



East Coast Nature Reserve Management Plan 2012 - 2016

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Section 1: Executive Summary

BirdWatch Ireland's East Coast Nature Reserve in Co. Wicklow, extends to over 92 ha and lies within the Murrugh Wetlands complex. This wetland complex stretches for 13 km along the coastal strip from Kilcoole Station, east of Kilcoole village in the north to Wicklow town in the south, and extends inland for up to 1 km in places. This extensive area is designated as a Special Protection Area due to its special conservation interest for Red-throated Diver, Greylag Goose, Light-bellied Brent Goose, Wigeon, Teal, Black-headed Gull, Herring Gull and Little Tern. This complex is also designated as a Special Area of Conservation and Natural Heritage Area. Our lands are incorporated within these designations. As well as being important in its own right, the reserve is becoming an important area displaying a wide range of the species and habitats from within the larger complex including supporting an increasing wintering waterfowl assemblage.

Between 2004 and 2007, funding support from the EU LIFE-Nature programme enabled BirdWatch Ireland to purchase the reserve and carry out a range of habitat restoration work including wetland creation and woodland management. This management played a major role in enhancing the wintering and breeding bird interests, as well as the rare fen communities and floral interest. Since the ending of the programme in 2007 our management has focused on ongoing habitat management and a programme of visitor developments culminating with the official opening of the reserve to the public in 2009.

In the next 5 years, the reserve will be managed to further enhance its key nature conservation interest and to provide an improved visitor experience. Key targets include attracting up to 2,000 wintering waterfowl, including up to 500 Greylag Geese and 300 Black-tailed Godwits, alongside an increase in breeding bird populations of 'Birds of Conservation Concern in Ireland' (BoCCI) such as Lapwing, Snipe, Kingfisher, Skylark, Spotted Flycatcher, Water Rail, Grasshopper and Reed Warbler. After a further five years of infrastructure development and management, and without compromising the biodiversity value of the reserve, our target is to attract up to 15,000 visitors per annum to enjoy the wildlife spectacle the reserve provides. Linked with this we will continue to develop a role in demonstration, advisory and research work to influence conservation and land management both locally and nationally, and to better inform our own management practices.

The reserve will provide exemplary conservation management, a natural place for people to enjoy wildlife and will contribute to the local community and economy.

To deliver these aims clear objectives for the next 5 years have been agreed as follows:

1. To manage the grasslands to provide the conditions necessary to increase the numbers of wintering waterfowl and key breeding species
2. To manage the woodland to enhance its biodiversity and provide the conditions necessary for priority breeding woodland species
3. To manage the Annex I fen habitat to maintain it in favourable conservation status and to provide the conditions necessary for breeding Water Rail, Grasshopper Warbler and Reed Warbler
4. To carry out a Research, Survey & Monitoring programme to inform our management of the site and contribute to other recording schemes, surveys and research projects
5. To improve the infrastructure in order to maximise the visitor experience
6. To build and retain support for our conservation work through education and visitors
7. To demonstrate best practice management to other site managers, advisers and landowners
8. To maintain and improve the integrity of the reserve

Section 2: Descriptions, Vision & Statements

2a: Site Description

BirdWatch Ireland has owned and managed its East Coast Nature Reserve, located at Blackditch, since 2003. Following an active management programme, with funding support from the EU LIFE-Nature III programme, the reserve has become important for wintering birds and now supports nationally important numbers of Greylag Geese, Shoveler and Black-tailed Godwit. Other important species present during the winter are Whooper Swan and Kingfisher (both Annex I species). Throughout the year Little Egret are present, and in recent years up to 2 pairs of Lapwing have bred successfully. All these species are associated with the grasslands (54 ha) which have since been designated as an SPA. In addition, 68 ha have been designated as an SAC, which includes the Annex I fen communities that have been part of a restoration project. These designations, written into statute in March 2010, form an extension to the Murrrough Wetlands SPA and SAC.

The broad habitats within the site are grassland (seasonally inundated), woodland and fen (calcareous and alkaline). The grasslands are managed primarily for wintering waterfowl and breeding waders through a summer cattle grazing regime and the manipulation of the soil water table (via sluice points) to create 'flashes' of open water during the winter months. These have been enhanced by the physical creation of permanent shallow open pools (covering about 1 ha) and the widening of the open water courses. This area attracts a mixture of over a thousand wintering wildfowl species which includes 400 Greylag Geese, 400 Wigeon and 200 Teal, as well as 30 Whooper Swan and 45 Shoveler.

The woodland area is managed through the Native Woodland Scheme (supported by the Department of Agriculture, Food and the Marine) with the aim being to enhance its biodiversity. This has involved the creation of 2 'ride' lines together with the clearance of 5 coupes. In addition the ride edges have been pruned and restructured, all exotic species removed and an annual deer cull carried out. Adjacent to the woodland is the calcareous and alkaline fen communities. In order to allow restoration, 3 ha of Lodgepole pine plantation and a further 6 ha of willow scrub were removed over 3 autumn periods from 2006 to 2009. Alongside this physical management, and in partnership with Genetic Heritage Ireland, 9 Kerry Bog ponies have been introduced to the fen area in order to limit re-growth. This has been beneficial to the wider biodiversity with Marsh Fritillary butterfly and the Narrow-leaved Marsh Orchid being recorded.

To encourage and enhance the visitor enjoyment of the reserve three wooden hides together with ancillary works, access paths and boardwalks have been constructed. The Main hide (including disabled access) was completed in 2009, with the West hide and Woodland hide completed in 2010. Interpretive panels have also been provided in the Main hide and along the access paths.

2b: Long term Vision

The reserve currently provides a newly restored wetland and wet woodland complex as part of a larger wetland designated site and is improving as management activity has taken effect and as habitats are maturing. It has sensitive low key visitor facilities attracting small numbers of people.

The long term vision for the site, beyond 2020, is to see it become one of the best wetland nature reserves in Ireland supporting a large and diverse range of wintering and breeding waterbirds on habitats which are in favourable conservation condition and with healthy communities of non-avian species including some rare or priority species of invertebrates and plants. In particular, the peak population of wintering waterbirds will be well in excess of 2,000 each year including more than 500 Greylag Geese. On the wetlands Lapwings and Snipe will have re-established breeding populations and in the reedbeds and fen populations of Water Rail, Reed and Grasshopper Warbler will have increased, Kingfisher, currently a non-breeding visitor, will utilise artificial banks for nesting. In the woodlands, the passerine populations

will see increases in Spotted Flycatcher and perhaps the establishment of Great Spotted Woodpecker will follow their spread in other parts of Wicklow. The woodlands will be managed to create a diverse stand structure with plenty of woodland glades and rides with abundant butterflies such as Silver-washed Fritillary and Holly Blue. On the grassland areas the re-establishment of Marsh Fritillary might be seen. Dragonflies will be a summer attraction for visitors with scarce species such as Emperor, Scarce Blue-tailed Damselfly and Black-tailed Skimmer well established.

By 2020, visitor infrastructure will be further enhanced with better parking, the provision of a suitable and sensitively planned visitor centre and signage to the site from main roads. The visitor experience on site will be enhanced by interpretation through volunteers and staff, events and high quality but low key static interpretation. The site will be promoted to attract 15,000 or more visitors annually to enjoy the abundant wildlife. Specialist visitors will also be encouraged with an increase in advisory groups learning about conservation management and also through a well planned and delivered education programme attracting over 1000 school children annually. The wildlife of the reserve and the high quality visitor infrastructure will be a significant socio-economic asset to the Newcastle community and to County Wicklow.

