



Cork County Council

Cork County Council Development Plan 2009 - Proposed Variation to Wind Energy Policy INF (7-4)

Habitats Directive Assessment

Date: September 2010



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1 Introduction

1.1 Background

Cork County Council is considering making a variation to the wind energy objective contained in the 2009 Cork County Development Plan in relation to the future development of wind energy projects at Ringaskiddy.

The County Council has identified a number of locations as suitable for large scale industry including Carrigtwohill, Kilbarry, Little Island, Ringaskiddy and Whitegate. In all these locations, except Ringaskiddy, wind energy proposals can be considered on their merits and in relation to the criteria set out in objective INF 7-4.

Ringaskiddy, however, is located within a Strategically Unsuitable Area where wind energy proposals, although not ruled out, will generally be small in scale. It is the County Councils view that this policy position in relation to wind energy at Ringaskiddy is inconsistent with the other objectives for Ringaskiddy *i.e.* as a location for large scale industry and in relation to encouraging business and industry generally to increase its use of wind energy.

Therefore, the County Council is considering making a variation to the County Development Plan 2009 so that, in line with the approach already taken with regard to other areas identified for large scale industry, Ringaskiddy is neither within an Area of Strategic Search nor in a Strategically Unsuitable Area for wind energy (**Table 1** below). The effect of this variation will be to enable wind energy proposals, of any scale, at Ringaskiddy to be considered on their merits in relation to the criteria set out in objective INF 7-4 and other proper planning considerations. There would be no change to the treatment of wind energy proposals in the other locations identified as suitable for large scale industrial development by objective ECON 3-2 (see **Table 2**).



Table 1: Proposed variation to the Development Plan Wind Energy Objective INF 7-4
 (Note: Red bold denotes proposed Variation)

INF 7-4	<p>Wind Energy Projects</p> <p>(a) It is an objective to encourage prospective wind energy businesses and industries. In assessing potentially suitable locations for projects, potential wind farm developers should focus on the strategic search areas identified in the Plan and generally avoid wind energy projects in the strategically unsuitable areas identified in this Plan.</p> <p>(b) It is an objective to support existing and established businesses and industries who wish to use wind energy to serve their own needs subject to proper planning and sustainable development. <u>In particular, because of the potential for wind generated electricity to reduce the reliance of large scale industry on fossil fuel generated electricity, proposals located within the areas identified as suitable locations for large scale industrial development in Objective ECON 3-2 of this plan will be considered on their merits.</u></p> <p>(c) It is an objective in the strategic search areas (and in those areas that are identified as neither strategic search areas nor strategically unsuitable areas), to consider new, or the expansion of existing, wind energy projects on their merits having regard to normal planning criteria including, in particular, the following:</p> <ul style="list-style-type: none"> • The sensitivity of the landscape and of adjoining landscapes to wind energy projects; • The scale, size and layout of the project, any cumulative effects due to other projects, and the degree to which impacts are highly visible over vast areas; • The visual impact of the project on protected views and prospects, and designated scenic landscapes as well as local visual impacts; • The impact of the project on nature conservation, archaeology and historic structures; • Local environmental impacts including noise and shadow flicker; • The visual and environmental impacts of associated development such as access roads, plant, grid connections <i>etc.</i>;
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Table 1: Proposed variation to the Development Plan Wind Energy Objective INF 7-4

(Note: Red bold denotes proposed Variation)

	<ul style="list-style-type: none"> • The proximity and sensitivity of a recognised settlement; • The impact of the project on archaeology and historic structures; • The impact of nature conservation, in particular avoiding designated and proposed European sites. <p>(d) Similar criteria would be taken into account in the strategically unsuitable areas except that <u>(other than in areas to which Objective ECON 3-2 relates)</u> suitable projects will generally be on a smaller scale and on very special, carefully chosen sites.</p>
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Table 2: Industry Objective Econ 3-2

Econ 3-2	<p>Locations for Large-Scale Industrial Development:</p> <p>It is an objective to ensure that sufficient and suitable land is zoned for sustainable large-scale and general industry taking into account the objectives of this plan (including development to meet the likely needs of the chemical, pharmaceutical and oil refining sectors) at the major employment centres of Ringaskiddy, Whitegate, Carrigtwohill, Kilbarry and Little Island. Such land will, normally, be protected from inappropriate development that would prejudice its long-term development for these uses.</p>
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In addition, there is a proposed variation to the definition of Strategically Unsuitable Areas, as outlined below.

Table 3: Proposed variation to the definition of Strategically Unsuitable Areas

(Note: Red bold and underlined denotes proposed Variation)

<p>Areas which, because of high landscape sensitivity, are considered generally to be unsuitable for wind energy projects. While there may be a small number of locations within these areas with limited potential for small-scale wind projects, their contribution to any significant reduction in greenhouse gas emissions would be negligible. Except on a small scale and at particularly suitable locations, wind projects would</p>

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normally be discouraged in these areas. ***However, because of the potential for wind generated electricity to reduce the reliance of large scale industry on fossil fuel generated electricity, for the avoidance of doubt, the areas identified as suitable locations for large scale industrial development in Objective ECON 3-2 of this plan are excluded from these areas and wind energy proposals in the areas referred to in ECON 3-2 will be considered on their merits.***

1.2 Legislative Background

A Habitats Directive Assessment (HDA), which is also referred to as an Appropriate Assessment (AA), is an evaluation of the potential impacts of a plan (or project) on the conservation objectives of a Natura 2000 site, and the development, where necessary, of mitigation or avoidance measures to preclude negative effects.

The main purpose of a Habitats Directive Assessment is to identify the possible effects of implementing a Plan (or in this case a variation to a Plan) on the conservation objectives and integrity of Natura 2000 sites within the Plan area.

The Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna – the 'Habitats Directive' provides legal protection for habitats and species of European importance. Article 2 of the Habitats Directive requires the maintenance or restoration of habitats and species of interest to the EU in a favourable condition. The Directive was transposed into Irish law by the European Communities (Natural Habitats) Regulations, SI 94/1997.

Articles 6(3) and 6(4) of the Habitats Directive sets out the decision-making tests for Plans or Projects affecting Natura 2000 sites.

Article 6(3) establishes the requirement for Appropriate Assessment:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if

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appropriate, after having obtained the opinion of the general public"

Article 6(4) of the Directive deals with alternative solutions, the test of "imperative reasons of overriding public interest" (IROPI) and compensatory measures:

"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted".

The Appropriate Assessment of the variation of the 2009 County Development Plan will:

- Reinforce the knowledge of the areas of high quality conservation and protected species present,
- Address potential impacts of the variation to the energy objectives on the Natura 2000 sites,
- Formulate mitigation measures that can be implemented to protect the sites (if required).

Principally the purpose of the Habitats Directive Assessment is to identify the possible effects of implementing a Plan on the conservation status of designated Natura 2000 sites within the Plan area.

In a situation where it is not possible to fully demonstrate that adverse effects on a site's integrity or conservation objectives would occur options must be explored so that any risk of damaging designated sites is avoided.

Plans can only be permitted after having ascertained that there will be no significant adverse effect on the integrity of the sites in question. Components within a plan, such as objectives or proposals, can be adjusted or removed to avoid significant adverse impacts prior to implementation. The Plan may also proceed if sufficient mitigation or compensation measures are in place to ensure the overall integrity of the site.

This document forms part of the Appropriate Assessment of the proposed variation to the County Development Plan 2009-2015, and in line with the recently published DoEHLG guidance, is called a **Natura Impact Statement** (formally Appropriate Assessment).

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2 Methodology

2.1 Introduction

The Habitats Directive Screening Assessment has been prepared taking cognisance of the following legislation and guidelines:

- Circular Letter SEA 1/087 & NPWS 1/08 Appropriate Assessment of Land Use Plans.
- Methodological Guidance on the Provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites.
- Council Directive 92/43/EEC Appropriate Assessment of Plans, Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental.
- MANAGING NATURA 2000 SITES. The provisions of Article 6, of the 'Habitats' Directive 92 / 43 / CEE
- Department of the Environment Heritage and Local Government (DoEHLG) Circular letter SEA 1 / 08 & NPWS 1 / 08 dated 15 February, 2008.
- Department of the Environment Heritage and Local Government (DoEHLG) Appropriate Assessment Guidance for Planning Authorities (December 2009) and amended in March 2010.

Information and data gathered during the Habitats Directive Assessment process has fed into the Strategic Environmental Assessment (SEA) where appropriate and *visa versa*.

2.2 Brief Overview of Methodology

The Appropriate Assessment process follows four stages as outlined below:

Stage 1 – Screening of the proposed variation of the Development Plan 2009-2015

The Screening Process will identify the likely impacts upon the Natura 2000 sites of the variation of the Development Plan, either alone or in combination with other Plans and Projects and considers whether these impacts are likely to be significant.

Ultimately, this process determines whether or not a Natura Impact Statement (formally Appropriate Assessment) is required *i.e.* whether the variation to the Energy Objective INF 7-4 is likely to negatively affect the conservation objectives of Natura 2000 sites. This will be done by examining the variation to the

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energy objective and determining if there are any potential impacts on the conservation objectives of the Natura 2000 sites.

