E.2. Wintering Bird Survey Report (2009 – 2010)

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N11/N25 Oilgate to Rosslare Road Scheme

Wintering Bird Survey Report (2009 – 2010)

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Prepared on behalf of:

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SUMMARY

The current report provides an account of the wintering bird survey undertaken for the proposed N11/N25 Oilgate to Rosslare Route Selection Report. The report provides details of the bird counts in addition to an assessment of the avifauna interest for the eight route options identified for the proposed road scheme; which cross the River Slaney between Ferrycarrig Bridge and Oilgate to the north and extends to Rosslare town in the south. The data recorded during wintering birds survey allowed for an evaluation of the proposed routes crossing the River Slaney in relation to their relative importance for wintering birds.

Counts were undertaken between the months of November 2009 to March 2010 and included both records of the wintering birds within the study area; as well as any additional records of roost sites or potentially important breeding bird habitats identified. Additional breeding season observations were undertaken between April and June 2010, with a specific field visit undertaken in June 2010.

The principal ornithological constraints identified for the current assessment was the River Slaney, which is to be crossed by the proposed road scheme. This river channel is included in the Wexford Harbour and Slobs Special Protection Area (SPA) and Slaney River Valley candidate Special Area of Conservation (cSAC). Both these sites are of international conservation importance and are part of the Natura 2000 network of designated nature conservation sites.

The historical data for wintering birds utilising the study area was assessed based on I-WeBS data which included counts from the following sites and sub-sites: River Slaney at two sub-sites (Ferrycarrig Bridge to Killurin (Deep's) Bridge and Killurin (Deep's) Bridge to Edermine Bridge) and the Wexford Harbour and Slobs at three subsites (Wexford Harbour South Slobs, Hopeland and Rosslare Backstrand).

The field survey investigations set out to identify the likely key ecological receptors affected by the proposed road scheme, with respect to the ornithological communities and their habitats within the zone of impact. The proposed route corridors crossing the River Slaney were identified as being the most significant areas of conservation concern in relation to wintering bird species within the study area and vantage points were established at all eight proposed route crossings.

Mapping of ornithological constraints was undertaken following the field survey. This included the identification of important habitats and habitat complexes, roosting sites and nest sites of priority species.

The current assessment has clearly identified that the proposed N11 route crossing the River Slaney cSAC would be most favourable in relation to wintering birds at the crossing point of the A/B Route at the southern end of the study area, directly north of the existing N11 crossing at Ferrycarrig. This crossing point is within the channel constriction at Ferrycarrig and avoids any direct impacts on important bird habitats. The D and E Route crossings (ranked 2nd and 3rd) would also be favoured over a crossing of the River Slaney in at the upper end of the study area (i.e. at the F/G Routes and H Route crossing points; ranked 4th and 5 respectively).

Furthermore wintering birds, breeding birds and summer migrants were surveyed at the southern end of the proposed route corridor at Assaly Bridge, due north of Killinick; with cognisance of the Wexford Harbour and Slobs proposed Natural Heritage Area (pNHA) designation at this location. This area was not found to be of significant ornithological importance during the current survey.

1 INTRODUCTION

The current report provides an account of the wintering bird survey undertaken for the proposed N11/N25 Oilgate to Rosslare Route Corridor Selection Report. The report provides details of the bird counts in addition to an assessment of the avifauna interest for the eight route options identified for the proposed road scheme; which cross the River Slaney between Ferrycarrig Bridge and Oilgate to the north and extends to Rosslare town to the south. The data recorded during wintering birds survey allowed for an evaluation of the proposed routes crossing the River Slaney in relation to their relative importance for wintering birds.

Counts were undertaken between the months of November 2009 to March 2010 and included both records of the wintering birds within the study area; as well as any additional records of roost sites or potentially important breeding bird habitats identified. Additional breeding bird observations have been undertaken between April and June 2010, with a specific site survey undertaken during June 2010.

The principal ornithological constraint identified for the current assessment was the Slaney River Valley cSAC and the Wexford Harbour and Slobs Special Protection Area (SPA), which is to be crossed by all proposed routes within the proposed road scheme. Both these sites are of international conservation importance and are part of the Natura 2000 network of designated nature conservation sites.

Eight potential routes have been identified which connect with the existing N11 north of Wexford town, crossing the River Slaney north of the existing bridge at Ferrycarraig and bypass Wexford town to connect with the existing N25 at Rosslare. The River Slaney flows in a south easterly direction through the study area to the join the sea at Wexford Harbour. All eight proposed routes require a crossing of the River Slaney main channel within the cSAC and SPA; with crossings proposed between Oilgate Village in the north, to Ferrycarrig Bridge at the south of the study area. The study area and proposed crossing points are presented in Figure 1.

The proposed routes under consideration, at the southern portion of the study area in the vicinity of Rosslare (Killinick), would potentially cross the south western periphery of the Wexford Harbour and Slobs pNHA. Habitats in the area of Killinick are considered to be of greater importance for breeding, rather than wintering birds; however, observations were made at this location during the current assessment to establish the extent of wintering bird usage.

The early portion of the current wintering bird's survey season was affected by severe flood conditions in the River Slaney during November and early December, in addition to severe, prolonged sub-zero conditions during late December and early January. However, the survey effort successfully recorded bird data during each month and included a further visit in early April to obtain bird data from the start of the breeding bird season.

The current study was undertaken by ECOFACT Environmental Consultants Ltd. on behalf of Mott McDonald Ireland Ltd.

Figure 1 Map of the study area, showing proposed routes crossing the River Slaney. Vantage Points for wintering bird survey also indicated.

Figure 1: Map of the study area showing proposed routes crossing the River Slaney. Vantage points for wintering survey also indicated.

Legend

- Route A
- Route B
- Route C
- Route D
- Route E
- Route F
- Route G
- Route H
- Vantage Points 2009-2010 Wintering Bird Surveys

N11/N25 Oilgate to Rosslare Road Scheme

Date: 01/12/2010

ecofact Environmental Consultants

2 METHODOLOGY

2.1 Desk study

Prior to the commencement of the field element of the works, a desk study was undertaken to assess the background historical data available on the ornithological interest of the site. During the desk study investigation, the study area boundaries were identified in relation to the potential zone of influence of each route potentially affecting ornithological interests. This was taken to be 250m either side of each proposed crossing point.

The collation of this information, as well as examination of OS aerial photographs allowed vantage observation points and areas of ornithological importance to be highlighted prior to the field survey.

A desktop study comprised a review of all relevant literature (i.e. journals, books, published reports) and the 'grey literature' (i.e. websites, unpublished reports, university theses etc.) for information on the study area. In particular the following websites and information sources were reviewed:

- National Parks and Wildlife Services (NPWS) website and database (www.npws.ie);
- Birdwatch Ireland (www.birdwatchireland.ie);

The following maps were utilised for the assessment: Ordnance Survey of Ireland, Discovery Series 1:50,000, Sheet 77.

The current assessment follows the NRA publications:

- '*Guidelines for ecological impact assessment for National Road Schemes*' (Rev. 2., NRA, 2009)
- '*Ecological surveying techniques for protected flora and fauna during the planning of National Road Schemes*' (NRA, 2008)

2.1.1 I-WeBS bird count data

The Irish Wetland Bird Survey (I-WeBS) is an annual survey of wintering birds undertaken at a national level, focussing on wetland sites utilised by wintering birds. Bird count data for the two primary sites within the study area were obtained for the current assessment. These sites are the River Slaney and Wexford Harbour and Slobs. Sub-site count data was obtained from within each of these sites to get better resolution in relation to the small scale of the zone of impact.

I-WeBS data was utilised from the following sites and sub-sites:

- River Slaney
  - Sub-sites: Ferrycarrig Bridge to Killurin (Deep's) Bridge and Killurin (Deep's) Bridge to Edermine Bridge
- Wexford Harbour and Slobs
  - Subsites: Wexford Harbour South Slobs, Hopeland and Rosslare Backstrand

2.1.1.1 Interpretation of I-WeBS count data

Wintering waterbird populations in Ireland are assessed on an all-Ireland basis using both I-WeBS and UK-WeBS data. A wetland is considered important in an all-Ireland context if it regularly holds 1% or more of one species, subspecies or population of waterbirds occurring in Ireland, and of international importance if it regularly supports the same proportion of the relevant international, or flyway, population. Normally, this is measured by calculating the five-year mean of annual peak counts for each species, and expressing this as a percentage of the all-Ireland/international populations. Where 1% of the national population is less than 20 birds, 20 is normally used as the minimum qualifying level for the designation of sites. These

levels are subject to periodic review as more years' data become available and data users are urged to consult the most recent publications of I-WeBS Annual Reports and Waterbirds Population Estimates for up-to-date 1% levels.

It is necessary to make a distinction between sites of all-Ireland/international importance and those which may happen to exceed the appropriate qualifying levels only in occasional winters. This follows the recommendations of the Ramsar Convention which states that key sites identified because of the numbers of birds should support such numbers on a regular basis (usually calculated as the mean winter maximum from the last five winters).

Sites which only occasionally support significant numbers may be important at certain times, e.g. when numbers in Ireland are high, during the main migratory periods, during cold weather, or when sites may act as refuges for birds away from traditionally used sites. Further, sites not of international or all-Ireland importance may nevertheless be of regional importance, especially in areas with relatively small waterbird populations. Sites which support significant numbers of only one species may be of crucial importance to that population and therefore of very high conservation value.

Counts in any one year may be unrepresentative due to gaps in coverage and disturbance, or weather-induced effects on numbers and distribution. The short-term movement of birds between adjacent sites may lead to altered assessments of a sites' apparent importance. This is particularly true when considering individual subsites within a large site due to the considerable movement that will inevitably occur due to a large number of factors.

The timing of the count can also affect the numbers of birds present at a site. This is particularly true of estuaries where, in particular, the distribution of birds will vary according to the time of the tidal cycle. Low-tide counts are crucial in establishing key areas for waterbirds within tidal sites.

2.2 Field survey

Most wintering waterbird species begin to arrive in Ireland in the autumn, build-up in numbers as the season progresses to a peak in December/ January, and decline thereafter as they begin the return to their arctic/ subarctic breeding areas. However, there are exceptions. For example, several wader species occur in Ireland in large numbers while on spring and/ or autumn passage, as well as during the mid-winter period. Often, these constitute different populations using different flyways. Another example includes the influence of cold weather patterns in Continental Europe, when birds are pushed westwards into Britain and Ireland which are considerably milder.

The field survey investigations set out to identify the likely key ecological receptors affected by the proposed road scheme, with respect to the ornithological communities and their habitats within the zone of impact. The proposed crossing points on the River Slaney were identified as being the most significant areas of conservation concern in relation to wintering bird species and vantage points were established at all eight proposed route crossings.

Count sites were selected to encompass roughly 250m either side of each proposed crossing point. The proposed routes extending from Oilgate Village in the north to Ferrycarrig Bridge in the south are detailed according to the route letter code at each of the eight crossing points from the H Route crossing in the north of the study area; the F/G Route crossing; the E Route crossing; the C/D Route crossing; and the A/B Route crossing in the south. In addition to the proposed crossing point of the A/B Routes at Ferrycarrig the study included observations to 200m downstream of Ferrycarrig Bridge, from a vantage point at the car park next to Ferrycarrig Castle.

In addition to the crossing points on the River Slaney, observations were also carried out at the southern portion of the study area, where the designated Wexford Harbour and Slobs pNHA extends into within 3km of the study area at Assaly Bridge in the townland of Killinick (on the N25) and also in the townland of Rathdowney on the R740. Table 1 provides the

locations of vantage points for the eight crossing points, while Table 2 provides the dates and times of the wintering birds survey site visits.

Table 1 Location of vantage points for each proposed crossing route on the River Slaney. Each vantage point is referenced according to the relevant crossing point. (One vantage point for the Assaly River also included).

Route	Survey Location	Vantage point
H Route	North East of Ballyhoge Crossroads – in the vicinity of Oilgate	1
F/G Route	Deeps Bridge and R730 south of Polehore	2, 3
E Route	R730 at Cullentra and R730 south of Polehore	3, 4
C/D Route	Heritage Centre and R730 at Cullentra	5
A/B Route	North of Ferrycarrig Bridge and opposite the Heritage Centre and also at Ferrycarrig Castle	6,7
G/A/B/D Route	Assaly Bridge – existing N25 crossing	8

Table 2 Date and time of counts undertaken, with tidal state during which count was completed.

Count	Date	Time	Tide	Weather
November 2009	10.11.2009	11.00 - 15.30	High	Dry, calm, sunny
December 2009	16.12.2009	10.45 - 1630	Low	Dry, overcast
January 2010	22.01.2010	10.35 - 16.30	Low	Dry, Sunny
February 2010	01.02.2010	11.15 - 16.50	Low	Dry, overcast.
February 2010	24.02.2010	10.00 – 15.30	Low	Dry, light breeze
March 2010	16.03.2010	11.10 – 16.00	Low	Dry, overcast, breezy

Systematic counts of these subsections were carried out from vantage points over-looking the river, using a 32x and 50x Kowa telescope mounted on a tripod. From these vantage points, all of the study areas were visible.

The surveys in the later months of the wintering birds season (i.e. March) and additional observations undertaken between April and June 2010 allowed for an assessment of the breeding bird potential within the study area. Additionally, breeding bird potential can be extrapolated from the habitat quality and extent / availability within the study area.