2c: Policy into practice

BirdWatch Ireland's Forward Strategy '2020 Vision' identifies a clear role for our reserves network as contributing significantly to nature conservation in Ireland by working with landowners, communities and partners to demonstrate and deliver best practice management for wildlife in Ireland.

Birds and biodiversity in Ireland face significant challenges with many habitats and species showing significant declines. Often these result from changes in landscapes and seascapes which we can control to varying degrees through land management and through changes at policy level. The assemblages of wildlife on reserves play a vital role in signaling the health of these areas as well as the health of the natural environment nationally.

The benefits of appropriately managed reserves, and healthy wildlife populations are wide reaching at both a local and national level in the delivery of both wildlife conservation as well as significant 'ecosystem services' such as tourism, floodwater management, community engagement and sense of ownership. By targeting actions for our most important wildlife these significant benefits are also gained. Priority species include those showing significant declines or those of local, national and global importance and are identified in local and national policy. Reserves can be managed so as to contribute to achieving the habitat needs and conservation status of wild bird species and groups of species that are identified in action plans such as through the BirdWatch Ireland's Species Action Planning Project 2009 - 2011.

BirdWatch Ireland has an active and ongoing programme of policy development and is working on local, national and European level to address key areas of conservation concern such as Invasive Species, Managing Natura sites, Valuing Nature & Ecosystem Services and Action Planning for Birds. This work is also reflected in the objectives, priorities and actions for management of individual reserves as well as of the reserve network as a whole.

The East Coast Nature Reserve lies in an area zoned within 'The Murrough' and classified as an Area of Outstanding Natural Beauty in the Wicklow County Development Plan 2004-2010 which identifies it and the surrounding area as a contribution to the Heritage & Landscape Conservation Objectives for the Local Authority Area. Natural heritage in line with strategic development are identified as key components for the Local Authority. This is supported by the Draft County Wicklow Heritage Plan 2009 - 2014 and the County Wicklow Biodiversity Action Plan 2010 - 2015. The reserve area supports five Annex I and four Annex II listed bird species. These are identified in BirdWatch Ireland's Species Action Planning initiative as

in Lake, Fen & Turlough birds, Lowland Farmland Birds and Woodland & Scrub Birds. The local and national policy areas of particular relevance to the reserve include the following areas:

- Biodiversity conservation
- Management of invasive species
- Local tourism initiatives
- Environmental education
- Agri-environmental land management
- Water management

Section 3: Information

3a: General Information

Location & relevant authorities

The location of the reserve is shown in Appendices Map 1 and details of relevant authorities given in the table below. The location of the reserve in context with the Murrrough Wetland complex is shown in Appendices Map 2

Site name	East Coast Nature Reserve
Total Area (ha)	92.61ha
Area per Feature (ha)	ECNR grasslands 53.96 (Freehold)
	ECNR wet woodlands 19.45 (Freehold)
	ECNR fen 19.20 (Freehold)
Grid ref (centre of reserve)	O315 035
County	Wicklow
Barony	Newcastle
Province	Leinster
County Council	Wicklow County Council, County Buildings, Wicklow, Co. Wicklow
Local County Council	Wicklow County Council, County Buildings. Wicklow, Co. Wicklow
NPWS South Eastern Region	Kilafin, Laragh, Co. Wicklow. 0404 45800
Local NPWS Office	Kilafin, Laragh, Co. Wicklow. 0404 45800
OS Maps	OS Discovery Series (1:50,000), sheet 56

Statutory & other designations

Details of statutory and other designations are given in the following table (see also Appendices Map 2).

Designation	Name	Code	All or part of site?
pSCI	The Murrrough Wetlands	0002249	All
SPA	The Murrrough Wetlands	004186	All
SAC	The Murrrough Wetlands	002249	Part
pNHA	The Murrrough Wetlands	730	Part

Tenure

Freehold

Folio / Ref No.	Agreement date	Site name	Area (ha)	Comments
Folio: WW27602F	11 March 2004	East Coast Nature Reserve	92.61	Funding support LIFE-Nature III

Land/rights let by BirdWatch Ireland

Rights	Particulars
Legal Burden of Folio WW27602F	Covenant between BirdWatch Ireland and Henry J. & Catherine O'Connor relating to the use and enjoyment of the property

Although no formal agreement is in place, the grasslands are let on an 'in lieu basis' to two farmers, Mr Niall Molloy and Mr Christie Martin, who supply livestock for grazing; in return they agree to carry out work as requested. The agreement exists as a verbal annual renewal basis.

Rights not let at the discretion of the BirdWatch Ireland

Rights	Particulars
Legal Burden carried forward into Folio WW27602F (dated 28 August 2002)	Full right & liberty granted to Joseph Connolly, registered owner of Folio 23667F to access his property, with or without vehicle and animals. Wayleave annotated on Folio map

Wayleaves granted by BirdWatch Ireland

None

Conditions of land purchase

Although not listed within the legal burdens of Folio WW27602F a condition of funding support for the land purchase was agreed with EU Commission, under Council Regulation (EC) No 1655/2000, that the lands are transferred to nature conservation purposes in perpetuity.

Statutory Consents & Permissions

Statutory Consent

Under Statutory Instrument 94 of 1997, made under the European Communities Act 1972 and in accordance with the obligations inherent in the Habitats Directive (92/43/EEC) on the conservation of the natural habitats and species of wild fauna and flora, written consents from the Minister for The Environment and Local Government is required before performing any operation on, or affecting, the Murrugh/ECNR complex as listed under the Notifiable Actions for (i) Wet Lowland Grasslands, (ii) Fens and flushes, and (iii) Woodlands

Under the EU Birds and Natural Habitats Regulations (Article 6(3) and 6(4)) an Appropriate Assessment needs to be screened or carried out for operations, projects or plans that may impact on the interests of these sites and are not related to achieving the Conservation Objectives of Natura interests of designated sites. The Appropriate Assessment is required to be carried out by the Competent Authority (the licensing authority or approving body) in consultation with National Parks and Wildlife Service.

Planning Permissions

Planning consent Ref. No	Date	Subject	Type	Expiry date	Comments
064944	29 November 2006	Grant of planning permission for three (3) no. raised bird watching hides	Full	28 November 2011	Completed

National Monuments

None listed on the National Sites & Monuments database <http://www.archaeology.ie>

Public access

Access routes, car parking and hide locations are shown in Appendices Map 3. Public access onto the reserve is at all times (although no dogs, with the exception of guide dogs, are allowed) via a series of constructed pathways (which included boardwalks) leading to the Main and West hides. To reduce potential disturbance issues relating to the wintering wildfowl on the coastal grasslands, access to the Woodland hide (via a 'circular' pathway) is presently only during the summer months (April to October inclusive). The reserve can be viewed at all times from the shingle ridge/coastal path along the eastern boundary.