This Screening Assessment will:

- Determine whether the variation of the Development Plan is directly connected with or necessary to the management of the site
- Describe the variation of the Development Plan and other plans and projects that, 'in combination', have the potential to have significant effects on a European site
- Identify the potential effects on the European site and
- Assess the significance of any effects on the European site.

Stage 2 – Appropriate Assessment of the proposed variation of the Development Plan 2009-2015

The Appropriate Assessment determines the potential impacts of the variation to the 2009 Plan on the conservation objectives of the Natura 2000 sites (including Natura 2000 sites within a 15km radius of the Plan's boundary) and where necessary, mitigation or avoidance measures to preclude negative effects are recommended. The impacts assessed include the indirect and cumulative impacts of approving the variation to the Plan, considered with any current or proposed activities, developments or policies impacting on the site(s). The potential impacts of policies and objectives outside the Natura 2000 sites but that potentially may impact upon them (known as 'ex situ' impacts) must also be included in the assessment.

Stage 3 – Assessment of Alternative Solutions

Stage 3 involves the examination of alternative ways of achieving the proposed variation to the Plan that avoids adverse impacts on the integrity of the Natura 2000 site(s). This stage, along with Stage 4 below, was not required to be completed for the proposed variation of the Cork Development Plan 2009-2015.

Stage 4 – Assessment of Compensatory Measures

Stage 4 is an assessment of compensatory measures, where, in the light of an assessment of imperative reasons of overriding public interest, it is deemed that the variation to the 2009 Plan should proceed.

Stage 1 and 2 above relate to Article 6(3) of the Habitats Directive and Stages 3 and 4 relate to Article 6(4).

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2.3 Cumulative Effects

The National Spatial Strategy 2002-2020 and the National Development Plan 2007-2013, set the planning framework within which the variation to the 2009 Cork Development Plan has been prepared with the objective of achieving an optimal balance of social, economic and physical development in the Plan area. The effects of higher level Strategies and Plans are considered insofar as they inform the variation to the Plan. Subsidiary plans and projects will be subject to separate assessment procedures in accordance with all applicable Regulations and Directives.



3 Stage 1: Habitats Directive Screening Assessment

3.1 Introduction

The Habitats Directive Screening process will determine whether the proposed variation is likely to have a significant effect on the conservation objectives and the integrity of Natura 2000 sites within 15 km of the study area associated with the proposed variation. This buffer zone was chosen as a precautionary measure to ensure that all affected Natura 2000 sites are included in this Screening process.

This process requires an initial review of the proposed variation to the plan in order to identify potential impacts upon the above Natura 2000 sites.

The Screening Process will identify the likely impacts upon the Cork Harbour SPA and Great Island Channel SAC and any other designated site within 15 km of the study area relating to the proposed variation of the 2009 Plan, either alone or in combination with other plans and projects and will consider whether these impacts are likely to be significant. Ultimately, this process determines whether or not a Natura Impact Statement is required *i.e.* whether the proposed variation to the energy objective is likely to negatively affect the conservation objectives of Natura 2000 sites.

3.2 Management of the Site

The variation to the Cork County Development Plan 2009-2015 is not directly connected with or necessary to the management of Natura 2000 sites. However, the 2009 Plan includes, *inter alia*, measures to protect, conserve and manage the natural heritage in a prudent and sustainable manner, including Natura 2000 sites, and to seek its enhancement where appropriate and feasible.

3.3 Brief Description of the Proposed Variation to the Plan

3.3.1 Background

Cork County Council is considering making a variation to the wind energy objective contained in the 2009 Cork County Development Plan in relation to the future development of wind energy projects at Ringaskiddy.

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The County Council has identified a number of locations as suitable for large scale industry including Carrigtwohill, Kilbarry, Little Island, Ringaskiddy and Whitegate. In all these locations, except Ringaskiddy, wind energy proposals can be considered on their merits and in relation to the criteria set out in objective INF 7-4.

Ringaskiddy is located south of Cork city (see **Figure 1**) and is a major industrial district with a number of large pharmaceutical facilities including Pfizer Ringaskiddy, Pfizer Lough Beg, DePuy, GSK, Centocor and Novartis. Ringaskiddy deepwater port with associated car ferry is also located in the area. Improved agricultural grassland and tillage / arable land are the other dominant land-uses in the area. The two main villages in the area, Shanbally and Ringaskiddy, are both located along the N28 national primary road which links the area with Cork city. The Ringaskiddy area is surrounded to the north, west and south east by Cork Harbour. The Glounatouig Stream flows into Monkstown Creek to the north east of Ringaskiddy and a tidal inlet, Lough Beg, is located to the south west.

Ringaskiddy, despite being identified as a location suitable for large scale industry, is located within a Strategically Unsuitable Area where wind energy proposals, although not ruled out, will generally be small in scale. It is the County Councils view that this policy position in relation to wind energy at Ringaskiddy is inconsistent with the other objectives for Ringaskiddy *i.e.* as a location for large scale industry and in relation to encouraging business and industry generally to increase its use of wind energy.

Therefore, the County Council is considering a variation to the County Development Plan 2009 so that, in line with the approach already taken with regard to other areas identified for large scale industry, Ringaskiddy is neither within an Area of Strategic Search nor in a Strategically Unsuitable Area for wind energy (see **Table 1** above). The effect of this variation will be to enable wind energy proposals, of any scale, at Ringaskiddy to be considered on their merits in relation to the criteria set out in objective INF 7-4 and other proper planning considerations. There would be no change to the treatment of wind energy proposals in the other locations identified as suitable for large scale industrial development by objective ECON 3-2 (see **Table 2** above).

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3.4 Natura 2000 Sites in and within 15 km of the Study Area Relating to the Proposed Variation

The European Communities (Habitats) Directive 1992, established a network of sites throughout Europe, which are of international importance. It is comprised of Special Protection Areas (SPA) and Special Areas of Conservation (SAC) which together are known as Natura 2000 sites.

Following guidance from the Department of the Environment, Heritage and Local Government, all Natura 2000 sites within both the area relating to the plan variation and an area extending 15 km around it are considered to ensure that all potentially affected Natura sites are included in the screening process. There is one SPA within the area relating to the proposed variation (15 km radius buffer zone from study site) and one SAC (see **Figure 1** and **Table 4** below).

The Cork Harbour SPA is located immediately adjacent to the Plan variation area and the Great Island Channel SAC is approximately 5 km to the north (see **Figure 1**). A summary of these designated sites are outlined in the following sub-sections below and the sites are discussed with respect to the requirement, or not, for a Natura Impact Statement.

Table 4: Natura 2000 Sites (SPA and SAC's) within the Study Area relating to the Variation to the 2009 Plan and Sites within 15km of this Area.

Designation	Site Name & Code	Qualifying Interests	Other Notable Features	Main Threats
Special Protection Area	Cork Harbour SPA (site code 004030)	<ul style="list-style-type: none"> • Cormorant, • Shelduck, • Oystercatcher, • Golden Plover, • Lapwing, • Dunlin, • Black-tailed Godwit, • Curlew, • Redshank, • Common Tern, • 20,000 wintering waterbirds. 	Special Conservation Interests <ul style="list-style-type: none"> • Little Grebe, • Great-crested Grebe, • Grey Heron, • Wigeon, • Teal, • Pintail, • Shoveler, • Red-breasted Merganser, • Grey Plover, • Black-headed Gull, • Common Gull, • Lesser Black-backed Gull 	Road works, infilling, sewage outflows, possible marina developments, oil pollution from shipping and recreational activities.

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Designation	Site Name & Code	Qualifying Interests	Other Notable Features	Main Threats
Special Area of Conservation	Great Island Channel Special Area of Conservation (site code 001058)	<ul style="list-style-type: none"> Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) Mudflats and sandflats not covered by seawater at low tide 	<ul style="list-style-type: none"> Important numbers of wintering waterfowl. Good diversity of invertebrate fauna. 	Road works, infilling, sewage outflows and possible marina developments.

The site synopses for the Cork Harbour SPA and the Great Island Channel SAC are appended at **Appendix A** and brief summaries of each designated site are outlined below.

Cork Harbour Special Protection Area

The Cork Harbour Special Protection Area is a large sheltered bay system with several river estuaries – principally those of the Rivers Lee, Douglas and Owenacurra. The SPA comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, Owenboy Estuary, Inner Lough Mahon, Lough Beg, Whitegate Bay and the Rostellan Inlet. Mudflat and other habitats within the SPA support very high numbers of wintering waterfowl, which feed on macroinvertebrates.

Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (*i.e.* > 20,000) and also for its population of Redshank. In addition, there are at least 15 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, *i.e.* Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.

Great Island Channel Special Area of Conservation

The Great Island Channel Special Area of Conservation comprises of the North Channel of Cork Harbour between Little Island to Midleton. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Within the site is the estuary of the Owennacurra and Dungourney Rivers. These rivers, which flow through Midleton, provide the main source of freshwater to the North Channel.