2.2.1 Mapping of Ornithological constraints

Mapping of ornithological constraints was undertaken following the field survey. This included the identification of important habitats and habitat complexes for avifauna, roosting sites and nest sites of priority species.

2.3 Consultation

Consultation was carried out with both statutory and non-statutory bodies, including relevant non-governmental organisations (NGOs) and local interest groups. The National Parks and Wildlife Service (NPWS) rangers for the study area were consulted directly, as was BirdWatch Ireland. Data on the wintering bird counts for the study area at the River Slaney was obtained from the I-WeBS database, managed by BirdWatch Ireland.

2.4 Ecological Evaluation

Each of the routes was evaluated with respect to ornithological interest and associated habitats of ecological importance. The existing ecological conditions are described and evaluated according to the NRA '*Guidelines for the Assessment of Ecological Impacts of National Road Schemes*' (Rev.2, NRA 2009). The impact significance is a combined function of the value of the affected feature (its ecological importance), the type of impact and the magnitude of the impact. Ecological importance is evaluated on the basis of a number of characteristics and features as outlined in Table 3.

Table 3 Ecological Evaluation (following NRA, 2009).

Geographic context for determining value	Description of criteria
International Importance	• European Site including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. • Proposed Special Protection Area (pSPA). • Site that fulfills the criteria for designation as a 'European Site' • Features essential to maintaining the coherence of the Natura 2000 Network • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	• Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Park. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); • Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: o Species protected under theWildlife Acts; and/or o Species listed on the relevant Red Data list. • Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.
County importance	• Area of Special Amenity • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. • Site containing area or areas of the habitat types listed in Annex I of the

Geographic context for determining value	Description of criteria
	Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. • County important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local importance (higher value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under theWildlife Acts; and/or o Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential
Local importance (lower value)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that are of some importance in maintaining habitat links.

3 RECEIVING ENVIRONMENT

3.1 Desk study

3.1.1 Designated areas

Sites of international conservation importance are designated as Special Areas of Conservation (cSACs) under the Habitats Directive (1992) and/or Special Protection Areas (SPAs) under the Birds Directive (1979). Together, cSACs and SPAs make up the Natura 2000 network of wildlife conservation sites. Sites of national importance for wildlife are designated as Natural Heritage Areas (NHAs) under the Irish Wildlife Act, 2000.

There are two sites of international conservation importance within the study area, the Slaney River Valley Special Area of Conservation (cSAC) and Wexford Harbour and Slobs Special Protection Area (SPA). The proposed scheme will require a crossing of the River Slaney within the Slaney River Valley cSAC and the Wexford Harbour and Slobs SPA.

The southern portion of the proposed scheme intersects the south western periphery of the Wexford Harbour and Slobs pNHA, in the townland of Killinick. The lands within this nature conservation site are evaluated as being of national importance. The SPA is located within 3km at this point.

The Slaney River Valley is designated due to the presence of a number of protected habitats and species along its reaches. The habitats include amongst others alluvial wet woodlands, Old oak woodlands and species-rich marsh which are of importance to bird species.

The River Slaney supports important numbers of birds in winter. Little Egret are found annually along the river. This bird is only now beginning to gain a foothold in Ireland and the south-east appears to be its stronghold. Nationally important numbers of Black-tailed Godwit, Teal, Tufted Duck, Mute Swan, Little Grebe and Black-headed Gull are found along the estuarine stretch of the river. The mean of the maximum counts over four winters (1994/98) along the stretch between Enniscorthy and Ferrycarrig is: Little Egret (6), Golden Plover (6), Wigeon (139), Teal (429), Mallard (265), Tufted Duck (171), Lapwing (603), Shelduck (16), Blacktailed Godwit (93), Curlew (81), Red-breasted Merganser (11), Black-headed Gull (3030), Goldeneye (45), Oystercatcher (19), Redshank (65), Lesser Black-backed Gull (727), Herring Gull (179), Common Gull (67), Grey Heron (39), Mute Swan (259) and Little Grebe (17). Wexford Harbour provides extensive feeding grounds for wading birds and Little Terns, which are listed on Annex I of the E.U. Birds Directive and have bred here in the past.

The River Slaney is monitored as part of the Irish Wetland Birds Survey (I-WeBS) and is counted in three sub-divisions, Ferrycarrig Bridge to Deep's Bridge, Deeps Br. to Edermine Br., Edermine Br. – Enniscorthy. The current study area is contained within the two lower study sites i.e. between Ferrycarrig Bridge and Edermine Bridge.

Mute Swans occur at internationally important numbers within the River Slaney as a whole, with mean peak counts of between 280 and 300 occurring between 1994 and 2000. This represents 1.3% of the national population. Teal occur at nationally important numbers with a mean peak of 587 in 1996-2000. Large concentrations of gulls included a mean peak of 4,144 Black-headed gull in 1996-2000 and a mean peak of 1,139 Lesser Black-backed gulls in 1996-2000. These gulls were associated with the landfill site at Killurin, which is no longer in use (Crowe 2005).

The Wexford Harbour and Slobs SPA is of special conservation interest due to the presence of the following species: Little Grebe, Great Crested Grebe, Cormorant, Bewick's Swan, Whooper Swan, Greenland White-fronted Goose, Lightbellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Goldeneye, Red-breasted Merganser, Hen Harrier, Coot, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Lesser Black-backed Gull and Little Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds.

This SPA is an internationally important site for Greenland White-fronted Geese, which feed almost entirely within the Slobs and roost at The Raven (a separate SPA), which lies outside the study area to the north of Wexford Harbour. The Wexford Harbour and Slobs SPA also has internationally important populations of Mute Swan, Light-bellied Brent Goose, Bar-tailed Godwit and Black-tailed Godwit. The North Slob is a Nature Reserve and much of this slob is managed for the benefit of the wintering geese.

According to NPWS, The Wexford Harbour and Slobs SPA is selected for the following bird species:

- Cormorant;
- Bewick's Swan;
- Whooper Swan;
- Greenland White-fronted Goose;
- Light-bellied Brent Goose;
- Shelduck;
- Teal;
- Scaup;
- Red-breasted Merganser;
- Oystercatcher;
- Golden Plover;
- Grey Plover;
- Lapwing;
- Sanderling;
- Black-tailed Godwit;
- Bar-tailed Godwit;
- Curlew;
- Black-headed Gull;
- Little Tern (B); and
- 20,000 wintering waterbirds.

Additional Special Conservation Interests (SCIs) are as follows:

- Little Grebe;
- Great Crested Grebe;
- Grey Heron;
- Mallard;
- Wigeon;
- Pintail;
- Goldeneye;
- Hen Harrier;
- Coot;
- Knot;
- Dunlin;
- Redshank;
- Lesser Black-backed Gull; and
- Wetland & Waterbirds.

3.1.2 I-WeBS bird survey data

3.1.2.1 Summary of River Slaney count data

As part of the current desk-study I-WeBS data for the River Slaney was obtained; focussing on the two sub-site data sets i.e. Ferrycarrig Bridge – Killurin (Deep's) Bridge and from Killurin (Deep's) Bridge – Edermine Bridge. It is important to note that Edermine Bridge is located approximately 3.5 river kilometres upstream of the northern-most upstream proposed

crossing point at Oilgate. This I-WeBS sub-site between Killurin Bridge and Edermine Bridge therefore includes bird counts from within and upstream of the current study area, where approximately 5 kilometres of the River Slaney is within the study area (between Killurin Bridge and Oilgate) and 3.5 kilometres of the river upstream of Oilgate is outside of the study area. Counts from this sub-site, therefore, are not fully representative of the wintering birds present within the upstream portion of the study area on the River Slaney. However, the counts themselves do provide a useful indication of the bird species utilising this section of the River.

From Ferrycarrig Bridge to Killurin (Deep's) Bridge, counts were available for the winters 1995/1996 to 1999/2000 and also for 2004/2005 and 2007/2008. Over these wintering seasons no bird species were recorded occurring in nationally important or internationally important numbers. During 2007/2008 Teal occurred at this sub-site in nationally important numbers (560).

From Killurin (Deep's) Bridge to Edermine Bridge wintering bird count data is available for the years 1995/1996 to 199/2000 and also for 2004/2005 and 2007/2008. From this count data, no bird species was recorded from within this sub-site in nationally important numbers.

The I-Webs data for the sub-sites on the River Slaney within the study area indicate that the estuarine habitats of the river are utilised by a diversity of ducks and divers (Shelduck, Wigeon, Teal, Mallard, Pintail, Shoveler, Pochard, Tufted Duck, Goldeneye, Redbreasted Merganser, Little Grebe, Slavonian Grebe, Cormorant). Waders and waterbirds are also present with species including Little Egret, Grey Heron, Water Rail, Moorhen, Coot, Golden Plover, Lapwing, Snipe, Curlew, Redshank all recorded.

Gull species at both the upper and lower sub-sites were found to be present in higher numbers during the earlier part of the last decade (i.e. 1999-2004), with a decline in most species over the more recent winter seasons, with the obvious exception of Black-headed Gull, which has declined in numbers at the upper sub-site but which is recorded in significant numbers at the Ferrycarrig Bridge to Killurin (Deep's) Bridge sub-site.

The counts from each sub-site are totalled for the River Slaney to give an indication of the relative importance of the site as a whole during each winter period.

3.1.2.2 Wexford Harbour South Slobs

Although the South Slobs sub-sites are within the study area for the current route selection report, it is important to note that the closest proposed route crosses only the south western tip of the Wexford Harbour and Slobs pNHA. The important wintering bird habitats (open agricultural grassland and coastal habitats) that are monitored by the I-WeBS winter surveys are not within the zone of impact (i.e., 250m) of the current route corridors.

I-WeBS bird count data has been assessed to identify species occurring within the South Slobs in numbers of national or international importance in order to evaluate potential indirect impacts arising from proposed routes in the vicinity of this site.

The South Slobs regularly holds numbers of Whooper Swan in excess of nationally important numbers, with internationally important numbers recorded during the 2007/2008 wintering season. Light-bellied Brent Goose also occur in internationally important numbers. Golden Plover has been regularly recorded in nationally important numbers, approaching internationally important numbers during 2005/2006. Other species occurring in nationally important numbers include Wigeon, Grey Plover, Lapwing and Black-tailed Godwit.

From these bird counts it is clear that the site's importance lies in the open agricultural grassland habitats which favour these species.

3.1.2.3 Rosslare Backstrand

The Rosslare Backstrand is part of the Wexford Harbour and Slobs SPA and is located due north of Rosslare town. This site is included as a sub-site of the I-WeBS wintering counts. The proposed N25 road routes entering Rosslare from the east are not within or connected to the Rosslare Backstrand. Bird count data for this site has been provided to evaluate potential indirect impacts arising from the proposed road scheme.

Regularly occurring nationally important numbers of Golden Plover, Grey Plover also occurs in nationally important numbers occasionally. Bar-tailed Godwit occurs in numbers significantly in excess of the nationally important threshold, approaching internationally important numbers during 2004/2005 and 2007/2008.

3.1.2.4 Hopeland Wexford Harbour

This sub-site lies to the east of the current study area in the area of Killinick; and north of the study area in the vicinity of Rosslare Town. The Hopeland site is within the Wexford Harbour and Slobs SPA and is also included as an I-WeBS sub-site. Hopeland regularly supports counts of nationally and internationally important wintering birds. Light-bellied Brent Goose regularly occurs in internationally important numbers. Shelduck, Dunlin and Bar-tailed Godwit occur in nationally important numbers in recent years.

The proposed road scheme does not intersect the Hopeland site; however, the wintering bird counts for this site were evaluated to determine the potential for indirect impacts arising from the proposed route options

3.2 Wintering bird survey results

From the desk study analysis it was concluded that the sensitive receptors in relation to avifauna were centred around the proposed River Slaney crossings, affecting the River Slaney cSAC and the Wexford Harbour and Slobs SPA, and also at the south of the study area where the route corridors came into close proximity with the southwestern corner of the Wexford Harbour and Slobs pNHA. Internationally important counts of wintering birds recorded from within the SPA outside of the River Slaney Estuary i.e. at the South Slobs, Hopeland and Rosslare Backstrand sites will not be directly affected by any of the proposed route corridors.

No significant counts of wintering birds are expected from the predominantly agricultural lands within the remainder of the Route Corridor Selection study area, outside of these designated sites, due to the types of habitats in these areas (i.e. not favoured by wintering birds).
The field survey element therefore concentrated on the two designated sites on the River Slaney with count results and subsequent evaluations based on the significance and sensitivity of the key receptors identified within all routes at these sites.

Wintering bird surveys were carried out between the months of November 2009 and March 2010. Additional observations were undertaken between April and June 2010, in order to contribute to an understanding of the migrant and breeding birds that may be utilising the study area (zone of impact) within the River Slaney riparian corridor and at a location adjacent to the South Slobs, within the Wexford Harbour and Slobs pNHA at Killinick.

The results of the wintering birds survey site visits are presented as tables in Appendix 1 of the current report, with total counts for each month also presented. Appendix 3 presents maps of the study area with target notes of important features in relation to wintering birds.

The first site visit was carried out on the 10th of November 2009 during high tide conditions. The significant rainfall conditions during the month of November affected the river which was in flood on the day of the survey.