Main Fixed Assets

Timber buildings & hides

Name	Insured by policy?	Comments
Main hide	Yes	Built in 2009
West hide	Yes	Built in 2010
Woodland hide	Yes	Built in 2010

Miscellaneous structures

Item	Insured by policy?	Comments
Boardwalk	No	Built 2008-10. Constructed from recycled plastics & treated timber decking. Total circa 550m
Bench seat	No	Wooden. 'In Memory of'. Placed in 2008 at end of first boardwalk

3b: Stakeholder Information

The Murrough is mainly a coastal wetland complex that has been influenced by man. In recent times, farming and drainage practices and afforestation have greatly reduced the area and quality of the wetland habitats. Therefore the key stakeholder identified with potential to impact on the SPA and reserve areas are the farmers and landowners (approximately 12 individuals with lands within the SPA). Secondly, because of its location it is recognised that the general public (either from the local communities or tourists) have the potential to impact on the SPA and reserve areas. In addition, along the northern boundary of the reserve, the adjacent land owners operate an active private airfield and the eastern boundary is adjacent to the main Dublin to Wexford railway line.

The primary impacts are identified in the following table

Stakeholder	Impact	Area	Affected species / habitat
Farmer	Under grazing	ECNR	Waterfowl
			Breeding Lapwing
	Disturbance	Wider SPA	Wintering geese
	Over grazing	Wider SPA/SAC	Breeding waders & wintering geese
	Pollution	ECNR & wider SPA/SAC	All
General Public	Disturbance	ECNR & wider SPA/SAC	Breeding birds, particularly ground nesters
			Wintering waterfowl
Landowner	Disturbance	Wider SPA/SAC	Murrough Wetlands
	Hydrology	ECNR & wider SPA/SAC	All
Private Airfield	Disturbance	ECNR & wider SPA/SAC	Wintering waterfowl
Railway	Disturbance	ECNR & wider SPA/SAC	Wintering waterfowl
	Hydrology	ECNR & wider SPA/SAC	All

NPWS has a general obligation under the Birds (and Habitats) Directive to take steps to avoid the deterioration of the designated site, as such Natura Site Management Plans are seen as an essential step in the process of managing sites and avoiding deterioration. Although no validated Management Plan exists for the Murrough Wetlands cSAC and SPA a draft plan was drawn up in May 2000. This plan broadly describes the bird species and habitats for which the Murrough Wetlands has been selected and includes the Conservation Objectives as follows:

1. To maintain or restore the favourable conservation condition of the Annex 1 habitats for which the SAC has been selected:

- Annual vegetation of drift lines (1210)
- Perennial vegetation of stony banks (1220)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) (1330)
- Mediterranean salt meadows (*Juncetalia maritima*) (1410)
- Calcareous fens with *Cladium mariscus* and species of *Caricion davilliana*
- Alkaline fens (7230)

2. To maintain the special conservation interests for this SPA at favourable conservation status for:

- Light-bellied Brent Goose
- Little Tern
- Red Throated Diver
- Greylag Goose
- Wigeon
- Teal
- Black-headed Gull
- Herring Gull

3c: Site Information

Physical

Hydrology

A hydrological study was carried out in 2004 which identified the site as an anthropogenic hydrological regime (a series of land drains to promote pastures for the purpose of grazing). The water courses flow into a main ditch which flows in a northern direction along the eastern part of the site; this drain is a continuation of a main drain from the south. This drain exits the site to the north before entering the sea via 'The Breaches' at Kilcoole. The Breaches is by far the largest and most significant macro influence on the hydraulic flow system over the reserve. Surface water flow is low over most of the site due to low elevation gradients; because of this water quality is slight to moderately polluted (EPA Quality Index Q4-Q2 – tested 2004). Ground water is sea and land derived, and is influenced by tidal oscillations and local soil permeability.

Geology & Soils

The geology is exclusively underlain by the Lower to Middle Cambrian Bray Head formation which is dominated by greywacke and quartzite units deposited in a marine basin by turbidity currents and debris flows and are considered impermeable and effective aquitards. Glacially deposited tills and gravels underlie the site and probably contain deposits from the midlands of Ireland which explain the alkaline-based groundwater contributing to the calcareous and alkaline fen. The dominant soil type is peat, derived from active fen and willow-birch carr woodland. Mineral sub-soils beneath the peat vary. Sandy clay, gravely sand and gravely clay underlie the fen.

Biological

Habitats

The habitats within the reserve are diverse and include wet grassland, calcareous fen, alkaline fen, wet woodland, water courses, open water and emergent vegetation. The fen is classified as a mixture of both alkaline and calcareous; the latter being a priority habitat under Annex 1 of the EU Habitats Directive

The listed habitats have not been officially classified but those that are unofficially classified are given in the following table

Habitat		Code	Approximate Area (ha)
Grasslands	Wet	GS4	54
Woodland	Wet woodland	WN6	19
Fen	Rich fen & flush	PF1	19
Water courses	Drainage ditches	FW4	2
Open water	Artificial ponds	FL8	3
Scrub	Fen scrub	WS1	3

open water, water courses have not been deducted from grassland, fen or woodland and scrub has not been deducted from fen

Flora

Surveys have produced an inventory of 199 vascular plants (T. Curtis various reports). Systematic vegetation sampling between 2004 and 2007, using 10 exclosures and controls, found that although the fen habitats are significant there has been little evidence of change. However, the rare Narrow-leaved Marsh Orchid was re-discovered in 2005 following pro-active management within the fen.

Fauna

Birds

Each summer and winter, between 2005 and 2010, a systematic survey of birds has been carried out to provide baseline information on populations of some species. In addition observations have been recorded, particularly with targeted daily counts of wintering species. These are summarised in the following tables.

Breeding birds listed on the Birds of Conservation Concern Ireland (BoCCI) species list along with their recent peak or range of population size (pairs unless otherwise stated) are given in the following table

Species	Pop. Size	Trend	Status	Comments
Lapwing	2	Increase	Red List	2 pairs produced 5 young (2010)
Skylark	2-3	-	Amber List	Not surveyed
Snipe	1-2	-	Amber List	Not surveyed
Water Rail	1-4	-	Amber List	Not surveyed
Grasshopper Warbler	1-3	Stable	Amber List	

Population figures are: average 2006-2010

Important populations of wintering birds listed on the Birds of Conservation Concern Ireland (BoCCI) species list are given in the following table

Species	Pop. Size	Trend	Comments
Whooper Swan	18	Stable	Increased daily usage; average number on the Murrough - 60
Mute Swan	10	Stable	
Greenland White-fronted Goose	<1	Decrease	Last recorded 2007
Greylag Goose	243	Increase	Max 395; increased daily usage.
Wigeon	295	Stable	Increased daily usage
Teal	196	Stable	
Lapwing	178	Increase	
Dunlin	5	Decrease	
Curlew	143	Stable	Decreased daily usage
Shoveler	22	Increase	Max 44 (2010); increased daily usage
Black-tailed godwit	140	Increase	Increased daily usage
Snipe	58	Decrease	

Population figures are: five-year average of peak winter counts 2006-2010 (compared with 2001-2005 for Trend)

Other fauna

Invertebrate

Very little information is available on the fish, reptiles, and amphibians or invertebrates however eight rare or notable species of *Diptera* have been recorded in the woodland including *Syntormon setosus*, a species unknown elsewhere in Britain or Ireland. In addition, 18 species of butterfly have been recorded including Marsh Fritillary *Euphydryas aurinia*, an Annex II species, in June 2006.

