

Wintering Bird Survey of the lands surrounding the Broadmeadows/Swords Estuary

January – March 2009

DRAFT 2



Prepared for
Fingal County Council
May 2009

**Wintering bird survey of the lands surrounding the
Broadmeadows/Swords Estuary**

January – March 2009

Prepared by:

Julie Roe and John Lovatt

Table of Contents

Summary	i
1. Introduction	1
2. Conservation Legislation and Policy	2
2.1 European Union Directives	2
2.2 Bird Species of Conservation Concern	4
3. Location and Study Area	5
3.1 Study area	5
3.2 Landscape overview	6
4. Survey Methodology	7
5. Results	8
5.1 Results overview	8
5.2 Survey results by section	11
5.2.1 Lissenhall East - Section A	11
5.2.2 Ballymadrough/Seapoint - Section B	12
5.2.3 Ballymadrough – Section C	13
5.2.4 Ballymadrough East – Section D	14
5.2.5 Kilcrea South - Section E	15
5.2.6 Kilcrea (Channel) – Section F	16
5.2.7 Kilcrea North – Section G	17
5.2.8 Corballis – Section H	18
5.2.9 Seatown East – Section I	19
5.2.10 Amenity Lands along the Estuary Road – Section J	20
5.3 Land utilisation by key species	21
5.3.1 Little Egret	21
5.3.2 Light-bellied Brent Goose	22
5.3.3 Water Rail	23
5.3.4 Golden Plover	24
5.3.5 Snipe	25
5.3.6 Black-tailed Godwit	26
5.3.7 Stock Dove	27
5.3.8 Barn Owl	28
5.3.9 Kingfisher	29
5.3.10 Skylark	30
5.3.11 Tree Sparrow	31
5.3.12 Yellowhammer	32
5.3.13 Other important observations	33
Birds of Prey	33
Waders	34
Finch flocks	35
6. Discussion	36

APPENDICES

Appendix 1: Map of the study area sections and baseline data	39
Section A Data	41
Section B Data	43
Section C Data	46
Section D Data	49
Section E Data	53
Section F Data	57
Section F Data	57
Section G Data	60
Section H Data	63
Section I Data	65
Section J Data	68
Appendix 2: Additional birds species recorded bordering the study area	70
Appendix 3: Mammal species recorded in the study area	71
Appendix 4: Species of conservation concern and their conservation status	72
Appendix 5: References	74

SUMMARY

The Broadmeadows/ Swords Estuary is situated immediately north of Malahide and east of Swords, Co Dublin. The estuary is designated as a Special Protection Area (SPA) for birds under the EU Birds Directive. This designation is based on the site's high importance for wintering waterfowl and good diversity of species. It has an internationally important population of Light-bellied Brent Goose, supports Golden Plover and Bar-tailed Godwit, both EU Annex I species, in nationally important numbers and is nationally important of a further 12 species. Within the SPAs the authorities are obliged to prevent significant pollution or deterioration of the habitat, and significant disturbance to the birds for which the SPAs have been designated. The estuary is also a Special Area of Conservation (SAC) for its habitats under the EU Habitats Directive. Together SPAs and SACs form a pan-European network of protected sites known as Natura 2000.

The estuary has been the focus of systematic waterbird monitoring since the early 1980s and monthly winter waterbird counts have been undertaken under the Irish Wetland Bird Survey (I-WeBS) since 1994. Crowe (2005) shows that the estuary also holds Black-tailed Godwit in numbers of international importance.

To date no systematic survey has been carried out on the lands surrounding the estuary and no information exists on the use of these lands by protected bird species. In response to Fingal County Council's need for baseline data to inform the preparation of the Swords Local Area Plan, the County Development Plan and future development decisions, this study was commissioned in January 2009 with the following aims:

- To collect baseline data on all wintering birds which utilise the lands surrounding the Broadmeadows/ Swords Estuary.
- To highlight the presence of any species of conservation concern, especially:
 - Annex I species listed under the EU Birds Directive and species featured under the qualifying interest of Broadmeadows/ Swords Estuary SPA - Natura 2000 site; and
 - Species listed under Birds of Conservation Concern Ireland (BoCCI), particularly those which are of regional importance and the focus of specific conservation actions in Fingal.

The study area comprised parts of the townlands of Lissenhall East, Ballymadrough, Kilcrea and Corballis to the north and Seatown East and amenity lands close to the estuary to the south. These lands surrounding the inner estuary are predominantly low lying with agriculture and pasture for horses and cattle dominating the northern districts, while the remaining undeveloped lands to the south are under agricultural use or used as amenity areas. The area was divided into ten sections and all study areas were surveyed four times between January and March 2009.

The winter bird survey has produced a good set of baseline data on the bird species which utilise the lands surrounding the Broadmeadows/ Swords Estuary, the topography and the diverse habitats. A total of 66 bird species were recorded in the survey area. Common birds were present throughout the lands in good numbers. In addition five bird species listed under Annex I of the EU Birds Directive and fourteen species listed under the qualifying interests the Broadmeadows/ Swords Estuary SPA - Natura 2000 site were recorded (see Table 3). Overall the survey identified 25 species of conservation concern, though many are listed based on their breeding populations.

Of these, the species recorded of most significance were:

- **Annex I species:** Little Egret, Golden Plover and Kingfisher.
- **Red listed species:** Barn Owl and Yellowhammer.
- **Amber listed species:** Light-bellied Brent Goose, Water Rail, Snipe, Black-tailed Godwit, Stock Dove, Skylark and Tree Sparrow.

Light-bellied Brent Goose and Golden Plover are the most important species recorded which feature under the qualifying interests the Broadmeadows/ Swords Estuary.

The Light-bellied Brent Goose is the most important species recorded with numbers of international importance present at Ballymadrough, Kilcrea, Corballis and at amenity lands to the south of the estuary. Another important species, Golden Plover, utilise agricultural land at Seatown East. Both of these are important SPA featured species and the findings illustrate that the surrounding lands are part of the functional wintering area for the populations of Light-bellied Brent Geese and Golden Plover that use the Broadmeadows/ Swords Estuary SPA.

Lapwing, Black-tailed Godwit and Curlew all rely on the surrounding fields as a feeding resource and for resting. The Newbridge River at Kilcrea and its flood zones are very important for a range of wildfowl and waders and an important roost for Grey Herons was located at the low-lying lands of Kilcrea North.

Other important and protected species which are not linked to the SPA designation were present. Kingfisher and Little Egret were recorded at the Lissenhall Stream at Ballymadrough/ Seapoint and along the Newbridge River at Kilcrea. Species of that are declining nationally and are the focus of specific conservation actions in Fingal were also recorded. Barn Owl was present at Ballymadrough, this is an important record for Fingal. Water Rail, Snipe, Stock Dove, Tree Sparrow and Yellowhammer were found at a number of suitable habitats over the survey area. All these species are the focus of specific conservation actions in Fingal.

In addition to the bird survey, evidence of the presence of large mammals was recorded. Good numbers of Irish Hares were present on lands the northern side of the estuary; a species known to be in decline nationally and Otter, an EU priority species, was recorded at Ballymadrough.

The rich diversity of species recorded is a direct reflection of the mosaic of habitats, land use and mix of activities and proximity of these lands to the estuary. Current farming practices which include tillage and pasture for horses and cattle offer protection for birds in the district.

This study provides clear evidence that important and protected species depend on the surrounding farmland together with the estuarine wetland habitats. If the mix of land use stays as it then this diversity should continue, but any deterioration of this habitat surrounding the estuary could affect the health of the Light-bellied Brent Goose and Golden Plover populations of the Broadmeadows/ Swords Estuary SPA and have adverse effects on other important species of conservation concern which rely on these lands.

1. INTRODUCTION

The Broadmeadow/ Swords Estuary is designated as a Special Protection Area (SPA) for birds under the EU Birds Directive and is internationally important for Light-bellied Brent Geese and Black-tailed Godwit and nationally important for a further 12 species (Crowe 2005). It is also listed as a Ramsar Site (Crowe 2005) and a Special Area of Conservation (SAC) for its habitats under the EU Habitats Directive.

The estuary has been the focus of systematic waterbird monitoring since the early 1980s (Hutchinson 1989, Sheppard 1993) and monthly counts from September to March have been conducted since 1994 under the Irish Wetland Bird Survey (I-WeBS)¹.

To date no systematic survey has been carried out on the lands surrounding the estuary and no information exists on the use of these lands by protected bird species.

In response to Fingal County Council's need for baseline data to inform the preparation of the Swords Local Area Plan, the County Development Plan and future development decisions, this study was commissioned in January 2009 with the following aims:

- To collect baseline data on all wintering birds species which utilise the lands surrounding the Broadmeadows/Swords Estuary,
- To highlight the presence of any species of conservation concern, especially:
 - Annex I species listed under the EU Birds Directive,
 - Species featured under the qualifying interest of the Broadmeadows / Swords Estuary SPA – Natura 2000 site, and
 - Species listed under Birds of Conservation Concern Ireland, particularly those which are of regional importance and the focus of specific conservation actions in Fingal.

¹ I-WeBS (Irish Wetland Bird Survey) is the national monitoring project for non-breeding waterbirds, wintering in Ireland, organised by BirdWatch Ireland, National Parks & Wildlife of the Department of the Environment, Heritage & Local Government and the Wildfowl and Wetlands Trust, and supported by The Heritage Council.

2. CONSERVATION LEGISLATION AND POLICY

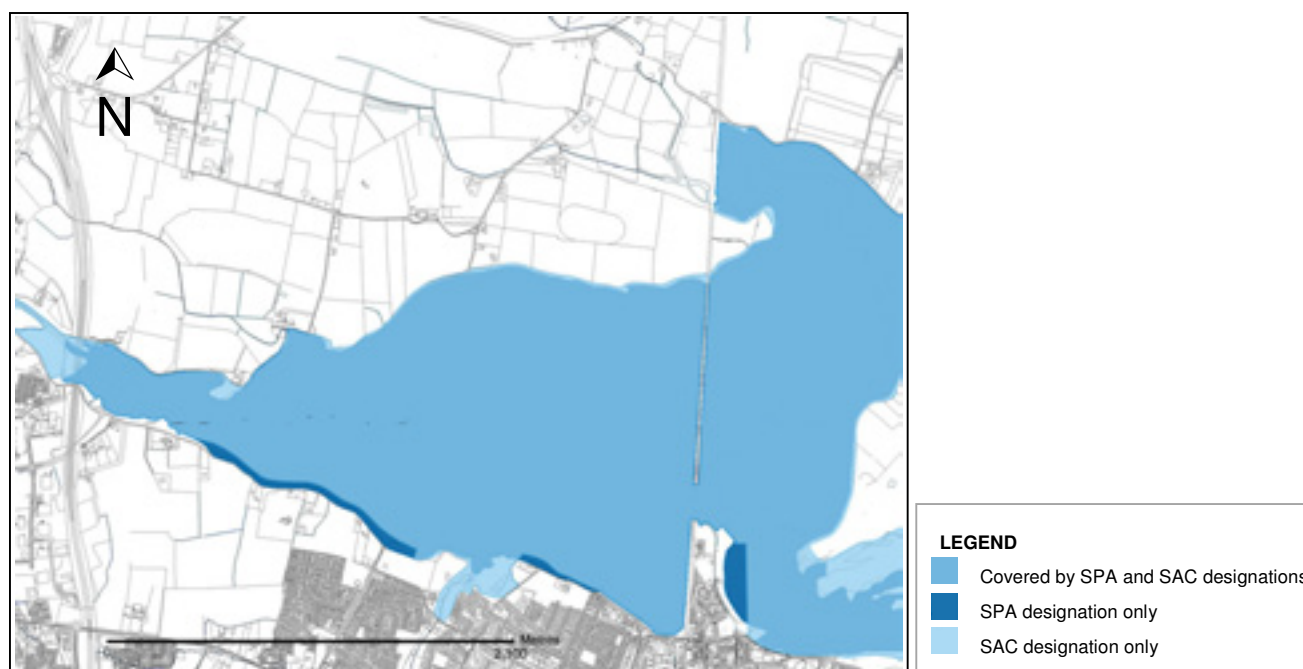
2.1 European Union Directives

The European Union's Habitats Directive

The National Parks & Wildlife Service (NPWS) has prepared Site Synopses in relation to the Special Area of Conservation (SAC) and Special Protection Area (SPA) designations covering the Broadmeadows/ Swords Estuary. These synopses contain outline descriptions of the designated areas, and in the case of the SAC synopsis, emphasis is on habitats which are included in Annexes to the EU Habitats Directive.

The extent of the Broadmeadows/ Swords Estuary SPA and SAC designations (adjacent to the survey area covered in this study) is shown in Figure 1 and the directives explained below.

Figure 1. Special and Protection Area and Special Area of Conservation designations at the Broadmeadows / Swords Estuary²



Special Protection Areas (SPAs)

In 1979 the European Union adopted a directive on the conservation of wild birds (Directive 79/409/EEC), which is commonly referred to as the "Birds Directive". The primary purpose of this directive is to give protection to Europe's birds and their habitats, especially to vulnerable species which are listed in Annex I of the directive. Species listed in Annex I are subject to special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. In relation to bird habitats, there is emphasis on wetlands, which are vital for many migratory waterbirds, some of which are listed in Annex I. Thirty three species of bird listed under Annex I of the EU Birds Directive 79/409 are deemed relevant to Ireland. The primary means for bird habitat protection is the establishment of a comprehensive network of Special Protection Areas (SPAs), under Article 4 of the directive. The SPAs are usually chosen on the basis that the sites are internationally important for birds, particularly Annex I species. Within the SPAs the authorities are obliged to prevent significant pollution or deterioration of the habitat, and significant disturbance to the birds for which the SPAs have been designated.

² All base maps used in this report were reproduced with kind permission of Fingal County Council. © Ordnance Survey Ireland.

Special Areas of Conservation (SACs)

Special Areas of Conservation (SACs) are prime habitat conservation areas in the country, considered to be important on a European as well as Irish level. The legal basis on which SACs are selected and designated is the EU Habitats Directive (92/43/EEC), transposed into Irish law in the European Union (Natural Habitats) Regulations, 1997. The Habitats Directive lists (Annex I) certain habitats that must be protected within SACs. The habitat types covered by the SPA designation at the Broadmeadows/ Swords Estuary include tidal rivers, estuaries, mud flats and lagoons.

Together SPAs and SACs form "Natura 2000", a network of protected areas throughout the European Community. Planning authorities are obliged by law to ensure that these sites are protected and conserved. Activities which are likely to damage or destroy SACs and SPAs, whether within the site or beyond it, must be controlled, and are only allowed in certain very limited circumstances (Clabby 2003).

According to the Broadmeadows/ Swords Estuary Natura 2000 Data Form the site is "of high importance for wintering waterfowl and supports a particularly good diversity of species. It has an internationally important population of *Branta bernicla hrota* (Light-bellied Brent Goose) (4.8% of national total), and nationally important populations of a further 12 species." (NPWS 2009)³. The species listed for the qualifying interest of the site are presented in Table 1.

Table 1: Bird species listed in the Broadmeadows / Swords Estuary Natura 2000 Data Form³

Common name	Scientific name	Number - individuals	Common name	Scientific name	Number - individuals
<i>Birds listed Annex I of the Council Directive 79/409/EEC</i>					
Golden Plover *	<i>Pluvialis apricaria</i>	1,843	Ruff	<i>Philomachus pugnax</i>	5-10
Bar-tailed Godwit *	<i>Limosa lapponica</i>	156			
<i>Regularly occurring Migratory Birds not listed Annex I of the Council Directive 79/409/EEC</i>					
Great Crested Grebe	<i>Podiceps cristatus</i>	64	Sanderling	<i>Calidris alba</i>	21
Cormorant	<i>Phalacrocorax carbo</i>	33	Dunlin *	<i>Calidris alpina</i>	1,594
Brent Goose **	<i>Branta bernicla</i>	956	Black-tailed Godwit	<i>Limosa limosa</i>	409
Shelduck *	<i>Tadorna tadorna</i>	439	Curlew	<i>Numenius arquata</i>	548
Teal	<i>Anas crecca</i>	93	Redshank *	<i>Tringa tetanus</i>	581
Mallard	<i>Anas platyrhynchos</i>	51	Greenshank *	<i>Tringa nebularia</i>	38
Pintail *	<i>Anas acuta</i>	58	Turnstone	<i>Arenaria interpres</i>	110
Pochard	<i>Aythya ferina</i>	50	Black-headed Gull	<i>Larus ridibundus</i>	69
Goldeneye *	<i>Beucephala clangula</i>	215	Common Gull	<i>Larus canus</i>	35
Red-breasted Merganser *	<i>Mergus serrator</i>	105	Little Stint	<i>Calidris minuta</i>	1-3
Oystercatcher *	<i>Haematopus ostralegus</i>	1,493	Curlew Sandpiper	<i>Calidris ferruginea</i>	1-10
Ringed Plover	<i>Charadrius hiaticula</i>	90	Green Sandpiper	<i>Tringa ochropus</i>	1-3
Grey Plover *	<i>Pluvialis squatarola</i>	201	Lapwing	<i>Vanellus vanellus</i>	1,543
Knot *	<i>Calidris canutus</i>	915			
<i>Other important species</i>					
Mute Swan	<i>Cygnus olor</i>	38	Grey Heron	<i>Ardea cinerea</i>	23

Notes: Species occurring in numbers of **** International importance; * National importance.**

Bird numbers presented in the Table 1 are based on the mean peak counts (I-WeBS) over the five-season periods 1995/96 - 1999/2000. Crowe (2005) shows that, based on data from period 1996/97 - 2000/01, all species of international and national importance retained their status and Black-tailed Godwit occurred in numbers of international importance at the site.

Threshold values for species of international importance are set by Wetlands International and are based on 1% of the international population estimate. Values for species of national importance are based on 1% of the national population estimate (Crowe *et al.* 2008)

³ NPWS. *Natura 2000 Data Form – Broadmeadows / Swords Estuary*. (20/03/2009) Site code: IE0004025. National Parks & Wildlife Service of the Department of Environment, Heritage and Local Government. 7 Ely Place, Dublin 2, Ireland.

2.2 Bird Species of Conservation Concern

In addition to species listed in the EU Birds Directive (see Section 2.1), species of conservation concern in the Irish and European context are also classified under Birds of Conservation Concern Ireland (BoCCI) and Species of European Conservation Concern (SPEC). Both of these assessment processes are used to identify priority species in order that conservation action can be taken to improve species status.

Birds of Conservation Concern Ireland (BoCCI) 2008 – 2013 (Lynas, P. *et al* 2008)

BirdWatch Ireland and the Royal Society for the Protection of Birds (RSPB) have listed priority bird species suffering decline in the Irish/European and global context. The Birds of Conservation Concern in Ireland (BoCCI) list classifies birds as Red (high conservation concern) or Amber (medium conservation concern) based on their conservation status and hence conservation priority. All other regularly occurring species are classified as Green List and are not considered threatened. Listed species must meet one or more of the following criteria:

- Red List:** Their breeding population or range has declined dramatically in recent years, or their breeding population has undergone a significant decline since 1800, or they are of global conservation concern.
- Red listed species automatically qualify for Amber status.
- Amber List:** Their population or range has declined moderately in recent years, or they are rare or sporadically breeding species, or their breeding or wintering population is internationally important and/or localised, or they have an unfavourable conservation status in Europe.
- Green List:** Do not meet Red or Amber-listing criteria.

European Conservation Status (SPEC)

Species of European Conservation Concern are assessed by BirdLife International and recognised by the SPEC process:

- SPEC 1:** Species are those which are of global conservation concern. SPEC 1 species are automatically BoCCI Red-listed and both SPEC 2 and 3 species are Amber-listed except for those that do not breed in Ireland.
- SPEC 2:** Species are those which have an unfavourable conservation status in Europe (if the population is threatened, declining, depleted from historical levels or is found only in a few locations) and is concentrated in Europe (i.e. more than 50% of the global population occurs in Europe).
- SPEC 3:** Species are which have an unfavourable conservation status in Europe (as above), but which are not concentrated in Europe.

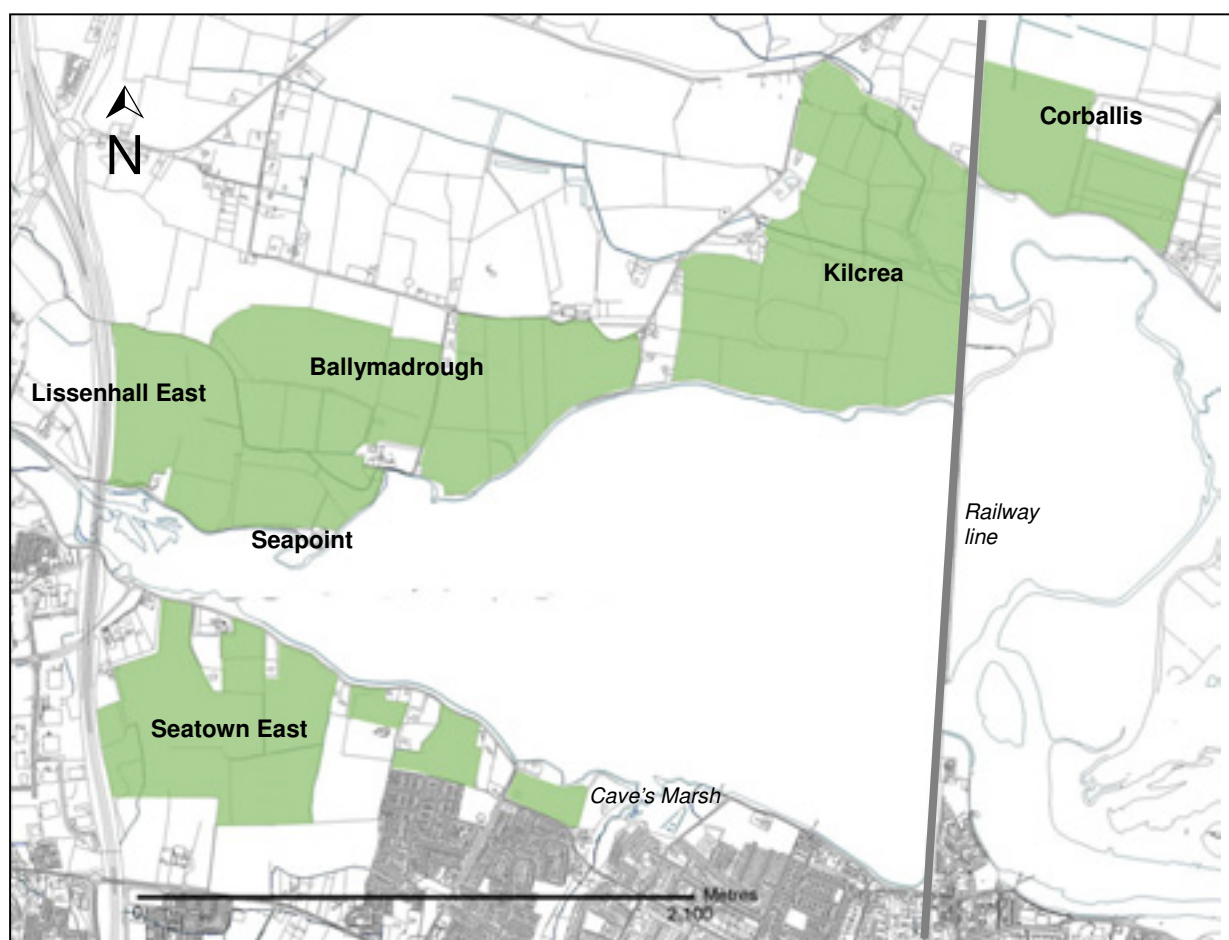
Species which do not fulfil these criteria are regarded as **non-SPEC** species and of least conservation concern.