The maximum counts for each species at the eight crossing points are shown in Table 4. This allows direct comparison of the results to date.

The most numerous species within the study area on the River Slaney was found to be Teal, with a total of 374 birds recorded from the crossing point of the F/G Routes, followed by a total of 344 birds recorded from the crossing point of the A/B Routes at Ferrycarrig. The greatest diversity of birds occurs at the north of the study area where the H Route crosses the Slaney and at Ferrycarrig, at the A/B Route crossing. The F/G Route crossing was found to have high counts of a number of important Amber listed species; however, the overall diversity at this site was low. The proposed crossings of the C/D and E Routes were found to consistently contain the lowest counts, where the C/D Route crossing had the lowest diversity of species.

The study area and sections of the proposed routes intersect the southwestern corner of the Wexford Harbour and Slobs pNHA near Killinick, to the south of the study area. This area was surveyed during the January and February field visits. This area is comprised of wet willow woodland to the west of Assaly Bridge, with wet alder woodland to the east of the bridge and holds few birds in winter. Species recorded from the areas of Assaly Bridge (wet alder woodland) included Woodcock, Sparrowhawk, Kestrel, Blackbird, Redwing, Song Thrush, Blue Tit, Great Tit, Coal Tit, Long-tailed Tit, Woodpigeon, Robin, Dunnock, Wren, Magpie, Redpoll, Chaffinch, Bullfinch.

An overview of the South Slobs area was carried out during December 2009, where a survey for important wintering bird habitat in proximity to the study area was carried out. No important wintering bird habitat was identified within the study area in proximity to the South Slobs. The open fields outside of the study area, within the South Slobs designated site were found to contain large numbers of wintering birds, with a single Hen Harrier recorded hunting over the fields; however, this areas lie outside of the current study area and is outside of the zone of impact of the proposed road development.

Lapwing, Redshank, Herring Gull and Black-headed Gull satisfy the criteria to be red listed because of a decline in the Irish breeding population of ≥ 50% over 25 years (Lynas *et al*., 2007). The rapidly declining breeding population of these species "*means that they are red-listed, yet the wintering population (augmented by immigrants) is healthy and does not require urgent conservation action*" (Lynas *et al.* 2007). The wintering populations of these species for the current study are therefore classified as amber-listed.

Table 4 Peak counts of waterbirds at eight proposed crossing points on the River Slaney, during the wintering survey period between November 2009 and March 2010. Wintering bird's conservation status according to the BoCCI are also indicated following Lynas *et al*. (2007).

Species	Latin Name	BoCCI list	Ferrycarrig Castle	Purple/ Orange Route	Brown Route	Yellow Route	Red/ Blue Route	Green Route
Great Northern Diver	*Gavia immer*							1
Little Grebe	*Tachybaptus ruficollis*	Amber	3	2			1	7
Great Crested Grebe	*Podiceps cristatus*	Amber	3					
Cormorant	*Phalacrocorax carbo*	Amber	1	2	4	1	3	2
Little Egret	*Egretta garzetta*			2	1	1		4
Grey Heron	*Ardea cinerea*			3	1	3	2	1
Mute Swan	*Cygnus olor*	Amber		6	3			19
Wigeon	*Anas penelope*	Amber					4	1
Teal	*Anas crecca*	Amber	1	128	14	12	182	98
Mallard	*Anas platyrhynchos*			18	8	8	26	26
Goldeneye	*Bucephala clangula*	Amber						1
Shelduck	*Tadorna tadorna*	Amber				2		1
Red-breasted Merganser	*Mergus serrator*		1					3
Water Rail	*Rallus aquaticus*	Amber					1	5
Moorhen	*Gallinula chloropus*			2		2	4	8
Coot	*Fulica atra*	Amber						1
Oystercatcher	*Haematopus ostralegus*	Amber	12	7				
Lapwing	*Vanellus vanellus*	Amber	3	44				14
Snipe	*Gallinago gallinago*	Amber		9		1		
Black-tailed Godwit	*Limosa limosa*	Amber	8	17				52
Curlew	*Numenius arquata*	Red	1	2		5	20	1
Redshank	*Tringa totanus*	Amber	5	20	2	15	1	15
Greenshank	*Tringa nebularia*	Amber		1		1		
Kingfisher	*Alcedo atthis*	Amber		1				
Black-headed Gull	*Larus ridibundus*	Amber	90	45	10	2	62	150
Common Gull	*Larus canus*	Amber		1	1			4
Herring Gull	*Larus argentatus*	Amber						1
Lesser Black-backed Gull	*Larus fuscus*	Amber		2				3
Species diversity per site			**11**	**19**	**9**	**12**	**11**	**23**

3.3 Wintering bird habitat assessment

3.3.1 Description of physical habitat at each crossing point

The proposed route options over the River Slaney each require a crossing of the River Slaney within the cSAC and SPA Natura 2000 designations. The river corridor between Oilgate and Ferrycarrig has been surveyed and examined both by field investigations and survey; and also utilising aerial photography.

Important habitat features for wintering birds have been identified where present at each of the proposed Route crossing points.

3.3.1.1 A/B Route crossing

The proposed A/B Route crossing is located directly north of the existing N11 corridor at Ferrycarrig. At this location the River Slaney passes through a constriction in the channel caused by an outcrop of rock. The existing road bridge crosses the river at this narrow point. Directly upstream and downstream of the existing N11 crossing point, within this narrow channel, there is limited suitable habitat for wintering birds.

However, upstream and downstream of the existing N11 crossing at Ferrycarrig, within the A/B Route crossing study area, the River Slaney channel widens to include tidal mudflats of importance for wintering birds. At the upstream end of the A/B Route corridor crossing the mudflats are most extensive on the southern side of the channel, with additional mudflat recorded from the northern channel. On the downstream side of the proposed route crossing, downstream of Ferrycarrig Bridge the mudflats were found to be more extensive in area; however, were utilised less by wintering birds during low tide conditions.

The study area for the proposed A/B Route crossing includes both the existing N11 road corridor at Ferrycarrig and the mudflat habitats on either side of the proposed route, with an additional vantage point on the downstream side of Ferrycarrig Bridge at Ferrycarrig Castle.

Although the full extent of the proposed route corridor study area has been examined during the current bird habitat assessment it is considered that the actual landtake required for a crossing of the A/B Routes would be significantly narrower, potentially including the landtake of the existing N11 road bridge. Habitats within this direct landtake would therefore not include the mudflats due east and west of the existing bridge crossing.

3.3.1.2 C/D Route Crossing

The proposed crossing point for the C/D Route options is located directly upstream of the mudflat habitat utilised by wintering birds during low tide conditions, as identified at Ferrycarrig. This crossing point comprises improved agricultural grassland which extends from the north to the river bank. There is limited intertidal mud on the northern bank, while muds on the southern bank are limited to a narrow band bordered by deciduous woodland. The intertidal and riparian habitats at this location were found to be of limited importance for wintering birds and low diversities and abundances were recorded at this crossing point.

3.3.1.3 E Route Crossing

Bird habitat at the proposed E Route crossing was found to be limited and supported low numbers of wintering birds, although diversity was comparable to that of the F/G Route crossing. The northern bank of the Slaney at this point was characterised by improved agricultural grassland, with a narrow band of deciduous woodland along the river corridor. There was no valuable mudflat or reedbed habitat at this location. The southern bank of the Slaney at this crossing point contained some narrow mudflat habitat and reed beds, although this was found to be of low value to wintering birds.

3.3.1.4 F/G Route Crossing

The proposed crossing point of the F/G Route, located downstream of Killurin / Deep's Bridge was found to cross the Slaney where considerable reed beds have formed on the depositing bend of the river at the southern bank, with an extensive reedbed adjoining deciduous woodland on the northern bank. Mud flat habitats on both the north and south banks at this location were found to be utilised by wintering birds during low tide, while the channel itself and the margins of the reed beds along the river channel were also found to be of importance.

The woodland features on both banks at this location are not of significance for wintering birds but are of conservation interest with regard to the cSAC and also with respect to breeding birds. In addition, the reed bed habitats at this crossing point are considered to provide an important habitat function (food and shelter) for breeding birds during the summer months.

3.3.1.5 H Route Crossing

The proposed route at the H Route Crossing traverses agricultural grassland and crosses a narrow band of deciduous woodland at the northern bank of the Slaney. This crossing site was found to contain significant wintering bird habitat comprising extensive reed beds and a network of intertidal creeks and back channels on the northeastern bank of the Slaney. The reed beds recorded at this crossing point extend upstream from the crossing point and as the channel narrows the reed beds widen to comprise a significant wildlife habitat of importance for both wintering and breeding birds at Macmine Marsh.

The southwestern bank was found to be of limited importance for wintering birds with no reed beds and an absence of mudflat habitat.

The significance of the reedbed habitat for wintering birds at the proposed H Route crossing point was found to be comparable to the importance of the mudflat habitat recorded at the upstream and downstream extents of the proposed A/B crossing point at Ferrycarrig. However, the reedbed habitat at this upstream crossing point is considered to provide more significant breeding bird habitat during the summer months.

3.3.2 Results of the wintering birds survey in relation to habitat

From the wintering bird counts collected over the survey period, it is clear that the habitat value, bird diversity and abundance are greatest at the mudflat habitat recorded at the northern extent of the A/B Route crossing study area, and at the reed bed habitats within the proposed F/G Route and H Route crossing points. It is important to note that the important wintering bird habitat (mudflats) at the proposed A/B Route crossing are at the periphery of the represented route option study area. It is considered likely that any construction at this crossing point would follow the line of the existing N11 bridge; thus avoiding the mudflat habitat identified upstream and downstream at Ferrycarrig.

Although the proposed E Route crossing point was found to have a total diversity greater than that at the F/G Route crossing, the counts for the bird species at the latter crossing are significantly greater; indicating more favourable habitat and a greater importance in relation to wintering birds.

The wintering bird habitat value and subsequently the ornithological importance of the proposed C/D Route and the E Route were identified as being of least importance; based on both the count data for these sites and also the limited suitable wintering bird habitat present.

It was observed that at low tide, most birds were feeding on the exposed mud which is prevalent at the proposed A/B Route crossing study area (including the habitat downstream of Ferrycarrig Bridge) and also at the proposed crossing point for the F/G Route. It was also noted that the river channel itself was not used by many wintering bird species.

In contrast to existing I-WeBS data, there were relatively few Mute Swans recorded in this study during the wintering period. It is likely that the large numbers of Mute Swans mentioned in Crowe (2007), refers to a large flock of non-breeding swans, probably grazing on improved

grassland, somewhere upstream of Edermine Bridge. There are no extensive grassland habitats of importance for wintering birds identified within the current study area. It is noted that during a site visit on the 26th May 2010, approximately 75 Mute swans were recorded along the study stretch of river.

Table 5 Wintering bird habitat at each proposed route crossing

Proposed route crossing	Summary description of habitats present	Habitat importance	Additional avifauna considerations
A/B Route	Extensive mudflats upstream and downstream of the proposed route crossings, potentially outside of the required road construction footprint. Limited reedbeds on the northern bank	Identified as being of significance for wintering bird feeding. Lesser importance as high tide roost.	Mudflats potentially utilised by shore birds during summer months.
C/D Route	Narrow band of mudflats on north and south banks.	Identified as being of low importance for wintering birds.	Limited habitat for breeding birds.
E Route	Narrow band of mudflats and reedbeds with some deciduous woodland along the bank	Identified as being of low importance for wintering birds.	Limited habitat for breeding birds.
F/G Route	Extensive reedbeds, narrow mudflats and some deciduous woodland along each bank.	Identified as being of significance for wintering bird feeding and as high tide roost.	Important reed bed habitat for breeding birds and summer migrants.
H Route	Extensive reed beds on both banks with a network of back channels on the northern bank. Deciduous woodland recorded from both banks of the Slaney.	Identified as being of significance for wintering bird feeding and as high tide roost.	Very important reed bed habitat for breeding birds and summer migrants.

A heronry with 4 or 5 occupied nests was recorded during the March survey on the north shore of the Slaney at Killowen (approx. Grid ref. S996 235).

In the southern portion of the study area near Killinick, where the study area intersects with the western boundary of the Wexford Harbour and Slobs pNHA, evidence of a Barn Owl roost site was found at the railway bridge at Grid ref. T0523 1326. Four or five pellets were found beneath the bridge but none of the pellets were fresh.

A further site visit was undertaken on the 12th of April 2010. Most of the wintering birds were found to have left the River Slaney and had returned to their breeding grounds. A partial count confirmed this with the following species recorded at the proposed A/B Route crossing point; Little Egret (1), Teal (12), Mallard (3), Black-tailed Godwit (12), Redshank (41) and Black-headed Gull (1). The 41 Redshank may be birds from the Icelandic population passing through the site.

There were 2 Great-crested Grebes at the H Route crossing point; this species was not recorded at this location during previous visits, adding one more species to the total diversity recorded for this site.

The site near Killinick at the southern end of the study area, which had evidence of a Barn Owl roost, was re-visited but no fresh pellets were found. This confirms that the site was used as a temporary winter roost.

3.3.3 Breeding bird survey results

To compliment the results of the late wintering birds survey data, a single early morning survey was undertaken during early June to survey the birds breeding in the study area of the proposed N11/N25 Oilgate to Rosslare Road Scheme. The survey was undertaken during low tide conditions, with clear, bright and calm weather conditions.