Species	Red List Status	Comments
Marsh Fritillary <i>Euphydryas aurinia</i>	Vulnerable	In general decline across central Europe and regarded as endangered or threatened in most of its range. Primarily a species of two main biotopes: dry calcicolous grassland and damp, neutral or acidophilous grassland. In Ireland it is recorded as mainly a central and north western species.

Mammals

Otter and Leisler's Bat are the most significant mammals recorded. Foxes, stoat and mink have been recorded. Sika deer are present and are controlled through culling.

Species	Pop. Size	Status	Comments
Otter	2+	Annex II	Regularly use the open pools and ditches within the reserve to bathe and feed
Leisler's Bat	1+	Annex IV Red Data species	One record in 2004

Visitors

Precise visitor numbers are unknown; however it is estimated to be in the order of 2,500 annually based on an average daily visitor rate of 6 plus known numbers during planned group visits, open days etc between June 2009 and June 2010. The breakdown of these is given in the following table.

Visitor type	Average daily numbers	Estimated annual visitor numbers	Comments
Daily visitors	6	2,190	Averaged observed and recorded
Open days	-	140	Recorded
Schools/colleges	-	100	Recorded
Invited groups	-	200	Recorded

The reserve is open daily and access is provided to the hides via surfaced pathways and boardwalks, no dogs (exception being guide dogs) are allowed. Access to the Woodland hide is via a grass pathway along the coastal edge of the grasslands leading onto a boardwalk and, at present is accessible during the summer only to prevent disturbance to wintering waterfowl from October to March. The raised embankment of the 'shingle' ridge adjacent to the east of the reserve offers the public views over the main features of the reserve throughout the year. Each year, two open days are held which are planned to coincide with National Biodiversity Day in May and with Heritage Week in August. Up to five school visits have been held. In addition, specialist groups visit by arrangement (up to three visits have been held) to see, for example, reserve management techniques.

3d: Features & Target Indicators

Conservation

Feature	Attribute(s)	Current	Target	Main factor(s)	Target for main factor(s)	Comments
Grassland						
Grassland	Extent	53.96 ha	53.96 ha	Cattle grazing	0.5 LSU/ha	Circa 80-90 cattle (mid April – mid October). Sheep considered if cattle not available
	Greylag Goose	250	≥ 500	Wintering	Annual monitoring	
	Black-tailed Godwit	140	300	Wintering	Annual monitoring	
	Wintering assemblages	ca 1,000	≥ 2,000		Raise water levels on 15 September	Seek to form shallow flooding on coastal grasslands & maintain
	Skylark	2-3	≥ 6	Lack of monitoring	Annual monitoring	Consider management after monitoring
Wet meadow	Lapwing	2	≥ 5	Breeding	Appropriate grazing levels – maximise productivity – annual monitoring	
	Snipe	1-2	≥ 6	Breeding	Appropriate grazing levels – annual monitoring	
Water courses	Extent	6 km	6 km			
	Clearance	0	4.85 km		20% annually cleared	Circa 40% one side only, 40% both sides & 20% clearance only
	Kingfisher	0	1	Lack of suitable bank	Create 2 nesting banks (1+ artificially)	
Rush cover	Extent	ca 1 ha	< 0.3 ha			Consider Kerry Bog pony grazing or control via (preferable) weed-wipe
Open water	Ponds/scrapes	2.5 ha	3 ha			Use mechanical excavator

Feature	Attribute(s)	Current	Target	Main factor(s)	Target for main factor(s)	Comments
Woodland						
Woodland	Extent	19.45 ha	19.45 ha			Native Woodland Scheme
	Edges & Rides	100%	100%	Lack of manpower	Increase skilled volunteer base	
	Coupes	5	5		Once in 5 years	
Deer	Extent	All	All	Lack of marksman	Annual monitor & cull	
Nest boxes	Extent	10	30			New & replacement
General fauna & flora	Spotted Flycatcher	?	≥ 2	Nest sites & woodland edge territories	Nest boxes – annual monitoring. Rides & glades increased	
Fen						
Scrub	Extent	3 ha	2 ha	Lack of manpower	Increase volunteer labour	Annual removal: 0.2 ha
Fen Grazing (ponies)	Extent	5	25	Lack of stock/funds	Increase stock numbers	Mixture of breeding, purchase & donation
Breeding species	Grasshopper Warbler	1	≥ 3		Targeted summer monitoring	5-year averages
	Reed Warbler	?	≥ 2			
	Water Rail	1-4	≥ 6			

Feature	Attribute(s)	Current	Target	Main factor(s)	Target for main factor(s)	Comments
Survey & monitoring						
Breeding birds	Extent	Casual	Survey	Lack of monitoring	At least 1 in 3 years	CBC style methods
Fixed-Point Photography	Extent	May	May			
Marsh Fritillary	Extent	None	Survey	Lack of expertise	Encourage use of site by external experts	
General fauna & flora	Extent	Casual	Enhanced & programme devised	Lack of expertise		
Survey water quality	Extent	Casual	Expert		Lab test (1 in 5 years)	

Development

Feature	Attribute(s)	Current	Target	Comments
Protection	Designation	100%	100%	
Demonstration	Events (5-year average)	Agriculture: 1	2 out of 5 years	
		Advocacy: < 1	2 out of 5 years	
		General: 2	2	HC Green Week / Biodiversity Day
Education	Schools	3 (average)	5 (total)	Average 25/group
Visitors	Numbers	ca 2,500	ca 15,000	
	Membership	< 10	≥ 60	Membership forms available at ECNR hides, enhance the ask & recruit at events
	Information	Panel: 2	5	General, woodland, fen
		Guide/leaflet: 1	1	Revise
		Audio / visual: 0	yes	
		ID panels: 3	9	Hides
	Boardwalk	550 m	775 m	
	Paths	ca 1,300 m	ca 1,850 m	Grass pathways
	Car park	2 cars	15 cars	Subject to Planning
Fen viewing platform	0	1	Subject to Funding	

3e. Objectives & Management

Rationale for Management

The Murrough Wetland SAC complex includes areas of grasslands and salt marsh which are farmed to varying degrees of intensity, and is part of one of the largest and most important coastal wetland sites in Ireland. The site is of high importance for wintering wildfowl, including Greylag Geese, Pale-bellied Brent Geese and Whooper Swans. The site is also of importance for breeding Lapwing and other waders. The impact of farming practices (which over the years has been one of gradual intensification throughout Ireland) has led to a lack of adequate management for breeding waders, and for wintering wildfowl and farmland birds, and therefore there has been a subsequent decline in numbers. Increased and continued suitable management within the Murrough and specifically ECNR is therefore of high importance.