3. LOCATION AND STUDY AREA

3.1 Study area

The Broadmeadow/Swords Estuary lies c.15 km NNE of the centre of Dublin City, with the towns of Swords to the west and Malahide to the south east. The study area comprises parts of the townlands of Lissenhall East, Ballymadrough, Kilcrea and Corballis to the north and Seatown East and amenity lands close to the south shores of the estuary.

Figure 2. Map of Study Area at lands surrounding the Broadmeadows/Swords Estuary⁴



The Cave's Marsh site has not been included in this survey as it is systematically counted under I-WeBS and has been the focus of a Fingal County Council commissioned study in 2007⁵.

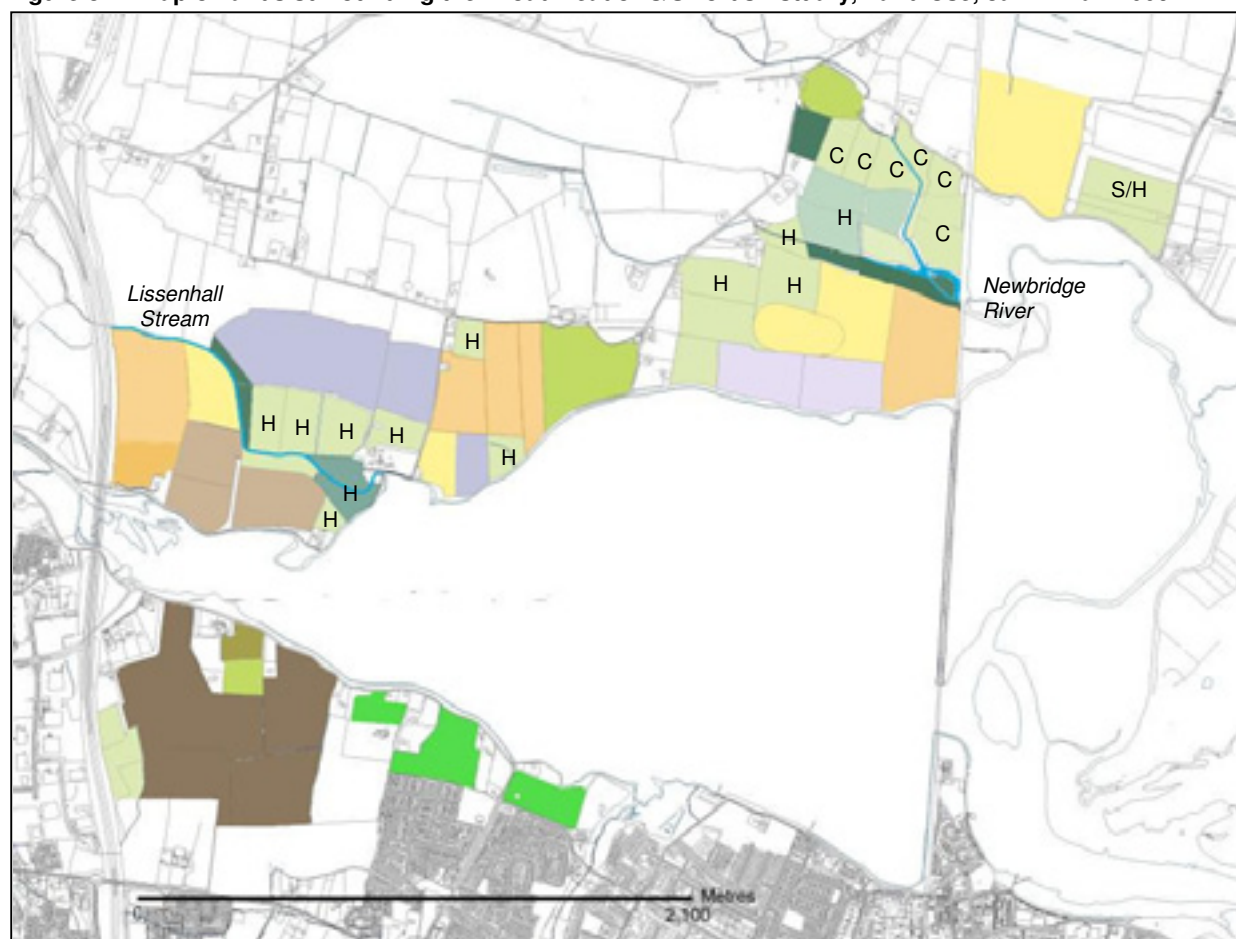
⁴ All base maps used in this report were reproduced with kind permission of Fingal County Council. © Ordnance Survey Ireland.

⁵ Pierce & Roe, 2007. *Caves Marsh Study, Feb-March 2007. Spatial distribution of wintering wader and wildfowl and the effects of human activity on the site.* Fingal County Council.

3.2 Landscape overview

The lands are rural with agriculture and pasture for horses and cattle dominating the northern districts. Lands here are predominately low lying. There are two river outflows; the Lissenhall Stream enters the estuary at Ballymadrough to the east of Seapoint and the Newbridge River flows through Kilcrea east and out under the main railway line. The fields surrounding these rivers are subject to flooding due to tidal movements and also drainage from surrounding areas. This was particularly the case at east Kilcrea with many of the very low lying fields being wet and holding water in ditches. A good network of native hedgerow exists in Ballymadrough and Kilcrea. Hedging appears to have been removed in a number of areas, but this has not happened recently. Mature native trees are present in much of the hedging and there are several stands of mature trees. There are few dwellings, many of which are surrounded with mature vegetation and attract birds and other wildlife. Two narrow roads service most of the northern districts. At Seatown East to the south, lands are under agricultural use, while areas further east are playing fields or green areas in front of existing housing. Figure 3 shows the study area and land use between January and March 2009.

Figure 3. Map of lands surrounding the Broadmeadows/Swords Estuary, Land Use, Jan. – Mar. 2009



LEGEND

Pasture	Damp grassland	Stubble	Crop / Cauliflower
Tidal pasture	Rough/rank grassland	Stubble - Ploughed	Crop / Unharvested potatoes
H=horses C=cattle S=sheep	Unmanaged	Stubble - Ploughed - Sown	
Lawn	Ploughed		
Amenity lands/playing field	Ploughed - Sown		
		River/stream	

4. SURVEY METHODOLOGY

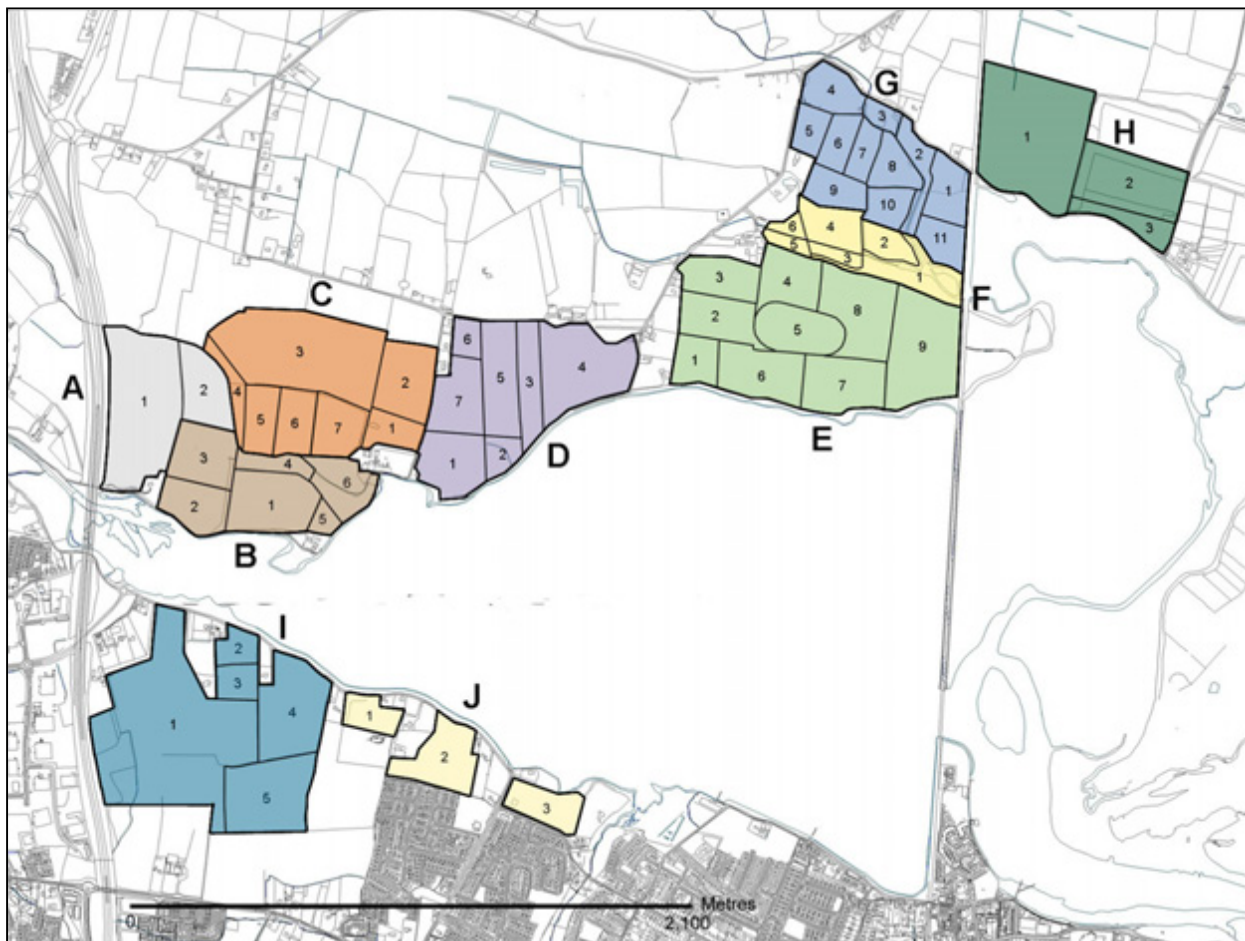
The area to be surveyed was broadly defined by Fingal County Council and refined after the initial visits to include any other areas of potential interest. The lands were visited, mapped and for the purposes of this study divided into ten accessible sections (labelled A-J, see Figure 4). These sections were referenced by individual field to provide a higher level of baseline information. The 59 sub-sections reflect the current field structure in each section.

All areas shown in the map A-J were visited monthly from January to March 2009. Each of the ten sub-sections was surveyed four times: once in January, twice in February and once in March. Additional visits were made to observe the movements of geese and plover within the estuary complex and to identify sites which were used regularly.

Every field was walked along its boundaries, open areas were observed and all birds present recorded. Long stops were undertaken where large numbers of birds were feeding to ensure accurate recording and counting. Within a section, where individual birds or large flocks (e.g. geese) moved between fields they were recorded once to avoid double counting. All fields which were suitable for geese were checked for fresh droppings. Evidence of the presence of large mammals was also recorded (see Appendix 3).

Observations were documented on land use and any particular habitats where bird species were present in high numbers. All observations took place when weather conditions were suitable for surveying. Where flocks of geese or waders were present, fields were not entered so as to minimise disturbance.

Figure 4. Colour coded map study sections for lands surrounding the Broadmeadows/Swords Estuary



5. RESULTS

5.1 Results overview

A total of 66 species were recorded in the survey area between January and March 2009 (see Table 2). This total did not include species along or close to the immediate waters edge of the estuary, here 25 additional species were recorded (Appendix 2).

Table 2: List of wintering species recorded at lands surrounding Broadmeadows Estuary, Jan. – Mar. 2009

No.	Species	Scientific name	No.	Species	Scientific name
1.	Mute Swan	<i>Cygnus olor</i>	34.	Skylark	<i>Alauda arvensis</i>
2.	Little Grebe	<i>Tachybaptus ruficollis</i>	35.	Meadow Pipit	<i>Anthus pratensis</i>
3.	Cormorant	<i>Phalacrocorax carbo</i>	36.	Grey Wagtail	<i>Motacilla cinerea</i>
4.	Little Egret	<i>Egretta garzetta</i>	37.	Pied Wagtail	<i>Motacilla alba</i>
5.	Grey Heron	<i>Ardea cinerea</i>	38.	Wren	<i>Troglodytes troglodytes</i>
6.	Light-bellied Brent Goose	<i>Branta bernicla hrota</i>	39.	Dunnock	<i>Prunella modularis</i>
7.	Teal	<i>Anas crecca</i>	40.	Robin	<i>Erithacus rubecula</i>
8.	Mallard	<i>Anas platyrhynchos</i>	41.	Stonechat	<i>Saxicola torquata</i>
9.	Wigeon	<i>Anas penelope</i>	42.	Blackbird	<i>Turdus merula</i>
10.	Sparrowhawk	<i>Accipiter nisus</i>	43.	Fieldfare	<i>Turdus pilaris</i>
11.	Buzzard	<i>Buteo buteo</i>	44.	Song Thrush	<i>Turdus philomelos</i>
12.	Kestrel	<i>Falco tinnunculus</i>	45.	Redwing	<i>Turdus iliacus</i>
13.	Peregrine Falcon	<i>Falco peregrinus</i>	46.	Mistle Thrush	<i>Turdus viscivorus</i>
14.	Merlin	<i>Falco columbarius</i>	47.	Goldcrest	<i>Regulus regulus</i>
15.	Pheasant	<i>Phasianus colchicus</i>	48.	Long-tailed Tit	<i>Aegithalos caudatus</i>
16.	Water Rail	<i>Rallus aquaticus</i>	49.	Coal Tit	<i>Parus ater</i>
17.	Moorhen	<i>Gallinula chloropus</i>	50.	Blue Tit	<i>Parus caeruleus</i>
18.	Oystercatcher	<i>Haematopus ostralegus</i>	51.	Great Tit	<i>Parus major</i>
19.	Golden Plover	<i>Pluvialis apricaria</i>	52.	Magpie	<i>Pica pica</i>
20.	Lapwing	<i>Vanellus vanellus</i>	53.	Jackdaw	<i>Corvus monedula</i>
21.	Snipe	<i>Gallinago gallinago</i>	54.	Rook	<i>Corvus frugilegus</i>
22.	Black-tailed Godwit	<i>Limosa limosa</i>	55.	Hooded Crow	<i>Corvus corone cornix</i>
23.	Curlew	<i>Numenius arquata</i>	56.	Raven	<i>Corvus corax</i>
24.	Redshank	<i>Tringa tetanus</i>	57.	Starling	<i>Sturnus vulgaris</i>
25.	Greenshank	<i>Tringa nebularia</i>	58.	Tree Sparrow	<i>Passer montanus</i>
26.	Black-headed Gull	<i>Larus ridibundus</i>	59.	Chaffinch	<i>Fringilla coelebs</i>
27.	Herring Gull	<i>Larus argentatus</i>	60.	Greenfinch	<i>Carduelis chloris</i>
28.	Common Gull	<i>Larus canus</i>	61.	Goldfinch	<i>Carduelis carduelis</i>
29.	Stock Dove	<i>Columba oenas</i>	62.	Linnet	<i>Carduelis cannabina</i>
30.	Wood Pigeon	<i>Columba palumbus</i>	63.	Redpoll	<i>Carduelis flammea</i>
31.	Collared Dove	<i>Streptopelia decaocto</i>	64.	Bullfinch	<i>Pyrrhula pyrrhula</i>
32.	Barn Owl	<i>Tyto alba</i>	65.	Yellowhammer	<i>Emberiza citrinella</i>
33.	Kingfisher	<i>Alcedo atthis</i>	66.	Reed Bunting	<i>Emberiza schoeniclus</i>

Common birds were present throughout the lands in good numbers. In addition five bird species listed under Annex I of the EU Birds Directive and fourteen species which are listed under the qualifying interests the Broadmeadows/ Swords Estuary SPA - Natura 2000 site were recorded in the study area. Overall the survey identified 25 species of conservation concern under BoCCI, though many are listed based on their breeding populations. (See Table 3).

Table 3: Overview of conservation status of species recorded at lands surrounding Broadmeadows/Swords Estuary, January – March 2009

No	Species	Broadmeadows/Swords Estuary Natura 2000 site - listed species	EU Birds Directive	Birds of Conservation Concern			
				Europe	Ireland		Fingal
				SPEC	BoCCI	BoCCI qualifying criteria*	Target species
1.	Cormorant	✓			Amber	Breeding populations	
2.	Little Egret		Annex I				
3.	Grey Heron	✓					
4.	Brent Goose	International Importance		3	Amber	Non-breeding populations	✓
5.	Teal	✓			Amber	Breeding populations	
6.	Mallard	✓					
7.	Wigeon				Amber	Non-breeding populations	
8.	Kestrel			3	Amber	New SPEC 3 species	
9.	Peregrine Falcon		Annex I				
10.	Merlin		Annex I		Amber	Breeding populations	
11.	Water Rail				Amber	Breeding populations	✓
12.	Oystercatcher	National Importance			Amber	Non-breeding populations	
13.	Golden Plover	National Importance	Annex I		Red	Breeding populations	✓
14.	Lapwing			2	Red	Breeding populations	✓
15.	Snipe	✓		3	Amber	SPEC 3 species	✓
16.	Black-tailed Godwit	✓		2	Amber	Non-breeding populations	✓
17.	Curlew	✓		2	Red/Amber	R: Breeding populations A: Non-breeding populations	✓
18.	Redshank	National Importance			Red/Amber	R: Breeding populations A: Non-breeding populations	✓
19.	Greenshank	National Importance			Amber	Breeding rarity Non-breeding populations	
20.	Black-headed Gull	✓			Red/Amber	Breeding populations	
21.	Common Gull	✓		2	Amber	Breeding populations	
22.	Stock Dove				Amber	Breeding populations	✓
23.	Barn Owl			3	Red/Amber	Breeding populations	✓
24.	Kingfisher		Annex I	3	Amber	Breeding populations	✓
25.	Skylark			3	Amber	New SPEC 3 species	✓
26.	Starling			3	Amber	New SPEC 3 species	
27.	Tree Sparrow			3	Amber	New SPEC 3 species	✓
28.	Linnet			2	Amber	New SPEC 2 species	✓
29.	Yellowhammer				Red/Amber	Breeding populations	✓

* Red listed species automatically qualify for Amber status
Further detail on the BoCCI qualifying criteria is presented in Appendix 4.

In order to highlight the key species that utilise the lands surrounding the Broadmeadows/Swords Estuary, the species of conservation concern presented in Figure 3 were assessed based on the following criteria:

- Species listed Annex I priority species under the EU Birds Directive or species listed under the qualifying interest of Broadmeadows/ Swords Estuary SPA - Natura 2000 site;
- Their conservation status, with a focus on species of regional importance requiring specific conservation actions in Fingal; and where relevant
- the concentrations of species recorded in the study area and/or species dependency on the site.

As a result of this process the following 12 species key species were identified:

- **Annex I species:** Little Egret, Golden Plover and Kingfisher.
- **Red listed species:** Barn Owl and Yellowhammer.
- **Amber listed species:** Light-bellied Brent Goose, Water Rail, Snipe, Black-tailed Godwit, Stock Dove, Skylark and Tree Sparrow.

Light-bellied Brent Goose and Golden Plover are the most important species recorded which feature under the qualifying interests the Broadmeadows/ Swords Estuary.

In Chapter 5.2 results from each of the ten survey sections (A-J) are presented individually. An overview of the habitats is given and birds of importance recorded in each of the sections are highlighted.

Chapter 5.3 presents the key species and illustrates their distribution over the entire study area.

The full list of species recorded in each section and the baseline data for each field (sub-section) is presented in Appendix 1.

5.2 Survey results by section

5.2.1 Lissenhall East - Section A

Two large stubble fields are situated along east side the M1 motorway. In January the fields were in stubble, but by March 70% was sown with grass and 30% was ploughed. It was noted during the surveys that there were high levels of noise from the motorway.



View from C4 looking towards A1

Eight bird species were recorded in Section A (see Appendix 1). Lapwing (105) were recorded resting in the southern sector of field 1. The other birds of note were Skylark and Yellowhammer. Buzzard was also recorded hunting in this area.

Figure 5. Map of important species recorded in Lissenhall East - Section A



5.2.2 Ballymadrough/Seapoint - Section B

Fields 1-3 were ploughed and by March sown with grass. Here mature hedging borders the fields and a stand of mature trees is present at the western end of field 1. A horse paddock with good hedging is present at 4 and 5. There is a tidal pasture zone located at 6 where the Lissenhall Stream flows into the estuary.



Tidal zone at B6

Thirty-seven bird species were recorded in Section B (see Appendix 1). Common birds were present in good numbers due to the habitat. More notable species were Little Egret, Black-tailed Godwit, Kingfisher, Skylark, and Tree Sparrow. Historically, the mature hedgerow to the south of B2 held Tree Sparrow, but this species was not recorded at this location during the survey period. Other species recorded include Little Grebe, Moorhen, Redshank, Meadow Pipit and Long-tailed Tit.

Figure 6. Map of important species recorded in Ballymadrough/Seapoint - Section B



5.2.3 Ballymadrough – Section C

Fields 1 and 5-7 were in pastures used for equine activities. Fields 2-3 were planted with potatoes and not harvested due to the wet autumn with water logging in the fields and ditches. Field 4 was in long rough grasses and bordered a river. There was mature hedging in most places except the northern boundaries of 2-3.



Waterlogged crop field at C2

Thirty-eight bird species were recorded in Section C. The full list is presented in Appendix 1 with common birds present in reasonable numbers. Notable species were Buzzard, Stock Dove, Barn Owl, Water Rail, Skylark, Tree Sparrow and Yellowhammer. Other species recorded included Meadow Pipit, Grey Wagtail and Long-tailed Tit.

Figure 7. Map of important species recorded in Ballymadrough - Section C



5.2.4 Ballymadrough East – Section D

Field 1 was 50% stubble and 50% unharvested potatoes. Fields 2 and 6 were in pasture with horses. Fields 3, 5 and 7 were in stubble but ploughed and partly sown by March. Good hedging was present at fields 1- 2 and taller weaker hedging at 5 and 7. Fields 3-4 had a dividing fence while 4 was in short grass. A stone wall is situated along the southern boundary of Section D. Old bare trees were present in the hedging and could prove important for unusual birds nesting.



Stubble strip at D3 looking north-east

Forty bird species were recorded in Section D. The full list is shown in Appendix 1 with common birds well represented. Important species recorded were Brent Goose, Barn Owl, Stock Dove and Tree Sparrow. The geese regularly used field 4 with numbers of international importance recorded (*peak 1,370*). Lapwing were noted in February feeding at field 7, which had recently been ploughed. This area was important for Goldfinch (65) and Linnet flocks (305).

In January an Otter (EU priority species) was also seen along the hedgerow between fields 5 and 3.

Figure 8. Map of important species recorded in Ballymadrough East - Section D



5.2.5 Kilcrea South - Section E

Field 1 was in short grass with good hedging on the west side. Fields 2-3 were in pasture with good hedging on west border and wooden fencing elsewhere. Field 4 which had wooden fencing was part of a stud farm and 5 had a sand track with stubble in the middle. Fields 6 and 7 were in cauliflowers with weak hedging and some trees, 8-9 in stubble with fencing and 9 ploughed by March.



Brent Geese coming in to land at E3-4

Forty-three bird species were recorded in Section E. Fields 1, 6 and 7 held good numbers of common birds. The full list is presented in Appendix 1. Fields 2-4 were very important for Brent Geese, with numbers of international importance present (*peak 1,506*). The geese used field 1 on brief occasions and also were found in the southern sector of field 9. Black-tailed Godwits were recorded in fields 3-4 and Curlew use fields 2-4 (140). Fields 6, 8-9 were important for Skylark. Kestrel were regularly seen hunting over fields 1, 6, and 7, and Buzzards (5) were recorded circling over field 9. This section was also important for finch flocks (Goldfinch and Linnet).