Breeding birds on the River Slaney, within the eight crossing points were recorded. Birds seen and heard within the reed beds on the bank of the river were also recorded. Species such as Sedge Warbler and Reed Warbler breed in extensive wetland vegetation, where the habitat is so difficult to census that no reliable counting methods have been developed (Bibby *et al*., 1993). Therefore, a species list was compiled but no definitive counts were possible.

3.3.3.1 June breeding bird survey results

Compared to mid winter figures, there were very few water birds using the river in early June. Only eight species were recorded and of these, only five are breeding in the study area. Both the Grey Heron and the Little Egret are nesting in a heronry with 4 or 5 occupied heron nests and 3 egret nests on the north shore of the Slaney at Killowen (approx grid ref S996 235). Mute Swan, Mallard and Shelduck are resident breeding birds in the area. The Black-tailed Godwit, Curlew and Black-headed Gulls are non-breeders. Wilson (1996) reported that as many as 200 non-breeding Black-tailed Godwits frequented the Wexford Slobs in summer.

Table 6 Counts of waterbirds observed on the River Slaney, June 2010. Birds marked with an asterix (*) are amber listed in Birds of Conservation Concern in Ireland (Lynas *et al*., 2007)

	A/B Route	C/D Route	E Route	F/G Route	H Route
Little Egret	1	2		2	
Grey Heron	1	1	2		
*Mute Swan	5	2	2	1	
Mallard	9		3		7
Shelduck		3			
*Black-tailed Godwit	87	10	2	6	
*Curlew	2				
*Black-headed Gull	7	3		4	2

The reed beds form one, almost continuous, linear habitat along the study area. The following species were recorded in all stretches of reed bed habitat; Water Rail, Sedge Warbler, Reed Warbler and Reed Bunting. These are reed bed specialists. The Reed Warbler is on the amber list of Birds of Conservation Concern in Ireland because it is a recent colonist and still considered a rare breeding bird in Ireland (Lynas *et al*., 2007). Other generalists such as Moorhen, Blackbird, Song Thrush, Robin, Wren, Dunnock, Bullfinch, Goldfinch, Blackcap, Chiffchaff and Willow Warbler were also present.

The wet willow woodland and alder woodland at Assaly Bridge, north of Killinick in the southern end of the study area was also visited. The following species were recorded; Wren, Rook, Chaffinch, Blackbird, Sedge Warbler, Blue Tit, Greenfinch, Wood Pigeon, Robin, Blackcap and Bullfinch. The Barn Owl roost site which was identified at this location during the wintering surveys was checked and no pellets were recorded.

Only eight species were recorded on the River Slaney and these were in small numbers (except for the non-breeding Black-tailed Godwits). It is clear that the river crossing at the southern end of the study area (i.e. A and B routes) is important for this non-breeding flock.

In the breeding season, the extensive reed-beds along the River Slaney are home to species such as Water Rail, Reed Warbler, Sedge Warbler and Reed Bunting. Larger areas of reed are more important than smaller ones. Any proposed crossing point should therefore avoid large areas of reed-bed.

The extensive reed-beds along the River Slaney are utilised by species such as Water Rail, Reed Warbler, Reed Bunting, Sedge Warbler and possibly Bittern during the breeding season. Any proposed crossing point should avoid large areas of reed-beds if possible, notably present at the F/G Route and H Route crossings and also the one heronry found within the study area. There may be the potential for swallow roosts during the autumn. There may also be activity by hen harriers in the area.

There are no species of conservation concern recorded from the wet willow woodland and alder woodland at Assaly Bridge.

It is clear from the results above that the River Slaney cSAC and SPA is important for its wintering birds populations; with the breeding birds populations recorded of lesser conservation importance.

3.4 Identification of key ecological receptors

The current wintering birds assessment concentrated on the key ecological receptor areas within the study area which were identified as being internationally important; namely the Slaney River Valley cSAC and the Wexford Harbour and Slobs SPA at the proposed crossing points on the River Slaney main channel and also the Wexford Harbour and Slobs pNHA at the south of the study area at Killinick.

This evaluation has been based on the Natura 2000 designation of these the cSAC and SPA site; in addition to I-WeBS wintering bird counts and the current wintering bird survey data. A summary description and evaluation of the identified sensitive receptors affected by each of the route options under consideration are provided in Tables 7 and 8 below.

It is important to note that further key ecological receptors exist within the current study area, both in relation to broader ecological interests and also in relation to avifauna; where ecological features within the zone of impact that are evaluated as being of high local importance (or higher) should be subject to an impact assessment. This will be undertaken as part of the EIA/EIS for the preferred route option.

In relation to wintering birds, it is considered that the key ecological receptors within the study area have been adequately assessed based on the current, focussed survey. However, it is considered that a continued follow-up survey for breeding birds and summer migrants in areas away from these designated sites would serve to identify key ornithological receptors, outside of the scope of the wintering season survey. This will also be done as part of the EIA for the preferred route option

Table 7 Description and evaluation of the sensitive receptors at the proposed River Slaney crossings i.e. the River Slaney Valley cSAC and the Wexford Harbour and Slobs SPA.

Route Option	Conservation designation	Important wintering bird habitats	Sensitive wintering bird species	Overall evaluation
A/B Route	Crosses the River Slaney within the cSAC/SPA	Open intertidal mudflat habitat present at the upstream and downstream extremities of the route study area; limited reed beds present on the northern river bank. Road traffic infrastructure in place	Teal, Lapwing, Black-tailed Godwit, Redshank, Black-headed Gull, Cormorant, Little Grebe, Great Crested Grebe, Curlew	Internationally Important
C/D Route	Crosses the River Slaney within the cSAC/SPA	Limited important wintering bird habitats present.	Cormorant, Mute Swan, Black-headed Gull, Teal, Redshank, Curlew	Internationally Important
E Route	Crosses the River Slaney within the cSAC/SPA	Limited important wintering bird habitats present. Some reed beds on both river banks.	Redshank, Curlew, Teal, Shelduck,	Internationally Important
F/G Route	Crosses the River Slaney within the cSAC/SPA	Important habitats comprise extensive reed beds and limited intertidal muds along the river bank.	Teal, Curlew, Black-headed Gull, Wigeon, Cormorant, Water Rail,	Internationally Important
H Route	Crosses the River Slaney within the cSAC/SPA	Important habitats comprise extensive reed beds with island features and limited intertidal muds along the river bank.	Little Grebe, Mute Swan, Water Rail, Redshank, Teal, Lapwing, Black-headed gull, Curlew	Internationally Important

Table 8 Description and Evaluation of the Wexford Harbour and Slobs pNHA (site code 00714) sensitive receptor at Killinick.

Route Option	Conservation designation	Sensitive bird habitats	Sensitive bird species	Overall evaluation
A/B/D/G Route	Crosses the southwestern corner of the Wexford Harbour and Slobs pNHA	Sensitive habitats are limited to a drainage channel and some wet grassland / alder woodland habitat.	Proximity to an inactive barn owl roost at Assaly bridge. Wintering wading birds recorded on one occasion from a flooded field to the west of the existing N25. Potentially more significant for breeding birds.	Nationally important site
C/E/F/H Route	Proximal to the southwestern boundary of the Wexford Slobs and Harbour pNHA	Sensitive habitats are limited to a drainage channel and some wet grassland / alder woodland habitat.	No wintering bird activity noted. Potentially more significant for breeding birds.	Proximal to, but not within nationally important site

5 PREFERRED ROUTE OPTION – WINTERING BIRDS

From the results of the wintering bird survey an evaluation of the importance for ornithological interests can be applied to each proposed crossing of the River Slaney, within the River Slaney cSAC and Wexford Harbour and Slobs SPA. The wintering bird survey, both in relation to count data and also species diversity provide a clear differentiation across the eight proposed crossing points on the Slaney main channel, allowing for the identification of a favourable crossing point with respect to wintering birds and ornithological constraints.

Based on the results of the current study the C/D Route crossing point was found to have the lowest diversity of bird species and also held the lowest counts of sensitive wading species, correlating with the limited suitable wintering bird habitat present at this site. This route is therefore identified as potentially the most favourable option.

The E Route crossing point is considered to be marginally less favourable to the C/D Route, due to a greater diversity of bird species recorded and a greater number of sensitive wintering bird species present (e.g. Curlew, Shelduck, Redshank).

The difference in ornithological importance between the above two crossings and the remaining sites is not a clear progression. There is a significant increase in importance in relation to wintering birds at the A/B Route crossing, the F/G Route crossing and the H Route crossing; when compared to the C/D and E Route crossings.

The proposed H Route crossing point has emerged as the most important site for wintering birds based on the current study. It is dominated by expansive reedbeds and limited intertidal muds. The species diversity and abundances recorded from the site reflect these habitat conditions.

With cognisance of the above, the proposed F/G Route crossing point is considered to be less important than the H Route crossing in terms of wintering birds, based on the diversity at the site with a weighting given to the reedbed habitat present, which is extensive, but not as extensive as at the H Route crossing. The presence of a significant number of Internationally Important Curlew at this crossing site (39), places an importance on this location. However, it is considered that the habitat supporting this species is available both directly downstream and also upstream of this crossing location.

The tidal mudflats at the A/B Route crossing are within the route corridor study area; however, the actual landtake of the proposed route is considered likely to follow the line of the existing N11 bridge crossing to the north of the existing bridge and will avoid the intertidal mud flat habitats identified as being of importance for wintering birds at this crossing site.

The current route selection report for wintering birds takes account of the existing infrastructure at the existing N11 crossing at Ferrycarrig. As the proposed A/B Route crossing at this location is to cross the Slaney Estuary directly north of the existing road within the narrow section of the channel, it is considered that impacts affecting wintering birds at this location, both during construction and operational phase would not be as severe as impacts affected on greenfield sites located at the most important locations i.e. the H Route and F/G Route crossings. The A/B Route crossing point, directly north of the existing N11 crossing is also considered preferable to any green field construction at the C/D or E Route crossings. Furthermore, the important mudflat area across from the Heritage Centre is obstructed from this crossing by a hill so there would be no significant increase in disturbance over that which occurs at present

This A/B Route crossing is therefore ranked 1st in order of preference. Should works be required affecting the mudflat habitats due north or south of the proposed crossing at Ferrycarrig, the evaluation of this preferred route option would require alteration.

Crossings at the proposed C/D and E Routes are ranked as 2nd and 3rd in that order, followed by the proposed crossings at the F/G Route and the H Route, ranked as 4th and 5th. The ranking of preference for the proposed route corridor therefore follows a progression from the

south to the north. The F/G Route and the H Route crossings contain similar habitat (reed beds); however both species diversity and habitat extent at the proposed H Route crossing are considered to be of greater importance than at the proposed F/G Route crossing. A summary of the above preferred route selection is presented in Table 9 below.

In relation to the two routes at the southern portion of the study area at Killinick (i.e. the C/E/F/H and A/B/D/G Routes) it is considered that the proposed C/E/F/H Route is preferable for wintering birds, as it avoids intersecting the Wexford Harbour and Slobs pNHA, in addition to avoiding open agricultural grassland habitat within the A/B/D/G Route option, which was identified to be used by wintering birds during the current study.

Table 9 Overall evaluation and assessment of the Preferred Route Crossing of the River Slaney.

Overall Route Impact Evaluation	Crossing within the River Slaney cSAC/SPA	Nationally important wintering bird habitat	Crossing of locally important wintering bird habitat	Ranking in order of preference
A/B Route	Yes	No	This proposed route option crosses the River Slaney directly north of the line of the existing N11 within the constricted channel at Ferrycarrig. However, this site is in close proximity to important intertidal habitat utilised by wintering birds.	**1st**
C/D Route	Yes	No	This route crosses the River Slaney in an area of low importance for wintering birds. The lowest bird counts and species diversity was recorded at this site	**2nd**
E Route	Yes	No	This route crosses the River Slaney in an area of low importance for wintering birds. Species abundance was low at this site with relatively low diversity.	**3rd**
F/G Route	Yes	No	This crossing point contains important reed bed habitat and high species diversity and abundance was recorded at this site.	**4th**
H Route	Yes	No	This route crossing was found to contain significant reedbed habitat with high wintering bird species diversity and bird counts were also high.	**5th**

6 CONCLUSIONS AND RECOMMENDATIONS

The current assessment has clearly identified that the proposed N11 route crossing the River Slaney cSAC would be most favourable in relation to wintering birds at the proposed A/B Route crossing point at Ferrycarrig; where the proposed route corridor would cross the constricted river corridor directly north of the existing N11 road bridge at Ferrycarrig. This would avoid the intertidal mudflat habitats identified upstream and downstream of the existing bridge crossing within the study area at this location. The C/D and E Route corridors (ranked 2nd and 3rd respectively) would also be favoured over a crossing of the River Slaney at the upper end of the study area (i.e. at the F/G Route crossing and at the H Route crossing).

It is recommended that the results of the current assessment be integrated into an overall ornithological assessment of the study area, to include breeding birds and summer migrants which are considered to comprise a significant element of the avifauna utilising the reedbed habitats of the River Slaney.