Conservation Objectives

Grasslands

1. To manage the grasslands to provide the conditions necessary to increase the numbers of wintering waterfowl and key breeding species

Species targets:

- Increase the numbers of wintering waterfowl to $\geq 2,000$ birds
- Increase the 5-year average of wintering Black-tailed Godwit to ≥ 500
- Increase the 5-year average of wintering Greylag Geese to ≥ 500
- Increase the population of breeding Lapwing to ≥ 5 pairs
- 6 pairs of breeding Snipe
- 1 pair of breeding Kingfisher

Habitat targets:

- The extent of the grasslands remains at 53.96 ha
- Reduce the extent of soft rush to < 0.3 ha within the northern fields
- Increase extent of open pools to 3 ha

Summary management:

- Graze, ideally cattle, from 15 April to 15 October (according to conditions and at ≤ 0.5 LSU/ha levels). Ensure any breeding Lapwings protected from trampling
- Raise, and maintain optimum winter water levels from 15 September to 15 March
- Provide 2 Kingfisher banks
- Provide supplementary feed (barley seed) for wintering wildfowl
- In fields with more than 30% coverage soft rush consider Kerry Bog pony grazing or control via (preferable) weed-wipe
- Excavate new pools (fields 3 & 14)
- Clear water courses on rotation
- Cut 30% of reeds annually on rotation (fields 13 & 14)
- Control invasive plants e.g. thistle

Summary monitoring:

- Record wintering waterfowl populations through I-WeBS, Grey goose counts & casual counts
- Survey & monitor key breeding birds (Lapwing, Snipe, Kingfisher & Skylark) using standard methods
- Monitor and record water levels (weekly)
- Survey flora assemblages in exclosures (1 in 3 years)

Woodlands

2. To manage the woodland to enhance the general biodiversity and provide the conditions necessary for breeding woodland species

Species targets:

- 2 pairs of breeding Spotted Flycatcher

Habitat targets:

- Extent of woodland remains at 19.45 ha

Summary management:

- Erect ≥30 nest boxes to benefit a range of species, including at least 10 'open-fronted' boxes for Spotted Flycatcher
- Maintain woodland 'rides'
- Manage woodland edges to maintain structure, species composition and herb layer (1 in 3 years)
- Coppice thicket stage re-growth (1 in 5 years)
- Cull deer (if necessary based on survey of numbers) in order to limit damage to saplings
- Prevent encroachment of scrub into the fen by felling
- Remove invasive/exotic tree/shrub species

Summary monitoring:

- Monitor nest box usage annually
- Monitor woodland re-growth
- Monitor deer activity

Fen communities

3. To manage the Annex I fen habitat to enhance its condition and maximise the biodiversity and to provide the conditions necessary for breeding Water Rail, Grasshopper Warbler and Reed Warbler

Species targets:

- Increase the population of singing male Water Rails to ≥ 6
- Increase the population of singing male Grasshopper Warbler to ≥ 3 and Reed Warbler to ≥ 2
- Marsh Fritillary continues to be recorded each year

Habitat targets:

- The extent of fen remains at 19.20 ha
- Restore 1 ha as priority fen habitat through scrub removal and grazing management

Summary management:

- Graze with ponies throughout year
- Increase Kerry Bog pony numbers to a maximum of 25 animals (if sourced; assess & revise numbers for other alternatives e.g. Koniks)
- Manage scrub encroachment (remove 0.2 ha annually by cutting)
- Maintain high soil water table throughout

Summary monitoring:

- Survey key breeding birds (Water Rail, Grasshopper & Reed Warbler)
- Survey fen composition (1 in 3 years)
- Survey invertebrates, particularly Marsh Fritillary
- Monitor pony browsing preferences and effects

Other Research, Survey & Monitoring Objectives

4. To carry out a Research, Survey & Monitoring programme to inform our management of the site and contribute to other recording schemes, surveys and research projects

Summary monitoring:

- Complete survey of breeding bird populations (1 in 3 years)
- Carry out Fixed-Point Photography (May annually)
- Survey flora (1 in 5 years)
- Survey water quality (field kit annually & laboratory 1 in 5 years)
- Survey invertebrates, in particular butterflies, dragonflies & damselflies
- Record visitor numbers
- Encourage other ecological surveys & schemes as appropriate e.g. the Constant Effort Site ringing

Reserve Integrity & Profile Objectives

5. To improve the infrastructure in order to maximise the visitor experience

Summary management:

- Provide a parking area for up to 15 cars
- Extend woodland boardwalk to form loop walk between rides
- Extend boardwalk to connect woodland to coastal grass path
- Upgrade and maintain all paths (stone, grass, boardwalks) to provide access at all times as a continuous walk between Six & Five Mile Points (spraying, mowing, fencing etc)
- Provide directional signage on paths
- Provide 3 additional interpretation panels & revise leaflet
- Upgrade or replace all non-functional gates (including 'Aussie' gates)
- Provide a raised viewing platform within the fen

6. To build and retain support for our conservation work through education and visitors

People targets:

- Increase visitor numbers from circa 2,500 to 15,000 through promotion (subject to car park facilities)
- Recruit 1 member per 250 visitors per annum (target being 60 new members per 15,000 visitors)
- Provide educational outings for ≥5 schools / colleges per annum

Summary management:

- Promote reserve through web, media & presentations
- Install digital visitor counters at public access points
- Hold 'open days' (2 per year)
- Encourage educational visits & promote the site for 'Green Schools'
- Recruit members (face-to-face events, membership forms in hides & tourist outlets)

7. To demonstrate best practice management to other site managers, advisers and landowners

People targets:

- Hold demonstration events for Advocacy & Agriculture (4 events in 5 years)

Summary management:

- Invite specialist groups
- Use web site to promote & inform

8. To maintain and improve the integrity of the reserve

Summary management:

- Provide protection to breeding and wintering birds
- Conform with administrative procedures
- Regularly patrol
- Enforce the 'no dogs' policy
- Liaison with NPWS, local farmers and others
- Provide appropriate livestock handling and secure equipment storage facilities
- Purchase and maintain equipment necessary to carry out reserve works (subject to agreement and Health & Safety requirements)
- Provide appropriate training e.g. use of machinery (chainsaw, tractor etc) & First Aid at Work

3f: Annual programme

Five-year work programme

Priority 1: Essential actions. Actions which we are legally bound to undertake, actions required to achieve or maintain favourable condition, essential habitat management which would lead to immediate deterioration of the habitat if not undertaken.

Priority 2: Important actions. Actions which are important for the routine management of the reserve, including habitat management which could be missed for one year without immediate deterioration of the key conservation interest

Priority 3: Desirable actions. Actions which could be undertaken after all priority 1 and 2 actions are complete, and if time and other resources become available

Years Active	2012	2013	2014	2015	2016
Grasslands					
Seasonal cattle grazing	1	1	1	1	1
Raise water levels (September)	1	1	1	1	1
Provide Kingfisher banks	2	2			
Provide supplementary feed (winter)	2	2	2	2	2
Control soft rush	3	1	3	1	3
Excavate pools	2	2			
Clear water courses on rotation	2	1	2	1	2
Cut reeds	3	2	3	2	3
Control invasive plants & remove old stumps	3	3	3	3	3
Woodland					
Erect nest boxes	2	2	2		
Maintain rides	1	1	1	1	1
Prune woodland edges	1				
Coppice thicket stage re-growth			1		
Cull deer	1	1	1	1	1
Prevent woodland encroachment	1			1	
Remove invasive/exotics	3	3	3	3	3
Fen communities					
Graze with ponies	1	1	1	1	1
Increase pony herd	2	2	2	2	2
Manage scrub encroachment	2	2	2	2	2
Cut reed	2	2	2	2	2
Maintain optimum water levels	1	1	1	1	1
Survey & Monitoring					
Survey & monitor key breeding birds	1	1	1	1	1
Survey all breeding birds		1			1
Record wintering waterfowl	1	1	1	1	1
I-WeBS counts	1	1	1	1	1
Monitor grazing effects	1	1	1	1	1
Monitor water levels	2	2	2	2	2
Monitor deer activity	2	2	2	2	2
Fixed-point photography	2	2	2	2	2
Survey flora communities		1			1
Survey Marsh Fritillary	2	2	2	2	2