Outside the study area to the east of the railway line Short-eared Owl roost in the rough grassland.

Figure 9. Map of important species recorded in Kilcrea South- Section E



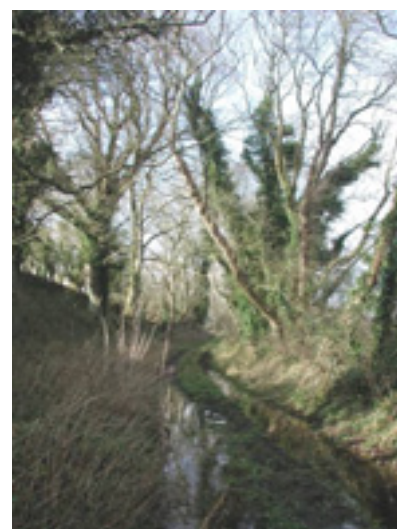
5.2.6 Kilcrea (Channel) – Section F

This area is liable to flooding due the presence of a river (Newbridge River) and low lying land. There is a sluice gate where the river flows into the estuary at field 1. Rank grass borders the channel and elsewhere with bramble and gorse bushes. Fields 1 and 5 have a mature woodland boundary and a track on the south side. Field 3 is rough, damp vegetated and with tall wild hedging and a small stand of alders.



Channel at F1

Thirty-nine bird species were recorded in Section F (see Appendix 1 for full list). Apart from common birds this area attracted waterbirds due to the tidal and brackish channel. Important birds included Little Egret, Kingfisher, Water Rail, Black-tailed Godwit, Curlew, Snipe and Skylark. Other species recorded include Little Grebe, Wigeon, Teal, Moorhen, Oystercatcher, Redshank, Greenshank, Meadow Pipit, Linnet and Reed Bunting. Sparrowhawk and Buzzard were recorded along the woodland track at 1. There is also a Badger sett at this location.



Mature woodland track at F1

Figure 10. Map of important species recorded at Kilcrea (Channel) - Section F



5.2.7 Kilcrea North – Section G

The whole area is very low lying with water lying on the fields. The Newbridge River flows alongside fields 3, 8, 10, and 2. Field 4 contains a dwelling and often has water lying on the surrounding ground. There is a good hedgerow regime in almost all sections and in many cases there was standing water in the ditches. The lands are in short pasture and used for cattle and horse grazing. Fields 1, 2, and 11 had lower hedging and an open track along 2. Fields 9 and 10 were very damp with good hedging.



View from G2 looking towards G8

Thirty-four bird species were recorded in Section G during the course of the survey. Field 5 is a shooting reserve where rough grasses and bramble were present and proved to be an excellent place for Snipe. Field 6 has a small pond and Grey Herons (11) use this location to rest up. Teal and Moorhen were also present. Fields 1, 7 and 8 were important for Brent Geese (*peak 1,600*) and they regularly used these fields as staging/feeding areas before moving to roost in Corballis Estuary at dusk. Thrushes fed in the same area and roosted in the hedgerows. Water birds were present according to tidal movements at 2. Field 11 held Curlew, Snipe and Skylark. Yellowhammer is also an important record in this section.

Figure 11. Map of important species recorded in Kilcrea North - Section G



5.2.8 Corballis – Section H

Field 1 was in stubble and had water lying on its southern border. There was mature hedging alongside the railway line and patchy hedging on the southern boundary. A hedge divides 1 from 2 and 3. Fields 2 is laid out in horse jumps with a conifer plantation on its northern boundary. Sheep sometimes grazed here. Field 3 had a low hedge bordering the road.



View from the railway line toward H2-3

Twenty-nine species were recorded in Section H (see Appendix 1). Important birds recorded in Field 1 were Sparrowhawk, Buzzard, Kestrel, Merlin, Snipe (*peak 5*), Skylark (*50*), Tree Sparrow (*10*), and Yellowhammer (*11*). Meadow Pipit were recorded in high densities (*30*). Field 2 is important for Brent Geese (*2,500*), Black-tailed Godwit (*25*), and Lapwing (*370*). Redshank were also recorded. Field 3 was surprisingly good for birds and attracted waders and thrushes, particularly Curlew and Fieldfare.

Figure 12. Map of important species recorded in Corballis - Section H



5.2.9 Seatown East – Section I

This section lies to the south of the estuary. Fields 1, 4 and 5 were ploughed and had virtually no hedging. Historically they have been known to accommodate Golden Plover and Lapwing from the estuary during high tides. Depending on the farming regime they can also attract larks and finches. Field 2 was unmanaged and field 3 was a lawn belonging to a private dwelling.



Golden Plover site at field 11

Thirty-two species were recorded in Section I (see Appendix 1). Field 1 is very important for flocks of Golden Plover (*peak 1,000*) and Lapwing (*370*). Stock Dove and Skylark were present and the hedging on the western boundary was important for Tree Sparrows and Yellowhammer. Buzzard was regularly recorded hunting here. Field 2 was attractive to finches and thrushes. Field 3 together with its surrounding vegetation attracted a range of common garden birds. Unploughed margins along fields 4 and 5 were good for Skylark.

Figure 13. Map of important species recorded in Seatown East - Section I



5.2.10 Amenity Lands along the Estuary Road – Section J

Sites 1, 2 and 3 were lands at the rugby club, amenity area at Seabury Gardens/Seabury Vale and the park area beside the yacht club. This section was surveyed to record usage by waders and geese.



Brent Geese at amenity lands J3

Three species were recorded in Section J (see Appendix 1). Sites 2 and 3 were important for Brent Geese as a feeding zone, though the geese were frequently disturbed by walkers and dogs. Oystercatchers were present in small numbers.

Figure 14. Map of important species recorded in Seatown East - Section I



5.3 Land utilisation by key species

The following section presents the key species in taxonomic order and illustrates their distribution over the entire study area. For more information on the selection of key species see Chapter 5.1.

5.3.1 Little Egret (*Egretta garzetta*)

Status: Annex I of the EU Birds Directive

Limited suitable habitat exists for this species within the survey area. The Cave's Marsh site is more frequently used with single birds recorded in the survey area along river margins and flooded areas at fields F1 and B6.

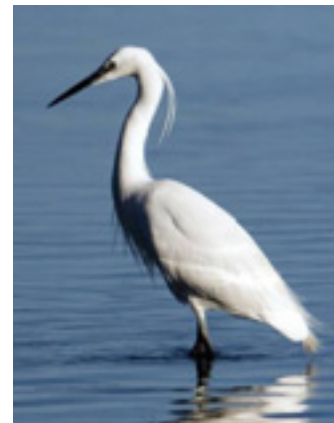
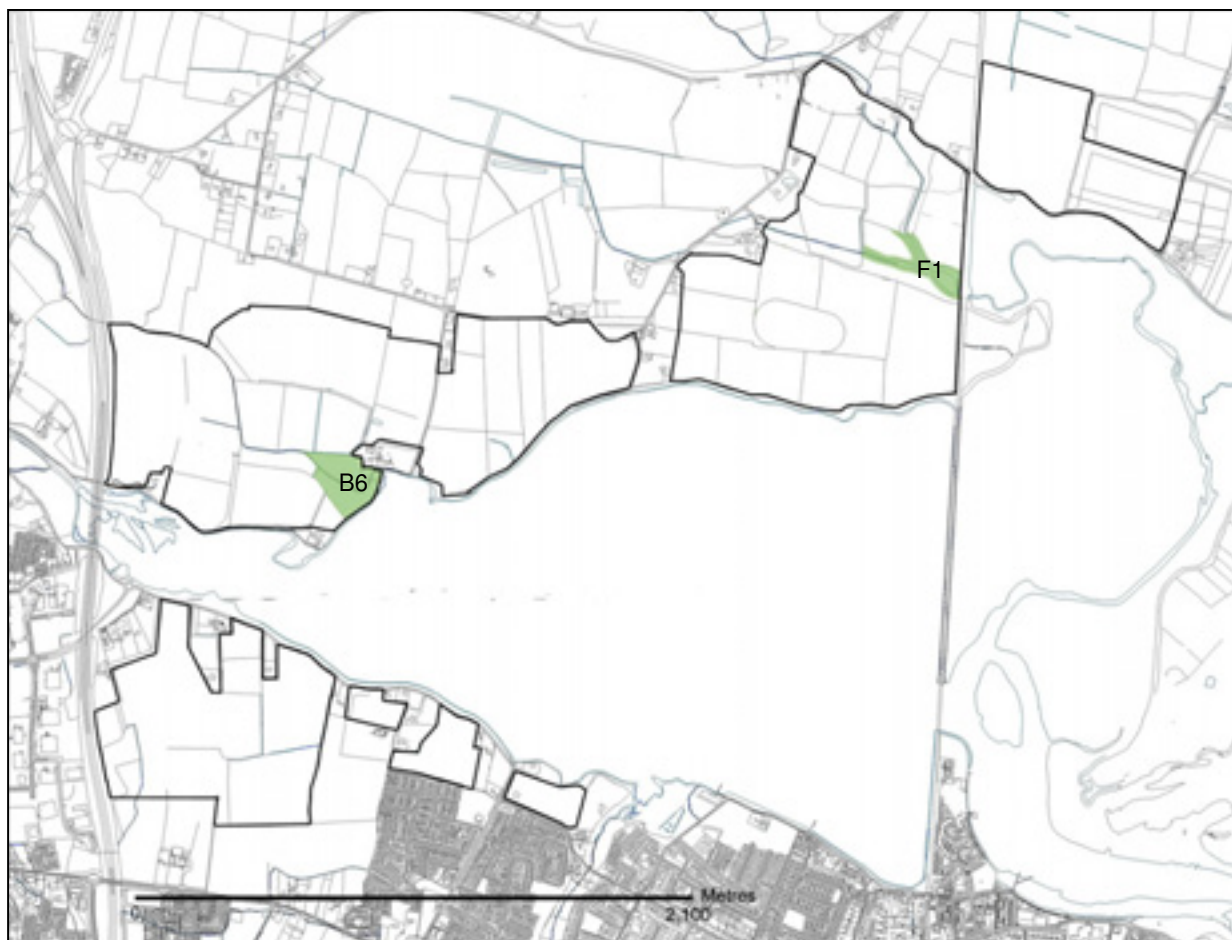


Figure 15. Little Egret, areas utilised in survey area, Jan. - Mar. 2009



5.3.2 Light-bellied Brent Goose (*Branta bernicla hrota*)

Status: Amber listed under BoCCI
International Importance, Natura 2000 site - listed species

Nearly 100% of Light-bellied Brent Geese winter in Ireland and at least 50% of this population occurs at 10 or fewer sites. Brent Geese occur in numbers of international importance at the Broadmeadows/Swords Estuary Natura 2000 site (threshold ≥ 260).



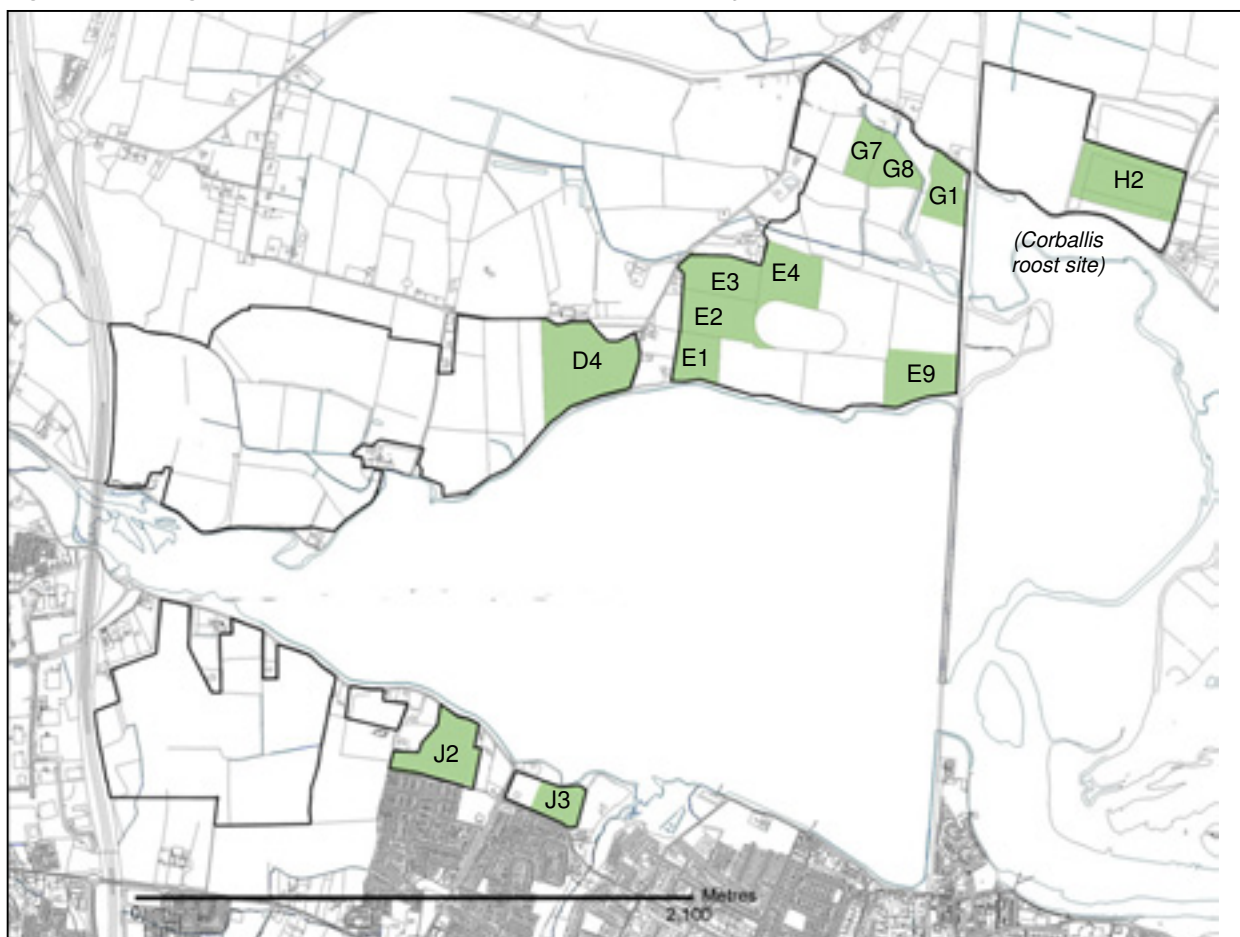
Geese flocks were highly mobile between the estuary and the surrounding lands during the course of a day. The geese utilised all suitable habitats (open areas with short grass, i.e. pasture, lawns, amenity areas) within the survey area at all states of the tide. The geese primarily used fields D4 (peak 1,370 Feb), E3-4 (1,560 Feb), G1, 7-8 (1,600 Feb, usually before dusk), H2 (2,500 Jan), J3 (770 Feb) and J2 (480 Feb). Most of these sites were used by geese at some stage during the day. (Within some survey sections the geese also moved between fields during counts i.e. Section G1, 7-8 and Section E3-4). Fields E1 (252) and E2 (498) were used less frequently by the geese (no geese present or droppings found in Jan) and only began to use field E9 (350) in March after this stubble field had been ploughed and sown.

A coordinated census of geese over the entire site was not undertaken, though on January 26 a coordinated count of only two survey sections, Sections E and H, produced a total of 3,950 geese.

Brent feeding or resting on the amenity areas to the south of the estuary have become habituated to pedestrians and traffic but are frequently disturbed. When disturbed, the geese moved to lands at the northern side of the estuary or to the mouth of Cave's Marsh.

At dusk the flocks of Brent were recorded moving from the fields and the estuary to their overnight roost at the north western corner of the outer estuary at Corballis.

Figure 16. Light-bellied Brent Goose - areas utilised in survey area. Jan. - Mar. 2009



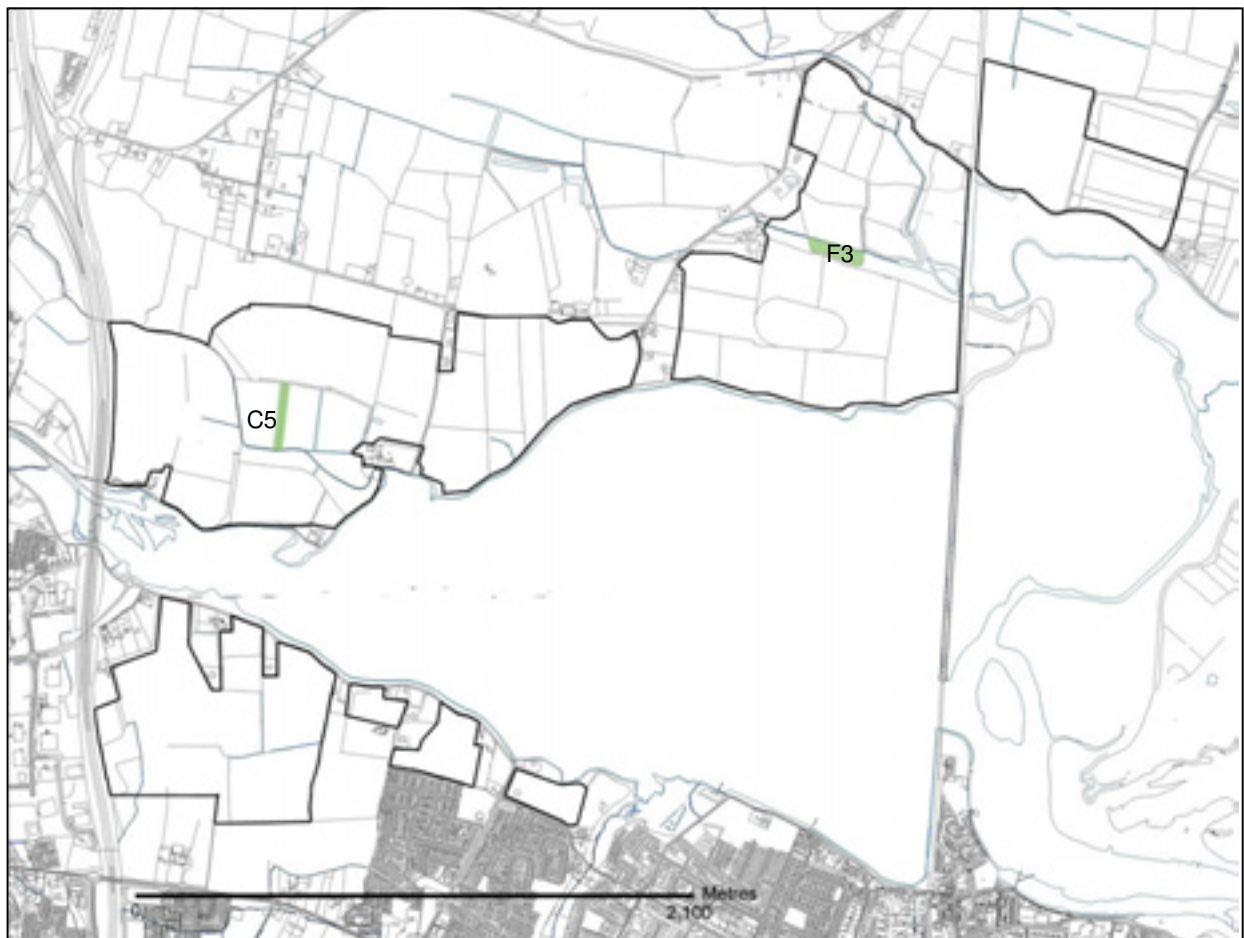
5.3.3 Water Rail (*Rallus aquaticus*)

Status: *Amber listed under BoCCI*
Regional importance

This species is Amber listed in BoCCI due to population declines associated with the degradation of wetland habitat in Ireland in recent years. Water Rail was recorded along a wet ditch on the eastern boundary of field C5 and at F3.



Figure 17. Water Rail - areas utilised in survey area. Jan. - Mar. 2009



5.3.4 Golden Plover (*Pluvalis apricaria*)

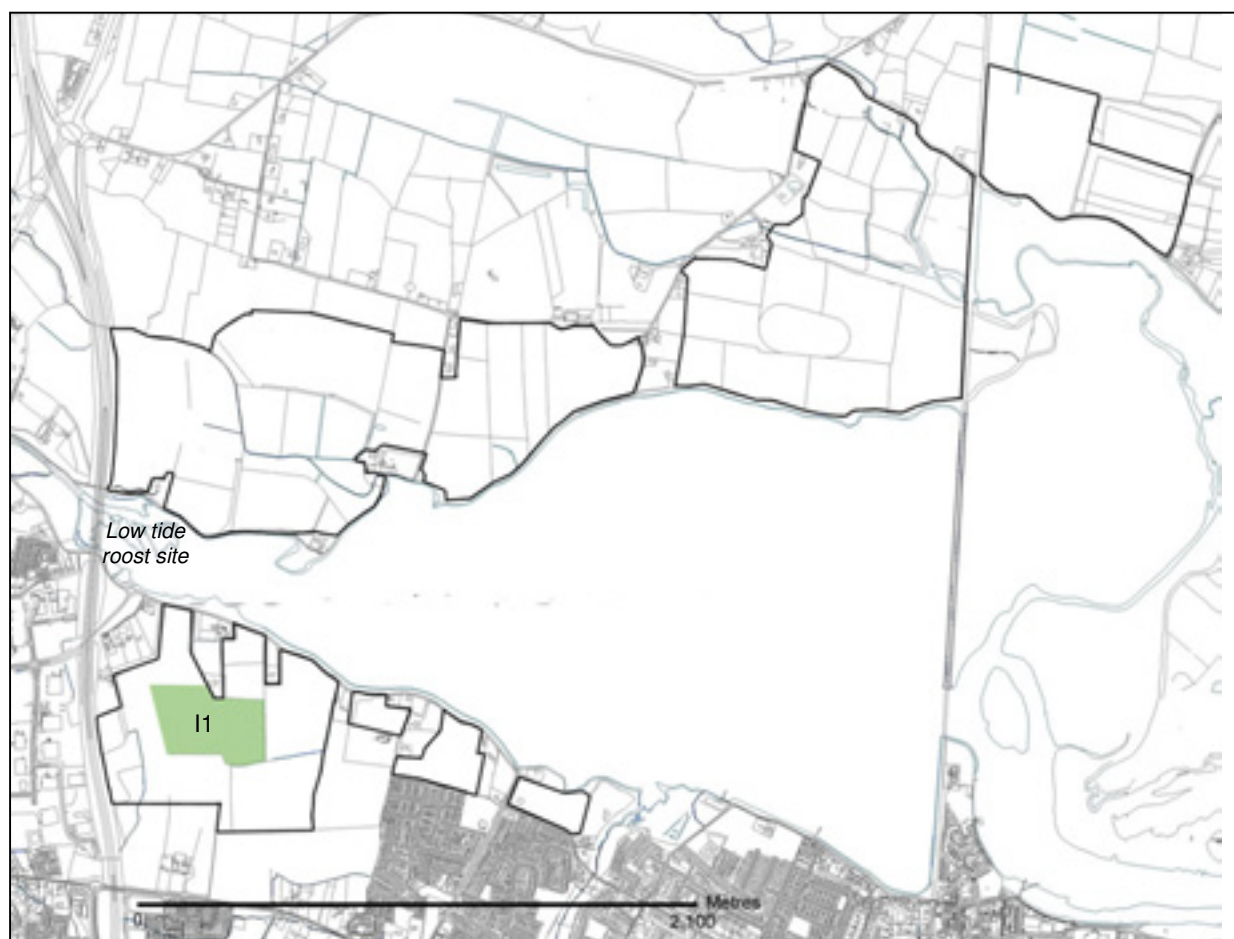
Status: Annex I of the EU Birds Directive
National Importance, Natura 2000 site - listed species

During low tides 1,000 Golden Plover were observed resting at the saltmarsh at the mouth of the Broadmeadows River at Seatown. When displaced by high tides the plovers were recorded wheeling high above the estuary and eventually settling with Lapwing on the crest of the ploughed field (I1) at Seatown East. This is the only site within the survey area which was used by Golden Plover.