Breeding birds and summer migrants were found to be of low conservation importance at the wet willow woodland and alder woodland at Assaly Bridge, adjacent to the Wexford Harbour and Slobs pNHA at the southern end of the study area. The proposed C/E/F/H Route is considered preferable over the A/B/D/G Route at this location; based on the limitation of impacts affecting the pNHA and also the preferential distance gained from the Wexford Harbour and Slobs SPA (internationally important site), with a subsequent reduction in potential indirect impacts.

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PLATES

Plate 1 Vantage point downstream of Ferrycarrig Bridge

Plate 2 View from the vantage point at the Heritage Centre

Plate 3 View from Assaly Bridge over the lands to the south of the study area (flooded at time of survey).

Plate 4 View of the lands within the SPA near Rathdowney on the R740, outside Rosslare.

Plate 5 Shellduck overflying the Slaney estuary.

Plate 6 Shelduck overflying the Slaney estuary.

Plate 7 Teal near the brown route crossing (April 2010).

Plate 8 Black-tailed godwit feeding on mudflats opposite the heritage centre (April 2010).

Plate 8 Little egrets / herons.

Appendix 1 Bird Count Data: November 2009 to March 2010

Table A1.1 Counts of waterbirds on River Slaney at high tide on the 10th of November 2009

Species	Latin Name	BoCCI list	C1A	C1	C2	C3	C5	C6	Total count
Great Northern Diver	*Gavia immer*								
Little Grebe	*Tachybaptus ruficollis*	Amber						3	3
Great Crested Grebe	*Podiceps cristatus*	Amber							
Cormorant	*Phalacrocorax carbo*	Amber		1	1			1	3
Little Egret	*Egretta garzetta*					1			1
Grey Heron	*Ardea cinerea*			1		1			2
Mute Swan	*Cygnus olor*	Amber						7	7
Wigeon	*Anas penelope*	Amber						1	1
Teal	*Anas crecca*	Amber		32			24		56
Mallard	*Anas platyrhynchos*			7		2		25	34
Goldeneye	*Bucephala clangula*	Amber							
Shelduck	*Tadorna tadorna*	Amber						1	1
Red-breasted Merganser	*Mergus serrator*								
Water Rail	*Rallus aquaticus*	Amber						5	5
Moorhen	*Gallinula chloropus*					1			1
Coot	*Fulica atra*	Amber							
Oystercatcher	*Haematopus ostralegus*	Amber							
Lapwing	*Vanellus vanellus*	Amber							
Snipe	*Gallinago gallinago*	Amber							
Black-tailed Godwit	*Limosa limosa*	Amber							
Curlew	*Numenius arquata*	Red					20		20
Redshank	*Tringa totanus*	Amber							
Greenshank	*Tringa nebularia*	Amber							
Kingfisher	*Alcedo atthis*	Amber							
Black-headed Gull	*Larus ridibundus*	Amber		7	2	1	62		72
Common Gull	*Larus canus*	Amber							
Herring Gull	*Larus argentatus*	Amber							
Lesser Black-backed Gull	*Larus fuscus*	Amber		2					2

Table A1.2 Bird counts from the 16th of December 2009

Species	Latin Name	BoCCI list	C1A	C1	C2	C3	C5	C6	Total count
Great Northern Diver	*Gavia immer*							1	1
Little Grebe	*Tachybaptus ruficollis*	Amber		1				7	8
Great Crested Grebe	*Podiceps cristatus*	Amber							
Cormorant	*Phalacrocorax carbo*	Amber	1	3	2				6
Little Egret	*Egretta garzetta*		1	1				4	6
Grey Heron	*Ardea cinerea*								
Mute Swan	*Cygnus olor*	Amber						19	19
Wigeon	*Anas penelope*	Amber							
Teal	*Anas crecca*	Amber		78	14		182		274
Mallard	*Anas platyrhynchos*		2	24	8	4	26	20	84
Goldeneye	*Bucephala clangula*	Amber						1	1
Shelduck	*Tadorna tadorna*	Amber							
Red-breasted Merganser	*Mergus serrator*								
Water Rail	*Rallus aquaticus*	Amber						2	2
Moorhen	*Gallinula chloropus*								
Coot	*Fulica atra*	Amber							
Oystercatcher	*Haematopus ostralegus*	Amber							
Lapwing	*Vanellus vanellus*	Amber		6					6
Snipe	*Gallinago gallinago*	Amber		9					9
Black-tailed Godwit	*Limosa limosa*	Amber		17					17
Curlew	*Numenius arquata*	Red	2	2					4
Redshank	*Tringa totanus*	Amber	4	6	2	1	1	13	27
Greenshank	*Tringa nebularia*	Amber		1					1
Kingfisher	*Alcedo atthis*	Amber		1					1
Black-headed Gull	*Larus ridibundus*	Amber	2	29	1	2	2		36
Herring Gull	*Larus argentatus*	Amber							
Common Gull	*Larus canus*	Amber		1					1
Lesser Black-backed Gull	*Larus fuscus*	Amber							

Table A1.3 Bird counts from the 21st of January 2010

Species	Latin name	BoCCI list	C1A	C1	C2	C3	C5	C6	Total count
Great Northern Diver	*Gavia immer*								
Little Grebe	*Tachybaptus ruficollis*	Amber		1					1
Great Crested Grebe	*Podiceps cristatus*	Amber							
Cormorant	*Phalacrocorax carbo*	Amber		2			1	2	5
Little Egret	*Egretta garzetta*							2	2
Grey Heron	*Ardea cinerea*					1	2		3
Mute Swan	*Cygnus olor*	Amber						7	7
Wigeon	*Anas penelope*	Amber							
Teal	*Anas crecca*	Amber		56		12	98	3	169
Mallard	*Anas platyrhynchos*			8		2	12	9	31
Goldeneye	*Bucephala clangula*	Amber							
Shelduck	*Tadorna tadorna*	Amber							
Red-breasted Merganser	*Mergus serrator*		1						1
Water Rail	*Rallus aquaticus*	Amber						2	2
Moorhen	*Gallinula chloropus*					2	4	8	14
Coot	*Fulica atra*	Amber		1					1
Oystercatcher	*Haematopus ostralegus*	Amber							
Lapwing	*Vanellus vanellus*	Amber		8					8
Snipe	*Gallinago gallinago*	Amber							
Black-tailed Godwit	*Limosa limosa*	Amber							
Curlew	*Numenius arquata*	Red							
Redshank	*Tringa totanus*	Amber	2	13				1	16
Greenshank	*Tringa nebularia*	Amber							
Kingfisher	*Alcedo atthis*	Amber							
Black-headed Gull	*Larus ridibundus*	Amber		45		1			46
Common Gull	*Larus canus*	Amber							
Herring Gull	*Larus argentatus*	Amber							
Lesser Black-backed Gull	*Larus fuscus*	Amber							

Table A1.4 Bird counts from the 1st of February 2010

Species name	Latin Name	BoCCI list	C1A	C1	C2	C3	C5	C6	Total count
Great Northern Diver	*Gavia immer*								
Little Grebe	*Tachybaptus ruficollis*	Amber	3	2				7	12
Great Crested Grebe	*Podiceps cristatus*	Amber							
Cormorant	*Phalacrocorax carbo*	Amber			1		3	1	5
Little Egret	*Egretta garzetta*							3	3
Grey Heron	*Ardea cinerea*			3			2	1	6
Mute Swan	*Cygnus olor*	Amber						9	9
Wigeon	*Anas penelope*	Amber					4		4
Teal	*Anas crecca*	Amber		128	8	3	92	22	253
Mallard	*Anas platyrhynchos*			18		8	19	2	47
Goldeneye	*Bucephala clangula*	Amber							
Shelduck	*Tadorna tadorna*	Amber							
Red-breasted Merganser	*Mergus serrator*							3	3
Water Rail	*Rallus aquaticus*	Amber						1	1
Moorhen	*Gallinula chloropus*			2				1	3
Coot	*Fulica atra*	Amber							
Oystercatcher	*Haematopus ostralegus*	Amber							
Lapwing	*Vanellus vanellus*	Amber	3	44				14	61
Snipe	*Gallinago gallinago*	Amber				1			1
Black-tailed Godwit	*Limosa limosa*	Amber		8					8
Curlew	*Numenius arquata*	Red		1	3				4
Redshank	*Tringa totanus*	Amber	4	20		1	1	12	38
Greenshank	*Tringa nebularia*	Amber				1			1
Kingfisher	*Alcedo atthis*	Amber							
Black-headed Gull	*Larus ridibundus*	Amber	1	12				11	24
Common Gull	*Larus canus*	Amber							
Herring Gull	*Larus argentatus*	Amber							
Lesser Black-backed Gull	*Larus fuscus*	Amber							

Table A1.5 Bird counts from the 24th of February 2010

Species name	Latin Name	BoCCI list	C1A	C1	C2	C3	C5	C6	Total count
Great Northern Diver	*Gavia immer*								
Little Grebe	*Tachybaptus ruficollis*	Amber	2				1	2	5
Great Crested Grebe	*Podiceps cristatus*	Amber	3						3
Cormorant	*Phalacrocorax carbo*	Amber			4	1	2		7
Little Egret	*Egretta garzetta*								
Grey Heron	*Ardea cinerea*					1		1	2
Mute Swan	*Cygnus olor*	Amber		6	3			5	14
Wigeon	*Anas penelope*	Amber							
Teal	*Anas crecca*	Amber		12			30	20	62
Mallard	*Anas platyrhynchos*						10	3	13
Goldeneye	*Bucephala clangula*	Amber							
Shelduck	*Tadorna tadorna*	Amber				2			2
Red-breasted Merganser	*Mergus serrator*								
Water Rail	*Rallus aquaticus*	Amber					1		1
Moorhen	*Gallinula chloropus*							1	1
Coot	*Fulica atra*	Amber						1	1
Oystercatcher	*Haematopus ostralegus*	Amber	12	7					19
Lapwing	*Vanellus vanellus*	Amber	1						1
Snipe	*Gallinago gallinago*	Amber							
Black-tailed Godwit	*Limosa limosa*	Amber							
Curlew	*Numenius arquata*	Red					16		16
Redshank	*Tringa totanus*	Amber	5	3			1		9
Greenshank	*Tringa nebularia*	Amber							
Kingfisher	*Alcedo atthis*	Amber		1					1
Black-headed Gull	*Larus ridibundus*	Amber	36	18	10		6	31	101
Common Gull	*Larus canus*	Amber			1				1
Herring Gull	*Larus argentatus*	Amber						1	1
Lesser Black-backed Gull	*Larus fuscus*	Amber							

Table A1.6 Bird counts from the 16th of March 2010

Species name	Latin Name	BoCCI list	C1A	C1	C2	C3	C5	C6	Total count
Great Northern Diver	*Gavia immer*								
Little Grebe	*Tachybaptus ruficollis*	Amber							
Great Crested Grebe	*Podiceps cristatus*	Amber							
Cormorant	*Phalacrocorax carbo*	Amber	1	2		1	1	2	7
Little Egret	*Egretta garzetta*			2				3	5
Grey Heron	*Ardea cinerea*			1	1	3			5
Mute Swan	*Cygnus olor*	Amber						6	6
Wigeon	*Anas penelope*	Amber							
Teal	*Anas crecca*	Amber	1	38	2	6	2	98	147
Mallard	*Anas platyrhynchos*			4		8	1	26	39
Goldeneye	*Bucephala clangula*	Amber							
Shelduck	*Tadorna tadorna*	Amber							
Red-breasted Merganser	*Mergus serrator*								
Water Rail	*Rallus aquaticus*	Amber							
Moorhen	*Gallinula chloropus*								
Coot	*Fulica atra*	Amber							
Oystercatcher	*Haematopus ostralegus*	Amber							
Lapwing	*Vanellus vanellus*	Amber							
Snipe	*Gallinago gallinago*	Amber							
Black-tailed Godwit	*Limosa limosa*	Amber	8	17				52	77
Curlew	*Numenius arquata*	Red	1	2		5	3	1	12
Redshank	*Tringa totanus*	Amber	5	19	1	15		15	55
Greenshank	*Tringa nebularia*	Amber				1			1
Kingfisher	*Alcedo atthis*	Amber							
Black-headed Gull	*Larus ridibundus*	Amber	90	2				150	242
Common Gull	*Larus canus*	Amber						4	4
Herring Gull	*Larus argentatus*	Amber							
Lesser Black-backed Gull	*Larus fuscus*	Amber						3	3

Appendix 2 Site synopses for designated conservation sites

Site name: Slaney River Valley
Site code: 000781

This site comprises the freshwater stretches of the Slaney as far as the Wicklow Mountains; a number of tributaries the larger of which include the Bann, Boro, Glasha, Clody, Derry, Derreen, Douglas and Carrigower Rivers; the estuary at Ferrycarrig and Wexford Harbour. The site flows through the counties of Wicklow, Wexford and Carlow. Towns along the site but not in it are Baltinglass, Hacketstown, Tinahely, Tullow, Bunclody, Camolin, Enniscorthy and Wexford. The river is up to 100 m wide in places and is tidal at the southern end from Edermine Bridge below Enniscorthy. In the upper and central regions almost as far as the confluence with the Derry River the geology consists of granite. Above Kilcarry Bridge, the Slaney has cut a gorge into the granite plain. The Derry and Bann Rivers are bounded by a narrow line of uplands which corresponds to schist outcrops. Where these tributaries cut through this belt of hard rocks they have carved deep gorges, more than two miles long at Tinahely and Shillelagh. South of Kildavin the Slaney flows through an area of Ordovician slates and grits.