Years Active	2012	2013	2014	2015	2016
Survey & Monitoring continued					
Survey other fauna and flora	3	2	3	3	2
Monitor water quality	2	2	2	2	2
Monitor visitor numbers	2	2	2	2	2
Other research (as appropriate)	3	3	3	3	3
Infrastructure					
Parking area	2	1			
Boardwalk (woodland)	1				
Boardwalk (coastal path)	1				
Upgrade & maintain paths	1	1	1	1	1
Mow grass paths	1	1	1	1	1
Maintain all infrastructure	1	1	1	1	1
Directional signage	1	2			
Interpretation panels	2	2			
Upgrade or replace gates	2	2			
Provide livestock handling & equipment storage	1	1	1	1	1
Visitor counters	1				
Viewing platform in fen		3			
Reserve Integrity & Profile					
Site inspection and H&S overview	1	1	1	1	1
Finances & Purchasing procedures	1	1	1	1	1
Annual report & review	1	1	1	1	1
Prepare/revise Management Plan					1
Events & schools	2	2	2	2	2
Recruitment	2	2	2	2	2
Liaison with local farmers & others	1	1	1	1	1
Equipment & Training					
Purchase tractor mounted mower		3			
Purchase hand tools	1	1	1	1	1
Purchase PPE	1	1	1	1	1
Provide appropriate training	1	1	1	1	1
Maintain tools/equipment/machinery	1	1	1	1	1
Store tools/equipment/machinery	1	1	1	1	1
Running costs (tax/fuel/oils)	1	1	1	1	1

The actions identified by this Management Plan are in keeping with the formal Conservation Objectives for the SPA of which the Reserve forms part. By way of best practice this plan has been screened for Appropriate Assessment (Appendix 3), and individual project initiatives requiring consents or permissions will also be screened during the delivery of the plan.

3g. Bibliography/References

Crowe, O (2005) *Ireland's Wetlands and their Waterbirds* BirdWatch Ireland, Dublin

Fossit, J.A. (2000) *A guide to habitats in Ireland*. The Heritage Council of Ireland Series, Heritage Council, Kilkenny

Lynas, P., Newton, S.F. & Robinson, J.A. (2007) The status of birds in Ireland: an analysis of conservation concern 2008-2013. *Irish Birds* 8: 149-167.

3h. Appendices

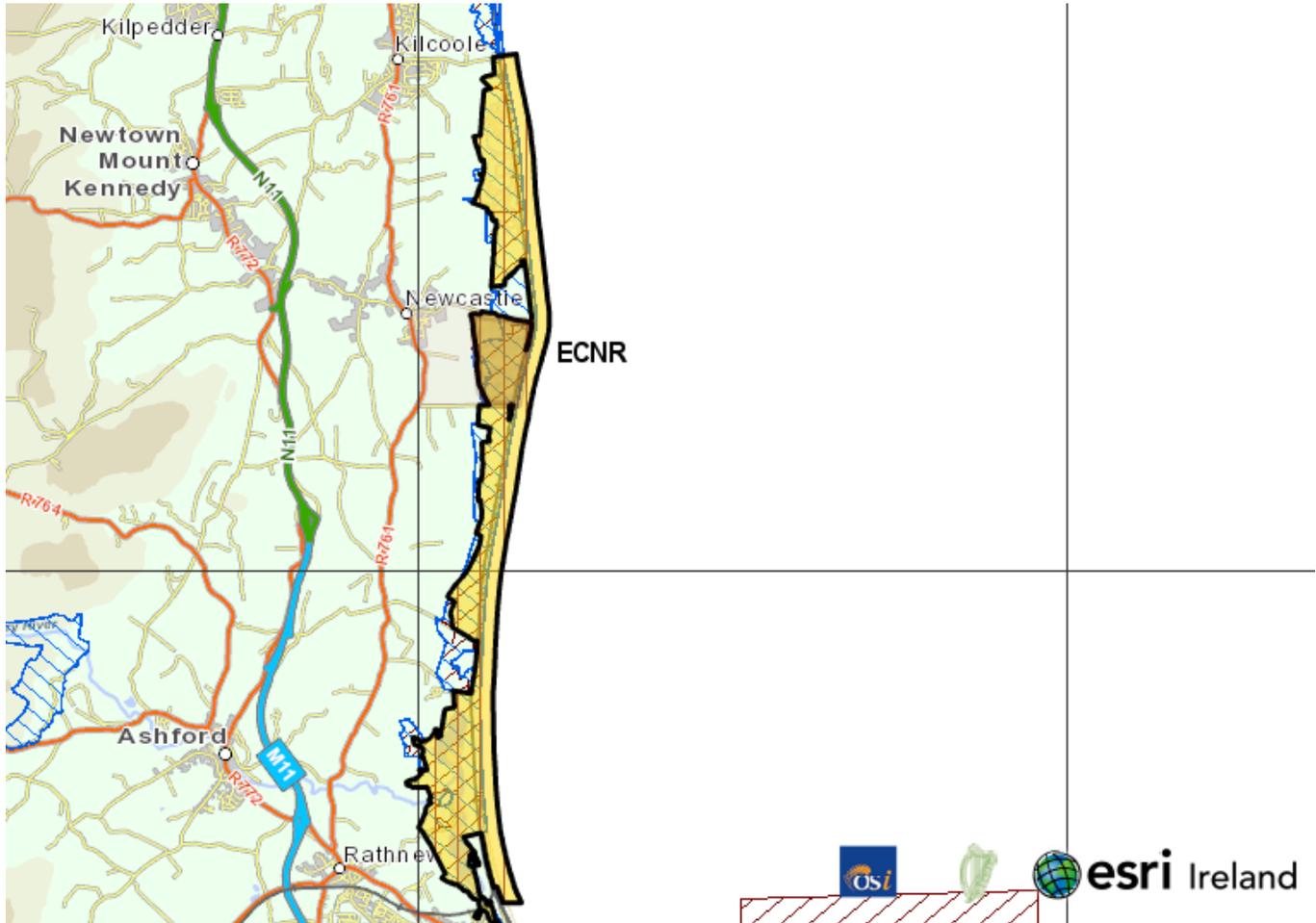
Appendix 1: Maps

Map 1: Location of the reserve and boundaries



Courtesy of Ordnance Survey Ireland (OSI)

Map 2: Location of the reserve in context with the Murrough Wetland SPA



Courtesy of OSI, NPWS & ESRI Ireland

Map 3: Access routes, car parking and hide locations within the reserve



Appendix 2: NPWS Designated Site Synopsis

Murrrough Wetlands SPA (004186)

SITE NAME: The Murrrough SPA (part of)

SITE CODE: 004186

The Murrrough SPA comprises a coastal wetland complex that stretches for 13 km from Kilcoole Station, east of Kilcoole village in the north to Wicklow town in the south, and extends inland for up to 1 km in places. The site includes an area of marine water to a distance of 200m from the low water mark. A shingle ridge runs along the length of the site and carries the Dublin-Wexford railway line.

