*) is important, leading into a zone of Flote Grass (*Glyceria fluitans*), Lesser Spearwort (*Ranunculus flammula*), Pink Water Speedwell (*Veronica catenata*), Mint (*Mentha aquatica*, *M. arvensis*) and Forget-me-not (*Myosotis scorpioides*, *M. laxa*). The surroundings of the pond are grazed and poached when the water levels are high. Silverweed (*Potentilla anserina*), Amphibious Bistort (*Persicaria amphibia*), Marsh Foxtail (*Alopecurus geniculatus*) and Marsh Ragwort (*Senecio aquatilis*) characterise this area.

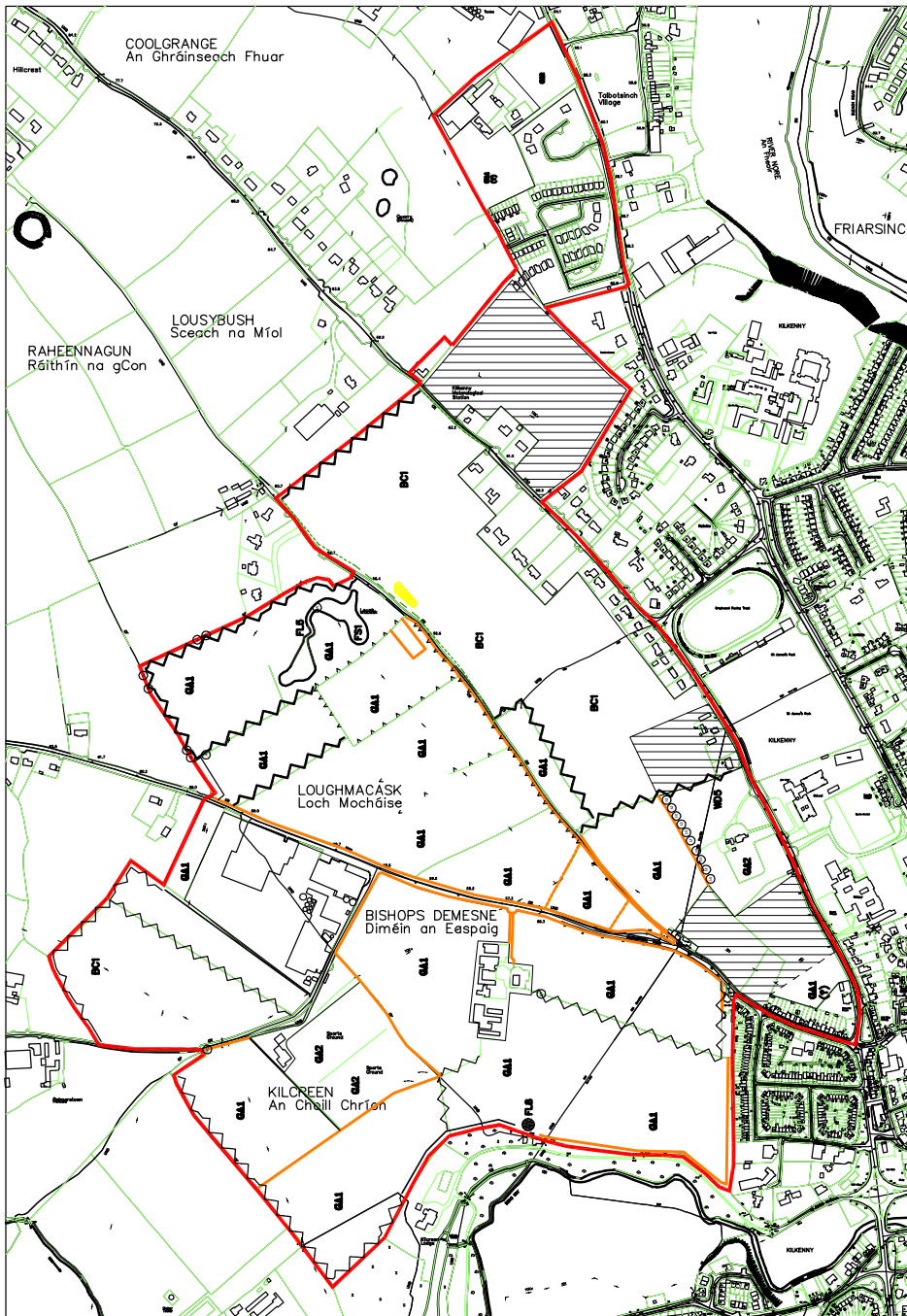
The vegetation shows that the site is similar in some ways to a turlough. It therefore differs from most other wetlands around Kilkenny and has a certain interest for this reason. In addition it contains Greater Duckweed (*Spirodela polyrhiza*) which is not found elsewhere in the county.

15th February, 1995.