The site is a candidate SAC selected for alluvial wet woodlands, a priority habitat on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats and old oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is further selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Twaite Shad, Atlantic Salmon and Otter.

Floating river vegetation is found along much of the freshwater stretches within the site. Species present here include Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus lacustris*), Water-starwort (*Callitriche* spp.), Hemlock Water-dropwort, Fine-leaved Waterdropwort (*Oenanthe aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*. Two rare aquatic plant species have been recorded in this site: Short-leaved Water-starwort (*Callitriche truncata*), a very rare, small aquatic herb found nowhere else in Ireland; and Opposite-leaved Pondweed (*Groenlandia densa*), a species that is legally protected under the Flora Protection Order, 1999.

Good examples of wet woodland are found associated with Macmine marshes, along banks of the Slaney and its tributaries and within reed swamps. Grey Willow (*Salix cinerea*) scrub and pockets of wet woodland dominated by Alder (*Alnus glutinosa*) have become established in places. Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*) are common in the latter and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Angelica (*Angelica sylvestris*), Yellow Iris, Horsetail (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*). These woodlands have been described as two types: one is quite eutrophic, is dominated by Willow and is subject to a tidal influence. The other is flushed or spring-fed subject to waterlogging but not to flooding and is dominated by Alder and Ash.

Old oak woodlands are best represented at Tomnafinnoge though patches are present throughout the site. At Tomnafinnoge the wood is dominated by mature, widely spaced Sessile Oak (*Quercus petraea*), which were planted around 1700, with some further planting in 1810. There is now a varied age structure with overmature, mature and young trees; the open canopy permits light to reach the forest floor and encourages natural regeneration of Oak. As well as Oak, the wood includes the occasional Beech (*Fagus sylvatica*), Birch (*Betula* sp.), Rowan (*Sorbus aucuparia*) and Scots Pine (*Pinus sylvestris*).

The shrub layer is well-developed with Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*) occurring. The ground layer consists of Great Wood-rush (*Luzula sylvatica*) and Bilberry (*Vaccinium myrtillus*), with some Bracken (*Pteridium aquilinum*) and Brambles (*Rubus*

fruticosus agg.). Herbaceous species in the ground layer include Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Common Cow-wheat (*Melampyrum pratense*) and Bluebell (*Hyacinthoides non-scripta*). Many of the trees carry an epiphytic flora of mosses, Polypody Fern (*Polypodium vulgare*), and lichens such as *Usnea comosa, Evernia prunastri*, *Ramalina* spp. and *Parmelia* spp.

Tomnafinnoge Wood is a remnant of the ancient Shillelagh Oak woods, and it appears that woodland has always been present on the site. In the past, the wood was managed as a Hazel coppice with Oak standards, a common form of woodland management in England but not widely practised in Ireland. The importance of the woodland lies in the size of the trees, their capacity to regenerate, their genetic continuity with ancient woodland and their historic interest. The nearest comparable stands are at Abbeyleix, Co. Laois and Portlaw, Co. Waterford.

Below Enniscorthy there are several areas of woodland with a mixed canopy of Oak, Beech, Sycamore (*Acer pseudoplatanus*), Ash and generally a good diverse ground flora. Near the mouth of the river at Ferrycarrig is a steep south facing slope covered with Oak woodland. Holly and Hazel are the main species in the shrub layer and a species-rich ground flora typical of this type of Oak woodland has abundant ferns - *Dryopteris filix-mas, Polystichum setiferum, Phyllitis scolopendrium* - and mosses - *Thuidium tamariscinum, Mnium hornum, Eurynchium praelongum.* North of Bunclody, the river valley still has a number of dry woodlands though these have mostly been managed by the estates with the introduction of Beech and occasional conifers. The steeper sides are covered in a thick scrub from which taller trees protrude. At the southern end of the site, the Red Data Book species Yellow Archangel (*Lamiastrum galeobdolon*) occurs. Three more Red Data Book species have also been recorded from the site: Basil Thyme (*Acinos arvensis*), Blue Fleabane (*Erigeron acer*) and Small Cudweed (*Filago minima*). A nationally rare species Summer Snowflake (*Leucojum aestivum*) is also found within the site.

Mixed woodlands occur at Carrickduff and Coolaphuca in Bunclody. Oak trees, which make up the greater part of the canopy, were originally planted and at the present time are not regenerating actively. In time, if permitted, the woodland will probably go to Beech. A fair number of Yew (*Taxus baccata*) trees have also reached a large size and these, together with Holly give to the site the aspect of a south-western Oak wood.

The site is considered to contain a very good example of the extreme upper reaches of an estuary. Tidal reedbeds with wet woodland are present in places. The fringing reed communities support Sea Club-rush (*Scirpus maritimus*), Grey Club-rush (*S. tabernaemontani*) and abundant Common Reed (*Phragmites australis*). Other species occurring are Bulrush (*Typha latifolia*), Reed Canary-grass (*Phalaris arundinacea*) and Branched Bur-reed (*Sparganium erectum*). The reed-swamp is extensive around Macmine, where the river widens and there are islands with swamp and marsh vegetation. Further south of Macmine are expanses of intertidal mudflats and sandflats and shingly shore often fringed with a narrow band of salt marsh and brackish vegetation. Narrow shingle beaches up to 10 m wide occur in places along the river banks and are exposed at low tide.

Upslope the shingle is sometimes colonised by Saltmarsh Rush (*Juncus gerardi*), Townsend's Cord-grass (*Spartina townsendii*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Hemlock Water-dropwort (*Oenanthe crocata*) and Himalayan Balsam (*Impatiens glandulifera*).

Wexford Harbour is an extensive, shallow estuary which dries out considerably at low tide exposing large expanses of mudflats and sandflats. The harbour is largely sheltered by the Raven Point to the north and Rosslare Point in the south. Other habitats present within the site include species-rich marsh in which sedges such as *Carex disticha, Carex riparia* and *Carex vesicaria* are common. Among the other species found in this habitat are Yellow Iris (*Iris pseudacorus*), Water Mint (*Mentha aquatica*), Purple Loosestrife (*Lythrum salicaria*) and Soft Rush (*Juncus effusus*). Extensive marshes occur to the west of Casltebridge associated with the tidal areas of the River Sow. The site supports populations of several species listed on Annex II of the EU Habitats Directive including the three Lampreys - Sea Lamprey

(*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Brook Lamprey (*Lampetra planeri*), Otter (*Lutra lutra*), Salmon (*Salmo salar*), small numbers of Freshwater Pearl Mussel (*Margaritifera margaritifera*) and in the tidal stretches, Twaite Shad (*Alosa fallax fallax*). A survey of the Derreen River in 1995 estimated the population of Freshwater Pearl Mussel at about 3,000 individuals. This is a significant population, especially in the context of eastern Ireland. The Slaney is primarily a spring salmon fishery and is regarded as one of the top rivers in Ireland for early spring fishing. The upper Slaney and tributary headwaters are very important for spawning.

The site supports important numbers of birds in winter. Little Egret are found annually along the river. This bird is only now beginning to gain a foothold in Ireland and the south-east appears to be its stronghold. Nationally important numbers of Black-tailed Godwit, Teal, Tufted Duck, Mute Swan, Little Grebe and Black-headed Gull are found along the estuarine stretch of the river. The mean of the maximum counts over four winters (1994/98) along the stretch between Enniscorthy and Ferrycarrig is: Little Egret (6), Golden Plover (6), Wigeon (139), Teal (429), Mallard (265), Tufted Duck (171), Lapwing (603), Shelduck (16), Blacktailed Godwit (93), Curlew (81), Red-breasted Merganser (11), Black-headed Gull (3030), Goldeneye (45), Oystercatcher (19), Redshank (65), Lesser Black-backed Gull (727), Herring Gull (179), Common Gull (67), Grey Heron (39), Mute Swan (259) and Little Grebe (17).

Wexford Harbour provides extensive feeding grounds for wading birds and Little Terns, which are listed on Annex I of the E.U. Birds Directive have bred here in the past. The Reed Warbler, which is a scarce breeding species in Ireland, is regularly found in Macmine Marshes but it is not known whether or not it breeds in the site. The Dipper also occurs on the river. This is a declining species nationally.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger, Irish Hare and Daubenton's Bat. Common Frog (*Rana temporaria*), another Red Data Book species, also occurs within the site. Agriculture is the main landuse. Arable crops are important. Improved grassland and silage account for much of the remainder. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Annex II animal species within it. Run-off is undoubtedly occurring, as some of the fields slope steeply directly to the river bank. In addition, cattle have access to the site in places. Fishing is a main tourist attraction along stretches of the Slaney and its tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place. There are some gravel pits along the river below Bunclody and many of these are active. There is a large landfill site adjacent to the river close to Hacketstown and at Killurin. Boating, bait-digging and fishing occur in parts of Wexford Harbour.

Waste water outflows, runoff from intensive agricultural enterprises, a meat factory at Clohamon and a landfill site adjacent to the river and further industrial development upstream in Enniscorthy and in other towns could all have potential adverse impacts on the water quality unless they are carefully managed. The spread of exotic species is reducing the quality of the woodlands.

The site supports populations of several species listed on Annex II of the EU Habitats Directive, and habitats listed on Annex I of this directive, as well as important numbers of wintering wildfowl including some species listed on Annex I of the EU Birds Directive. The presence of wet and broad-leaved woodlands increases the overall habitat diversity and the occurrence of a number of Red Data Book plant and animal species adds further importance to the Slaney River site.

Site name: Wexford Harbour and Slobs SPA
Site code: 004076

Wexford Harbour is the lowermost part of the estuary of the River Slaney, a major river that drains much of the south-east region. The site is divided between the natural estuarine habitats of Wexford Harbour, the reclaimed polders known as the North and South 'Slobs',

and the tidal section of the River Slaney. The seaward boundary extends from the Rosslare peninsula in the south to the area just west of The Raven Point in the north. Shallow marine water is a principal habitat, but at low tide extensive areas of intertidal flats are exposed. These vary from rippled sands in exposed areas to sandy-muds in the more sheltered areas, especially at Hopeland and the inner estuary to the west of Wexford bridge. The flats support a rich macroinvertebrate fauna, including the bivalves Cockle (*Cerastoderma edule*), Baltic Tellin (*Macoma balthica*) and Peppery Furrow-shell (*Scrobicularia plana*), the polychaetes Lugworm (*Arenicola marina*), Catworm (*Nepthys hombergi*) and Ragworm (*Hediste diversicolor*) and the crustacean *Corophium volutator*. Beds of mussels (*Mytilus edulis*) also occur. Salt marshes fringe the intertidal flats, especially in the sheltered areas such as Hopeland and towards Castlebridge. The Slobs are two flat areas of farmland, mainly arable and pasture grassland, empoldered behind 19th century seawalls.

The lands are drained by a network of channels which flow into two central channels, in parts several hundred metres in width. Water from the channels is pumped into the sea with electric pumps. The channels often support swamp vegetation. The river section of the site is extensive, extending to Enniscorthy, a distance of almost 20 km from Wexford town. It is noticeably tidal as far as Edermine Bridge but with tidal influence right up to Enniscorthy. In places, such as the Macmine marshes, it is several hundreds metres wide and here reedswamp is well developed

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Bewick's Swan, Whooper Swan, Greenland White-fronted Goose, Lightbellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Goldeneye, Red-breasted Merganser, Hen Harrier, Coot, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Lesser Black-backed Gull and Little Tern.

The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The site is of international importance for several species of waterbirds but also because it regularly supports well in excess of 20,000 waterbirds (average peak of 49,030 for the 5 winters 1996/97-2000/01). Wexford Harbour and Slobs is one of the top three sites in the country for numbers and diversity of wintering birds. The combination of estuarine habitats, including shallow waters for grebes, diving duck and seaduck, and the farmland of the polders, which include freshwater drainage channels, provides optimum feeding and roost areas for a wide range of species. Of particular importance is that it is one of the two most important sites in the world for Greenland White-fronted Goose (9,353) (all given figures for species are average peaks for the 5 winters 1995/96-1999/00). The geese feed almost entirely within the Slobs and roost at The Raven (a separate SPA). The site also has internationally important populations of Mute Swan (519), Light-bellied Brent Goose (1,469), Bartailed Godwit (1,843) and Black-tailed Godwit (768).

There are at least a further 25 species of wintering waterbirds which occur in numbers of national importance, i.e. Great Crested Grebe (123), Little Grebe (77), Cormorant (443), Whooper Swan (120), Bewick's Swan (191), Shelduck (903), Wigeon (2,838), Gadwall (37), Teal (1,601), Mallard (3,121), Pintail (78), Scaup (416), Goldeneye (151), Red-breasted Merganser (226), Coot (353), Oystercatcher (1,800), Golden Plover (5,590), Grey Plover (1,412), Lapwing (11,944), Knot (566), Sanderling (262), Dunlin (3,037), Curlew (1,924), Redshank (535), Black-headed Gull (6,136) and Lesser Black-backed Gull (1,036). Other species that use the site include Ringed Plover (69), Turnstone (41), Greenshank (12), Shoveler (24), Tufted Duck (114), Pochard (218), Common Gull (100+) and Little Egret. Several of the above populations represent substantial proportions of the national totals, especially Shelduck (6.2%), Scaup (6.6%), Red-breasted Merganser (6.2%), Grey Plover (21.9% and the top site in the country) and Black-headed Gull (6.1%). The Slobs is the most important and indeed one of the few sites in the country which supports a regular flock of Bewick's Swan. Numbers of wintering birds are often swelled by hardweather movements from Britain and Europe, notably Golden Plover and Lapwing.