Beside the shingle shore is a stony ridge supporting perennial vegetation. Driftline vegetation on the seaward side includes species such as Sea Rocket (*Cakile maritima*), Sea Sandwort (*Honkenya peploides*), Sea Holly (*Eryngium maritimum*) and Yellow-horned Poppy (*Glaucium flavum*). Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive in the south end of the site, has developed. A community dominated by Silverweed (*Potentilla anserina*) and Strawberry Clover (*Trifolium fragiferum*) occurs in some of the wetter, grassy areas. In some places, particularly at the south of the site, a Gorse (*Ulex*) heath has developed on the stony ridge.

At the southern end of the site, Broad Lough, a brackish, partly tidal lake, has a well-developed saltmarsh community. Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Club-rush (*Scirpus maritimus*). Saltmarsh is also present in the northern end of the site in the vicinity of the Breaches. An area of fen occurs at Five Mile Point. Here, Black Bogrush (*Schoenus nigricans*) is dominant. Fen Sedge (*Cladium mariscus*) is present where the ground is wetter. This merges into areas dominated by Common Reed. A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and rushes (*Juncus* spp.), to those of sedges (*Carex* spp.) with other areas supporting a mixture of sedges and Yellow Iris (*Iris pseudacorus*) also occurring. The marshes merge into wet grassland in many areas and where grazing pressure is low, a herb-rich sward occurs. Sedges are abundant in the wetter areas. Where drains have been cut, there are many other species such as Greater Spearwort (*Ranunculus lingua*), Bogbean (*Menyanthes trifoliata*) and Reed Sweet-grass (*Glyceria maxima*).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Greylag Goose, Light-bellied Brent Goose, Wigeon, Teal, Black-headed Gull, Herring Gull and Little Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The shingle ridge at Kilcoole is a traditional nesting area for Little Tern, and the site now supports one of the largest colonies in the country. Numbers vary between years, with an average of 30 pairs recorded for the four years 1999-2002. In 2005, 100 pairs were recorded here. A tern protection scheme and research programme, co-ordinated by BirdWatch Ireland and the National Parks and Wildlife Service, has been in operation since 1985. Breeding success varies from year to year, largely due to predation by foxes, crows and other species.

During the winter this site is important for a number of waterbirds - all population sizes are the mean of peak counts for the 5 years, 1995/96 – 1999/2000. Light-bellied Brent Goose occurs here in internationally important numbers (859). Other species that visit here in nationally important numbers are Red-throated Diver (32), Greylag Goose (300), Wigeon (1,209), Teal (644), Black-headed Gull (997) and Herring Gull (506). Other species that are known to occur here are Little Grebe, Grey Heron, Cormorant, Mute Swan,

Whooper Swan, Greenland White-fronted Goose, Shelduck, Gadwall, Shoveler, Mallard, Golden Plover, Ringed Plover, Lapwing, Dunlin, Curlew, Greenshank and Redshank.

Short-eared Owl is recorded here during the winter. Little Egret has bred locally in recent years and this site is a main feeding area, with several birds present regularly. While formerly a rare bird in Ireland, Little Egret is now well-established with most birds occurring in the south-east and south (Counties Wexford, Waterford and Cork). The Murrough is presently at the edge of the species' range. This site is one of the few sites in Ireland where Reed Warbler breeds regularly. It is considered that 1-4 pairs bred each year during the 1980s and early 1990s, with a minimum of 6 birds in song in 1993. An absence of records since 1996 may be due to under-recording. For some years in the 1980s, Bearded Tit bred - this is the only known site in the country where breeding of this rare species has been proven; there have, however, been no subsequent records. Kingfisher regularly uses the site. Sandwich Tern are recorded from the site during the autumn.

Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. Some levelling of the sand hills near Killoughter has also occurred. Pollution, reclamation and further drainage would adversely affect this site.

The Murrough SPA is an important site for wintering waterbirds, being internationally important for Brent Goose and nationally important for Red-throated Diver, Greylag Goose, Wigeon, Teal, Black-headed Gull and Herring Gull. It is probably the most important site in the country for nesting Little Tern. The regular occurrence of Red-throated Diver, Little Egret, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Little Tern, Sandwich Tern, Short-eared Owl and Kingfisher is of note as these species are listed on Annex I of the E.U. Birds Directive. The site also supports a typical diversity of birds associated with reed swamp, including Reed Warbler, a very localised species in Ireland. The site is also of considerable importance for the wide range of coastal and freshwater habitats that it supports, including several that are listed on Annex I of the E.U. Habitats Directive.

20.8.2007

The Murrough SAC (002249)

SITE NAME: The Murrough SAC (part of)

SITE CODE: 002249

The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway.

The site supports a number of habitats listed on Annex I of the EU Habitats Directive and a number of bird species listed on Annex I of the EU Birds Directive, as well as a wide range of important migratory birds. There are also many rare plants in the site.

On the seaward side, driftline vegetation includes species such as Sea Rocket (*Cacile maritima*), Sea Sandwort (*Honkenya peploides*), Sea Holly (*Eryngium maritimum*) and Yellow-horned Poppy (*Glaucium flavum*). The rare and legally protected Oyster Plant (*Mertensia maritima*) (Flora (Protection) Order, 1999) has been recorded on the gravelly shore in the past but is now considered to be extinct from this locality.

Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive in the south end of the site, has developed. Typical species include Sweet Vernal-grass (*Anthoxanthum odoratum*), Crested Dog's-tail

(*Cynosurus cristatus*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Burnet Rose (*Rosa pimpinellifolia*) and Pyramidal Orchid (*Anacamptis pyramidalis*). A community dominated by Silverweed (*Potentilla anserina*) and Strawberry Clover (*Trifolium fragiferum*) occurs in some of the wetter, grassy areas. In some places, particularly at the south of the site, a Gorse (*Ulex*) heath has developed on the stony ridge.

Saltmarsh is present within the site in two distinct areas. At the southern end of the site, Broad Lough, a brackish, partly tidal lake, has a well developed saltmarsh community which includes Sea Rush (*Juncus gerardii*), Common saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Purslane (*Hamillione portulacoides*) and Common Scurvy-grass (*Cochlearia officinalis*). Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Clubrush (*Scirpus maritimus*).

Saltmarsh is also present in the northern end of the site in the vicinity of the Breaches. Though this has been greatly affected by drainage in the late 1980s and early 1990s, localised Sea Couch (*Elymus pycnanthus*) still occurs. The grassland which was improved as a result of the drainage is now influenced by seepage and flooding of saline waters.

An area of fen occurs at Five Mile Point. Here Black Bog-rush (*Schoenus nigricans*) is dominant, with Marsh Pennywort (*Hydrocotyle vulgaris*), Purple Moor-grass (*Molinia caerulea*), heather (*Calluna vulgaris*), Cross-leaved heath (*Erica tetralix*), Devil's-bit Scabious (*Succisa pratensis*) and a wide variety of orchids also present. The rare, Narrow-leaved Marsh Orchid (*Dactylorhiza traunsteineri*) has also been recorded here. Fen Sedge (*Cladium mariscus*) is present where the ground is wetter. This in turn, merges into areas dominated by Common Reed. Fen is found in mosaic with reed bed, and wet woodland in the town land of Blackditch.