It was noted that this birds took a long time to settle in the field and were very sensitive to any disturbance, even overflying aircraft caused these birds to lift off the site.

Figure 18. Golden Plover - area utilised in survey area. Jan. - Mar. 2009



5.3.5 Snipe (*Gallinago gallinago*)

Status: Amber listed under BoCCI

Snipe has unfavourable conservation status in Europe and is amber listed in BoCCI due to population declines associated with the degradation of wetland habitat in Ireland. This species was recorded at Kilcrea and Corballis. Highest concentrations were found in the rough grasses of G5 (*peak 5*) and the wetter region to the south of H1 (5). Suitable habitat also exists along the river inlet at F1 and G 11 although only single birds were recorded here. These sites in conjunction with Cave's Marsh on the southern shore of the estuary are important locations in close proximity to the estuary for Snipe.

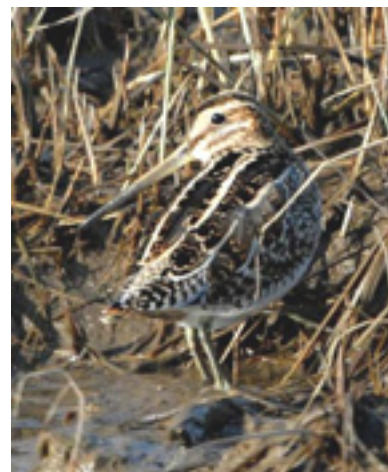
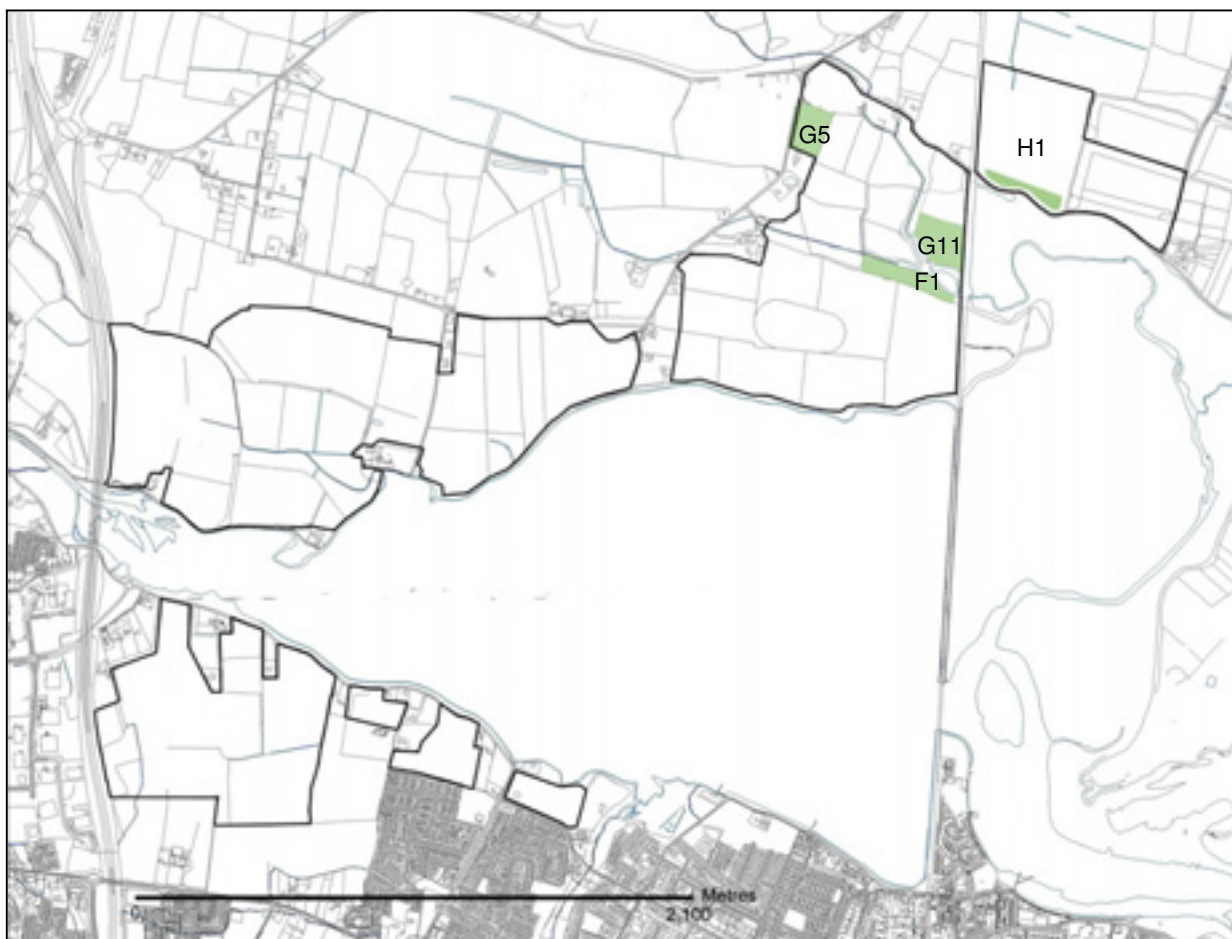


Figure 19. Snipe - areas utilised in survey area. Jan. - Mar. 2009



5.3.6 Black-tailed Godwit (*Limosa limosa*)

Status: Amber listed under BoCCI
Natura 2000 site - listed species

This is a localised non-breeding species with at least 50% of the population occurring at 10 or fewer sites in Ireland. Black-tailed Godwits occur in numbers of international importance at the Broadmeadows/ Swords Estuary Natura 2000 site (threshold ≥ 160). Numbers are shown to peak in the estuary in November and December (Crowe 2005).

Black-tailed Godwits were recorded feeding at Kilcrea in fields E3-4 (peak 20) and at Corballis – field H2-3 (27). Other sites also used were along the channel at F2 and the tidal pasture zone B6.

These lands were not surveyed during bad weather conditions, when higher numbers could have been present.

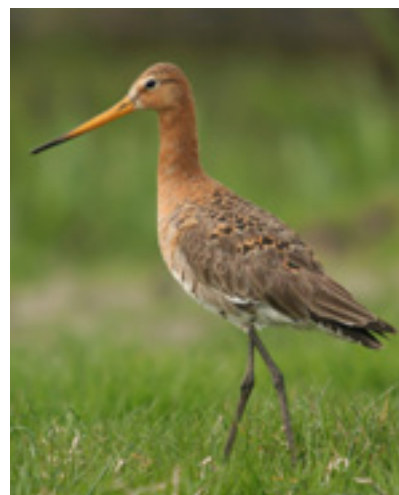
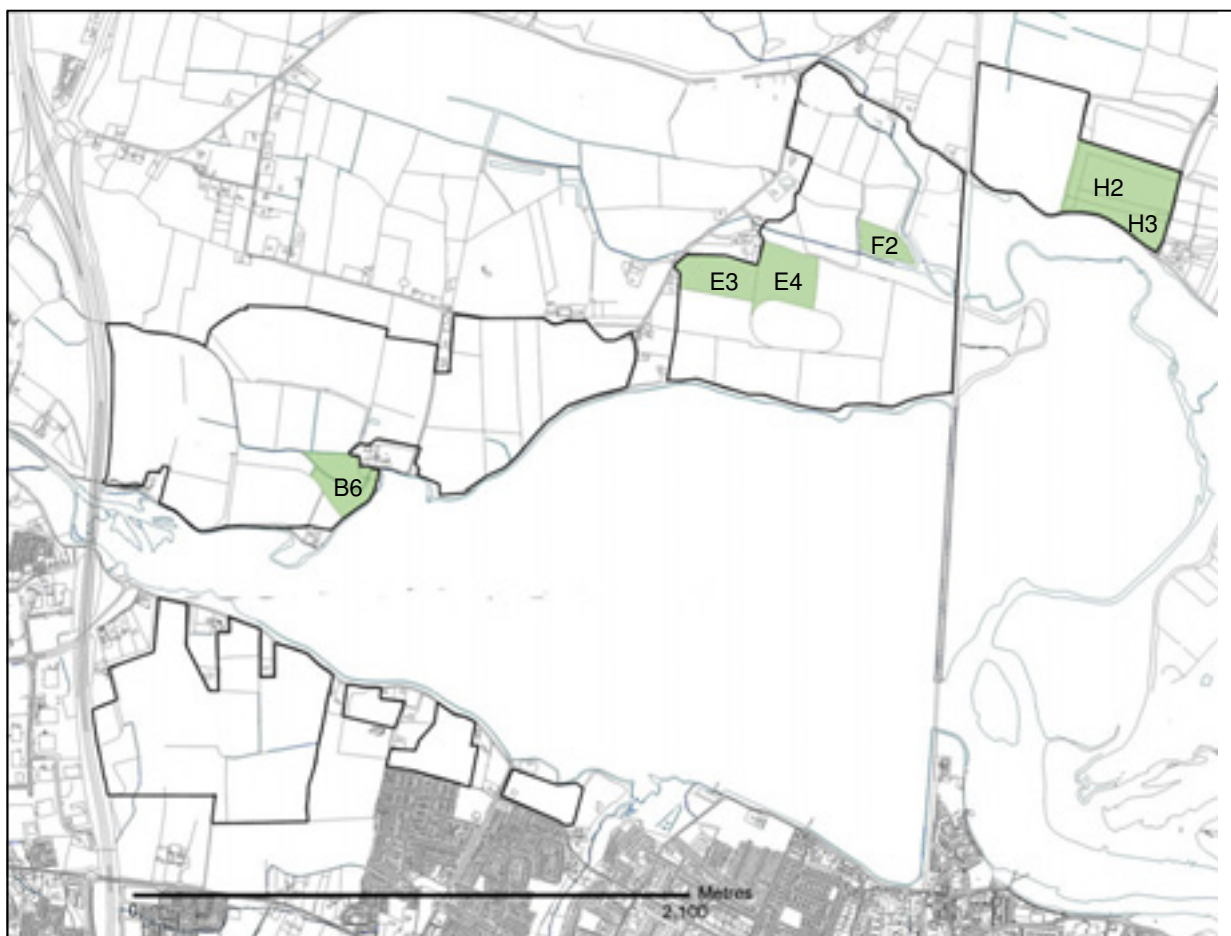


Figure 20. Black-tailed Godwit - areas utilised in survey area. Jan. - Mar. 2009



5.3.7 Stock Dove (*Columba oenas*)

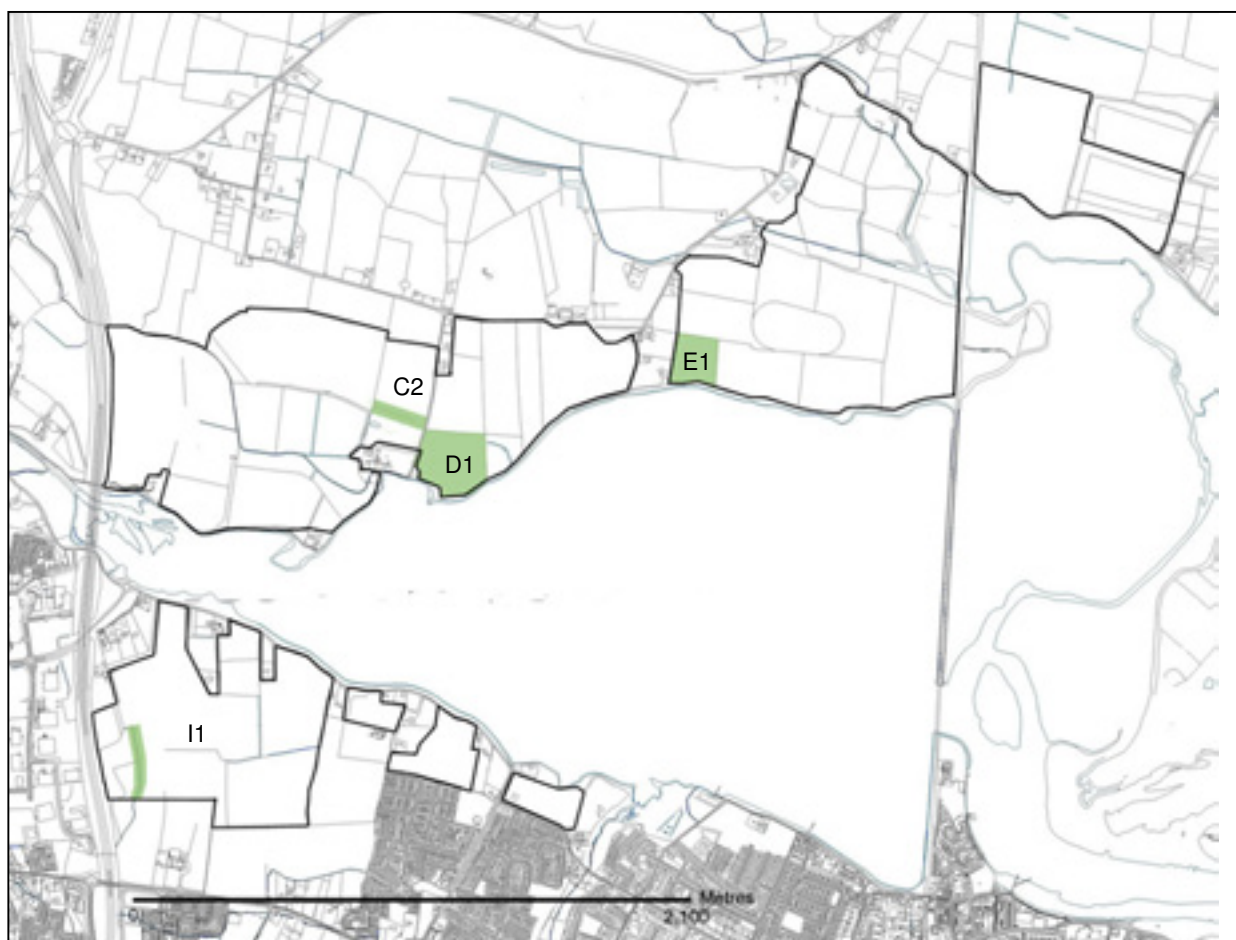
Status: *Amber listed under BoCCI*
 Regional Importance

This is a species with localised distribution in Ireland and is Amber listed under BoCCI as there has been a 35-70% decline in the breeding range over 25 years.

A winter flock of 10 was recorded feeding with Wood Pigeons in field D1, while 3 birds were recorded in I1 and singles in C1-2 and E1.



Figure 21. **Stock Dove - areas utilised in survey area. Jan. - Mar. 2009**



5.3.8 Barn Owl (*Tyto alba*)

Status: *Red listed under BoCCI (breeding)*
 Regional Importance

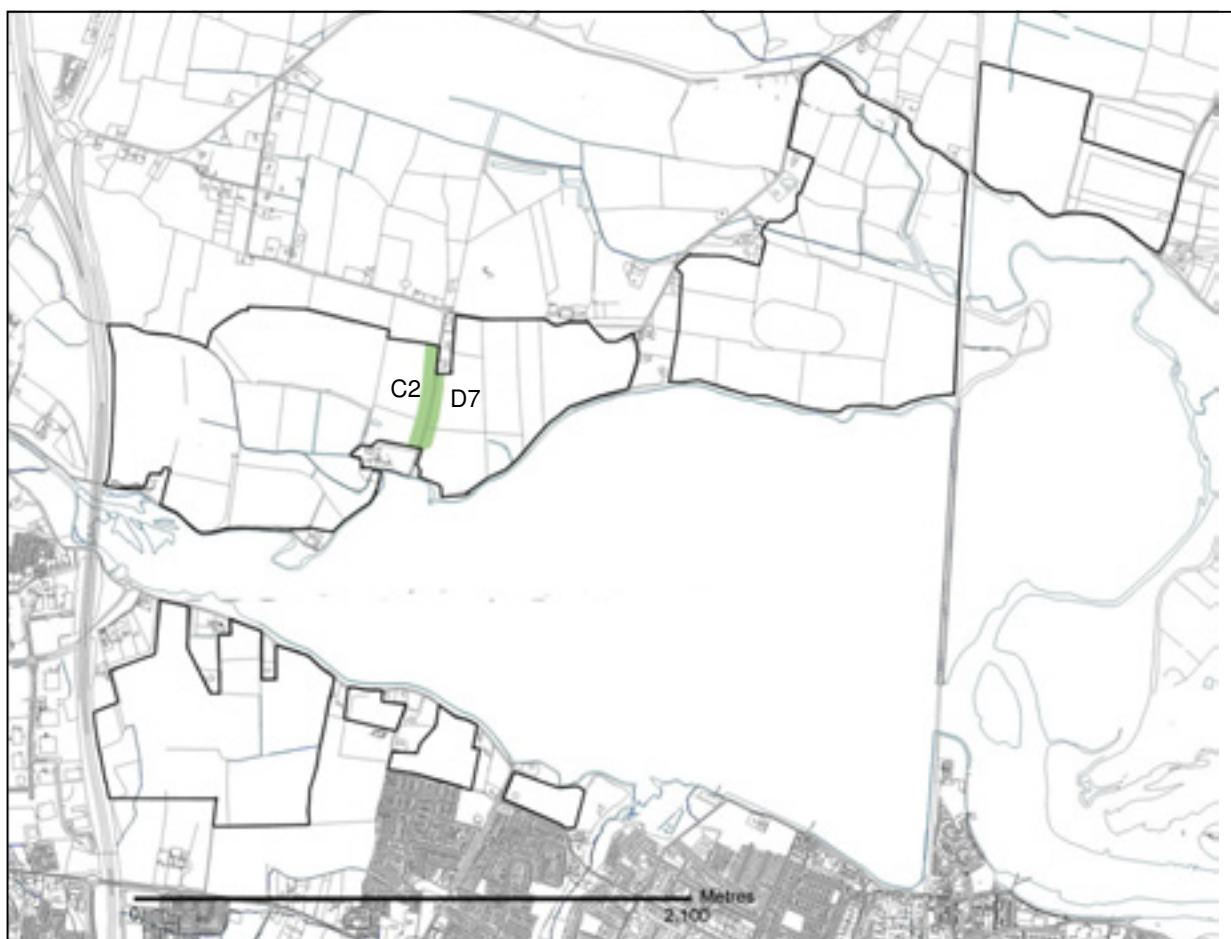
The Barn Owl is Red listed under BoCCI. There has been a decline of over 50% in their breeding population in Ireland during the past 25 years, most probably due to agricultural intensification, increased use of harmful rodenticides and development.

Local residents at Ballymadrough reported regular sightings of this species along the road at C2 and D7. This was confirmed with a dawn sighting in April of a bird returning to the area.

This is an important record for the County.



Figure 22. Barn Owl - area utilised in survey area. Jan. - Mar. 2009



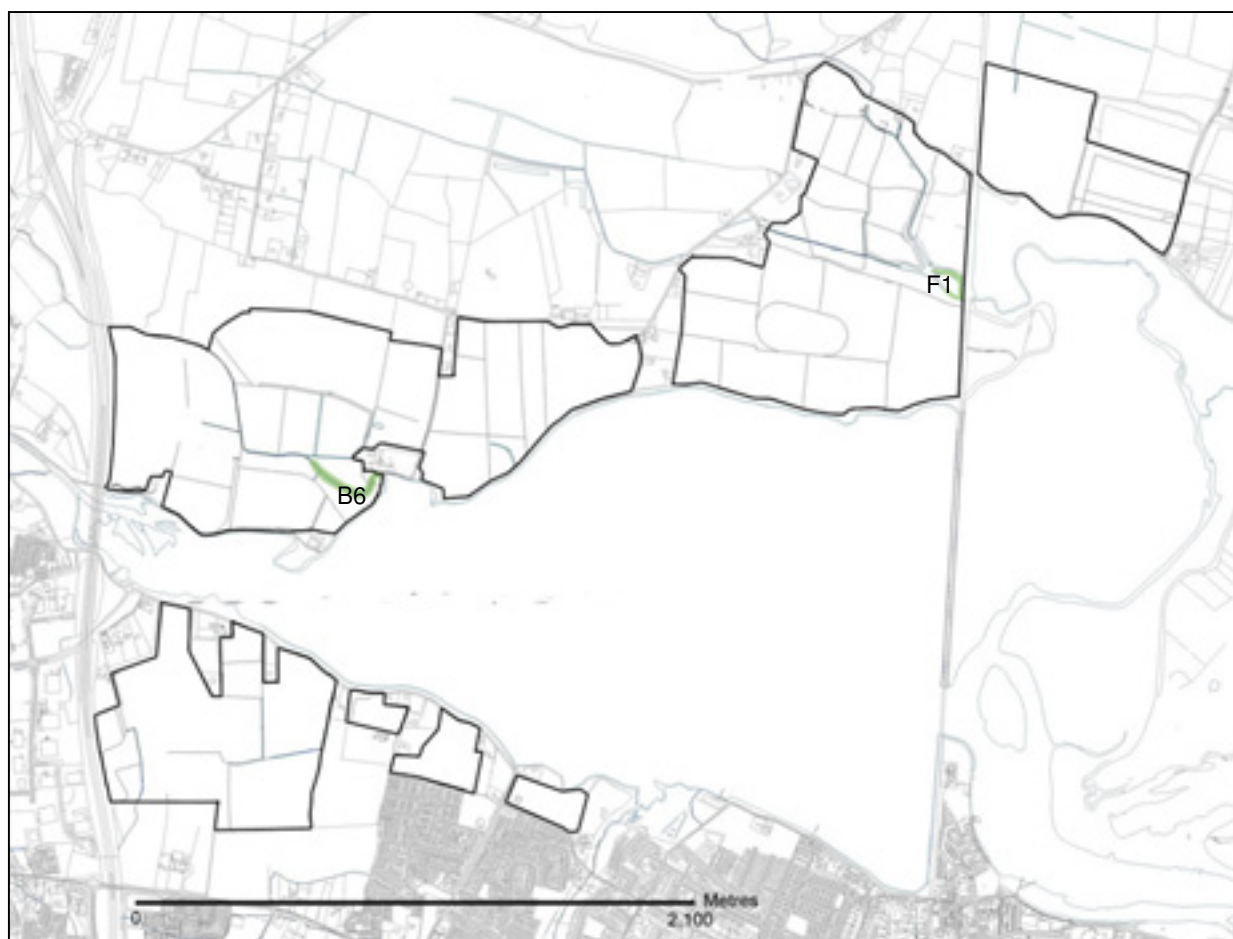
5.3.9 Kingfisher (*Alcedo atthis*)

Status: Annex I of the Birds Directive

This is another Annex I species found in the survey area. Habitat is limited to freshwater areas and it was observed at Seapoint where the Lissenhall River flows into the estuary at B6 and around the sluice gate at F1 where the Newbridge River flows into the estuary at Corballis.



Figure 23. Kingfisher - area utilised in survey area. Jan. - Mar. 2009



5.3.10 Skylark (*Alauda arvensis*)

Status: *Amber listed under BoCCI*

Skylark has unfavourable conservation status in Europe and is Amber listed in BoCCI. This species was well distributed throughout the survey area. The key areas identified for winter flocks were at Corballis - field H1 (*peak 50*), Kilcrea E6 (20), G11 (11) and at Seatown East, fields I1 (5), I4-5 (5).