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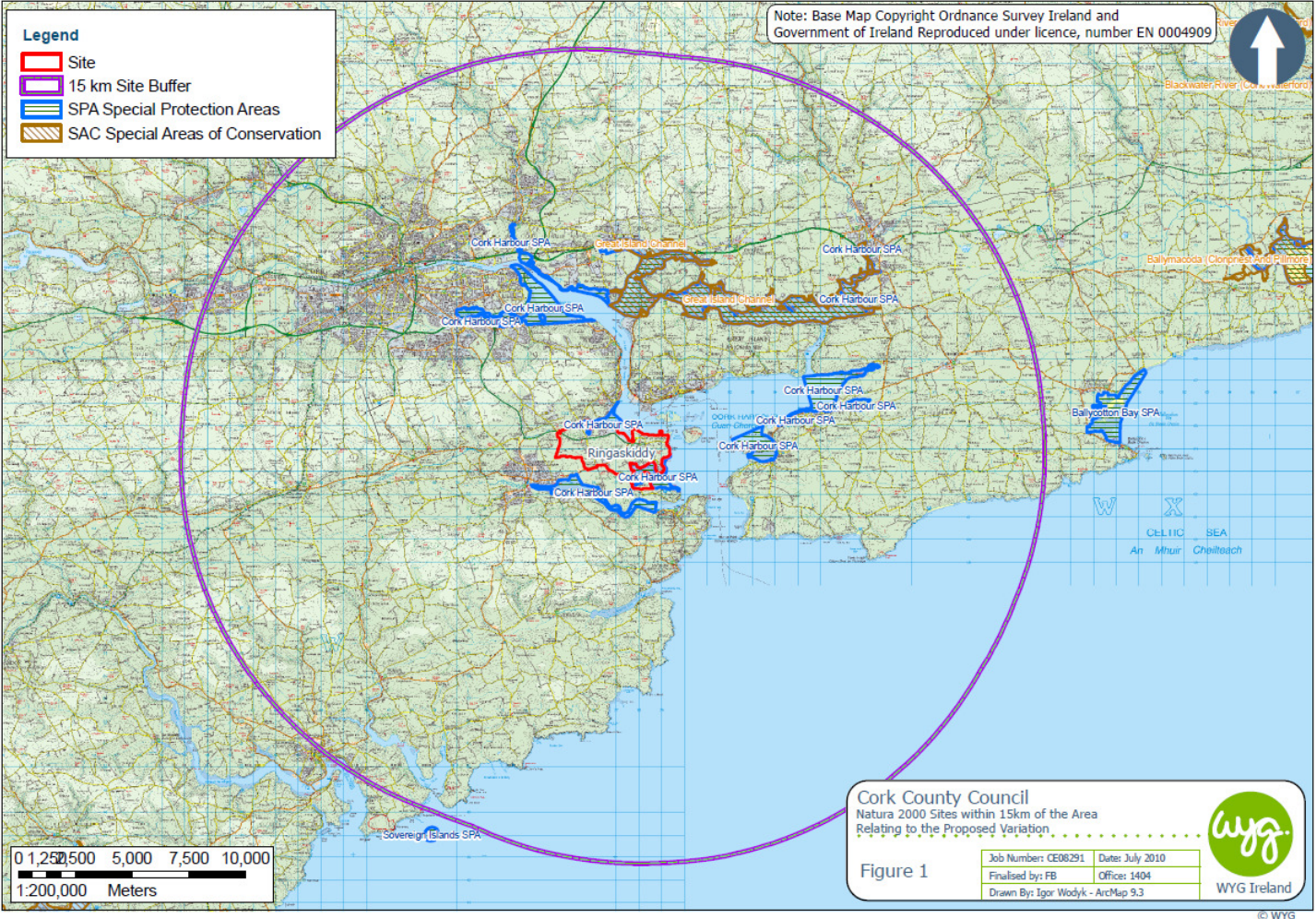


The main habitats of conservation interest are the sheltered tidal sand and mudflats and Atlantic salt meadows, both habitats listed on Annex I of the EU Habitats Directive. Owing to the sheltered conditions, the intertidal flats are composed mainly of soft muds. These muds support a range of macroinvertebrates. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially at Rossleague and Belvelly. The salt marshes are scattered through the site and are all of the estuarine type on mud substrate.

While the main land use within the site is aquaculture (Oyster farming), the greatest threats to its conservation significance come from road works, infilling, sewage outflows and possible marina developments.

The site is of major importance for the two habitats listed on the EU Habitats Directive that it contains, as well as for its important numbers of wintering waders and wildfowl. It also supports a good invertebrate fauna.

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3.5 Conservation Objectives

Management planning for nature conservation sites has a number of aims. These include:

- To identify and evaluate the features of interest for a site;
- To set clear objectives for the conservation of the features of interest;
- To describe the site and its management;
- To identify issues (both positive and negative) that might influence the site;
- To set out appropriate strategies/management actions to achieve the objectives.

Generic conservation objectives have been compiled for some SACs and SPAs. These are based on the sites' qualifying features. In time, specific conservation objectives will be written for the features of interest within each Designated Site.

3.5.1 Cork Harbour SPA (Site Code 004030)

The conservation objectives for the Cork Harbour SPA are outlined below (**Source:** NPWS):

1. To avoid deterioration of the habitats of the qualifying species and species of special conservation interest, or significant disturbance to these species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species and species of special conservation interest that the following are maintained in the long-term.
 - the population of the species as a viable component of the site;
 - the distribution and extent of habitats supporting the species;
 - the structure, function and supporting processes of habitats supporting the species;

3.5.2 Great Island Channel SAC (Site Code 01043)

The conservation objectives for the Great Island Channel SAC are outlined below (**Source:** NPWS):

1. To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: Mudflats and sandflats not covered by seawater at low tide; Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).
2. To maintain the extent, species richness and biodiversity of the entire site.
3. To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

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3.5.3 Threats to Natura 2000 Sites

The main threats to the conservation significance of the Cork harbour SPA and the Great Island Channel SAC, as outlined in the NPWS Site Synopses, come from road works, infilling, sewage outflows and possible marina developments.

In relation to the Cork harbour SPA, further reclamation of estuarine habitat for industrial, port-related and road projects remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is a general threat. Recreational activities are high in some areas of the harbour, including jet skiing which causes disturbance to roosting birds.

3.6 Assessment of Likely Effects

3.6.1 Effects of the Variation to the Plan that are likely to be Significant

Effects of the proposed variation to the 2009 Plan that are likely to cause significant impacts on the integrity and conservation objectives of Natura 2000 sites include:

- Any impact on an Annex I habitat
- Reduction in the area of the habitat or Natura 2000 site
- Direct or indirect damage to the physical quality of the environment (*e.g.* water quality) in the Natura 2000 site
- Serious or ongoing disturbance to species or habitats for which the Natura 2000 site is selected (*e.g.* increased noise, illumination and human activity)
- Direct or indirect damage to the size, characteristics or reproductive ability of populations on the Natura 2000 site
- Interfering with mitigation measures put in place for other Plans or Projects

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3.6.2 Elements of the Variation to the Plan with Potential to Give Rise to Significant Effects

The proposed variation to the 2009 Development Plan was examined in terms of its potential impacts on the Natura 2000 sites in the context of a number of factors that could potentially affect the integrity of the Natura 2000 sites *e.g.* reductions in habitat area, disturbance to key species, habitat loss *etc.* The potential impacts of the proposed variation on the integrity of the Cork Harbour SPA and the Great Island Channel SAC are shown in **Table 5** below.

Table 5: Potential Impacts on Natura 2000 Sites

Site Name	Habitat Loss	Habitat Species Fragmentation or	Disturbance to Key Species	Reduction in Species Richness and Density	Changes in key indicators of Conservation Value
Cork Harbour SPA	O	O	X	X	X
Great Island Channel SAC	O	O	O	O	O

(**X** = Potential Impact; **O** = No Impact)

The proposed variation to the Plan is likely to result in the construction of several windfarms within the existing (and, possible, future) industrial areas of Ringaskiddy. The industrial areas are located in the eastern part of Ringaskiddy and any potential wind turbines are likely to be located within 1.5 km of the Cork Harbour SPA.

Two of the intertidal areas of the Cork Harbour SPA are located immediately adjacent to Ringaskiddy, with Monkstown Creek located to the north and Lough Beg to the south. Both of these areas are used by the Cork Harbour SPA qualifying interest species such as cormorant, shelduck, oystercatcher, black-tailed godwit, curlew and redshank for feeding and roosting during the winter season (NATURA Environmental Consultants, 2010), hence the proposed variation has the potential to cause significant disturbances to the qualifying species of the site and key indicators of conservation value.

The wind turbines have the potential to impact on the waterbirds (qualifying species) through the collision risk with moving turbine blades; displacement of birds as they may avoid roosting and feeding areas close

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to turbines; barrier effects by disrupting flight lines; and direct habitat loss if the turbines and associated infrastructure are built on foraging or roosting habitat.