A fine wet woodland occurs at Blackditch. Birch (*Betula pubescens*) is the dominant species with some Alder (*Alnus glutinosa*), Willow (*Salix* spp.) and Ash (*Fraxinus excelsior*) also present. The ground flora of this wooded area is often quite dense. This wood also contains a rich invertebrate community with at least eight rare or notable species of fly (Diptera) occurring, including *Syntormon setosus*, a species unknown elsewhere in Britain or Ireland.

A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and Rushes (*Juncus* spp.), to those of Sedges (*Carex* spp.) with other areas supporting a mixture of Sedges and Yellow Iris (*Iris pseudacorus*) also occurring. A wide variety of grasses and herbs are also found. These include Meadowsweet (*Filipendula ulmaria*), Silverweed and Common Spikerush (*Eleocharis palustris*). The scarce, Marsh Pea (*Lathyrus palustris*) occurs in one area. The marshes merge into wet grassland in many areas. Where grazing pressure is low, a herb-rich sward occurs with species such as Ragged Robin (*Lychnis flos-cuculi*), Cuckoo Flower (*Cardamine pratensis*), Meadowsweet and Spotted Orchid (*Dactylorhiza maculata*) occurring. Sedges are abundant in the wetter areas. Where drains have been cut, there are many other species such as Greater Spearwort (*Ranunculus lingua*), Bogbean (*Menyanthes trifoliata*) and the scarce Reed Sweetgrass (*Glyceria maxima*).

The Murrough is an important site for wintering waterfowl and breeding birds. Annex I bird species present include Red-throated Diver, Little Egret, Bewick's Swan, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Kingfisher, Sandwich Tern and Little Tern. Average peak winter counts from 1994/95 - 1997/98 showed the site to have an internationally important population of Brent Geese (1,318, which is much higher than it was in the early 90s), nationally important populations of Wigeon (1,518), Teal (772), Common Scoter (103) and Lapwing (3,140) and regionally or locally important populations of Whooper Swan (80), Little Grebe (22), Shelduck (95), Gadwall (9), Mallard (391), Shoveler (22), Golden Plover (615), Curlew (605) and Redshank (181). Greylag Geese numbers were nationally important in the early 90s but these numbers have dropped off. The average peak is now 213.

Little Tern breed on the shingle beach near The Breaches and this is the largest colony on the east coast (c.50 pairs in 1993, an average of 37 pairs over the ten year period 1988-1998). Redshank, Oystercatcher, Ringed Plover and Water Rail also breed. The reedbeds at Broad Lough provide habitat for Reed Warbler and the rare Bearded Tit has bred here. Otter has been reported regularly from the Murrough.

Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. In 1997 there was some levelling of the sand hills below Killoughter station. Pollution, reclamation and further drainage would adversely affect this site.

This site is of importance as it is the largest coastal wetland complex on the east coast of Ireland. Although much affected by drainage, it still contains a wide range of coastal and freshwater habitats including five listed on Annex I of the EU Habitats Directive, some of which contain threatened plants. Areas on the site contain a rich invertebrate fauna, including several rarities. It is an important site for both wintering and breeding birds and supports a wide variety of species listed on Annex I of the EU Birds Directive.

18.1.2000

Appendix 3: Appropriate Assessment Screening of the Management Plan

Is this proposal part of the Natura 2000 Management Plan for the reserve? **Yes**

Details of proposal

While no Management Plan is in place for the SPA or SAC, this Reserve Management Plan is in keeping with achieving the Conservation Objectives for the SPA and SAC. Nonetheless, by way of internal process, the Reserve Management Plan is screened for Appropriate Assessment.

A five-year Reserve Management Plan for the period 2012 to 2016, produced by BirdWatch Ireland encompasses an area of 92.61ha within the SPA and SAC. All licensed or permits requiring consent will be screened for Appropriate Assessment by way of best practice

Location

Grid Ref: O315035 (approximate centre of reserve)

Map attached in Appendix 1 of the Reserve Management Plan

List of nearby Natura sites and distance from proposal

Site name	Reference/code	Distance	Considered
The Murrough SPA	004186	Reserve is contained wholly within the designation	Yes
The Murrough Wetlands SAC	002249	Reserve is contained partly within the designation	Yes
The Murrough pNHA	00730	Reserve is contained partly within the designation	Yes

Natura interests

The Murrough Special Protection Area: Site Code 004186

SPA interests	Specific considerations	Safeguard	Conclusion
Light-bellied Brent Goose	Does not use the reserve area at present (data up to 2011)	None required	No impact
Little Tern	Does not use the reserve area	None required	No impact
Red-throated Diver	Does not use the reserve area	None required	No impact
Greylag Goose, Wigeon & Teal	Increased usage of the reserve area; requires undisturbed wet grassland areas for feeding and roosting	Maintain raised soil water table and undisturbed grassland areas in winter	Positive impact in increasing numbers
Black-headed Gull & Herring Gull	Does not use the reserve area	None required	No impact

The Murrough Wetlands Special Area of Conservation: Site Code 002249

SAC interest	Specific considerations	Safeguard	Conclusion
Calcareous & Alkaline Fen	This is a wetland habitat, partially restored through tree removal and managed by appropriate grazing levels and a network of raised water courses	Ensure appropriate soil water table levels and grazing levels are maintained	Positive impact in increasing diversity
Annual vegetation of drift lines	Does not occur within the reserve area	None required	No impact
Perennial vegetation of stony banks	Does not occur within the reserve area	None required	No impact
Atlantic & Mediterranean salt meadows	Does not occur within the reserve area	None required	No impact

Other wildlife interests (not listed interests of the SPA/SAC)

Species/Habitat	Status	Consideration	Safeguards	Conclusion
Kingfisher	Annex 1	Up to 2 birds use the water courses and open pool areas for foraging and fly routes. Semi-resident on reserve; does not breed. Disturbance may be an issue	Management of the water courses restricted to summer months & all potential banks assessed for breeding holes prior to any works	No likely impact
Whooper Swan, Mute Swan, Greenland White-fronted Goose, Shoveler, Little Egret Curlew & Black tailed Godwit	Annex I & National priority species	Utilise the wet grasslands, seasonally flooded areas and water courses for foraging and roosting during the October – March period	Any construction work would be scheduled to be carried out during the summer months; an assessment ‘on the ground’ of any breeding species and / or important biodiversity prior to any works starting	Positive impact in increasing numbers
Hen Harrier , Merlin , Peregrine , Short-eared Owl	Annex 1 & National priority species	1-2 birds of each forage over the Fen & Reed bed habitats during the October – March period	Active management restricted to summer months	No likely impact
Hedgerow	National interest	Loss of breeding bird habitat and screening	Any removal of native hedgerow plants mitigated by re-planting in a suitable area	No likely impact

Summary of proposed activities and likely significant effect

Activity	Potential impact	Safeguard	Conclusion
Creation of infrastructure	Disturbance & loss of habitat	Construction period to be outside of wintering period. Limited loss of habitat – restricted to small area of improved grassland and removal of ca50m young native hedgerow (will be re-planted)	No likely impact
Visitors numbers & usage	Disturbance	Provision of clearly marked pathways & boardwalks to restrict access	No likely impact
Grazing management	Disturbance	Sympathetic and appropriate grazing levels; on wet grassland areas restricted to between April and October	No likely impact
Survey & Monitoring	Disturbance	Limited to professional experienced surveyors	No likely impact