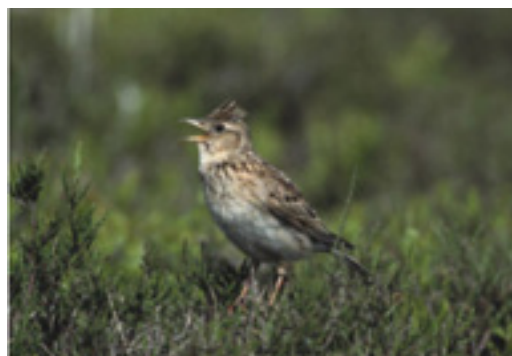
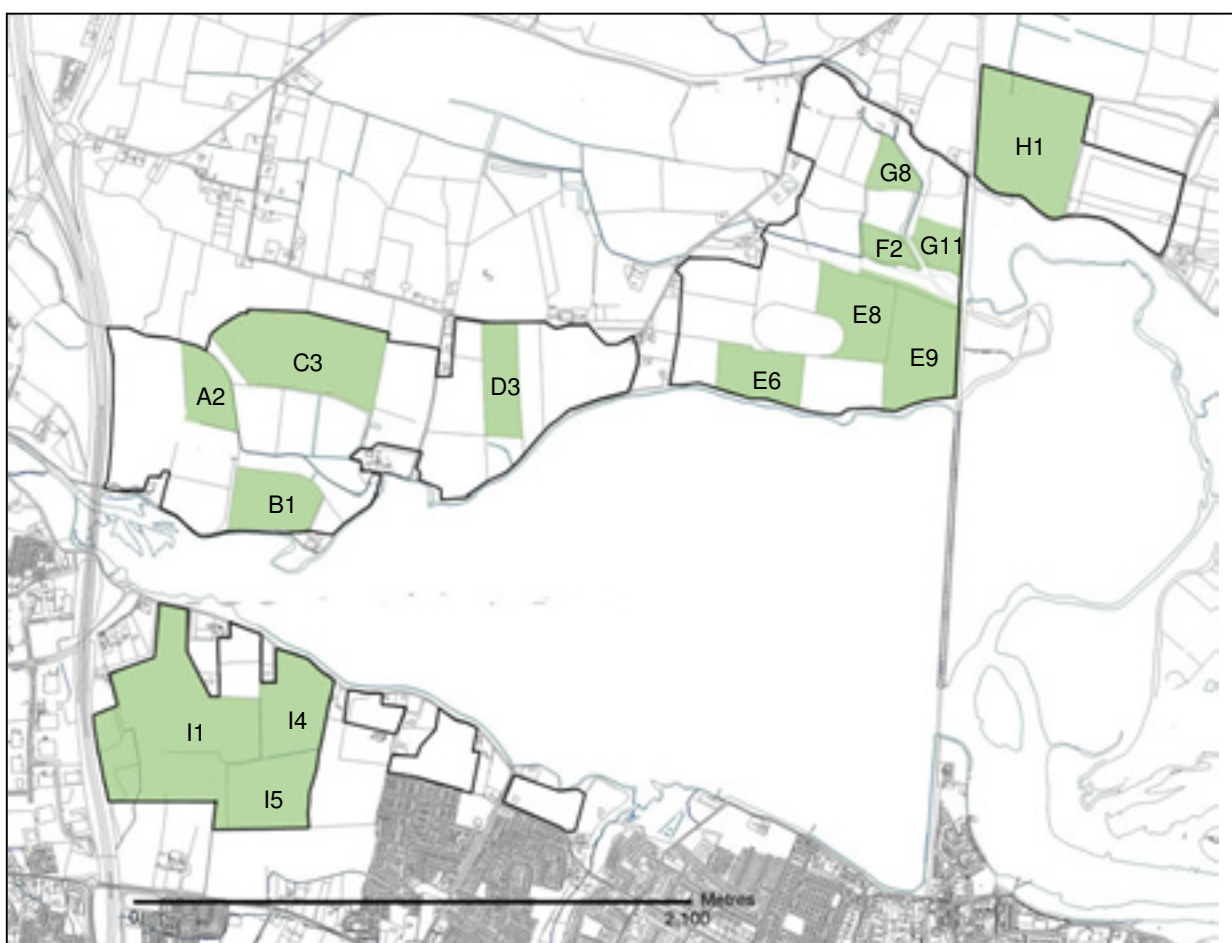


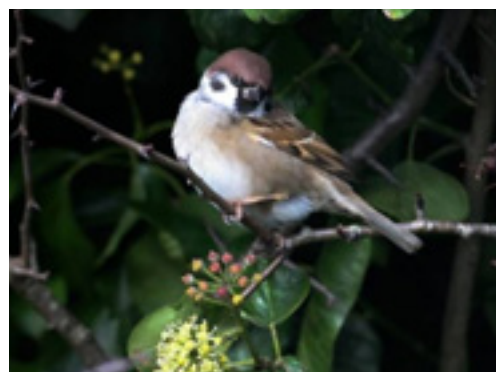
Figure 24. Skylark - areas utilised in survey area. Jan. - Mar. 2009



5.3.11 Tree Sparrow (*Passer montanus*)

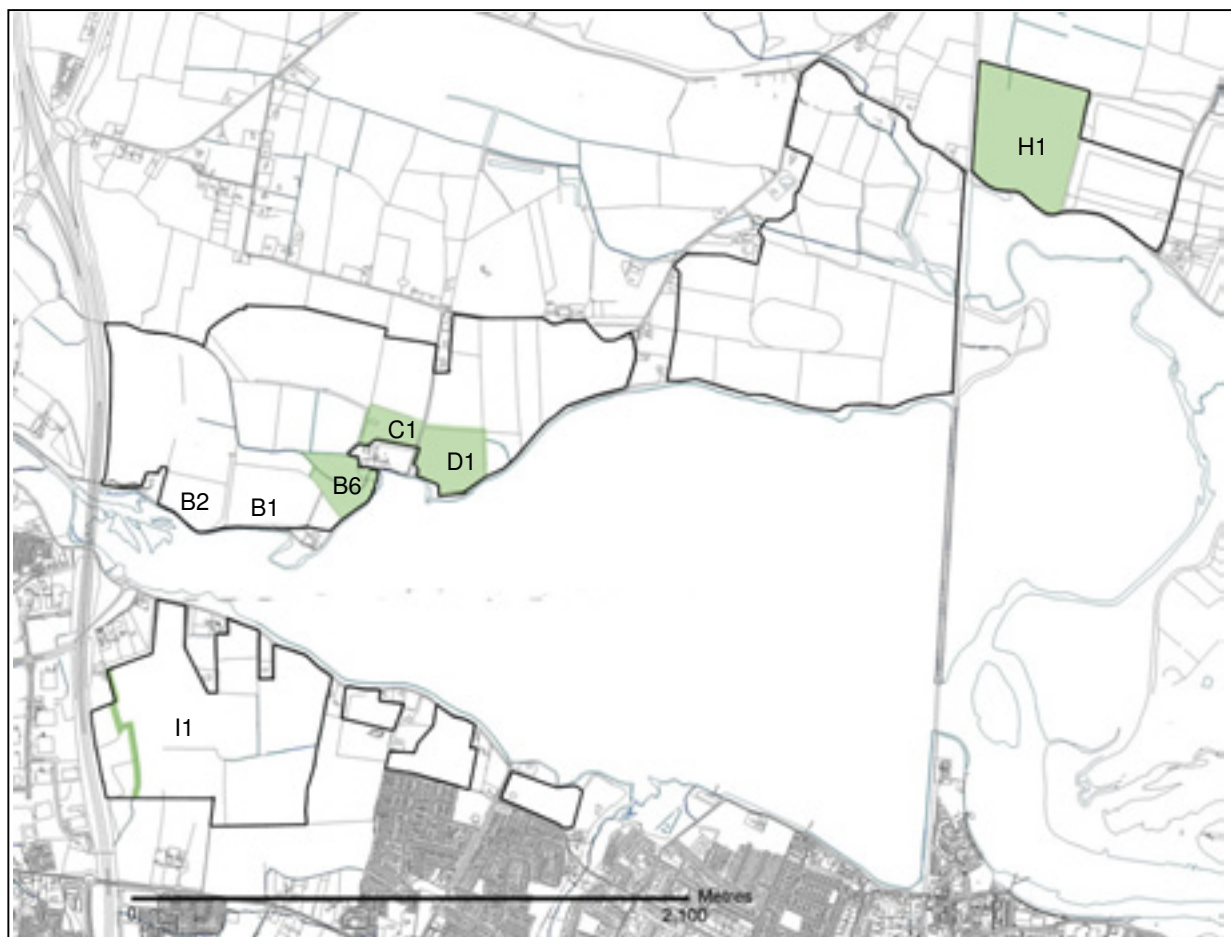
Status: Amber listed under BoCCI
Regional Importance

Tree Sparrow has unfavourable conservation status in Europe and is Amber listed in BoCCI. This is a species with localised distribution; with Fingal being one of the main strongholds on the east coast. The key area for Tree Sparrow was at Corballis, field H1, where this species was recorded coming in to roost at dusk (*peak 10*). Other sites include D1, B6, C7 and along the hedgerow on the western boundary of field I1.



Historically the hedgerow along Hutchinson's Strand (B1-2 southern boundary) has been a good site for Tree Sparrow but they were not recorded at this location during the survey.

Figure 25. Tree Sparrow - areas utilised in survey area. Jan. - Mar. 2009



5.3.12 Yellowhammer (*Emberiza citrinella*)

Status: Red listed under BoCCI
Regional Importance

Yellowhammer is Red listed under BoCCI as there has been a decline of over 50% in their breeding population in Ireland during the past 25 years.

The key sites for Yellowhammer were identified as H1 (*peak 11 – observed with 10 Tree Sparrows coming in to roost at dusk*), the southern hedgerow of C2 (6) and along the hedging on the western boundary of I1 (5). This species was also recorded at A2, C4, and F1 and G1.

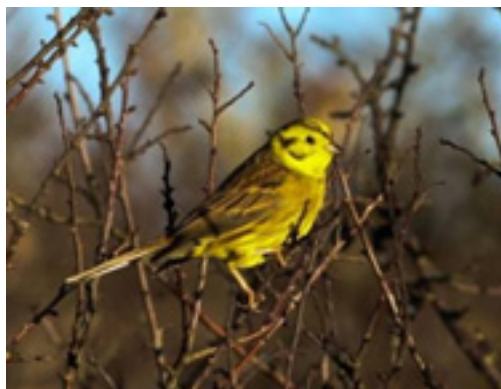
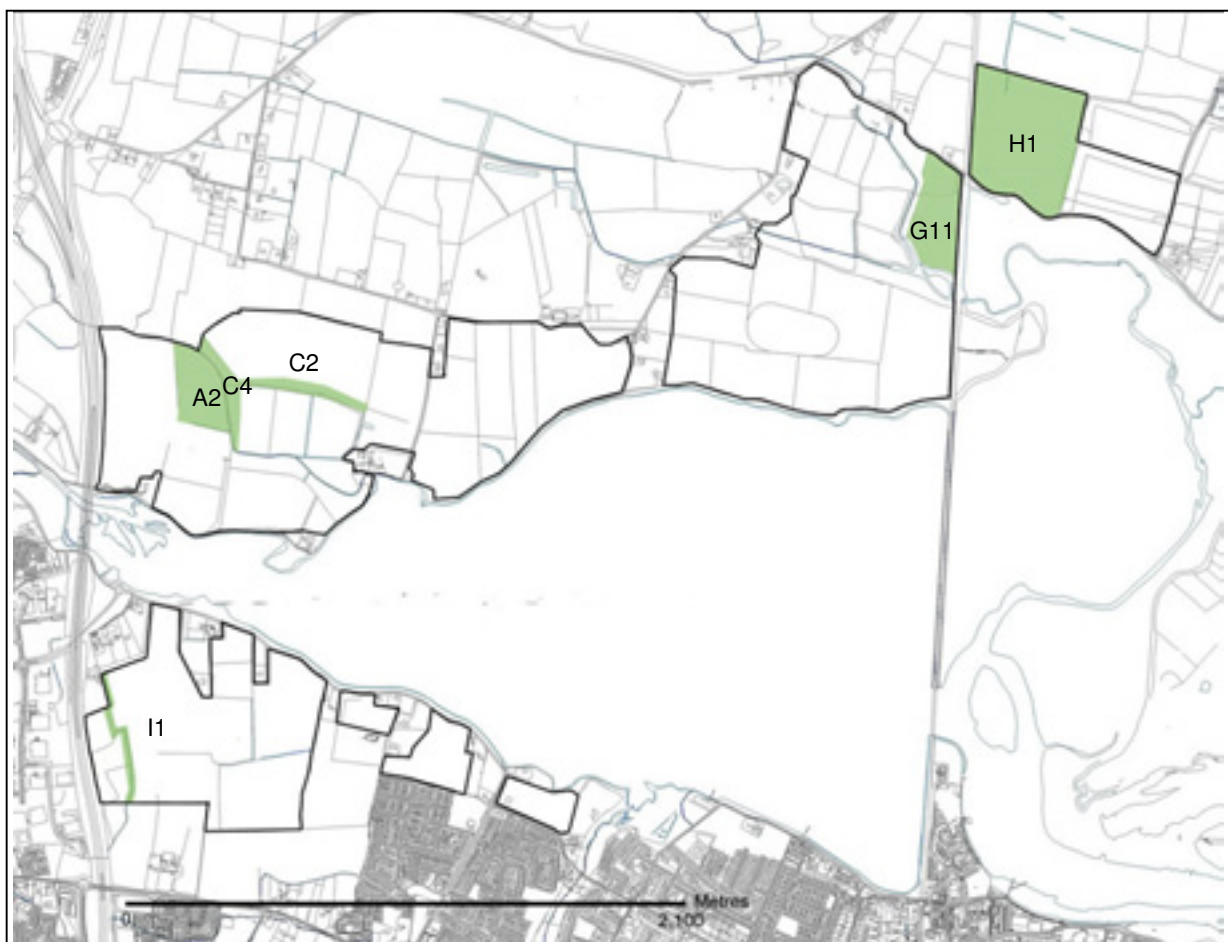


Figure 26. Yellowhammer - areas utilised in survey area. Jan. - Mar. 2009

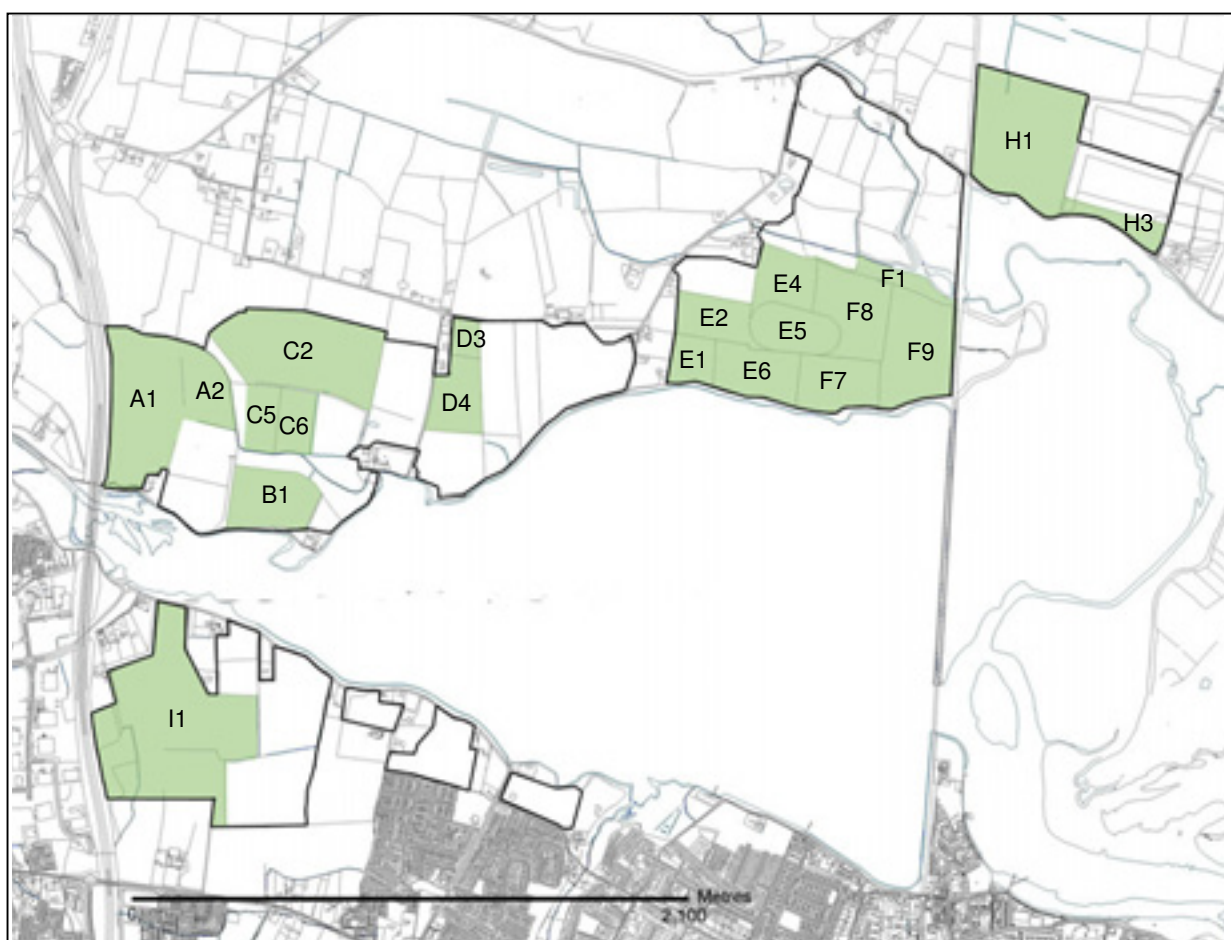


5.3.13 Other important observations

Birds of Prey

The main areas utilised by birds of prey are illustrated in Figure 27.

Figure 27. Birds of Prey - areas utilised in survey area. Jan. - Mar. 2009

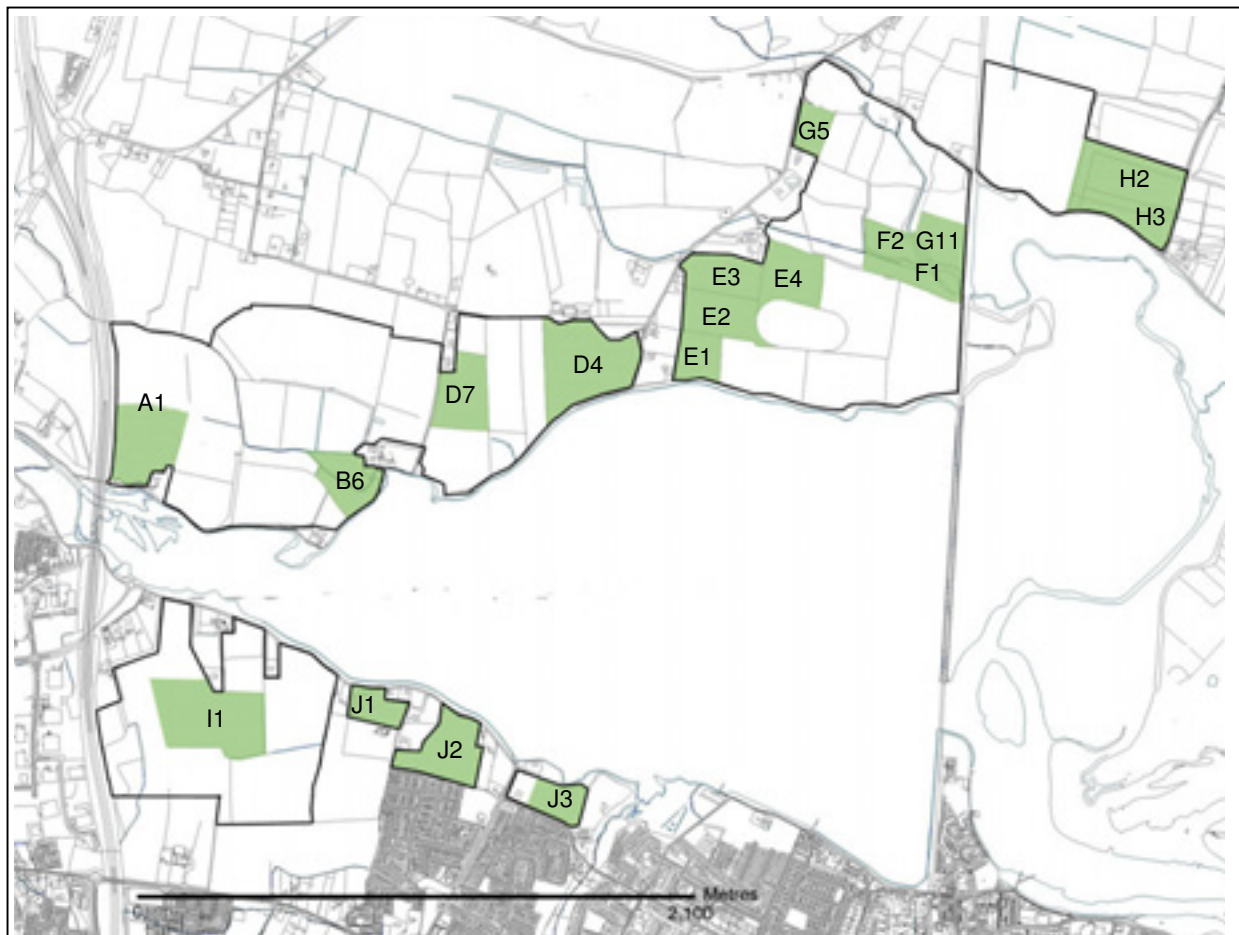


Species	Key Sites
Sparrowhawk	Recorded hunting woodland track at Kilcrea (F1).
Buzzard	Recorded throughout the area: Lissenhall East (A1-2), Ballymadrough (B1, C2-3, C5-6, D6), Kilcrea (E2, E5-6, E8-9, F1 - woodland track), Corballis (H1) and Seatown East (I1).
Kestrel	Regularly recorded at Kilcrea (E1, E6-7). Also present at Seapoint/Ballymadrough (B1, C2, D1) and Corballis (H1, H3).
Peregrine	Recorded at Corballis (H1), hunts waders along foreshore.
Merlin	Recorded hunting from hedgerow at Corballis (H1)

Waders

The main areas utilised by waders are illustrated in Figure 28.