However, the Great Island Channel SAC is located approximately 5 km to the north of Ringaskiddy and the construction of wind turbines at Ringaskiddy will have no impact on its Annex I habitats, *i.e.* sheltered tidal sand and mudflats and Atlantic salt meadows. The wintering waders and wildfowl and invertebrate fauna that the SAC supports will also be unaffected by the wind turbines at Ringaskiddy as there are no potential impacts on the conservation objectives and/or integrity of the Great Island Channel SAC, hence no further assessment is required for this Natura 2000 site

3.7 Screening Conclusion

The potential impacts that may arise from the implementation of the proposed variation to the Cork County Development Plan 2009-2015 have been examined in terms of factors that may adversely impact on the integrity of Natura 2000 sites.

There is the potential for the proposed variation to the Plan to negatively impact on the conservation objectives and/or integrity of the Cork Harbour SPA. Therefore, in accordance with Article 6(3) of the Habitats Directive, an Appropriate Assessment of the proposed variation to the Cork County Development Plan 2009-2015 is required in relation to the potential for negative impacts on the Cork Harbour SPA.



4 Stage 2 Appropriate Assessment

4.1 Introduction

The Screening Assessment examined the proposed variation to the Cork County Development Plan 2009-2015 with respect to the Natura 2000 sites (*i.e.* Cork Harbour SPA and the Great Island Channel SAC) and determined if possible impacts might arise from the proposed variation to the Cork County Development Plan 2009-2015 in the context of a number of factors (*e.g.* habitat loss, habitat fragmentation, habitat and species disturbance *etc.*) that could potentially affect the integrity of the Natura 2000 sites.

The Screening Stage has concluded that an Appropriate Assessment of the proposed variation to the Cork County Development Plan 2009-2015 is required and identified that the proposed variation to the Plan might potentially impact negatively on the conservation objectives of the following Natura 2000 Site:

Site Name & Code	Designation
Cork Harbour SPA (004030)	Special Protection Area

The aim of Stage 2, the Appropriate Assessment, is to identify likely impacts of the proposed variation to the Plan and where necessary identify necessary changes to the proposed variation to the Plan that will avoid and mitigate any negative impacts on the Natura 2000 site and thereby avoid the need to progress to Stage 3 of this process, which would effectively constitute a rejection of the proposed variation to the Plan in its current form and require the County Council to implement compensatory measures for impacts on the Natura 2000 site.

4.2 Consultation

During the Strategic Environmental Assessment statutory consultation process, comments and submissions were received from the following statutory bodies:

- Environmental Protection Agency;
- Minister for Communications, Marine and Natural Resources (DCMNR);
- Department of Environment, Heritage and Local Government (DoEHLG).

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Cognisance has been taken of their comments and recommendations during the preparation of this report.

Consultation was undertaken with the local conservation ranger Mr. Danny O'Keefe on 11th August 2010 to consult with National Parks and Wildlife Service (NPWS) of the DoEHLG on the proposed variation to the Plan in terms of the AA and SEA. Mr. O'Keefe said he would have no problem with this proposed variation from the strategic point of view but that a Habitats Directive Assessment / Appropriate Assessment of the proposed variation to the Plan would be required and it would be essential to ensure that a Habitats Directive Assessment is completed for each individual windfarm project that is proposed for Ringaskiddy.

The formal NPWS scoping response received as part of the SEA process, dated 1st September 2010 (see **Appendix B**) stated that 'for the avoidance of doubt, the amended wording to both INF 7-4 and Table 3.3 (of the SEA Scoping Report) should have the clause added as follows (in italics): "...will be considered on their merits *and subject to compliance with Article 6 of the EU Habitats Directive.*" In the absence of the amended wording, it is recommended that the variation be not adopted until detailed data becomes available allowing a conclusion of no adverse effects of wind turbine development within the area outlined on Cork Harbour Special Protection Area (SPA).'

4.3 Description of Cork Harbour SPA

Cork Harbour is a large, sheltered bay system, with several river estuaries – principally those of the Rivers Lee, Douglas and Owenacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Lough Beg, Whitegate Bay and the Rostellan inlet.

The Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (*i.e.* > 20,000) and also for its population of Redshank. In addition, there are at least 15 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, *i.e.* Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.

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Details of the qualifying interest species (see **Table 6**) for which the Natura 2000 site has been designated and details of the environmental factors which support these features (*i.e.* conservation objectives of the site) are dealt with in **Section 3.4** and **Section 3.5** of this report.

Table 6: List of qualifying interests and special conservation interests for the Cork Harbour Special Protection Area.

Qualifying Interests	Scientific Name	Annex of EU Birds Directive
• Cormorant,	• <i>Phalacrocorax carbo</i>	• n/a
• Shelduck,	• <i>Tadorna tadorna</i>	• n/a
• Oystercatcher,	• <i>Haematopus ostralegus</i>	• n/a
• Golden Plover,	• <i>Pluvialis apricaria</i>	• Annex I
• Lapwing,	• <i>Vanellus vanellus</i>	• n/a
• Dunlin,	• <i>Calidris alpina</i>	• n/a
• Black-tailed Godwit,	• <i>Limosa limosa</i>	• n/a
• Curlew,	• <i>Limosa lapponica</i>	• n/a
• Redshank,	• <i>Numenius arquata</i>	• n/a
• Common Tern,	• <i>Tringa totanus</i>	• n/a
	• <i>Sterna hirundo</i>	• Annex I

Owing to the sheltered conditions of the harbour, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva lactuca* and *Enteromorpha spp.* Cordgrass (*Spartina spp.*) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Laxflowered Sea-lavender (*Limonium humile*) and Sea Arrowgrass (*Triglochin maritima*). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Rostellan Lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

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Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The five-year average annual core count for the entire harbour complex was 34,661 for the period 1996/97-2000/01. Of particular note is that the site supports an internationally important population of Redshank (1,614) – all figures given are average winter means for the 5 winters 1995/96-1999/00. A further 15 species have populations of national importance, as follows: Great Crested Grebe (218), Cormorant (620), Shelduck (1,426), Wigeon (1,750), Gadwall (15), Teal (807), Pintail (84), Shoveler (135), Red-breasted Merganser (90), Oystercatcher (791), Lapwing (3,614), Dunlin (4,936), Black-tailed Godwit (412), Curlew (1,345) and Greenshank (36). The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial. The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145), Golden Plover (805), Grey Plover (66) and Turnstone (99). Other species using the site include Bat-tailed Godwit (45), Mallard (456), Tufted Duck (97), Goldeneye (15), Coot (77), Mute Swan (39), Ringed Plover (51), Knot (31), Little Grebe (68) and Grey Heron (47). Cork Harbour is an important site for gulls in winter and autumn, especially Common Gull (2,630) and Lesser Black-backed Gull (261); Black-headed Gull (948) also occurs.

A range of passage waders occur regularly in autumn, including Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

Cork Harbour has a nationally important breeding colony of Common Tern (3-year mean of 69 pairs for the period 1998-2000, with a maximum of 102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower.

The wintering birds in Cork Harbour have been monitored since the 1970s and are counted annually as part of the I-WeBS scheme. **Table 7** below tabulates the Cork Harbour I-WeBS data for 1988/89 - 2007/08.

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Table 7: Cork Harbour I-WeBs Data

Note: 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.

Species	1% National	1% International	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	Mean (03-07)	Peak (03-07)
Mute Swan	110	110	46	42	25	15	42	56	71	54	73	68	64	73
Bewick's Swan	20	200	6					2					0	2
Whooper Swan	130	210			12	14	12	15	7			3	5	15
Black Swan			3								2		0	2
Pink-footed Goose		2250			1							2	0	2
Greenland White-fronted Goose	110	270			1								0	0
Greylag Goose	50	870			3	4	4	1	1	3	1	6	2	6
Canada Goose			10	6	13	8	2	21	23	11	13	22	18	23
Light-bellied Brent Goose	220	260			4		6	12	16	26	11	17	16	26
Feral/hybrid Goose									2			5	1	5
Shelduck	150	3000	1875	1870	722	1108	1903	1946	1391	1350	918	823	1286	1946
Wigeon	820	15000	1683	1402	1272	1519	1931	2926	2043	2332	1492	1259	2010	2926
Gadwall	20	600	4		6	8	67	17	13	13	7		10	17
Green-winged Teal					1	1	1						0	0
Teal	450	5000	778	1214	1139	1079	1492	1611	1169	1302	667	644	1079	1611
Mallard	380	20000	671	572	431	362	489	539	628	406	423	484	496	628
Pintail	20	600	52	41	2	74	73	46	20	14	2		16	46
Shoveler	25	400	103	148	74	48	103	33	24	45	62	51	43	62
Red Crested Pochard			1										0	0
Pochard	380	3500	38	11	19	21	27	18	7	7	2	3	7	18
Ring-necked Duck							1						0	0
Tufted Duck	370	12000	34	20	46	36	29	33	14	14	19	16	19	33
Scaup	45	3100	2							2			0	2
Long-tailed Duck		20000					2						0	0
Eider	30	12830						1		15	1		3	15
Common Scoter	230	16000		2			1	1	3	7		1	2	7
Surf Scoter			2										0	0
Velvet Scoter												3	1	3
Goldeneye	95	11500	18	14	18	28	11	14	7	10	5	14	10	14
Red-breasted Merganser	35	1700	110	128	64	77	95	88	85	80	68	72	79	88
Red-throated Diver	20	3000								1	1		0	1
Black-throated Diver		3750											0	0
Great Northern Diver		50	1	8	3	1	1	1			4	3	2	4