The site is a regular location for scarce passage waders such as Ruff, Spotted Redshank and Green Sandpiper, as well as Curlew Sandpiper in varying numbers. The rare Wood Sandpiper is seen each year, mainly in autumn. Short-eared Owl and Hen Harrier are regular visitors in small numbers to the Slobs during winter. Of particular note is the presence of the Hen Harrier communal roost site.

The site is important for Little Tern as it has can hold a nationally important breeding colony (30 pairs were recorded in 2000). The Slobs support a nesting colony of Tree Sparrow, a very localised species in Ireland that is listed in the Irish Red Data Book. Another very localised breeding species, Reed Warbler, is well established within the swamp vegetation along the River Slaney and on the South Slob (estimated as at least 10 pairs). A range of duck species breed, including Teal, Tufted Duck and, probably in most years, Shoveler.

The site supports populations of Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Short-leaved Water-starwort (*Callitriche truncata*), both protected, Red Data Book species. The Slobs are well known for their population of Irish Hare. Part of the North Slob is a Nature Reserve and much of this slob is managed for the benefit of the wintering geese. Monitoring of the wintering birds of the Slobs extends back to the 1960s and nowadays there is an ongoing monitoring and research programme. The North Slob has a wildfowl collection and an interpretative centre.

There are no imminent significant threats to the wintering bird populations. In the long-term, however, projected increases in sea level could cause problems in maintaining the Slobs as farmland. In recent times, the South Slob has become less suitable due to changes in landuse, including forestry operations, and a sustained programme of scaring. An increase in the amount of new housing in the vicinity of the North Slob has led to increased levels of disturbance in recent times. Localised reclamation has occurred in Wexford Harbour and any further reclamation of estuarine habitat is undesirable. Aquaculture occurs in Wexford Harbour though it is not known what effects, if any, this has on the bird populations.

Wexford Harbour and Slobs SPA is one of the most important ornithological sites in the country. It is of world importance for Greenland White-fronted Goose, and supports internationally important populations of a further four species (Mute Swan, Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit). In addition, it has 25 species of wintering waterbirds with populations of national importance. Also of significance is that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Little Egret, Whooper Swan, Bewick's Swan, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Bar-tailed Godwit, Ruff, Wood Sandpiper, Little Tern and Short-eared Owl. The site is an important centre for research, education and tourism.

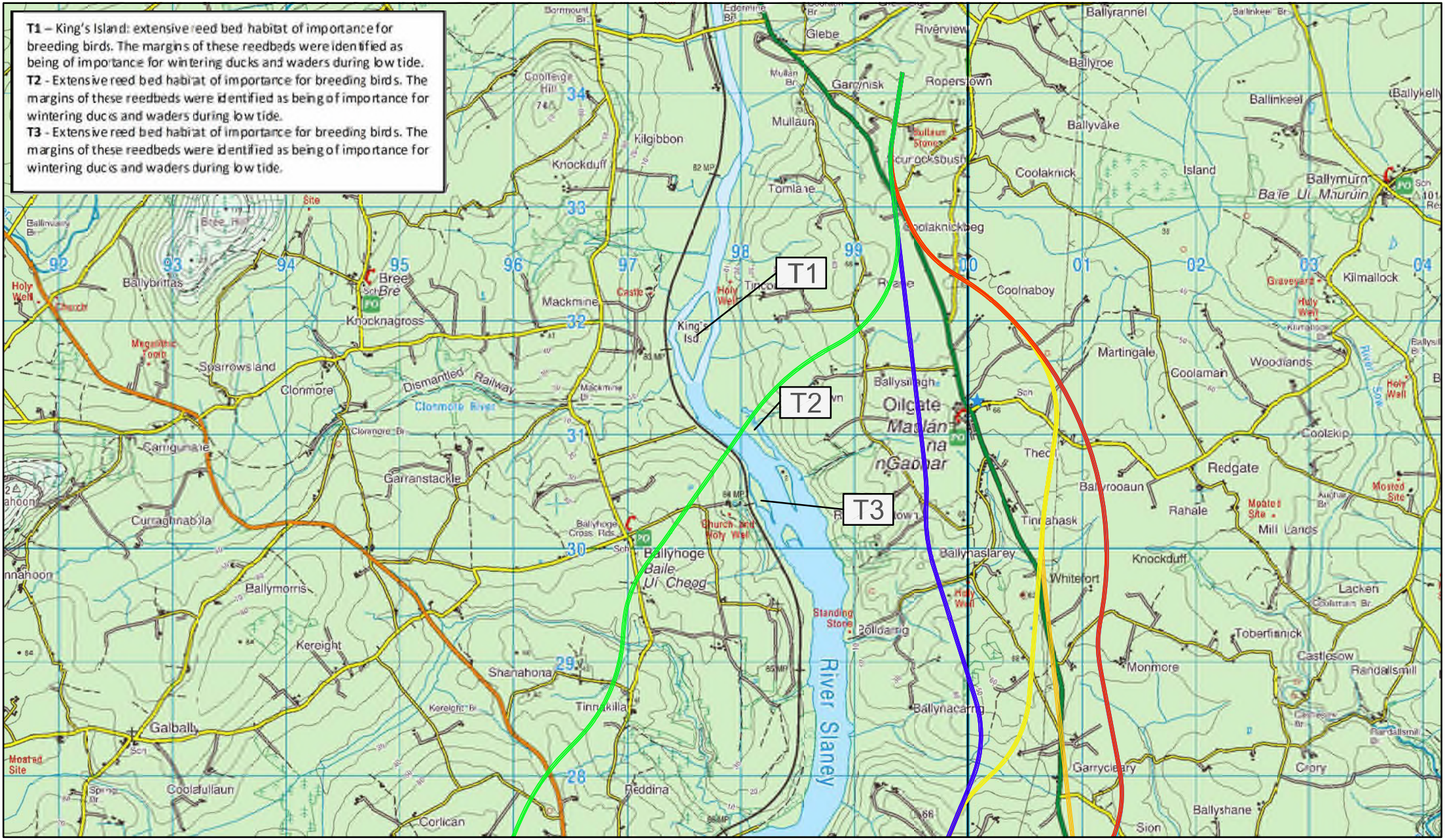
Appendix 3 Maps of the proposed route crossings with target notes from the wintering birds survey (2009-2010)

Figure A3.1 Map showing the most northerly survey site (Green Route) on the River Slaney main channel. Target notes are included on the map.

Figure A3.2 Map showing survey sites on the River Slaney main channel. Target notes are included on the map.

Figure A3.3 Map showing survey sites at the southern end of the proposed scheme at Assaly Bridge. Target notes are included on the map.

Figure A3.1: Map of the most northerly survey site (Green Route) on the River Slaney main channel



Legend

- Route A
- Route B
- Route C
- Route D
- Route E
- Route F
- Route G
- Route H

N11/N25 Oilgate to Rosslare Road Scheme

Date: 01/12/2010

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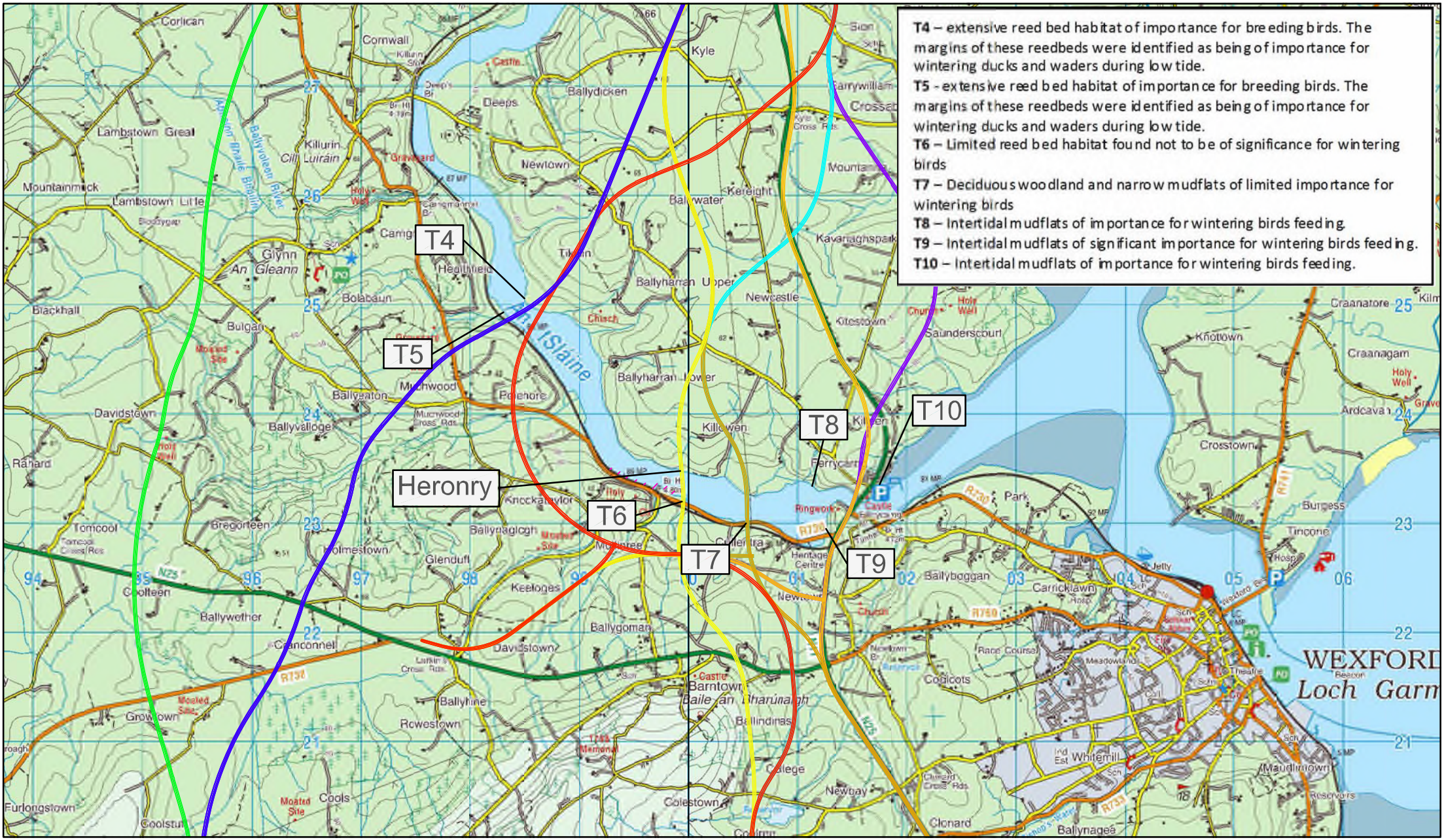
Figure A3.2: Map showing survey sites on the River Slaney main channel. Target notes are included on the map.



Legend

- Route A
- Route B
- Route C
- Route D
- Route E
- Route F
- Route G
- Route H

N11/N25 Oilgate to Rosslare Road Scheme

Date: 01/12/2010

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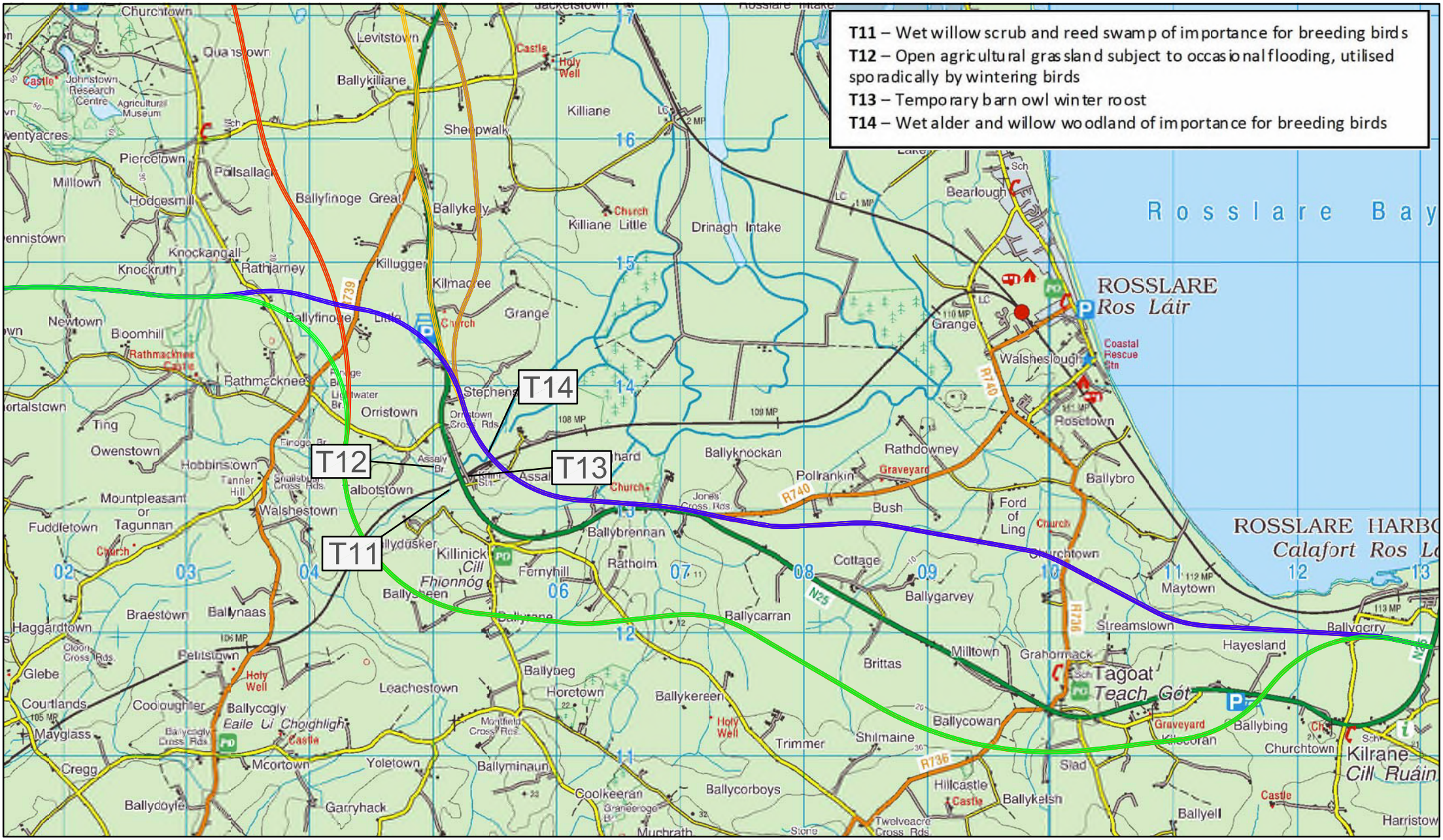
Figure A3.3: Map showing survey sites at southerly end of proposed scheme at Assaly Bridge. Target notes are included on the map.