Figure 28. Waders - areas utilised in survey area. Jan. - Mar. 2009

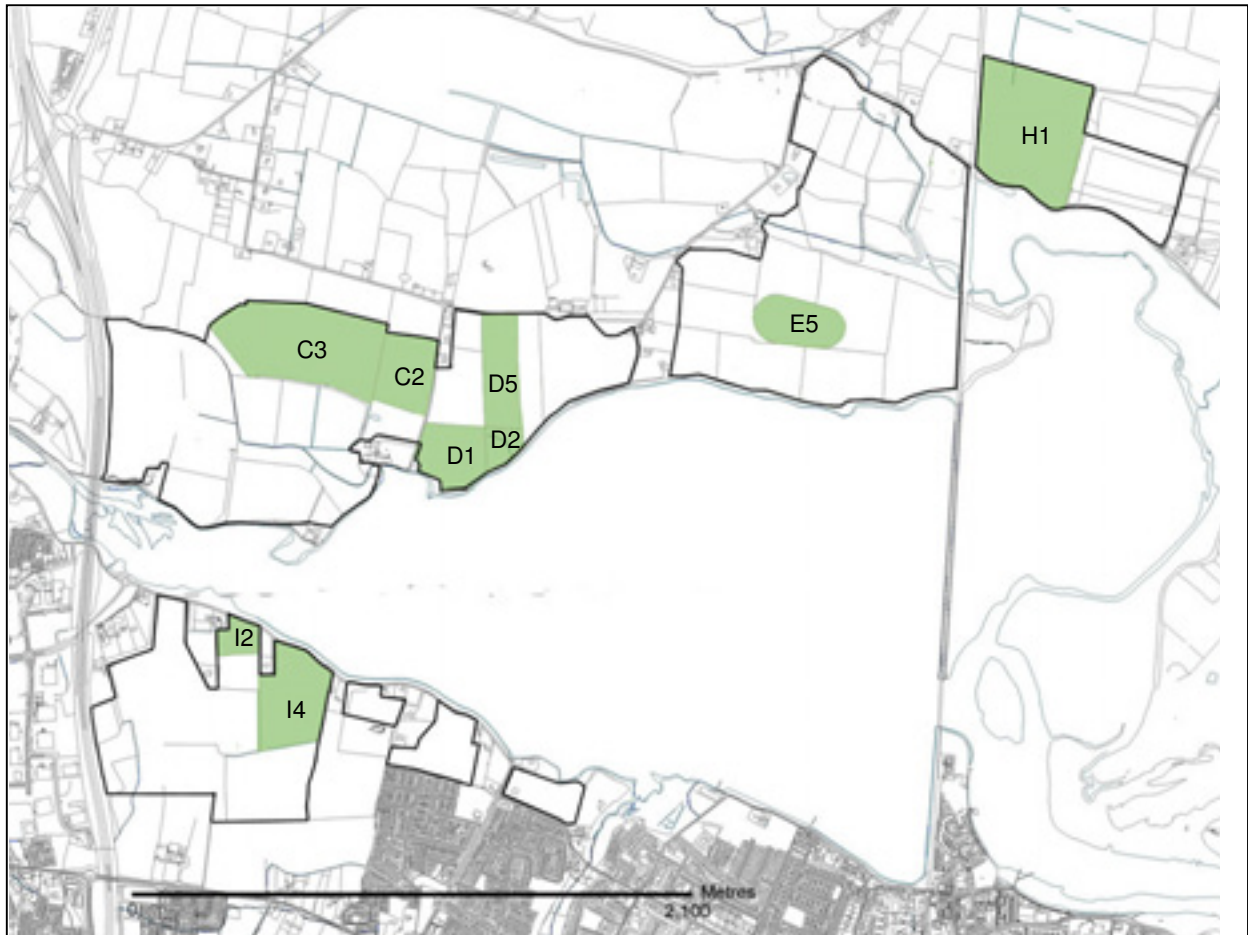


Species	Key Sites (peak number recorded)	Secondary areas
Oystercatcher:	Favoured the amenity lands on southern side of the estuary (peak 50 in J1)	F2 and H3
Golden Plover:	Only site used is I1 at Seatown East (1,000)	
Lapwing:	I1(370), E2-E3 (150), A1 (105)	E1 and D7
Redshank:	F1-2 (32)	Also E4
Greenshank:	F1-2 (7)	
Black-tailed Godwit:	H2-H3 (27), E3-4 (20) and F2 (7)	Also B6
Curlew:	F2 (250), also E2 – E3 (140), E4 (106), D4 (69), H3 (53)	G11 and E8
Snipe:	G5 (5) and H1(5)	Also F1

Finch flocks

The main areas utilised by flocks of Linnet and Goldfinch are illustrated in Figure 29.

Figure 29. Finch flocks (Linnet and Goldfinch) - areas utilised in survey area. Jan. - Mar. 2009



Species	Key Sites (peak number recorded)
Goldfinch:	D5 (65,) E5 (60), C2-C3 (45), D1 (26), I2 (8)
Linnet:	D5 (305), E5 (61), H1 (35), D2 (20), I4 (20)

6. DISCUSSION

The Broadmeadows/ Swords Estuary is an internationally important wetland site for wintering waterbirds and is designated as a Special Protection Area (SPA) for birds under the EU Birds Directive and thus is afforded statutory protection. The estuary has been the focus of systematic waterbird monitoring for nearly 30 years yet little was known about the bird species of the surrounding lands or whether important and protected species from the SPA utilise or depend on these lands.

This winter bird survey has produced a good set of baseline data on the bird species which utilise the lands surrounding the estuary, their habitats, and provides a valuable snapshot of the mix of land uses. The survey results showed that there is a very good diversity of species throughout the lands, with 66 bird species recorded, and provided clear evidence that important and protected species rely on the surrounding ecosystem together with the estuarine wetland habitats.

The species recorded of most significance was the Light-bellied Brent Goose. The geese occur in numbers of international importance at the estuary and are a featured species of the Broadmeadows/ Swords Estuary SPA designation based on I-WeBS published counts of the estuary for the period 1995-1999, with the average population of 956 individuals.

Light-bellied Brent Geese begin arriving in September and numbers steadily build up thereafter. Peak numbers occur at this site between December and February (Crowe 2005). In the early part of the season the geese feed on algae (*Enteromorpha* sp.) and sea grasses (*Zostera* sp.) in the estuary at low tide and later in the season depend more on amenity and other inland grasslands. Under this study the geese were found to utilise all suitable grasslands over the surrounding lands and at all states of the tide. Geese flocks were highly mobile between the estuary and these lands during the course of a day. In January and February Brent were recorded in numbers of international importance in survey sections at Ballymadrough, Kilcrea South, Kilcrea North, Corballis and at the amenity lands to the south of the estuary. With frequent disturbance occurring at these amenity lands, the availability of 'safe' lands to the north of the estuary make this area very important for the geese.

While a coordinated census of geese over the entire site was not undertaken, a coordinated count on January 26 of only two survey sections, Sections E (Kilcrea South) and H (Corballis), produced a total of 3,950 geese. In 2008-2009 I-WeBS counts of the Broadmeadows/ Swords Estuary recorded peak counts of 2,000 - 2,500 geese (*Black, B. pers comm*); these counts include any geese on surrounding lands visible from the estuary and therefore would exclude any geese present at Kilcrea South (sub-sites E2, E3, E4). Also I-WeBS counts of the inner estuary are undertaken from the south shore of the estuary and some geese on inland sites can often be hidden from view. The total number of Brent Geese supported by Broadmeadows/ Swords Estuary and surrounding lands in January and February could be in the region of 5,000 birds (*Black, B. and Roe J.*), and this would account for c11% of national population⁶. Details of interchanges with Brent wintering in adjacent sites, such as the Rogerstown Estuary SPA (3km north), is not known. Numbers of Brent at Rogerstown Estuary and adjacent lands peaked in November 2008 at 2,657 and dropped to 980 in January and 799 in February 2009 (*Roe, J.*) as the geese depleted feeding resources on the estuary and moved to inland grassland. It is likely that in January and February these lands surrounding the Broadmeadows/ Swords Estuary also support Brent Geese from Rogerstown Estuary SPA and other important sites. To determine the number of geese utilising the estuary and surrounding lands and their movement between adjacent sites would require further dedicated research.

Another important species recorded was Golden Plover. This is an EU Annex I species, and a featured species of the Broadmeadows/ Swords Estuary SPA. They regularly occur at the estuary in numbers of national importance but populations in Ireland can fluctuate from year to year depending on weather conditions. Flocks of up to 4,000 have been recorded at the estuary and numbers peak in December and February (Crowe 2005).

⁶ Based on the 2008/9 estimate of national population size of 47,000. Irish Brent Research Study Group.

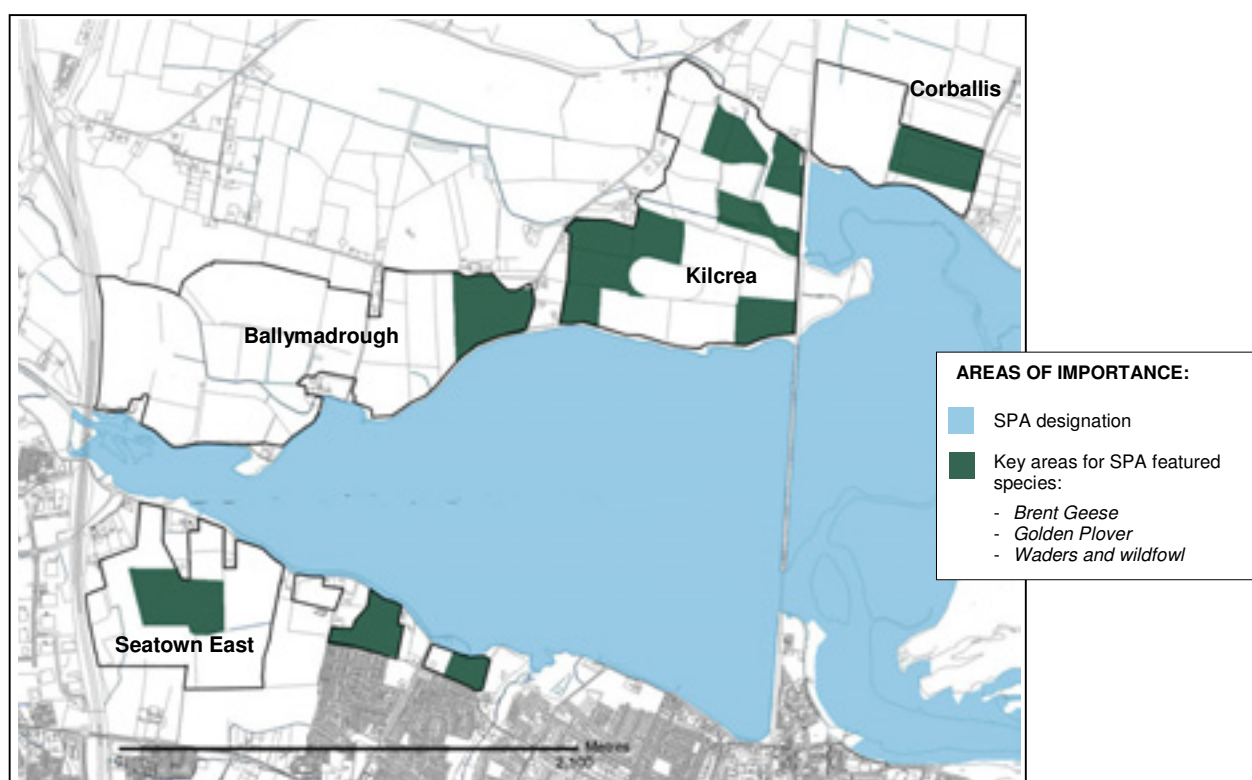
During the winter Golden Plover feed on arable land and rest on tidal mudflats and saltmarshes. On passage, they occur mainly on pasture, stubble and ploughed fields (Delany et al. 2009). Birds forage both by day and night, and return to favoured feeding and roosting sites within large tracts of open land (Byrkjedal & Thompson 1998). The extensive use by this species of farmland for feeding and roosting means that a high proportion of the Golden Plover population spends much of its time in unprotected areas prone to many kinds of disturbance (Delany et al. 2009).

In January and February, Golden Plover were present at the estuary and peaked at 1,000 birds. The saltmarsh at the mouth of the Broadmeadows River at Seatown East is the key site within the SPA for this species. In January and February 2009 the birds were observed here at low tide and when displaced by high tides these birds moved to ploughed lands at Seatown East (*sub-site 11*). Flocks have been observed in previous years on this field (Black, *B. pers comms*). This field at Seatown East was the only site within the survey area which was used by Golden Plover and therefore is a very important site for this species.

A good mix of other waders were found to utilise the surrounding fields as a feeding resource and for resting. The Newbridge River at Kilcrea and its flood zones was found to be an important site for a range of wintering waders and wildfowl. Black-tailed Godwit, Curlew, Redshank, Greenshank, Oystercatcher, Wigeon and Teal were all recorded here.

The the following map (Figure 30) brings together and illustrates the key areas utilised by important species linked to the SPA designation.

Figure 30. Map of key areas for SPA featured species, January – March 2009



Other important and protected species which are not linked to the SPA designation were present. Kingfisher and Little Egret, EU Annex I species, were recorded at the Lissenhall Stream at Ballymadrough/ Seapoint and along the Newbridge River at Kilcrea.

Species of that are declining nationally and are the focus of specific conservation actions in Fingal were recorded. Barn Owl was present at Ballymadrough – an important county record, and Water Rail, Snipe, Stock Dove, Tree Sparrow and Yellowhammer were found at a number of suitable habitats over the survey area.

In addition to the bird survey, Otter - an EU priority species, was sighted at Ballymadrough, and Badger, Red Fox, Stoat, Hedgehog, Grey Squirrel and Rabbit were also recorded. Good numbers of Irish Hares were present on lands at the northern side of the estuary. This species is in decline nationally and to find a healthy population so close to the city is impressive.

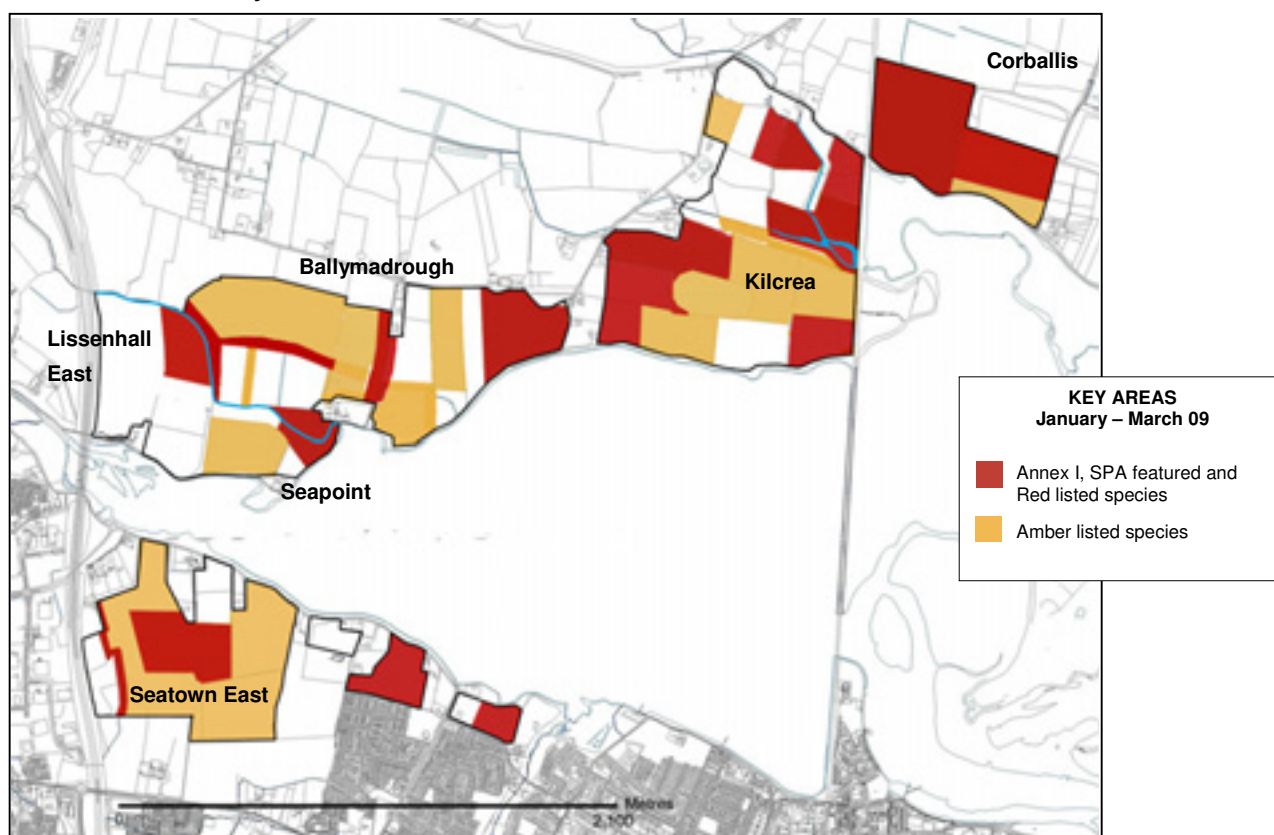
In Fingal, urban and industrial development and agricultural intensification has resulted in the degradation of valuable habitats which species depend on. These lands are rich with birds and mammals and the diversity recorded is a direct reflection of the mosaic of habitats, land use and mix of activities, and proximity to the estuary. Individual fields could become more or less important for certain species from year to year depending on the farming practices undertaken. The current farming practices offer protection for birds in the district and undisturbed lands so close to the Broadmeadows/ Swords SPA are important as waders and geese do not have to expend unnecessary and precious energy commuting to lands further afield.

These findings clearly illustrate that the surrounding lands are part of the functional wintering area for the populations of Light-bellied Brent Geese and Golden Plover that use the Broadmeadows/ Swords Estuary SPA. Any deterioration of this habitat surrounding the estuary could affect the health of these populations and have adverse effects on the important species of conservation concern which rely on these lands.

This valuable mix of land use together with the estuarine wetland habitats produces this diversity, if the mix stays as it is this level of diversity should continue.

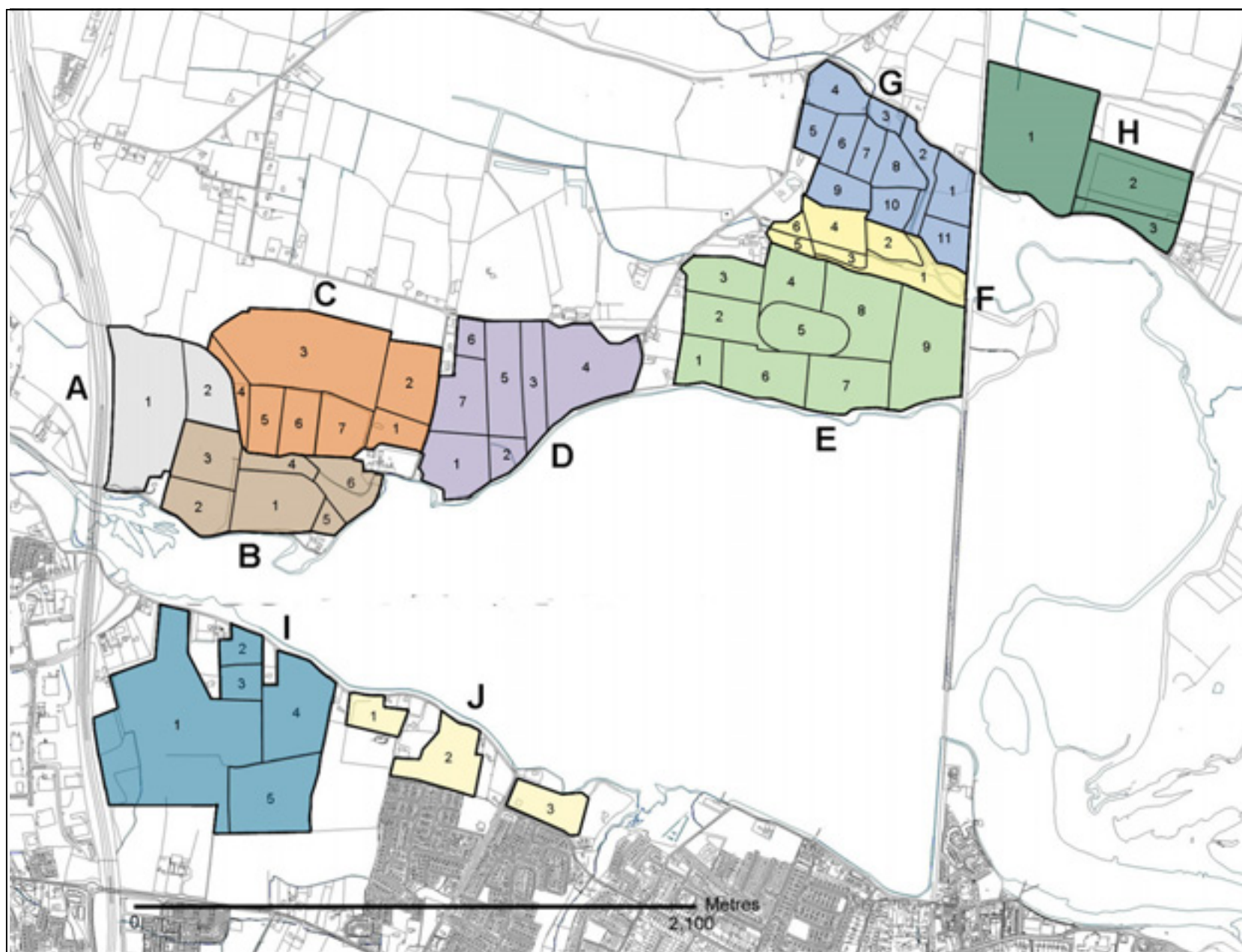
Based on the overall findings of the winter survey, the following map illustrates the key areas of importance.