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Species	1% National	1% International	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	Mean (03-07)	Peak (03-07)
Pied-billed Grebe			1										0	0
Little Grebe	25	4000	56	50	58	59	60	88	80	69	58	65	72	88
Great Crested Grebe	55	3600	166	218	171	287	240	132	105	137	63	106	109	137
Slavonian Grebe		55	4		1		3		1	2			1	3
Black-necked Grebe			3	3	2	2							0	0
Cormorant	140	1200	283	556	244	392	326	357	370	308	163	285	297	370
Shag									2		2	8	2	8
Little Egret		1300	20	18	27	39	61	83	166	126	143	151	134	166
Grey Heron	30	2700	54	61	114	57	97	68	135	76	84	72	87	135
Spoonbill												1	0	1
Water Rail			3	3		1	1	1	2	2	2	2	2	2
Moorhen	20		28	21	21	19	24	46	24	33	55	25	37	55
Coot	330	17500	34	96	24	13	26	31	23	16	19	7	19	31
Oystercatcher	680	10200	1584	1421	1698	1061	1570	2021	1857	2076	1061	1590	1721	2076
Ringed Plover	150	730	59	52	78	66	28	68	25	67	17	27	41	68
Golden Plover	1700	9300	3000	3432	4009	6888	4262	5102	6200	3002	3266	5232	4560	6200
Grey Plover	65	2500	72	44	5	6	108	37	4	24	12	39	23	39
Lapwing	2100	20000	4386	4116	7267	2816	4176	4864	4133	4096	3321	3321	3947	4864
Knot	190	4500	16	17	80	79	306	114	85	117	124	111	110	124
Sanderling	65	1200					135	350		33			77	350
Curlew Sandpiper				15		2	1		3	4	1		2	4
Dunlin	880	13300	8277	8240	6632	5155	3979	4785	4325	3874	4456	3579	4204	4785
Ruff		12500		1			1	1		1		3	1	3
Snipe		20000	43	47	5	20	20	54	14	49	32	75	45	75
Long-billed Dowitcher						1	1						0	0
Black-tailed Godwit	140	470	2508	1692	1615	2128	3162	1518	2937	3337	1433	2823	2410	3337
Bar-tailed Godwit	160	1200	16	52	351	419	477	405	298	218	383	257	312	405
Whimbrel		2000	2	1		1	1	3	1	4	1	1	2	4
Curlew	550	8500	2927	2223	1297	1329	1817	1083	2317	1809	1363	1607	1636	2317
Common Sandpiper			3	3	1	2	2	2	2	2	1	4	2	4
Green Sandpiper			2	1		1	1	1	1	1			1	1
Spotted Redshank		900	3	2	1	1	2	1	2	1	1	1	1	2
Greenshank	20	2300	46	61	31	25	60	47	83	68	72	71	68	83
Redshank	310	3900	2243	2269	1005	1138	2170	1591	2295	1543	1459	1725	1723	2295
Turnstone	120	1500	166	146	93	66	145	131	161	136	129	214	154	214
Mediterranean Gull			5	7	1	2	12	11	13	15	24	48	22	48
Sabine's Gull								1					0	1
Bonaparte's Gull											1		0	1
Black-headed Gull		20000	2493	1609	2288	1180	1811	2954	2170	2627	2010	2103	2373	2954
Ring-billed Gull			2	3	2	1		1	1				0	1
Common Gull		16000	676	378	1264	1725	459	200	290	188	214	207	220	290
Lesser Black-backed Gull		4500	753	118	177	106	63	254	496	31	630	72	297	630
Herring Gull		13000	53	68	36	16	37	32	36	40	123	51	56	123
Iceland Gull				1	1								0	0
Glaucous Gull												1	0	1
Great Black-backed Gull		4800	120	238	141	76	110	150	385	157	137	98	185	385
Unidentified gull						2123							0	0
Sandwich Tern			2	12	2	34	5		2	225	2	17	49	225
Common Tern				18			2	1		1	1	1	1	1
Arctic Tern												1	0	1
Unidentified Tern								3					1	3
Kingfisher				1	1	2	1	3	3	3	1	2	2	3

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4.4 Impact Avoidance Measures

The proposed variation to the Cork County Development Plan 2009-2015 has the potential to impact adversely on the Cork Harbour SPA (see **Section 4.5**). However, the main Cork County Development Plan 2009-2015 also includes policies and objectives that would ensure the protection and enhancement of natural habitats.

It is essential that at least equal weight is given to environmental protection policies as to "Development Policies" to ensure the protection of biodiversity, flora and fauna of the Cork Harbour SPA and biodiversity in general in the Development Plan area.

For example the County Development Plan 2009-2015 contains the following environmental protection policies or objectives which directly or indirectly will protect the Cork Harbour SPA:

Objective ENV 1-2: *"It is an objective to implement the County Biodiversity Action Plan in partnership with all relevant stakeholders".*

Objective ENV 1-3: Management of Natural Heritage - *"It is an objective to work with all stakeholders to conserve, manage and where possible enhance the County's natural heritage including all habitats, wild species, landscapes and geological heritage".*

ENV 1-5

"(a) It is an objective to provide protection to all natural heritage sites designated or proposed for designation in accordance with National and European legislation. This includes SACs, SPAs, NHAs, Statutory Nature Reserves and Ramsar Sites.

(b) It is an objective to:

- protect the conservation value of all European sites, as defined in the Planning and Development Acts 2000 (Special Areas of Conservation, Special Protection Areas or lands proposed for inclusion in such sites), notified by the Minister for the Environment, Heritage and Local Government, either before or during the lifetime of this plan, and to ensure that appropriate assessments are carried out where development plans or projects are likely to have significant effects on these sites.*

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- *assess all proposed developments which are likely to impact (directly or through indirect or cumulative impact) on designated natural heritage sites or sites proposed for designation and protected species in accordance with the relevant legislation;*
- *require that an adequate level of environmental assessment is prepared to an acceptable standard in respect of any proposed plan or project likely to have an impact on these sites or protected species"*

ENV 1-6

Appropriate Assessment

"Cork County Council shall carry out screening for possible impacts of any draft land use plan or amendment/variation to any such plan for any potential ecological impact on areas designated or proposed for inclusion as European Sites and shall make a determination with respect for the requirement for appropriate assessment, where necessary of the potential impacts of the plan on the conservation objectives of any European site".

ENV 1-7

European Sites

"It is an objective through the Local Area Plan process to ensure the protection of European sites from development and land use proposals that would contribute to potential significant adverse impacts".

4.5 The Likely Effects of the Draft Plan on Natura 2000 Sites

4.5.1 General

The key potential environmental impacts on the Cork Harbour SPA that are likely to arise from the implementation of the proposed variation are summarised below.

As mentioned in **Section 3.6.2**, the proposed variation to the Plan is likely to result in the construction of several windfarms within the existing (and, possible, future) industrial areas of Ringaskiddy. The industrial areas are located in the eastern part of Ringaskiddy and any potential wind turbines are likely to be located within 1.5 km of the Cork Harbour SPA. Two of the intertidal areas of the Cork Harbour SPA are located immediately adjacent to Ringaskiddy, with Monkstown Creek located to the north and Lough Beg to the south. Both of these areas are used by qualifying interest species such as cormorant, shelduck,

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oystercatcher, black-tailed godwit, curlew and redshank for feeding and roosting during the winter season (NATURA Environmental Consultants, 2010).

Wind turbines have the potential to impact on conservation objectives and integrity of the Cork Harbour SPA through the following:

1. Collision risk with moving turbine blades;
2. Displacement of birds as they may avoid roosting and feeding areas close to turbines;
3. Barrier effects by disrupting flight lines; and
4. Direct habitat loss if the turbines and associated infrastructure are built on foraging or roosting habitat.

Brief overviews of the above risks are outlined in the following sub sections.

4.5.2 Collision Risk

The wintering waterbirds that use the areas around Ringaskiddy for feeding and roosting may be impacted through collision with the wind turbines as they fly around the harbour. Mortality can result from collision not only with rotor blades, but also with towers, nacelles and associated structures such as guy cables, power lines and meteorological masts (Drewitt & Langston, 2006).

Bird collisions at coastal windfarms are generally higher than from upland windfarms from the studies of bird collisions which is probably reflective of the higher bird densities in these coastal areas (Percival, 2003).