Appendix 4 I-Webs data

River Slaney

Killurin (Deep's) Bridge - Edermine Bridge

Species	1% National	1% International	1995/96	1996/97	1997/98	1998/99	1999/00	2004/05	2007/08
Mute Swan	110	110	77	194	243	310	301	52	93
Shelduck	150	3,000	3	2	9	7		11	
Wigeon	820	15,000	149	244	8	105	55	119	30
Teal	450	5,000	243	474	213	271	979	525	164
Mallard	380	20,000	154	224	178	236	203	176	74
Pintail	20	600		2					
Shoveler	25	400		8	3				
Pochard	380	3,500	1	10					
Tufted Duck	370	12,000	209	402	13	32	117		
Goldeneye	95	11,500	42	62	32	68	25	16	
Red-breasted Merganser	35	1,700	15	9	1	5		2	
Little Grebe	25	4,000	1	4	1			2	2
Slavonian Grebe		55	1						
Cormorant	140	1,200	54	35	39	54	38	47	26
Little Egret		1,300						8	12
Grey Heron	30	2,700	3	8	9	8	7	10	3
Water Rail					1				2
Moorhen	20		1	3		4	1		
Coot	330	17,500	3						
Golden Plover	1,700	9,300		6					
Lapwing	2,100	20,000	175	920		16			420
Snipe		20,000		8	5	17			
Curlew	550	8,500	100	62		136	101	2	
Redshank	310	3,900	12	38	2	100	131	40	30
Black-headed Gull		20,000	606	234	2,954	2,170	895	870	432
Common Gull		16,000	86	50		50	45	40	58
Lesser Black-backed Gull		4,500	40	45	38	482	570		14
Herring Gull		13,000	1	10	14	50	25	42	5
Great Black-backed Gull		4,800	23	20	2	10	25	1	15
Kingfisher					1				

* Note there has been a taxonomic change within the wildfowl, which are now headed by swans and geese.

The counts presented in the table refer to the peak counts of species in each I-WeBS season.
Site peak and mean are calculated as the peak and mean of peak counts respectively over the seasons specified. Blank cells within columns which contain positive values for one or more species constitute zero for those species.

I-WeBS

Ferrycarrig Bridge - Killurin (Deep's) Bridge

Species	1% National	1% International	1995/96	1996/97	1997/98	1998/99	1999/00	2004/05	2007/08
Mute Swan	110	110	8	24	11	3		4	
Shelduck	150	3,000	17	19	1	5	7	6	
Wigeon	820	15,000			16			30	
Teal	450	5,000	125	224	52	81	83	85	560
Mallard	380	20,000	69	48	27	25	81	27	129
Tufted Duck	370	12,000	50	25					
Red-breasted Merganser	35	1,700	3	4			1		
Little Grebe	25	4,000	1	3		1		1	5
Great Crested Grebe	55	3,600	1						
Cormorant	140	1,200	22	73	25	39	35	26	31
Little Egret		1,300		1				6	3
Grey Heron	30	2,700	8	14	18	5	4	4	8
Moorhen	20		1	3		3		3	
Oystercatcher	680	10,200	20	35	1	1			
Lapwing	2,100	20,000	400	500		80		104	20
Snipe		20,000				21			
Black-tailed Godwit	140	470		116					25
Bar-tailed Godwit	160	1,200					1		
Curlew	550	8,500	78	24	18	28	5	30	66
Spotted Redshank		900							2
Greenshank	20	2,300		7		2	4	3	2
Redshank	310	3,900	5	50	32	6	30	22	5
Turnstone	120	1,500			1				
Mediterranean Gull			1						
Black-headed Gull		20,000	745	1,555	1,641	5,030	2,910	1,400	1,398
Common Gull		16,000	60	60	12	145	56	12	95
Lesser Black-backed Gull		4,500	584	1,020	475	1,005	940	350	20
Herring Gull		13,000	61	160	180	450	80	10	4
Great Black-backed Gull		4,800	170	102		111	85	5	4
Kingfisher				1					

* Note there has been a taxonomic change within the wildfowl, which are now headed by swans and geese.

The counts presented in the table refer to the peak counts of species in each I-WeBS season.
Site peak and mean are calculated as the peak and mean of peak counts respectively over the seasons specified. Blank cells within columns which contain positive values for one or more species constitute zero for those species.

I-WeBS

Wexford Harbour & Slobs

South Slob & adjacent harbour

Species	1% National	1% International	2003/04	2004/05	2005/06	2006/07	2007/08	Mean	Peak
Mute Swan	110	110	68	36	24		100	57	100
Whooper Swan	130	210	159	112	29		478	195	478
Greenland White-fronted Goose	110	270	12					3	12
Light-bellied Brent Goose	220	260		3,100	850		800	1,188	3,100
Shelduck	150	3,000	1		27		15	11	27
Wigeon	820	15,000	158	21	25		1,600	451	1,600
Teal	450	5,000	26				3	7	26
Mallard	380	20,000	1,085	22	41		12	290	1,085
Pintail	20	600	1				25	7	25
Pochard	380	3,500			12		9	5	12
Tufted Duck	370	12,000	4				10	4	10
Red-breasted Merganser	35	1,700			3			1	3
Little Grebe	25	4,000	10	5	1		2	5	10
Great Crested Grebe	55	3,600	12					3	12
Black-necked Grebe							1	0	1
Cormorant	140	1,200	3		2		2	2	3
Little Egret		1,300	3		2		1	2	3
Grey Heron	30	2,700	13	7	2		5	7	13
Water Rail				1				0	1
Moorhen	20		28	11	8			12	28
Coot	330	17,500	35		2		50	22	50
Oystercatcher	680	10,200	1		13			4	13
Ringed Plover	150	730	12					3	12
Golden Plover	1,700	9,300	2,804	1,155	9,050		6,200	4,802	9,050
Grey Plover	65	2,500	197				165	91	197
Lapwing	2,100	20,000	3,254	1,727	2,020		2,650	2,613	3,254
Dunlin	880	13,300	150		65		570	196	570
Snipe		20,000	10					3	10
Woodcock					25			6	25
Black-tailed Godwit	140	470	209	455	5		250	230	455
Bar-tailed Godwit	160	1,200	8					2	8
Curlew	550	8,500	395	160	310		53	230	395
Redshank	310	3,900	30	11	1			11	30
Turnstone	120	1,500	15	15	16			12	16
Black-headed Gull		20,000	1,022	37	250		12	330	1,022
Common Gull		16,000	124	5			15	36	124
Herring Gull		13,000	1					0	1
Sandwich Tern			1					0	1

* Note there has been a taxonomic change within the wildfowl, which are now headed by swans and geese.

The counts presented in the table refer to the peak counts of species in each I-WeBS season.
Site peak and mean are calculated as the peak and mean of peak counts respectively over the seasons specified. Blank cells within columns which contain positive values for one or more species constitute zero for those species.

Hopeland Wexford Harbour

Species	1% National	1% International	2003/04	2004/05	2005/06	2006/07	2007/08	Mean	Peak
Mute Swan	110	110		7	9			4	9
Light-bellied Brent Goose	220	260	627	1,026	256		370	570	1,026
Shelduck	150	3,000	188	580	910		270	487	910
Wigeon	820	15,000	264		210			119	264
Teal	450	5,000	40					10	40
Goldeneye	95	11,500	8	1				2	8
Red-breasted Merganser	35	1,700	47	11	4			16	47
Great Crested Grebe	55	3,600	4	3			1	2	4
Cormorant	140	1,200	10	4				4	10
Little Egret		1,300	8	2	6		22	10	22
Grey Heron	30	2,700	12		9			5	12
Coot	330	17,500					12	3	12
Oystercatcher	680	10,200	94	10	155		110	92	155
Grey Plover	65	2,500	164		56		6	57	164
Lapwing	2,100	20,000	240	80	847		40	302	847
Knot	190	4,500			2			1	2
Curlew Sandpiper			1					0	1
Dunlin	880	13,300	2,080		615		800	874	2,080
Snipe		20,000	1					0	1
Black-tailed Godwit	140	470	51					13	51
Bar-tailed Godwit	160	1,200	602		353		700	414	700
Curlew	550	8,500	323	12	71		200	152	323
Spotted Redshank		900	2					1	2
Greenshank	20	2,300	8		2		5	4	8
Redshank	310	3,900	439	2	49		290	195	439
Turnstone	120	1,500		23				6	23
Mediterranean Gull					10			3	10
Black-headed Gull		20,000	160	3	75		400	160	400
Common Gull		16,000	51				8	15	51
Lesser Black-backed Gull		4,500	2		20			6	20
Herring Gull		13,000			10		2	3	10
Great Black-backed Gull		4,800	1					0	1

* Note there has been a taxonomic change within the wildfowl, which are now headed by swans and geese.

The counts presented in the table refer to the peak counts of species in each I-WeBS season.
Site peak and mean are calculated as the peak and mean of peak counts respectively over the seasons specified. Blank cells within columns which contain positive values for one or more species constitute zero for those species.

Rosslare Backstrand

Species	1% National	1% International	2003/04	2004/05	2005/06	2006/07	2007/08	Mean	Peak
Mute Swan	110	110			1			0	1
Whooper Swan	130	210		136			13	37	136
Light-bellied Brent Goose	220	260	189	310	157		82	185	310
Shelduck	150	3,000	10	1	6			4	10
Wigeon	820	15,000	6		240		400	162	400
Teal	450	5,000	3		70			18	70
Mallard	380	20,000	4		18			6	18
Pintail	20	600					40	10	40
Goldeneye	95	11,500	36		5			10	36
Red-breasted Merganser	35	1,700	32	23	28		27	28	32
Great Crested Grebe	55	3,600	34	5	1		11	13	34
Cormorant	140	1,200	80	43	63		198	96	198
Little Egret		1,300	16	2	4		7	7	16
Grey Heron	30	2,700	12		1		1	4	12
Oystercatcher	680	10,200	957	520	267		446	548	957
Ringed Plover	150	730	27		1		7	9	27
Golden Plover	1,700	9,300	1,470	4,130	3,350		3,000	2,988	4,130
Grey Plover	65	2,500	310	29	32		165	134	310
Lapwing	2,100	20,000			80		370	113	370
Knot	190	4,500	36	15	55			27	55
Sanderling	65	1,200	63	3	50			29	63
Little Stint							5	1	5
Dunlin	880	13,300	1,363	410	95		640	627	1,363
Snipe		20,000	3					1	3
Black-tailed Godwit	140	470		35	10		600	161	600
Bar-tailed Godwit	160	1,200	585	1,150	698		982	854	1,150
Curlew	550	8,500	219	550	291		175	309	550
Greenshank	20	2,300	5				1	2	5
Redshank	310	3,900	269	89	23		64	111	269
Turnstone	120	1,500	26	1	4		15	12	26
Black-headed Gull		20,000	1,187	6	265		30	372	1,187
Common Gull		16,000	149	13	12		217	98	217
Lesser Black-backed Gull		4,500	7	4				3	7
Herring Gull		13,000	19	1	27		64	28	64
Great Black-backed Gull		4,800	39	9	32		30	28	39
Sandwich Tern			9				42	13	42
Little Tern									

* Note there has been a taxonomic change within the wildfowl, which are now headed by swans and geese.

The counts presented in the table refer to the peak counts of species in each I-WeBS season.
Site peak and mean are calculated as the peak and mean of peak counts respectively over the seasons specified. Blank cells within columns which contain positive values for one or more species constitute zero for those species.

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