Figure 31. Map of key areas identified - winter birds survey of lands surrounding Broadmeadows Estuary, January – March 2009



APPENDIX 1: MAP OF THE STUDY AREA SECTIONS AND BASELINE DATA

Map of the survey sections at lands surrounding the Broadmeadows/Swords Estuary



Section A Data

Overview of species recorded in Section A – Lissenhall East

	Species	Jan	Feb	Mar	Section peak count
1.	Buzzard		✓		1
2.	Lapwing		✓		105
3.	Wood Pigeon		✓		20
4.	Skylark			✓	1
5.	Meadow Pipit		✓		1
6.	Jackdaw	✓	✓		4
7.	Rook			✓	4
8.	Yellowhammer			✓	1

Species recorded in Section A

	Species – A1	27/1/09	12/2/09	21/2/09 nil count	2/3//09 nil count
1.	Buzzard		1		
2.	Lapwing		105		
3.	Jackdaw	4	4		

	Species – A2	27/1/09 nil count	12/2/09 nil count	21/2/09	2/3//09
1.	Buzzard			1	
2.	Wood Pigeon			20	
3.	Skylark				1
4.	Meadow Pipit			1	
5.	Rook				4
6.	Yellowhammer				1

Section B Data

Overview of species recorded in Section B – Ballymadrough/Seapoint

	Species	Jan	Feb	Mar	Section peak count
1.	Little Grebe	✓			2
2.	Little Egret		✓	✓	1
3.	Grey Heron		✓	✓	1
4.	Light-bellied Brent Goose			✓	1
5.	Mallard	✓	✓	✓	10
6.	Buzzard		✓		1
7.	Kestrel	✓			1
8.	Pheasant		✓		1
9.	Moorhen	✓	✓	✓	2
10.	Black-tailed Godwit			✓	3
11.	Redshank	✓	✓		3
12.	Wood Pigeon	✓	✓	✓	154
13.	Kingfisher		✓		1
14.	Skylark		✓		1
15.	Meadow Pipit		✓	✓	4
16.	Wren	✓	✓	✓	8
17.	Duncock		✓	✓	3
18.	Robin	✓	✓		3
19.	Blackbird	✓	✓	✓	18
20.	Song Thrush		✓	✓	5
21.	Redwing			✓	1
22.	Mistle Thrush	✓	✓	✓	4

	Species	Jan	Feb	Mar	Section peak count
23.	Long-tailed Tit		✓	✓	4
24.	Coal Tit		✓		5
25.	Blue Tit	✓	✓	✓	4
26.	Great Tit		✓	✓	3
27.	Magpie		✓		1
28.	Jackdaw		✓	✓	2
29.	Rook		✓		1
30.	Hooded Crow	✓	✓		3
31.	Starling	✓			5
32.	Tree Sparrow		✓		2
33.	Chaffinch		✓	✓	3
34.	Greenfinch		✓		2
35.	Goldfinch		✓	✓	2
36.	Redpoll			✓	1
37.	Bullfinch			✓	1

Species recorded in Section B

	Species – B1	27/1/09	12/2/09	21/2/09	2/3//09
1.	Buzzard			1	
2.	Kestrel	1			
3.	Pheasant		1		
4.	Wood Pigeon	150		16	1
5.	Skylark		1		
6.	Wren		1		1
7.	Dunnock				1
8.	Robin	6	1	1	
9.	Blackbird	10		1	3
10.	Song Thrush				1
11.	Redwing				1
12.	Long-tailed Tit				4
13.	Coal Tit		2		
14.	Blue Tit		2		3
15.	Great Tit		2		
16.	Hooded Crow	2		2	
17.	Chaffinch		2		
18.	Greenfinch			1	1
19.	Goldfinch				1
20.	Redpoll				1

	Species – B2	27/1/09	12/2/09	21/2/09	2/3//09
1.	Wood Pigeon			1	
2.	Wren	4			
3.	Dunnock		1		
4.	Robin	2	1	1	1
5.	Blackbird		1	1	
6.	Song Thrush			1	
7.	Great Tit	1			1
8.	Magpie			1	
9.	Jackdaw			1	2
10.	Chaffinch				1
11.	Greenfinch			1	
12.	Goldfinch			1	

	Species – B3	27/1/09 nil count	12/2/09	21/2/09	2/3//09
1.	Wren				1
2.	Dunnock		1		2
3.	Robin		1		2
4.	Blackbird			1	1
5.	Song Thrush		1	1	
6.	Blue Tit		1		

Section B (continued)

	Species – B4	27/1/09	12/2/09	21/2/09	2/3/09
1.	Mallard		8		
2.	Moorhen		2		
3.	Wren	4	1		1
4.	Robin		1		
5.	Blackbird		1	1	1
6.	Song Thrush				1
7.	Mistle Thrush	2			
8.	Blue Tit		1		
9.	Great Tit		1		
10.	Redpoll				1

	Species – B5	27/1/09	12/2/09	21/2/09	2/3/09
1.	Wood Pigeon	1			1
2.	Wren		1		
3.	Blackbird	2	2		1
4.	Song Thrush		2		
5.	Mistle Thrush		2		1
6.	Coal Tit		1		
7.	Blue Tit		1		1
8.	Chaffinch		1		1
9.	Goldfinch			1	1

	Species – B6	27/1/09	12/2/09	21/2/09	2/3/09
1.	Little Grebe	2			
2.	Little Egret			1	1
3.	Grey Heron		1		1
4.	Light-bellied Brent Goose				1
5.	Mallard	11	10	2	8
6.	Moorhen	1	2	1	1
7.	Black-tailed Godwit				3
8.	Redshank	3	2		
9.	Wood Pigeon	3			
10.	Kingfisher		1		
11.	Meadow Pipit		4		2
12.	Wren				1
13.	Robin		1		
14.	Blackbird	6	7		1
15.	Song Thrush		5		
16.	Redwing		1		
17.	Mistle Thrush	2	2		
18.	Blue Tit				1
19.	Great Tit				1
20.	Jackdaw		3		
21.	Rook			1	
22.	Hooded Crow	1	2	1	
23.	Starling	5	4		
24.	Tree Sparrow		2		

Section C Data

Overview of species recorded in Section C – Ballymadrough

	Species	Jan	Feb	Mar	Apr	Section peak count
1.	Cormorant		✓			1
2.	Grey Heron			✓		1
3.	Mallard			✓		2
4.	Buzzard	✓	✓	✓		2
5.	Kestrel			✓		1
6.	Pheasant	✓	✓	✓		5
7.	Water Rail		✓			1
8.	Redshank		✓			1
9.	Stock Dove			✓		1
10.	Wood Pigeon	✓	✓	✓		150
11.	Barn Owl				✓	1
12.	Skylark		✓	✓		5
13.	Meadow Pipit	✓	✓			18
14.	Grey Wagtail		✓			2
15.	Pied Wagtail			✓		1
16.	Wren	✓	✓	✓		5
17.	Duncock	✓	✓	✓		4
18.	Robin	✓	✓	✓		7
19.	Blackbird	✓	✓	✓		7
20.	Song Thrush	✓	✓	✓		8
21.	Redwing		✓			1
22.	Goldcrest		✓	✓		2

	Species	Jan	Feb	Mar	Section peak count
23.	Long-tailed Tit		✓		5
24.	Blue Tit	✓	✓	✓	4
25.	Great Tit	✓	✓		4
26.	Jackdaw		✓	✓	45
27.	Rook		✓	✓	10
28.	Hooded Crow	✓			1
29.	Starling	✓	✓		20
30.	Tree Sparrow		✓		1
31.	Chaffinch	✓	✓	✓	2
32.	Greenfinch	✓	✓		3
33.	Goldfinch	✓		✓	45
34.	Linnet		✓	✓	9
35.	Redpoll	✓			1
36.	Bullfinch		✓		3
37.	Yellowhammer		✓		6
38.	Reed Bunting	✓	✓		5

Species recorded in Section C

	Species – C1	27/1/09	10/2/09	21/2/09	2/3/09
1.	Mallard				2
2.	Pheasant			1	2
3.	Redshank		1		
4.	Stock Dove				1
5.	Wood Pigeon	40	40		1
6.	Wren		1		1
7.	Dunnock		1		
8.	Robin	2	1		
9.	Blackbird	2	1		
10.	Long-tailed Tit		2		
11.	Coal Tit		1		
12.	Blue Tit		2	1	1
13.	Great Tit		1		
14.	Tree Sparrow		1		
15.	Greenfinch		2		
16.	Bullfinch		1		
17.	Jackdaw		3		1

	Species – C2	27/1/09	10/2/09	21/2/09	2/3/09	16/4/09
1.	Grey Heron				1*	
2.	Buzzard			2	1	
3.	Kestrel				1	
4.	Pheasant			3	2	
5.	Wood Pigeon	150		30		
6.	Meadow Pipit	5	1	3		
7.	Barn Owl					1
8.	Grey Wagtail		1			
9.	Wren	1	1		2	
10.	Dunnock		1		2	
11.	Robin		1			
12.	Blackbird	2		1		
13.	Song Thrush	1	1	2		
14.	Redwing		1			
15.	Goldcrest			1	1	
16.	Long-tailed Tit		3			
17.	Blue Tit	3		2		
18.	Great Tit	2				
19.	Jackdaw			45		
20.	Rook			10		
21.	Starling	20				
22.	Chaffinch			1		
23.	Greenfinch	1				
24.	Goldfinch	45			1	
25.	Linnet				3	
26.	Redpoll	1				
27.	Bullfinch		1			
28.	Reed Bunting	1				

*Flyover

	Species – C3	27/1/09	10/2/09	21/2/09	2/3/09
1.	Buzzard		1		
2.	Pheasant	1			
3.	Wood Pigeon	100			100
4.	Skylark		3		1
5.	Meadow Pipit		4		
6.	Pied Wagtail				1
7.	Wren	1	1		
8.	Dunnock	2	1		1
9.	Robin	2	1		
10.	Blackbird		3		1
11.	Song Thrush	3	5	1	
12.	Blue Tit		1		
13.	Great Tit	1			
14.	Jackdaw				2
15.	Rook				2
16.	Hooded Crow	1			
17.	Chaffinch	1	1		1
18.	Goldfinch				1
19.	Linnet				6
20.	Bullfinch		2		
21.	Yellowhammer		2		
22.	Reed Bunting		1		

Section C (continued)

	Species – C4	27/1/09	10/2/09	21/2/09	2/3/09
1.	Cormorant		1		
2.	Pheasant				1
3.	Meadow Pipit			1	1
4.	Wren			1	2
5.	Dunnoch				1
6.	Blackbird				2
7.	Song Thrush				2
8.	Chaffinch			1	
9.	Greenfinch		1		
10.	Bullfinch		1	1	
11.	Yellowhammer		4	1	
12.	Reed Bunting	1	1	5	

	Species – C5	27/1/09	10/2/09	21/2/09	2/3/09
1.	Buzzard		1		
2.	Pheasant		1		
3.	Water Rail			1	
4.	Meadow Pipit	13	1	1	
5.	Wren	1			
6.	Robin	1	1	1	
7.	Blackbird	1			1
8.	Song Thrush			1	
9.	Goldcrest			1	
10.	Blue Tit		1		1
11.	Great Tit		1		
12.	Starling			1	
13.	Linnet			2	
14.	Reed Bunting	1			

	Species – C6	27/1/09	10/2/09	21/2/09	2/3/09
1.	Buzzard	2			
2.	Pheasant	1			
3.	Wren		1		
4.	Dunnoch		1		
5.	Robin	2	1	1	1
6.	Blackbird	1		1	1
7.	Song Thrush		1		
8.	Blue Tit	1			
9.	Great Tit	2			

	Species – C7	27/1/09	10/2/09	21/2/09	2/3/09
1.	Meadow Pipit		1		
2.	Robin			1	1
3.	Blackbird		1		
4.	Song Thrush		1		
5.	Blue Tit				1
6.	Chaffinch		1		
7.	Reed Bunting	1			

Section D Data

Overview of species recorded in Section D – Ballymadrough East

	Species	Jan	Feb	Mar	Apr	Section peak count
1.	Little Egret		✓			2
2.	Light-bellied Brent Goose	✓	✓			1,370
3.	Buzzard			✓		1
4.	Kestrel		✓			1
5.	Pheasant	✓	✓	✓		11
6.	Lapwing		✓			73
7.	Curlew		✓			69
8.	Redshank	✓				1
9.	Black-headed Gull		✓			100
10.	Stock Dove	✓		✓		10
11.	Wood Pigeon	✓	✓	✓		250
12.	Meadow Pipit	✓	✓	✓		20
13.	Barn Owl				✓	1
14.	Skylark		✓			1
15.	Pied Wagtail			✓		2
16.	Wren	✓	✓	✓		3
17.	Duncock	✓	✓	✓		8
18.	Robin	✓	✓	✓		6
19.	Stonechat		✓			1
20.	Blackbird	✓	✓	✓		5
21.	Song Thrush	✓	✓			4
22.	Redwing	✓	✓			26

	Species	Jan	Feb	Mar	Section peak count
23.	Mistle Thrush	✓			2
24.	Goldcrest		✓	✓	3
25.	Coal Tit	✓			2
26.	Blue Tit	✓	✓	✓	4
27.	Great Tit	✓	✓		3
28.	Magpie	✓	✓	✓	5
29.	Jackdaw	✓	✓	✓	37
30.	Rook	✓	✓	✓	20
31.	Hooded Crow	✓	✓	✓	1
32.	Starling	✓	✓		112
33.	Tree Sparrow	✓	✓		3
34.	Chaffinch	✓	✓	✓	4
35.	Greenfinch	✓	✓	✓	6
36.	Goldfinch	✓	✓		66
37.	Linnet	✓	✓	✓	305
38.	Redpoll		✓		3
39.	Bullfinch	✓			1
40.	Reed Bunting	✓	✓		3

Species recorded in Section D

	Species – D1	27/1/09	13/2/09	21/2/09	2/3/09
1.	Pheasant	2	2		
2.	Redshank		1		
3.	Stock Dove	10			1
4.	Wood Pigeon	121	8	100	100
5.	Meadow Pipit	17	6		1
6.	Wren			1	1
7.	Dunnock	4	7		1
8.	Robin	4	2		1
9.	Blackbird		1		
10.	Song Thrush		1		
11.	Goldcrest		3		
12.	Coal Tit	1			
13.	Blue Tit	1			1
14.	Great Tit	1	1		
15.	Magpie	2			3
16.	Jackdaw			7	
17.	Rook			2	
18.	Hooded Crow			1	1
19.	Tree Sparrow	2	3		
20.	Chaffinch				3
21.	Greenfinch	2	2		1
22.	Goldfinch	26	1		
23.	Linnet		122	12	55
24.	Bullfinch	1			
25.	Reed Bunting		1		

	Species – D2	27/1/09	13/2/09	21/2/09	2/3/09
1.	Pheasant	1			
2.	Wood Pigeon		1		
3.	Meadow Pipit	3		2	
4.	Pied Wagtail				1
5.	Stonechat		1		
6.	Blackbird	2			
7.	Blue Tit		1		
8.	Magpie			2	1
9.	Rook			2	
10.	Hooded Crow	1			
11.	Greenfinch	1			
12.	Linnet	20			
13.	Reed Bunting		1		

	Species – D3	27/1/09	13/2/09	21/2/09	2/3/09
1.	Pheasant	3	1		
2.	Wood Pigeon		100		
3.	Wren	1		1	
4.	Dunnock			1	
5.	Robin				1
6.	Blackbird		2		1
7.	Redwing			26	
8.	Mistle Thrush	1			
9.	Magpie		5		
10.	Chaffinch		1	1	
11.	Greenfinch			1	
12.	Goldfinch	5			
13.	Linnet		6	1	3

Section D (continued)

	Species – D4	27/1/09	13/2/09	21/2/09	2/3//09
1.	Light-bellied Brent Goose	400	1,370		
2.	Pheasant		6	1	2
3.	Curlew		69		
4.	Black-headed Gull		1		
5.	Wood Pigeon		162		
6.	Magpie	2			
7.	Jackdaw	1			
8.	Rook				6
9.	Starling		110		

	Species – D5	27/1/09	13/2/09	21/2/09	2/3//09
1.	Pheasant	5	1		
2.	Wood Pigeon	100			
3.	Skylark		1		
4.	Pied Wagtail				1
5.	Wren	1	2	1	1
6.	Dunnock				1
7.	Robin		1		2
8.	Blackbird	1	1		
9.	Song Thrush	2	2		
10.	Redwing		11		
11.	Mistle Thrush	1			
12.	Coal Tit	1			
13.	Blue Tit	3	2		
14.	Great Tit	2			
15.	Magpie			3	
16.	Jackdaw				2
17.	Rook			4	
18.	Hooded Crow				
19.	Starling	4	2		
20.	Chaffinch	3			1
21.	Greenfinch	3			
22.	Goldfinch		65	40	
23.	Linnet		305	40	
24.	Redpoll		2		
25.	Reed Bunting	1	1		

	Species – D6	27/1/09	13/2/09 nil count/ disturbance	21/2/09 nil count/ disturbance	2/3//09
1.	Buzzard				1
2.	Wren	1			
3.	Robin	2			
4.	Blackbird	4			
5.	Song Thrush	2			
6.	Redwing	1			
7.	Blue Tit				1
8.	Linnet				1

Section D (continued)

	Species – D7	27/1/09	13/2/09	21/2/09	2/3/09	16/4/09
1.	Little Egret			2*		
2.	Kestrel			1		
3.	Pheasant			1		
4.	Lapwing		73			
5.	Black-headed Gull			100		
6.	Wood Pigeon	30			250	
7.	Barn Owl					1
8.	Duncock		1			
9.	Robin		1		1	
10.	Stonechat					
11.	Blackbird	1	1			
12.	Goldcrest				1	
13.	Blue Tit				1	
14.	Jackdaw	12		30	3	
15.	Rook	1		12		
16.	Greenfinch				1	
17.	Redpoll		1			

* Flyover

Section E Data

Overview of species recorded in Section E – Kilcrea South

	Species	Jan	Feb	Mar	Section peak count
1.	Mute Swan		✓		1
2.	Light-bellied Brent Goose	✓	✓	✓	1,560
3.	Buzzard	✓	✓		5
4.	Kestrel	✓	✓		2
5.	Pheasant			✓	1
6.	Oystercatcher	✓			1
7.	Lapwing		✓		150
8.	Black-tailed Godwit		✓		20
9.	Curlew	✓	✓		140
10.	Redshank		✓		10
11.	Black-headed Gull	✓	✓		19
12.	Herring Gull		✓		6
13.	Common Gull		✓		3
14.	Stock Dove		✓	✓	2
15.	Wood Pigeon	✓	✓	✓	83
16.	Collared Dove		✓		1
17.	Skylark	✓	✓	✓	20
18.	Meadow Pipit	✓	✓		16
19.	Pied Wagtail	✓			1
20.	Wren	✓	✓	✓	2
21.	Duncock	✓	✓	✓	5
22.	Robin	✓	✓	✓	7

	Species	Jan	Feb	Mar	Section peak count
23.	Stonechat	✓			2
24.	Blackbird	✓	✓	✓	13
25.	Song Thrush	✓	✓		31
26.	Redwing	✓	✓		6
27.	Mistle Thrush	✓	✓		6
28.	Goldcrest	✓	✓		4
29.	Coal Tit		✓	✓	1
30.	Blue Tit	✓	✓	✓	12
31.	Great Tit	✓	✓		2
32.	Magpie	✓	✓	✓	1
33.	Jackdaw	✓	✓		12
34.	Rook	✓	✓		27
35.	Hooded Crow	✓	✓		2
36.	Raven		✓		1
37.	Starling	✓	✓	✓	80
38.	Chaffinch	✓	✓	✓	6
39.	Greenfinch		✓		1
40.	Goldfinch	✓	✓		60
41.	Linnet	✓	✓	✓	61
42.	Redpoll	✓			3
43.	Bullfinch	✓			3

Species recorded in Section E

	Species – E1	26/1/09	11/2/09	21/2/09	2/3/09
1.	Light-b. Brent Goose			252	250
2.	Kestrel	1	1		
3.	Lapwing			75	
4.	Herring Gull		2		
5.	Stock Dove			1	
6.	Wood Pigeon	6	2	60	1
7.	Collared Dove			1	
8.	Meadow Pipit	1			
9.	Wren		1		
10.	Dunnoch	1	3	1	1
11.	Robin	1	2		
12.	Blackbird		3	2	1
13.	Song Thrush	2	6	1	
14.	Redwing		2		
15.	Mistle Thrush			2	
16.	Coal Tit			1	
17.	Blue Tit	4	3	2	2
18.	Great Tit	1	2	1	
19.	Jackdaw	2			
20.	Rook	2			
21.	Starling				40
22.	Chaffinch			2	2
23.	Greenfinch	1			
24.	Goldfinch			1	

	Species – E2	26/1/09	11/2/09	21/2/09	2/3/09
1.	Light-b. Brent Goose			498	
2.	Buzzard	1			
3.	Lapwing		45		
4.	Curlew			104	
5.	Black-headed Gull			1	
6.	Herring Gull			6	
7.	Common Gull			3	
8.	Wood Pigeon		16		
9.	Meadow Pipit	1		1	
10.	Redwing	2			
11.	Mistle Thrush	6			
12.	Coal Tit				1
13.	Blue Tit				1
14.	Jackdaw		10		
15.	Rook		27	2	
16.	Starling		6	80	
17.	Chaffinch	1			

	Species – E3	26/1/09	11/2/09	15/2/09	21/2/09	2/3/09
1.	Light-b. Brent Goose	1,450	540	1,560		
2.	Oystercatcher	1				
3.	Lapwing		105			
4.	Curlew	22			36	
5.	Black-headed Gull	1	19			
6.	Wood Pigeon					40
7.	Starling		5			

Section E (continued)

	Species – E4	26/1/09	11/2/09	21/2/09 nil count	2/3/09 nil count
1.	Light-bellied Brent Goose	1	640		
2.	Black-tailed Godwit		20		
3.	Curlew	106	94		
4.	Redshank		10		
5.	Jackdaw	10			
6.	Starling	50			

	Species – E5	26/1/09	11/2/09	21/2/09	2/3/09
1.	Buzzard			1	
2.	Stock Dove*				2
3.	Skylark			1	
4.	Meadow Pipit			1	
5.	Blackbird		1		
6.	Magpie				1
7.	Hooded Crow	2		1	
8.	Chaffinch			2	
9.	Greenfinch				
10.	Goldfinch		60		
11.	Linnet		61		5

* Flyover

	Species – E6	26/1/09	11/2/09	21/2/09	2/3/09
1.	Buzzard	1	1		
2.	Kestrel		1	1	
3.	Skylark	20			
4.	Meadow Pipit	2	1	5	
5.	Dunnock		1		
6.	Robin	2	3		
7.	Stonechat	2			
8.	Blackbird	2	2		1
9.	Song Thrush		5		
10.	Redwing		2		
11.	Blue Tit		2		1
12.	Chaffinch		6		
13.	Linnet				13
14.	Bullfinch	2			

Section E (continued)

	Species – E7	26/1/09	11/2/09	21/2/09	2/3/09
1.	Kestrel	1			
2.	Black-headed Gull	1			
3.	Wood Pigeon				2
4.	Meadow Pipit		1		
5.	Pied Wagtail	1			
6.	Wren		1	1	1
7.	Dunnock			1	
8.	Robin	1	1		
9.	Stonechat	2			
10.	Blackbird	8			
11.	Goldcrest	3	1		
12.	Blue Tit	4			
13.	Chaffinch	10		1	
14.	Greenfinch		1		
15.	Linnet	6			
16.	Bullfinch	1			

	Species – E8	26/1/09 nil count	11/2/09	21/2/09	2/3/09
1.	Mute Swan			1*	
2.	Pheasant				1
3.	Curlew		12		
4.	Wood Pigeon		15		
5.	Skylark		12		1
6.	Meadow Pipit		2		
7.	Wren				1
8.	Dunnock		1		1
9.	Robin		1		
10.	Blackbird		7		
11.	Song Thrush		20		
12.	Redwing		2		
13.	Magpie			1	
14.	Raven			1	
15.	Starling		12		
16.	Greenfinch			1	
17.	Linnet				1

* Flyover

	Species – E9	26/1/09	11/2/09 nil count	15/2/09	21/2/09	2/3/09
1.	Buzzard			5		
2.	Light-b. Brent Goose					350
3.	Wood Pigeon					40
4.	Skylark				1	1
5.	Meadow Pipit	12				
6.	Wren	1				
7.	Dunnock				1	
8.	Blackbird	1				
9.	Goldcrest	1				
10.	Blue Tit	4				
11.	Magpie	1				
12.	Goldfinch	1				

Section F Data

Overview of species recorded in Section F – Kilcrea (Channel)

	Species	Jan	Feb	Mar	Section peak count
1.	Little Grebe	✓			1
2.	Little Egret	✓			1
3.	Grey Heron	✓	✓		2
4.	Teal			✓	30
5.	Wigeon			✓	46
6.	Mallard			✓	2
7.	Sparrowhawk	✓	✓		1
8.	Buzzard		✓	✓	1
9.	Pheasant	✓	✓	✓	6
10.	Water Rail			✓	1
11.	Moorhen			✓	1
12.	Oystercatcher		✓		45
13.	Snipe		✓		1
14.	Black-tailed Godwit			✓	7
15.	Curlew	✓	✓	✓	250
16.	Redshank	✓	✓	✓	32
17.	Greenshank	✓	✓	✓	7
18.	Wood Pigeon	✓	✓	✓	43
19.	Kingfisher			✓	1
20.	Skylark		✓	✓	2
21.	Meadow Pipit		✓	✓	10
22.	Pied Wagtail		✓		1
23.	Wren	✓	✓	✓	5

	Species	Jan	Feb	Mar	Section peak count
24.	Dunnock	✓	✓	✓	1
25.	Robin	✓	✓	✓	4
26.	Blackbird	✓	✓	✓	6
27.	Song Thrush	✓	✓		1
28.	Redwing		✓		1
29.	Blue Tit		✓	✓	1
30.	Great Tit		✓	✓	1
31.	Magpie		✓		2
32.	Hooded Crow		✓		3
33.	Starling		✓	✓	35
34.	Chaffinch		✓		2
35.	Greenfinch			✓	2
36.	Goldfinch		✓	✓	10
37.	Linnet		✓	✓	13
38.	Bullfinch		✓	✓	1
39.	Reed Bunting	✓		✓	3

Species recorded in Section F

	Species – F1	26/1/09	11/2/09	21/2/09	2/3/09
1.	Little Egret	1			
2.	Teal				30
3.	Wigeon				46
4.	Mallard				2
5.	Sparrowhawk	1			
6.	Buzzard		1		1
7.	Pheasant	1	1		
8.	Snipe		1		
9.	Redshank	1		2	32
10.	Greenshank	1			
11.	Wood Pigeon			40	
12.	Kingfisher				1
13.	Skylark			1	
14.	Meadow Pipit			1	1
15.	Wren	1		2	
16.	Dunnock	1	1	1	
17.	Robin		1	2	2
18.	Blackbird	1	5	2	3
19.	Song Thrush	1	1	1	
20.	Great Tit			1	
21.	Hooded Crow			2	
22.	Starling				35
23.	Chaffinch			1	
24.	Goldfinch		10		
25.	Linnet			13	5
27.	Bullfinch		1		
28.	Reed Bunting	1			1