Collision risk is likely to be greater on or near areas regularly used by large numbers of feeding or roosting birds, or on migratory flyways or local flight paths, especially where these are intercepted by the turbines (Drewitt & Langston, 2006) and this may be the case in Ringaskiddy.

Large birds with poor maneuverability (such as swans and geese) are generally at greater risk of collision with structures (Brown *et al.*, 1992) and species that habitually fly at dawn and dusk or at night are perhaps less likely to detect and avoid turbines (Larsen & Clausen, 2002). Foraging waterbirds are limited by tidal state in coastal habitats and they will continue to feed in darkness if the low tide permits. Coastal water birds move around during darkness and they may be more vulnerable to collisions with turbines in limited light conditions (NATURA Environmental Consultants, 2010).

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Collision risk is also influenced by weather conditions, with evidence from some studies showing that more birds collide with structures when visibility is poor due to fog or rain (*e.g.* Erickson *et al.*, 2001), although lower levels of flight activity in these conditions may reduce some of this effect.

It is apparent that birds are generally able to avoid collisions and do actively avoid flying into wind turbines.

However, the risk of collisions in Ringaskiddy may be potentially high due to the high concentrations of waterbirds in the estuaries adjacent to sites both for feeding and roosting and due to the fact that most bird movements will potentially occur in darkness or semi-darkness.

4.5.3 Displacement

The displacement of birds from areas within and surrounding windfarms due to visual intrusion and disturbance can amount effectively to habitat loss (Drewitt and Langston, 2006). Displacement may occur during both the construction and operational phases of windfarms, and may be caused by the presence of the turbines themselves through visual, noise and vibration impacts, or as a result of vehicle/vessel and personnel movements related to site maintenance (Drewitt and Langston, 2006). Several studies have shown displacement of birds around windfarms occurring in coastal habitats, although no significant effect has been shown for some studies (Percival, 2003). Disturbance distances up to 800 m from windfarms have been recorded for wintering waterfowl and up to 300 m for breeding waterfowl (Drewitt and Langston, 2006; and Percival, 2003). Distances vary between species with 250 m to 500 m being the average distances for displacement effects from the nearest turbines.

Behavioural responses to windfarms vary between species and may also vary between individuals of the same species, depending on factors such as stage of life cycle, flock size and degree of habituation (Drewitt and Langston, 2006). The scale of disturbance to birds caused by windfarms also shows great variation and this variation is dependent on a wide range of factors including seasonal and diurnal patterns of use by birds, location with respect to important habitats, availability of alternative habitats and possibly turbine and windfarm specifications (Drewitt and Langston, 2006).

Lawrence *et al.* (2007) conducted a ten-year study of the response of birds to the windfarm at Blythe Harbour, Northumberland, UK which is part of the Northumberland Coast SPA and supports a variety of industrial activities. The studies showed no evidence for habitat displacement for winter or summer bird populations and the integrity of the conservation interest of the SPA was not affected (Lawrence *et al.*, 2007).

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The presence of vehicle and personnel movements around proposed wind turbines at the industrial facilities of Ringaskiddy would not cause disturbance as waterbirds would already be habituated to activity at these industrial areas. However, the presence of wind turbines themselves and their visual, noise and vibration impacts may result in displacement of birds from their feeding areas and roosts in Monkstown Creek and Lough Beg, especially any wind turbines within close proximity of intertidal feeding areas or high tide roosts.

4.5.4 Barrier Effects

Windfarms can have a barrier effect if birds alter their migration flyways or local flight paths to avoid a windfarm (Drewitt and Langston, 2006). This effect may be beneficial as it reduces collision risk but is of concern because of the possibility of increased energy expenditure when birds have to fly further, as a result of avoiding a large array of turbines, and the potential disruption of linkages between distant feeding, roosting, moulting and breeding areas otherwise unaffected by the windfarm (Drewitt and Langston, 2006). Several studies have shown that some bird species alter their flight routes to avoid flying through windfarms (Percival, 2003).

Thus, the windfarms located in Ringaskiddy may potentially create a barrier effect causing waterbirds to fly further to reach their feeding and roosting sites.

4.5.5 Habitat Loss

There will be no direct land take from the Cork Harbour SPA from the proposed development of wind turbines in Ringaskiddy. However, some of waterbird feeding areas are located outside of the SPA within the Ringaskiddy area on wet grassland fields and therefore wind turbines and associated infrastructure built in these areas may result in direct loss of feeding habitats which may subsequently lead to indirect impacts on the conservation objective of the site through the reduction in foraging areas for water birds.

As has been shown above, there is the potential that the proposed variation to the Plan could impact on the Cork Harbour SPA by resulting in disturbance to key waterbird species (*i.e.* qualifying interest species), by reducing the species richness and density of waterbirds and by changing key indicators of conversation value (*i.e.* qualifying interests). **Figure 2** below illustrates some of the main possible waterbird flightlines between the estuaries around Ringaskiddy and the areas within 500 m of the regularly used feeding areas for waterbirds in Monkstown Creek and Lough Beg as defined by NATURA Environmental Consultants (2010). This figure illustrates that large areas of Ringaskiddy have the potential to be sensitive to the location of wind turbines from avian biodiversity perspective. The proposed variation to the Plan will have

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no impact direct impact on habitat loss or fragmentation of habitats or species as the Ringaskiddy area is located outside of the SPA and hence no turbines would be located within the SPA itself. However, the turbines may impact on the foraging grounds outside the SPA which support the species for which the site is designated.

4.6 Integrity of Site Checklist

This integrity of site checklist (see **Table 8**) from the Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2009, amended 2010) provides tabulated information to support the assessment of impacts on the integrity and conservation objectives of the Cork Harbour SPA.

The conservation objectives against which the assessment has been made are outlined below:

- To avoid deterioration of the habitats of the qualifying species and species of special conservation interest, or significant disturbance to these species, thus ensuring that the integrity of the site is maintained.
- To ensure for the qualifying species and species of special conservation interest that the following are maintained in the long-term.
 - the population of the species as a viable component of the site;
 - the distribution and extent of habitats supporting the species;
 - the structure, function and supporting processes of habitats supporting the species;

Table 8: Integrity of Site Checklist (Source: DoEHLG)

Conservation Objectives: Does the Project or Plan have the Potential to:	Y/N	Details
Cause delays in progress towards achieving the conservation objectives of the site?	Yes	Implementation of the proposed variation has the potential to cause " <i>the deterioration of the habitats of the qualifying species and species of special conservation interest, or significant disturbance to these species</i> ".
Interrupt progress towards achieving the conservation objectives of the site?	No	

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Conservation Objectives: Does the Project or Plan have the Potential to:	Y/N	Details
<p>Disrupt those factors that help to maintain the favourable conditions of the site?</p> <p>Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?</p>	Yes	<p>Some of waterbird feeding areas are located within the Ringaskiddy area on wet grassland fields which are outside the SPA boundary. The wind turbines and associated infrastructure built in these areas may result in direct loss of feeding habitats which may subsequently lead to indirect impacts on the conservation objective of the site through the reduction in foraging areas for water birds <i>i.e. disrupt/alter factors that help to maintain the favourable conditions of the site.</i></p> <p>The operation of the wind turbines can lead to displacement of birds as they may avoid roosting and feeding areas close to turbines and the disruption of flight lines leading to the Barrier Effect.</p> <p>Flying birds hitting the moving rotor blades of wind turbines may cause some mortality, especially where the turbines are located on specific flight paths or are very close to nest sites. Birds can also be impacted by getting caught in the air drag of rotors, leading to mortality. This has the potential therefore to interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site.</p>
Other Objectives: Does the Project or Plan have the Potential to:	Y/N	Details
Cause changes to the vital defining aspects (<i>e.g.</i> nutrient balance) that determine how the site functions as a habitat or ecosystem?	No	
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No	
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	

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Conservation Objectives: Does the Project or Plan have the Potential to:	Y/N	Details
Reduce the area of key habitats?	Yes	<p>There will be no reduction in key habitats within the Cork Harbour SPA. However, as noted above some of the waterbird feeding areas are located within the Ringaskiddy area on wet grassland fields which are outside of the SPA boundary. The wind turbines and associated infrastructure built in these areas may result in direct loss of these feeding habitats which may subsequently lead to indirect impacts on the conservation objective of the site through the reduction in foraging areas for water birds (qualifying interest) <i>i.e.</i> disrupt/alter factors that help to maintain the favourable conditions of the site.</p> <p>It must be noted that certain bird species avoid areas in close proximity to wind turbines thus the windfarm can cause effective habitat loss to the bird species.</p>
Reduce the population of key species?	Yes	<p>Direct habitat loss may occur if the turbines and associated infrastructure are built on foraging or roosting habitat and this in turn will lead to reduced population of key species for which the site is designated.</p>
Change the balance between key species?		<p>The risk of collisions in Ringaskiddy may be potentially high due to the high concentrations of waterbirds in the estuaries adjacent to sites both for feeding and roosting and due to the fact that most bird movements will potentially occur in darkness or semi-darkness. Hence there is the potential for the reduction in diversity at the site.</p>
Reduce diversity of the site?		<p>The operation of the wind turbines can lead to displacement of birds as they may avoid roosting and feeding areas close to turbines and the disruption of flight lines leading to the Barrier Effect.</p>