APPENDIX 2

PHOTOGRAPHIC RECORD

- Plate 1. The Bishops Demesne/Kilcreen area is dominated by improved agricultural grassland. Hedgerows are low and well maintained.
- Plate 2. Arable farming is a feature of the study area. Several fields were in stubble at the time of survey. View is of a large field at Kilcreen.
- Plate 3. View is of intensively managed grassland in the Lough Macask area where hedgerows are often mere remnants.
- Plate 4. Hedgerows along part of the north-western boundary are intact and of moderate quality. View is from arable field east of Lough Macask.
- Plate 5. Tall, mixed woodland skirts part of the southern boundary of the study area. This is on the sloped ground above the adjoining river.
- Plate 6. A small pond occurs along the southern boundary. This is of minor ecological interest.
- Plate 7. Walls, including old stone walls, form some of the field boundaries. View is from south of Lough Macask looking south-eastwards.
- Plate 8. Ayrfield House is set in typical parkland, with tall, mature trees of beech, lime and horse chestnut.
- Plate 9. Lough Macask is a small eutrophic lake within a grassland field. View is of eastern basin showing large willow tree and swamp vegetation within lake.
- Plate 10. View of western basin of Lough Macask.
- Plate 11. Cattle have unrestricted access to Lough Macask and have caused severe poaching around the edges and nutrient enrichment.
- Plate 12. An area of damp ground, now dominated by wet grassland and weedy vegetation, occurs in the field to the east of Lough Macask. This was probably formerly a wetland connected to Lough Macask.



DON'T SCALE DIMENSIONS

DON'T FORGET SAFETY

LOUGH MCCASK-ECOLOGY

KEY FOR HABITAT/LANDUSE MAP

	EUTROPHIC LAKE FL5(LOUGH MCCASK)(PRELIMINARY CLASSIFICATION)	BC1	ARABLE CROPS BC1 (STUBBLE)
	ARTIFICIAL PONDS FL8		STONE WALLS BL1
FS1	REED AND LARGE SEDGE SWAMP FS1 (WITHIN LOUGH MCCASK)		STONE WALLS BL1 (REMNANTS)
GA1	IMPROVED GRASSLAND GA1		BOUNDARY-WALL AND REMNANT HEDGE
GA2	AMENITY GRASS GA2 (SPORTS GROUNDS, GARDENS)		BOUNDARY-GRASSY BANK (PARTS IN ASSOCIATION WITH WALLS)
WD5	SCATTERED TREES AND PARKLAND WD5 (WREFIELD HOUSE)		AREA OF DAMP GROUND (GS4) THOUGH NOW DOMINATED BY WEEDY VEGETATION (ED3)
	HEDGEROWS W1.1 (LOW/C.2M, WELL MAINTAINED-LOW VALUE)		BUILDINGS AND ARTIFICIAL SURFACES BL2 CONSTRUCTION IN PROGRESS (HATCHED)
	HEDGEROWS W1.1 (REMNANTS-NO ECO VALUE)	TALL TREES	
	HEDGEROWS W1.1 (MODERATE QUALITY,C.5-7M)		SYCAMORE
	FENCELINES		ASH
			HORSE CHESTNUT
			WILLOW
			MIXED TREES (LIME, BEECH/HORSE CHESTNUT)

 ADR MALONE O'REGAN CONSULTING ENGINEERS	2B Richview Office Park, Clonskeagh, DUBLIN 14.	St. Catherine's House, Catherine Street WATERFORD
	Tel: +353 1 269 2655 Fax: +353 1 269 2660 Email: info@morcea.ie	Tel: +353 51 876 855 Fax: +353 51 876 828 Email: info@waterford.morcea.ie

Client KILKENNY COUNTY COUNCIL		Drawing ECOLOGICAL FEATURES OF STUDY AREA			
Job LOUGH MCCASK LAP					
Job Number E0392	Drawing Number	Sht. Size A3	Scale 1:8	Date NOV05	Drawn PK



Plate 1. The Bishops Demesne/Kilcreen area is dominated by improved agricultural grassland. Hedgerows are low and well maintained.



Plate 2. Arable farming is a feature of the study area. Several fields were in stubble at the time of survey. View is of a large field at Kilcreen.



Plate 3. View is of intensively managed grassland in the Lough Macask area where hedgerows are often mere remnants.



Plate 4. Hedgerows along part of the north-western boundary are intact and of moderate quality. View is from arable field east of Lough Macask.



Plate 5. Tall, mixed woodland skirts part of the southern boundary of the study area. This is on the sloped ground above the adjoining river.



Plate 6. A small pond occurs along the southern boundary. This is of minor ecological interest.



Plate 7. Walls, including old stone walls, form some of the field boundaries. View is from south of Lough Macask looking south-eastwards.



Plate 8. Ayrfield House is set in typical parkland, with tall, mature trees of beech, lime and horse chestnut.



Plate 9. Lough Macask is a small eutrophic lake within a grassland field. View is of eastern basin showing large willow tree and swamp vegetation within lake.



Plate 10. View of western basin of Lough Macask.



Plate 11. Cattle have unrestricted access to Lough Macask and have caused severe poaching around the edges and nutrient enrichment.



Plate 12. An area of damp ground, now dominated by wet grassland and weedy vegetation, occurs in the field to the east of Lough Macask. This was probably formerly a wetland connected to Lough Macask.