	Species – F2	26/1/09	11/2/09	21/2/09	2/3/09
1.	Grey Heron	2			
2.	Sparrowhawk		1		
3.	Oystercatcher		45		
4.	Curlew	250	112	8	34
5.	Black-tailed Godwit				7
6.	Redshank		20		
7.	Greenshank		2		7
8.	Skylark				2
9.	Meadow Pipit			7	8
10.	Pied Wagtail			1	
11.	Hooded Crow			1	
12.	Starling		24		
13.	Reed Bunting				1

	Species – F3	26/1/09	11/2/09	21/2/09	2/3/09
1.	Water Rail				1
2.	Wood Pigeon	43			2
3.	Meadow Pipit		1		
4.	Wren			1	1
5.	Dunnock	1			1
6.	Robin				2
7.	Blackbird		1		
8.	Redwing				6
9.	Blue Tit				1
10.	Chaffinch		1		
11.	Goldfinch			1	1

Section F (continued)

	Species – F4	26/1/09 nil count	11/2/09 nil count	21/2/09	2/3//09
1.	Mallard				1
2.	Moorhen				1
3.	Curlew				1
4.	Meadow Pipit			1	2
5.	Wren			1	1
6.	Dunnock				1
7.	Robin				2
8.	Bullfinch				1

	Species – F5	26/1/09 nil count	11/2/09 nil count	21/2/09	2/3//09
1.	Pheasant			6	1
2.	Wood Pigeon				6
3.	Wren			1	2
4.	Blackbird			1	3
5.	Redwing			1	
6.	Blue Tit			1	
7.	Great Tit				1
8.	Magpie			2	
9.	Chaffinch			1	
10.	Greenfinch				1

	Species – F6	26/1/09 nil count	11/2/09	21/2/09	2/3//09
1.	Grey Heron		1		
2.	Wood Pigeon			1	1
3.	Robin			1	1
4.	Great Tit		1		
5.	Greenfinch				1

Section G Data

Overview of species recorded in Section G – Kilcrea North

	Species	Jan	Feb	Mar	Section peak count
1.	Little Grebe		✓		3
2.	Grey Heron		✓	✓	11
3.	Light-bellied Brent Goose	✓	✓		1,600
4.	Teal			✓	2
5.	Mallard		✓	✓	4
6.	Pheasant		✓		2
7.	Moorhen		✓	✓	2
8.	Lapwing		✓		1
9.	Snipe		✓	✓	5
10.	Curlew		✓		12
11.	Redshank		✓		3
12.	Wood Pigeon			✓	10
13.	Skylark		✓	✓	11
14.	Meadow Pipit		✓	✓	25
15.	Grey Wagtail			✓	1
16.	Pied Wagtail		✓	✓	2
17.	Wren		✓	✓	2
18.	Duncock		✓	✓	3
19.	Robin		✓	✓	4
20.	Blackbird		✓	✓	6
21.	Fieldfare		✓		1
22.	Song Thrush		✓	✓	8

	Species	Jan	Feb	Mar	Section peak count
23.	Redwing		✓		19
24.	Mistle Thrush		✓		1
25.	Coal Tit			✓	1
26.	Blue Tit		✓	✓	2
27.	Magpie		✓	✓	5
28.	Jackdaw		✓		2
29.	Hooded Crow		✓	✓	1
30.	Chaffinch			✓	1
31.	Greenfinch			✓	2
32.	Linnet			✓	1
33.	Yellowhammer		✓	✓	1
34.	Reed Bunting		✓	✓	1

Species recorded in Section G – Kilcrea

	Species – G1	27/1/09 NC	9/2/09	11/2/09	21/2/09	2/3/09
1.	Light-b. Brent Goose		1,600	700		
2.	Lapwing		1			
3.	Meadow Pipit					1
4.	Wren				1	
5.	Dunnock				1	1
6.	Robin				2	1
7.	Blackbird		2		1	
8.	Fieldfare		1			
9.	Song Thrush		1		1	
10.	Redwing		19			
11.	Mistle Thrush		1			
12.	Yellowhammer		1		1	
13.	Reed Bunting				1	

	Species – G2	27/1/09 NC	11/2/09	21/2/09	2/3/09
1.	Little Grebe		3		
2.	Mallard			2	4
3.	Moorhen		1	2	1
4.	Meadow Pipit		25		
5.	Pied Wagtail		1		
6.	Dunnock				1
7.	Robin			1	
8.	Blackbird		1		
9.	Song Thrush		6		
10.	Redwing		4		
11.	Jackdaw			2	

	Species – G3	27/1/09 NC	11/2/09	21/2/09 NC	3/3/09
1.	Wood Pigeon				1
2.	Grey Wagtail				1
3.	Robin				1
4.	Blackbird		4		1
5.	Coal Tit				1
6.	Magpie		5		1

	Species – G4	27/1/09 NC	11/2/09	21/2/09 NC	2/3/09
1.	Pied Wagtail				1
2.	Robin				1
3.	Redwing		6		

	Species – G5	27/1/09 NC	12/2/09 NC	21/2/09	2/3/09
1.	Pheasant			2	
2.	Snipe			5	1
3.	Meadow Pipit			2	
4.	Pied Wagtail				1
5.	Wren			1	2
6.	Robin			1	1
7.	Blackbird				1
8.	Song Thrush			1	
9.	Blue Tit			1	1
10.	Chaffinch				1

	Species – G6	27/1/09 NC	12/2/09 NC	21/2/09	2/3/09
1.	Grey Heron			11	11
2.	Teal				2
3.	Mallard			2	2
4.	Wood Pigeon				10
5.	Song Thrush			1	

Section G (continued)

	Species – G7	27/1/09	12/2/09 NC	21/2/09 NC	3/3/09
1.	Light-b. Brent Goose	310			
2.	Robin				1

	Species – G8	27/1/09	12/2/09	21/2/09 NC	2/3/09
1.	Light-b. Brent Goose	600	830		
2.	Moorhen				1
3.	Skylark				1
4.	Meadow Pipit				3
5.	Dunnock				1
6.	Blackbird				1
7.	Blue Tit				2
8.	Hooded Crow		1		

	Species – G9	27/1/09 NC	12/2/09 NC	21/2/09 NC	3/3/09
1.	Wood Pigeon				1
2.	Meadow Pipit				2
3.	Dunnock				1
4.	Blackbird				1
5.	Greenfinch				2
6.	Linnet				1

	Species – G10	27/1/09 NC	12/2/09 NC	21/2/09 NC	3/3/09
1.	Wood Pigeon				1
2.	Meadow Pipit				2
3.	Dunnock				1
4.	Robin				1
5.	Reed Bunting				1

	Species – G11	27/1/09 NC	12/2/09 NC	21/2/09	2/3/09
1.	Snipe				1
2.	Curlew			12	
3.	Skylark			11	
4.	Robin				1
5.	Blackbird				1
6.	Song Thrush				1
7.	Yellowhammer				1

Section H Data

Overview of species recorded in Section H – Corballis

	Species	Jan	Feb	Mar	Section peak count
1.	Light-bellied Brent Goose	✓			2,500
2.	Sparrowhawk	✓	✓		1
3.	Buzzard	✓	✓	✓	2
4.	Peregrine Falcon		✓		1
5.	Kestrel		✓	✓	2
6.	Merlin		✓		1
7.	Pheasant		✓		1
8.	Oystercatcher		✓		1
9.	Lapwing		✓		66
10.	Snipe			✓	5
11.	Black-tailed Godwit		✓		27
12.	Curlew		✓		53
13.	Redshank		✓		2
14.	Black-headed Gull		✓		2
15.	Skylark	✓	✓	✓	50
16.	Meadow Pipit		✓	✓	30
17.	Duncock		✓	✓	2
18.	Robin		✓	✓	1
19.	Stonechat		✓		2
20.	Blackbird	✓		✓	3
21.	Fieldfare		✓		18
22.	Song Thrush			✓	1

	Species	Jan	Feb	Mar	Section peak count
23.	Redwing		✓		5
24.	Magpie		✓	✓	2
25.	Hooded Crow		✓		2
26.	Tree Sparrow	✓			10
27.	Linnet		✓	✓	35
28.	Yellowhammer	✓	✓	✓	11
29.	Reed Bunting	✓		✓	5

Species recorded in Section H – Corballis

	Species – H1	26/1/09	11/2/09	15/2/09	21/2/09	22/2/09	2/3//09
1.	Sparrowhawk	1		1		1	
2.	Buzzard	1		2	1	2	1
3.	Peregrine Falcon			1			
4.	Kestrel		1	2	1	2	2
5.	Merlin		1	1			
6.	Pheasant		1				
7.	Snipe						5
8.	Skylark	1		50		25	1
9.	Meadow Pipit			30			7
10.	Dunnock						2
11.	Robin						1
12.	Stonechat		2	2		2	
13.	Blackbird	1					3
14.	Song Thrush						1
15.	Magpie				2		
16.	Tree Sparrow	10					
17.	Linnet			6			35
18.	Yellowhammer	11				2	1
19.	Reed Bunting	5					1

	Species – H2	26/1/09	9/2/09	11/2/09	21/2/09	2/3//09
1.	Light-b. Brent Goose	2,500				
2.	Lapwing			66		
3.	Black-tailed Godwit		25			
4.	Black-headed Gull		1			
5.	Dunnock				1	
6.	Robin				1	
7.	Magpie					2
8.	Yellowhammer		1			

	Species – H3	26/1/09 nil count	9/2/09	11/2/09	21/2/09	2/3//09
1.	Kestrel					1
2.	Oystercatcher		1			
3.	Lapwing			3		
4.	Black-t. Godwit		2			
5.	Curlew		53			
6.	Redshank		2			
7.	Black-h. Gull		1			
8.	Fieldfare		18	15		
9.	Redwing		5			
10.	Hooded Crow				2	

Section I Data

Overview of species recorded in Section I – Seatown East

	Species	Jan	Feb	Mar	Section peak count
1.	Buzzard	✓	✓	✓	1
2.	Pheasant		✓		1
3.	Golden Plover	✓	✓		1,000
4.	Lapwing	✓	✓		370
5.	Black-headed Gull	✓		✓	14
6.	Common Gull			✓	2
7.	Herring Gull	✓		✓	2
8.	Stock Dove			✓	3
9.	Wood Pigeon	✓	✓	✓	70
10.	Skylark		✓		8
11.	Meadow Pipit	✓		✓	15
12.	Wren	✓	✓	✓	3
13.	Duncock	✓		✓	6
14.	Robin	✓		✓	8
15.	Blackbird	✓			1
16.	Song Thrush	✓	✓	✓	5
17.	Mistle Thrush		✓	✓	3
18.	Goldcrest			✓	1
19.	Coal Tit			✓	1
20.	Blue Tit	✓		✓	5
21.	Magpie	✓	✓	✓	5
22.	Jackdaw	✓		✓	4

	Species	Jan	Feb	Mar	Section peak count
23.	Rook	✓		✓	36
24.	Hooded Crow	✓	✓		3
25.	Starling	✓	✓	✓	4
26.	Tree Sparrow		✓		2
27.	Chaffinch	✓	✓	✓	30
28.	Greenfinch	✓		✓	6
29.	Goldfinch		✓	✓	8
30.	Linnet	✓		✓	21
31.	Yellowhammer		✓	✓	5
32.	Reed Bunting	✓			1

Species recorded in Section I – Seatown East

	Species – I1	26/1/09	13/2/09	21/2/09	1/3/09
1.	Buzzard	1	1	1	1
2.	Pheasant			1	
3.	Golden Plover	600	1,000		
4.	Lapwing	130	370		
5.	Black-headed Gull	1			
6.	Herring Gull	1			
7.	Stock Dove				3
8.	Wood Pigeon	8		16	5
9.	Skylark			5	
10.	Meadow Pipit	14			1
11.	Wren	1		1	1
12.	Dunnock	1			1
13.	Robin	2			1
14.	Blackbird	1			
15.	Song Thrush	1		2	1
16.	Mistle Thrush			3	
17.	Blue Tit	2			
18.	Magpie	2		5	
19.	Jackdaw	1			2
20.	Rook	2			
21.	Hooded Crow	3		2	
22.	Starling	2		4	
23.	Chaffinch	6		30	6
24.	Greenfinch	1			
25.	Goldfinch			1	
26.	Tree Sparrow			2	
27.	Yellowhammer			1	5
28.	Reed Bunting	1			

	Species – I2	26/1/09	13/2/09	21/2/09 nil count	1/3/09
1.	Wood Pigeon	5			15
2.	Meadow Pipit	1			
3.	Wren	1			2
4.	Dunnock	5			
5.	Robin				2
6.	Song Thrush	4			
7.	Mistle Thrush				1
8.	Coal Tit				1
9.	Blue Tit	3			1
10.	Magpie				1
11.	Starling				1
12.	Chaffinch	1			2
13.	Greenfinch	5			1
14.	Goldfinch		8		7
15.	Linnet	1			1

	Species – I3	26/1/09 NC	13/2/09 NC	21/2/09	1/3/09
1.	Wood Pigeon			30	
2.	Dunnock				2
3.	Robin				5
4.	Goldcrest				1

Section I (continued)

	Species – I4	26/1/09 NC	13/2/09 NC	21/2/09	1/3//09
1.	Black-headed Gull				1
2.	Common Gull				1
3.	Herring Gull				2
4.	Wood Pigeon				50
5.	Skylark			3	
6.	Jackdaw				2
7.	Rook				36
8.	Greenfinch				1
9.	Goldfinch				1
10.	Linnet				20

	Species – I5	26//1/09 NC	13/2/09 NC	21/2/09	1/3//09
1.	Black-headed Gull				13
2.	Common Gull				1
3.	Wood Pigeon				500
4.	Skylark			2	
5.	Rook				36
6.	Chaffinch				1

Section J Data

Overview of species recorded in Section J – Amenity lands along Seatown Road

	Species	Jan nil count	Feb	Mar	Section peak count
1.	Light-bellied Brent Goose		✓		770
2.	Oystercatcher		✓		59
3.	Black-headed Gull		✓		5

NB The survey focus was on geese and waders at these the amenity lands

Species recorded in Section J

	Species – J1	10/2/09 nil count	11/2/09 nil count	13/2/09	1/3/09 nil count
1.	Oystercatcher			50	

	Species – J2	10/2/09	11/2/09	13/2/09 nil count	15/2/09	21/2/09 nil count	1/3/09 nil count
1.	Light-b. Brent Goose	440	55		480		
2.	Oystercatcher	6	35				

	Species – J3	10/2/09 nil count	13/2/09	15/2/09	21/2/09	1/3/09 nil count
1.	Light-b. Brent Goose		770	88	430	
2.	Oystercatcher		9	34	6	
3.	Black-h. Gull			5		

APPENDIX 2: ADDITIONAL BIRD SPECIES RECORDED BORDERING THE STUDY AREA

Species recorded at the estuary along side the study area, January - March 2009:

	Species	Scientific name
1.	Red-throated Diver	<i>Gavia stellata</i>
2.	Great Crested Grebe	<i>Podiceps cristatus</i>
3.	Slavonian Grebe	<i>Podiceps auritus</i>
4.	Dark-bellied Brent Goose	<i>Brenta bernicla</i>
5.	Shelduck	<i>Tadorna tadorna</i>
6.	Pintail	<i>Anas acuta</i>
7.	Pochard	<i>Aythya ferina</i>
8.	Tufted Duck	<i>Aythya fuligula</i>
9.	Goldeneye	<i>Bucephala clangula</i>
10.	Red-breasted Merganser	<i>Mergus serrator</i>
11.	Ringed Plover	<i>Charadrius hiaticula</i>
12.	Grey Plover	<i>Pluvialis squatarola</i>
13.	Knot	<i>Calidris canutus</i>
14.	Curlew Sandpiper	<i>Calidris ferruginea</i>
15.	Dunlin	<i>Calidris alpina</i>
16.	Ruff	<i>Philomachus pugnax</i>
17.	Bar-tailed Godwit	<i>Limosa lapponica</i>
18.	Spotted Redshank	<i>Tringa erythropus</i>
19.	Common Sandpiper	<i>Actitis hypoleucos</i>
20.	Turnstone	<i>Arenaria interpres</i>
21.	Little Gull	<i>Larus minutus</i>
22.	Bonaparte's Gull	<i>Larus philadelphia</i>
23.	Lesser Black-backed Gull	<i>Larus fuscus</i>
24.	Great Black-backed Gull	<i>Larus marinus</i>
25.	Short-eared Owl	<i>Asio flammeus</i>

APPENDIX 3: MAMMAL SPECIES RECORDED IN THE STUDY AREA

	Large Mammals	Scientific name	Sites recorded
1.	Hedgehog	<i>Erinaceus europaeus</i>	C3
2.	Grey Squirrel	<i>Sciurus carolinesis</i>	B3 – in climax beech/oaks
3.	Irish Hare	<i>Lepus timidus hibernicus</i>	B1, B3, B4, C2, C3, C4, C5, D1, D2, D3, D4, D5, D7, E2, E9, F1, F2, F6, I1, I3
4.	Rabbit	<i>Oryctolagus cuniculus</i>	B2, B3, C3, C5, D6, E5, E7, F1, F2, F4, F6, G11
5.	Stoat	<i>Mustela erminea</i>	C3
6.	Otter	<i>Lutra lutra</i>	Seen in hedgerow between D3/5
7.	Red Fox	<i>Vulpus vulpus</i>	B1, C3, C4, F1
8.	Badger	<i>Meles meles</i>	F1 – sett at woodland track

APPENDIX 4: SPECIES OF CONSERVATION CONCERN AND THEIR CONSERVATION STATUS

No.	Species	Broadmeadows/Swords Estuary Natura 2000 site - listed species	Birds of Conservation Concern			
			EU Birds Directive	Europe SPEC	Ireland	
					BoCCI	BoCCI qualifying criteria
1.	Mute Swan	✓			Amber	International importance during the non-breeding season: at least 20% of the European non-breeding population occurs in Ireland.
2.	Little Grebe				Amber	Decline in breeding range: 35-70% over 25 years.
3.	Cormorant	✓			Amber	Localised breeding: at least 50% of the breeding population occurs at fewer than 10 sites.
4.	Little Egret		Annex I			
5.	Grey Heron	✓				
6.	Light-bellied Brent Goose	International Importance		3	Amber	Localised non-breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites. International importance during the non-breeding season: almost 100% of the flyaway population winters in Ireland
7.	Teal	✓			Amber	Decline in breeding range: 35-70% over 25 years.
8.	Mallard	✓				
9.	Wigeon				Amber	Localised non-breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites.
10.	Kestrel			3	Amber	New SPEC 3 species: unfavourable conservation status in Europe.
11.	Peregrine Falcon		Annex I			
12.	Merlin		Annex I		Amber	Decline in breeding range: 35-70% over 25 years.
13.	Water Rail				Amber	Decline in breeding range: 35-70% over 25 years.
14.	Oystercatcher	National Importance			Amber	Localised non-breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites.
15.	Golden Plover	National Importance	Annex I		Red	Decline in breeding population: ≥ 50% over 25 years.
16.	Lapwing			2	Red	Decline in breeding population: ≥ 50% over 25 years.
17.	Snipe	✓		3	Amber	SPEC 3 species: unfavourable conservation status in Europe.
18.	Black-tailed Godwit	✓		2	Amber	Localised non-breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites.
19.	Curlew	✓		2	Red Amber	R: Decline in breeding population: ≥ 50% over 25 years. A: Decline in population during the non-breeding season: 25-49% over 25 years A: Localised non-breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites.

Continued overleaf

Species of conservation concern and their conservation status (contd.)

No.	Species	Broadmeadows/Swords Estuary Natura 2000 site - listed species	Birds of Conservation Concern			
			EU Birds Directive	Europe	Ireland	
				SPEC	BoCCI	BoCCI qualifying criteria
20.	Redshank	National Importance			Red Amber	R: Decline in breeding population: $\geq 50\%$ over 25 years. A: Localised non-breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites.
21.	Greenshank	National Importance			Amber	Breeding rarity: Less than 100 pairs breed in Ireland. International importance during the non-breeding season: at least 20% of the European non-breeding population occurs in Ireland.
22.	Black-headed Gull	✓			Red Amber	R: Decline in breeding population: 50% over 25 years. R: Decline in breeding range: $\geq 70\%$ over 25 years. A: Localised breeding species: at least 50% of the breeding population occurs at 10 or fewer sites.
23.	Herring Gull				Red	Decline in breeding population: 50% over 25 years.
24.	Common Gull	✓		2	Amber	Decline in breeding range: 35-70% over 25 years. Localised breeding species: at least 50% of the non-breeding population occurs at 10 or fewer sites.
25.	Stock Dove				Amber	Decline in breeding range: 35-70% over 25 yrs.
26.	Barn Owl			3	Red Amber	R: Decline in breeding population: $\geq 50\%$ over 25 years. A: Decline in breeding range: 35-70% over 25 years.
27.	Kingfisher		Annex I	3	Amber	Decline in breeding range: 35-70% over 25 years.
28.	Skylark			3	Amber	New SPEC 3 species: unfavourable conservation status in Europe.
29.	Starling			3	Amber	New SPEC 3 species: >50% decline in population.
30.	Tree Sparrow			3	Amber	New SPEC 3 species: unfavourable conservation status in Europe.
31.	Linnet			2	Amber	New SPEC 2 species: unfavourable conservation status in Europe
32.	Yellowhammer				Red Amber	R: Decline in breeding population: 50% over 25 years. A: Decline in breeding range: 35-70% over 25 years.

APPENDIX 5: REFERENCES

- Byrkjedal, I. and Thompson D.B.A. 1998. *Tundra Plovers: The Eurasian, Pacific and American Golden Plovers and Grey Plover*. T. and A. D. Poser, London.
- Clabby, G. (2003) *Conservation and management of wetlands in Ireland*. 213-218. Wetlands of Ireland, Distribution, ecology, uses and economic value. Otte, M. L. University College Press Dublin.
- Crowe, O. (2005) *Ireland's Wetlands and their Waterbirds: Status and Distribution*. Birdwatch Ireland, Newcastle, Co. Wicklow.
- Crowe, O., Austin, G.E., Colhoun, K., Cranswick, P., Kershaw, M. & Musgrove, A.J. 2008. *Estimates and trends of waterbird numbers wintering in Ireland, 1994/95-2003/04*. *Bird Study* 55: 66–77.
- Delany, S., Scott, D., Dodman, T. & Stroud, D. (eds). 2009. *An Atlas of Wader Populations in Africa and Western Eurasia*. Wetlands International, Wageningen, The Netherlands.
- Hutchinson, C. D. (1979). *Ireland's Wetlands and Their Birds*. Irish Wildbird Conservancy, Dublin
- 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. 149:165
- BirdLife International. (2004). *Birds in the European Union: a status assessment*. Wageningen, The Netherlands: BirdLife International.
- NPWS. (2009). *Natura 2000 Data Form – Broadmeadows / Swords Estuary*. Site code: IE0004025. National Parks & Wildlife Service of the Department of Environment, Heritage and Local Government. 7 Ely Place, Dublin 2, Ireland.
- Sheppard, R. (1993). *Ireland's Wetland Wealth*. Irish Wildbird Conservancy, Dublin.
- Wetlands International. 2006. *Waterfowl population estimates – Fourth Edition*. Wetlands International, Wageningen, The Netherlands.