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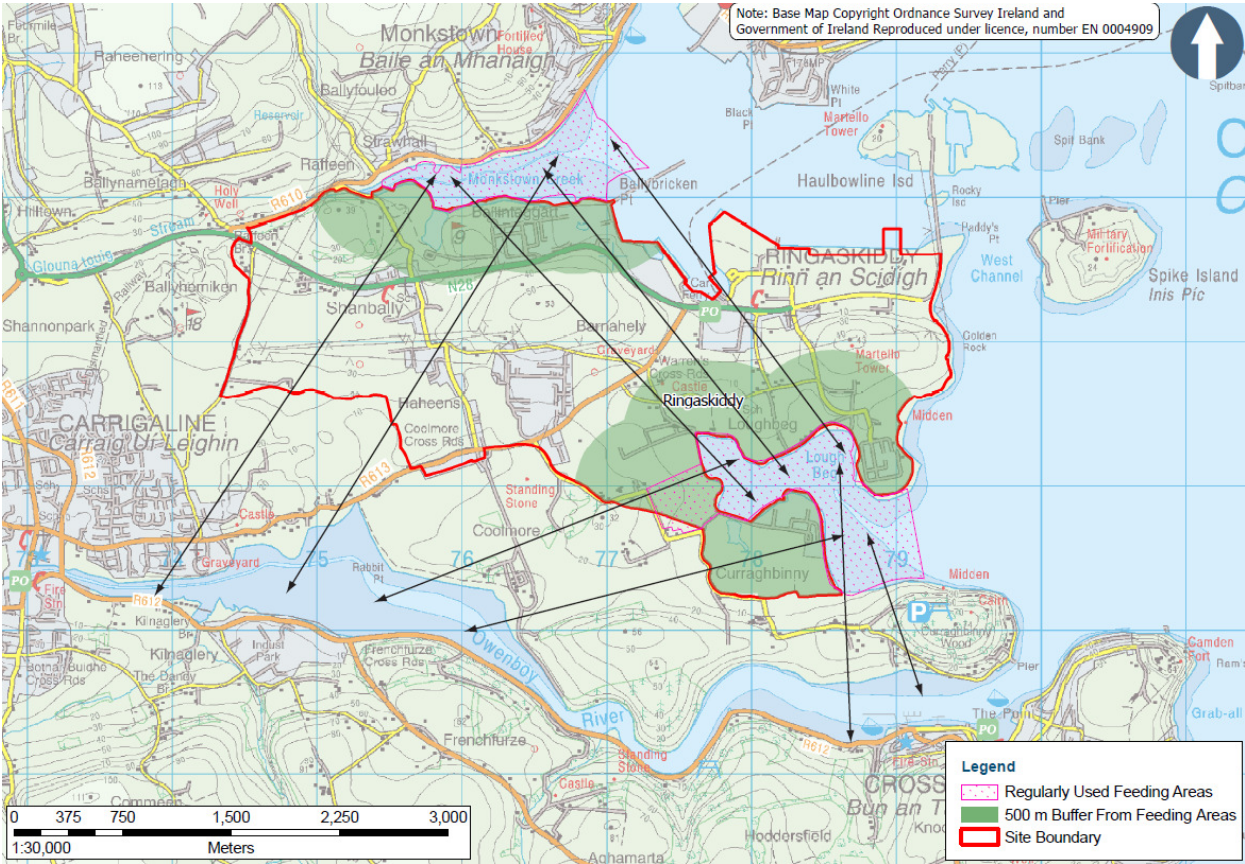


Conservation Objectives: Does the Project or Plan have the Potential to:	Y/N	Details
Result in disturbance that could affect population size or density or the balance between key species?	Yes	The presence of wind turbines themselves and their visual, noise and vibration impacts may result in displacement of birds from their feeding areas and roosts in Monkstown Creek and Lough Beg, especially any wind turbines within close proximity of intertidal feeding areas or high tide roosts.
Result in fragmentation?	No	There will be no direct habitat fragmentation within the Cork Harbour SPA itself; however, there is the potential for habitat fragmentation/habitat loss at the waterbird feeding areas which are located on wet grassland fields in the Ringaskiddy area. Hence, potentially leading to indirect impacts on the conservation objective of the site through the reduction in foraging areas for water birds (qualifying interest).
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No	

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Figure 2: Ringaskiddy showing the main possible waterbird flightlines between Monkstown Creek, Loughbeg and Owenboy Estuary and a 500 m buffer zone around the regularly used feeding areas for waterbirds in Monkstown Creek and Lough Beg.



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4.7 Potential Effects in Combination with Other Plans and Projects

It is a requirement of Article 6(3) of the Habitats Directive that the potential for significant effects of the proposed variation to the Plan in combination with other plans and projects is assessed.

*"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually **or in combination with other plans and projects**, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives".*

The key plans that have the potential to have significant in combination effects are:

- Cork County Development Plan 2009–2015;
- Carrigaline Electoral Area Local Area Plan (LAP) 2005; and
- National Renewable Energy Action Plan (2010).

The Cork County Development Plan 2009–2015 includes for the provision of developments in and around Cork Harbour. These developments may involve road works, infilling, increased sewage outflows and possibly marina developments. These developments could combine with the proposed variation to the Plan to impact on the Cork Harbour SPA by negatively impacting on the amount and/or quality of the habitat available to birds in the harbour, which may result in a reduction in wintering waterbird numbers.

The Carrigaline Electoral Area Local Area Plan (LAP) 2005 has zoned large areas of Ringaskiddy for industry and enterprise with some small areas for residential development. The potential in combination effects could include changes in the water quality of estuaries from the proposed developments and disturbances to waterbird roosts and feeding areas from developments adjacent/close to the shoreline.

As mentioned in **Section 4.4**, a number of objectives are contained within the Cork County Development Plan 2009–2015 which have been developed to ensure that there is no negative impact on biodiversity, including the Cork Harbour SPA, from the County Development Plan or the Carrigaline Electoral Area Local Area Plan.

National Renewable Energy Action Plan (2010) has the objective to achieve 16% of energy from renewable sources by 2020 in line with Ireland's obligations under the Renewable Energy Directive (2009/28/EC). The potential in combination effects between the proposed variation to the Plan and the NREAP could lead to the development of many windfarms in Ringaskiddy and the surrounding areas of Cork which could lead to the disturbance and mortality through collision of the large migratory populations of waterbirds that use the

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many intertidal habitats of Cork Harbour and the surrounding coastline. Regular flightlines of waterbirds that use Cork Harbour could be impacted by wind turbines even if the turbines are located long distances from Cork Harbour.

There are currently several projects proposed for Ringaskiddy with most of these concerning extensions to existing industries within the footprint of the current plant and as such there is unlikely to be an in combination effect with the proposed variation to the Plan. The largest new development currently proposed for Ringaskiddy is the waste-to-energy facility and transfer station proposed by Indaver Ireland but both the 2008 EIS and the 2010 Addendum to the EIS do not envisage any impacts on flora and fauna, including the marine environment, and therefore there would be no in combination effects with the proposed Plan variation.

The potential in combination effects from other plans and projects should be kept to a minimum provided the objectives of the Cork County Development Plan 2009–2015 are implemented especially the objective to complete Habitat Directive Assessments (Appropriate Assessments) for all plans and projects impacting on Cork Harbour or important wintering waterbird flightlines.

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4.8 Mitigation Measures

The potential significant impacts on the Cork Harbour SPA that may arise from the implementation of the variation to the Plan have been identified in **Section 4.5** and **Section 4.6**.

This section describes the **core mitigation measure** (proposed amendment to the Variation) to ensure that there are no adverse effects of wind turbine development on the integrity and conservation objectives of the Cork Harbour SPA.

It is imperative that a Habitats Directive Assessment, in compliance with Article 6 of the EU Habitats Directive, is prepared for each proposed development at the planning application stage *i.e.* project level.

Hence, the wording of the draft variation should be amended as follows:

**Table 4.2: Proposed variation to the Development Plan Wind Energy Objective INF 7-4
(Note: Black bold and underlined denotes proposed Variation and Orange bold and underlined denotes proposed amendment to proposed variation)**

Wind Energy Projects

- a) It is an objective to encourage prospective wind energy businesses and industries. In assessing potentially suitable locations for projects, potential wind farm developers should focus on the strategic search areas identified in the Plan and generally avoid wind energy projects in the strategically unsuitable areas identified in this Plan.
- b) It is an objective to support existing and established businesses and industries who wish to use wind energy to serve their own needs subject to proper planning and sustainable development. ***In particular, because of the potential for wind generated electricity to reduce the reliance of large scale industry on fossil fuel generated electricity, proposals located within the areas identified as suitable locations for large scale industrial development in Objective ECON 3-2 of this plan will be considered on their merits and subject to compliance with Article 6 of the EU Habitats Directive***
- c) It is an objective in the strategic search areas (and in those areas that are identified as neither strategic search areas nor strategically unsuitable areas), to consider new, or the expansion of existing, wind energy projects on their merits having regard to normal planning criteria including, in particular, the following:
 1. The sensitivity of the landscape and of adjoining landscapes to wind energy projects;
 2. The scale, size and layout of the project, any cumulative effects due to other projects, and

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Table 4.2: Proposed variation to the Development Plan Wind Energy Objective INF 7-4

(Note: Black bold and underlined denotes proposed Variation and Orange bold and underlined denotes proposed amendment to proposed variation)

- the degree to which impacts are highly visible over vast areas;
3. The visual impact of the project on protected views and prospects, and designated scenic landscapes as well as local visual impacts;
 4. The impact of the project on nature conservation, archaeology and historic structures;
 5. Local environmental impacts including noise and shadow flicker;
 6. The visual and environmental impacts of associated development such as access roads, plant, grid connections etc.
 7. The proximity and sensitivity of a recognised settlement,
 8. The impact of the project on archaeology and historic structures,
 9. The impact of nature conservation, in particular avoiding designated and proposed European sites.
- d) Similar criteria would be taken into account in the strategically unsuitable areas except that **(other than in areas to which Objective ECON 3-2 relates)** suitable projects will generally be on a smaller scale and on very special, carefully chosen sites.

Table 4.4: Proposed variation to the definition of Strategically Unsuitable Areas

(Note: Orange bold and underlined denotes proposed Variation)

- e) Areas which, because of high landscape sensitivity, are considered generally to be unsuitable for wind energy projects. While there may be a small number of locations within these areas with limited potential for small-scale wind projects, their contribution to any significant reduction in greenhouse gas emissions would be negligible. Except on a small scale and at particularly suitable locations, wind projects would normally be discouraged in these areas. ***However, because of the potential for wind generated electricity to reduce the reliance of large scale industry on fossil fuel generated electricity, for the avoidance of doubt, the areas identified as suitable locations for large scale industrial development in Objective ECON 3-2 of this plan are excluded from these areas and wind energy proposals in the areas referred to in ECON 3-2 will be considered on their merits and subject to compliance with Article 6 of the EU Habitats Directive***

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This amendment to the proposed variation will ensure that there are no adverse effects of wind turbine development on the Cork Harbour SPA.

The scope of each project's Habitat Directive Assessment must be agreed with the NPWS and Birdwatch Ireland prior to their commencement.

4.9 Conclusion

After completing the Habitats Directive Assessment process, it can be concluded that, once the mitigation measure of **Section 4.8** has been incorporated into the proposed wind energy policy, no significant negative effects on the Cork Harbour SPA are likely to arise as a result of the implementation of the proposed variation to Cork County Council Development Plan 2009-2015.

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5 References

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Appendix A
Site Synopses

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SITE NAME: CORK HARBOUR SPA

SITE CODE: 004030

Cork Harbour is a large, sheltered bay system, with several river estuaries – principally those of the Rivers Lee, Douglas and Owenacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Lough Beg, Whitegate Bay and the Rostellan inlet.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva lactua* and *Enteromorpha* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Laxflowered Sea-lavender (*Limonium humile*) and Sea Arrowgrass (*Triglochin maritima*). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Rostellan lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The five-year average annual core count for the entire harbour complex was 34,661 for the period 1996/97-2000/01. Of particular note is that the site supports an internationally important population of Redshank (1,614) – all figures given are average winter means for the 5 winters 1995/96-1999/00. A further 15 species have populations of national importance, as follows: Great Crested Grebe (218), Cormorant (620), Shelduck (1,426), Wigeon (1,750), Gadwall (15), Teal (807), Pintail (84), Shoveler (135), Red-breasted Merganser (90), Oystercatcher (791), Lapwing (3,614), Dunlin (4,936), Black-tailed Godwit (412), Curlew (1,345) and Greenshank (36). The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial. The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145), Golden Plover (805),

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Grey Plover (66) and Turnstone (99). Other species using the site include Bat-tailed Godwit (45), Mallard (456), Tufted Duck (97), Goldeneye (15), Coot (77), Mute Swan (39), Ringed Plover (51), Knot (31), Little Grebe (68) and Grey Heron (47). Cork Harbour is an important site for gulls in winter and autumn, especially Common Gull (2,630) and Lesser Black-backed Gull (261); Black-headed Gull (948) also occurs.

A range of passage waders occur regularly in autumn, including Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

The wintering birds in Cork Harbour have been monitored since the 1970s and are counted annually as part of the I-WeBS scheme.

Cork Harbour has a nationally important breeding colony of Common Tern (3-year mean of 69 pairs for the period 1998-2000, with a maximum of 102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Extensive areas of estuarine habitat have been reclaimed since about the 1950s for industrial, port-related and road projects, and further reclamation remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is a general threat. Recreational activities are high in some areas of the harbour, including jet skiing which causes disturbance to roosting birds.

Cork Harbour has is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its population of Redshank. In addition, there are at least 15 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, *i.e.* Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.

4.7.2004

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SITE NAME: GREAT ISLAND CHANNEL

SITE CODE: 001058

The Great Island Channel stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Geologically, Cork Harbour consists of two large areas of open water in a limestone basin, separated from each other and the open sea by ridges of Old Red Sandstone. Within this system, Great Island Channel forms the eastern stretch of the river basin and, compared to the rest of Cork Harbour, is relatively undisturbed. Within the site is the estuary of the Owennacurra and Dungourney Rivers. These rivers, which flow through Midleton, provide the main source of freshwater to the North Channel.

The main habitats of conservation interest are the sheltered tidal sand and mudflats and Atlantic salt meadows, both habitats listed on Annex I of the EU Habitats Directive. Owing to the sheltered conditions, the intertidal flats are composed mainly of soft muds. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algal species occur on the flats, especially *Ulva lactuca* and *Enteromorpha* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially at Rossleague and Belvelly. The salt marshes are scattered through the site and are all of the estuarine type on mud substrate. Species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Greater Sea-spurry (*Spergularia media*), Sea Lavender (*Limonium humile*), Sea Arrowgrass (*Triglochin maritimum*), Mayweed (*Matricaria maritima*) and Red Fescue (*Festuca rubra*).

The site is extremely important for wintering waterfowl and is considered to contain three of the top five areas within Cork Harbour, namely North Channel, Harper's Island and Belvelly-Marino Point. Shelduck are the most frequent duck species with 800-1000 birds centred on the Fota/Marino Point area. There are also large flocks of Teal and Wigeon, especially at the eastern end. Waders occur in the greatest density north of Rosslare, with Dunlin, Godwit, Curlew and Golden Plover the commonest species. A population of about 80 Grey Plover is a notable feature of the area. All the mudflats support feeding birds; the main roost sites are at Weir Island and Brown Island and to the north of Fota at Killacloyne and Harper's Island. Ahanesk supports a roost also but is subject to disturbance. The numbers of Grey Plover and Shelduck, as given above, are of national importance.

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The site is an integral part of Cork Harbour which is a wetland of international importance for the birds it supports. Overall, Cork Harbour regularly holds over 20,000 waterfowl and contains Internationally important numbers of Black-tailed Godwit (1,181) and Redshank (1,896) along with Nationally important numbers of nineteen other species. Furthermore, it contains the large Dunlin (12,019) and Lapwing (12,528) flocks. All counts are average peaks, 1994/95 – 1996/97. Much of the site forms part of Cork Harbour Special Protection Area, an important bird area designated under the EU Birds Directive.

While the main land use within the site is aquaculture (Oyster farming), the greatest threats to its conservation significance come from road works, infilling, sewage outflows and possible marina developments.

The site is of major importance for the two habitats listed on the EU Habitats Directive that it contains, as well as for its important numbers of wintering waders and wildfowl. It also supports a good invertebrate fauna.

2.10.2001

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Appendix B
NPWS Scoping Response

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Comhshaoil, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government



1st September 2010

WYG Ireland,
Unit 2,
University Technology Centre,
Curraheen Road,
Bishopstown,
Cork.

Our Ref: G2010/437

Re: Ringaskiddy wind energy proposed Variation to Cork County Development Plan.

A chara,

I refer to your scoping request of 4 August 2010 in relation to the above proposed variation. Further to my letter of 30th August outlining archaeological and architectural heritage observations please find below the recommendations of the Department of the Environment, Heritage and Local Government relating to nature conservation.

For the avoidance of doubt, the amended wording to both INF 7-4 and Table 3.3 (of the SEA Scoping Report) should have the clause added as follows (in italics): "... will be considered on their merits and subject to compliance with Article 6 of the EU Habitats Directive."

In the absence of this amended wording, it is recommended that the variation be not adopted until detailed data becomes available allowing a conclusion of no adverse effects of wind turbine development within the area outlined on Cork Harbour Special Protection Area (SPA).

Is mise le meas,

David Tuohy
Development Applications Unit
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*Please note – our new address for all correspondence is:
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