APPROPRIATE ASSESSMENT SCREENING OF PROPOSED BELGARD ROAD TO COOKSTOWN LINK ROAD AT BELGARD SQUARE NORTH, DUBLIN 24

Prepared October 2017 by on behalf of South Dublin Co. Council by:

Forest, Environmental Research and Services Ltd.
Sillogue
Kilberry
Navan
Co. Meath
046 9062021/087 7573121
dr_patmoran@eircom.net
OSI License No.:EN0064509

Non-technical Summary

South Dublin County Council (SDCC) is in the process of considering the provision of a new link road between Belgard Square North and Cookstown Road. The proposed site is within 15 km of seven Special Areas of Conservation and four Special Protection Areas. As such, and in accordance with the Precautionary Principle, the proposed development requires Appropriate Assessment in order to comply with article 6(3) of the Habitats Directive. Screening having identified no significant potential impacts, Phase II Appropriate Assessment and the preparation of a Natura Impact Statement was not deemed necessary. The proposed development will have no significant impact upon the Natura 2000 network.

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1 Introduction

1.1 FERS Ltd. Company background

Forest, Environmental Research and Services have been conducting ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr Moran, the principal ecologist with FERS, has a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD) and a M.Sc. in Geographical Information Systems and Remote Sensing (University of Ulster, Coleraine). Dr Moran has in excess of 15 years of experience in carrying out ecological surveys on both an academic and a professional basis. Dr Emma Reeves, senior ecologist with FERS has an honours degree in Botany, and a Ph.D. in Botany. Dr Reeves has almost 10 years of experience in undertaking ecological surveys on an academic and professional basis. Ciaran Byrne, a Junior Ecologist with FERS holds a first class honours degree in Environmental Management (DIT) and a M.Sc. in Applied Science/Ecological Assessment (UCC).

FERS client list includes National Parks and Wildlife Service, An Bord Pleanála, various County Councils, the Heritage Council, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, the Office of Public Works, Coillte and Drogheda Port Company in addition to numerous private individuals and companies. FERS Ltd. has prepared in excess of 300 Appropriate Assessments of a wide range of plans and projects.

1.2 The aim of this report

This report has been prepared in compliance with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2009, February 2010) and the European Communities (Birds and Natural Habitats) Regulations 2011 (DoEHLG 2011) in support of the Appropriate Assessment Screening of a proposed new link road between Belgard Square North and Cookstown Road. The proposed site is within 15 km of seven Special Areas of Conservation and four Special Protection Areas. As such, the proposed development requires Appropriate Assessment screening in accordance with article 6(3) of the Habitats Directive. This report provides the information required in order to establish whether or not the proposed development is likely to have a significant ecological impact on any Natura 2000 sites, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

1.3 An outline of the Appropriate Assessment process

The "Habitats Directive" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A "Special Conservation Area" or SAC is a designation under the Habitats Directive.

The "Birds Directive" (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection. A "Special Protection Area" or SPA, is a designation under The Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites.

The Habitats Directive sets out the protocol for the protection and management of SACs. The Directive sets out key elements of the system of protection including the requirement for Appropriate Assessment of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive respectively, state:

> "*…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 appropriate, after having obtained the opinion of the general public….*"
>
> "*…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 over-riding 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….*"

1.4 Methodology for Appropriate Assessment

A number of guidance documents on the appropriate assessment process have been consulted during the preparation of this NIS. These are:

- Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000);
- Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (Nov. 2001 – published 2002);
- EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (2007);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG 2009, Revised February 2010); and
- European Communities (Birds and Natural Habitats) Regulations 2011 (DoEHLG 2011).

The assessment requirements of Article 6 are generally dealt with in a stage by stage approach. The stages as outlined in "Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities" are:

1.4.1 Stage (1) Screening

This initial process identifies the likely impacts of a proposed project or plan upon a Natura 2000 site, either alone, or in combination with other projects or plans and considers whether these impacts are likely to be significant.

1.4.2 Stage (2) Appropriate Assessment

The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

1.4.3 Stage (3) Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

1.4.4 Stage (4) Assessment where Adverse Impacts Remain

An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

At each stage, there is a determination as to whether a further stage in the Appropriate Assessment process is required. If, for example, the conclusions of the Screening stage indicate that there will be no significant impacts on the Natura 2000 site, there is no requirement to proceed further. Appropriate Assessment stages 1 and 2 deal with the main requirements for assessment under Article 6.3. Stage 3 may be part of Article 6(3) or a necessary precursor for Stage 4. This report is comprised of the ecological impact assessment and testing required under the provisions of Article 6(3) by means of the first stage of Appropriate Assessment, the screening process (as set out in the EU Guidance documents).

EU guidance states:

"…This stage examines the likely effects of a project or plan, either alone or in combination with other projects or plans, upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant...".

This report has been undertaken in accordance with the European Commission's Guidance on Appropriate Assessment (European Commission, 2001) which comprises the following:

1. Description of the Plan.
2. Identification of Natura 2000 sites potentially affected by the Plan.
3. Identification and description of individual and cumulative impacts likely to result from the Plan.
4. Assessment of the significance of the impacts identified on the conservation objectives of the site(s).
5. Exclusion of sites where it can be objectively concluded that there will be no significant impacts on conservation objectives.

1.5 Consultations

The primary body consulted with regard to matters involving Natura 2000 sites is the National Parks and Wildlife Service (NPWS). The role of the NPWS is:

- To secure the conservation of a representative range of ecosystems and maintain and enhance populations of flora and fauna in Ireland.
- To implement the EU Habitats and Birds Directives.
- To designate and advise on the protection of Natural Heritage Areas (NHA) having particular regard to the need to consult with interested parties.
- To make the necessary arrangements for the implementation of National and EU legislation and policies and for the ratification and implementation of the range of international Conventions and Agreements relating to the natural heritage.
- To manage, maintain and develop State-owned National Parks and Nature Reserves.

Information pertaining to Natura 2000 sites within the Republic of Ireland is typically held by NPWS and is publically accessible through their on-line database at www.npws.ie . Consultations carried out involved searching through the NPWS database for information pertaining to the potential impact of the surveying on Natura 2000 sites within 15 km of the proposed works. A consultation meeting with NPWS was not undertaken.

2 Screening

Following the guidelines set out by NPWS (2009), Appropriate Assessment Screening (Phase I Appropriate Assessment) is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the EU Habitats Directive. According to the guidelines as laid by NPWS (2009), Appropriate Assessment Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

(1) Is the plan or project directly connected to or necessary for the management of the site?

(2) Is the plan or project, alone or in combination with other such plans or projects likely to have significant negative effects on a Natura 2000 site(s) in view of the conservation objectives of that site(s)?

The proposed works do not comply with the first screening test (i.e. the proposed works are not directly connected to, or necessary for the management of any Natura 2000 site). The screening exercise will therefore inform the Appropriate Assessment process in determining whether the proposed works, alone or in combination with other plans and projects, are likely to have significant effects on the Natura 2000 sites within the study area. If the effects are deemed to be significant, potentially significant, or uncertain, or it the screening process becomes overly complicated, then applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment is required stage, i.e., "*The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.*"

2.1 Description

2.1.1 Description of works

South Dublin County Council (SDCC) is in the process of considering the provision of a new link road Belgard Square North to Cookstown Road. The proposed new link road is approximately 100 metres in length and the width varies between 2 metres and 14 metres. The scheme extends through a disused industrial site. The Scheme proposes clearing all vegetation from the road corridor and excavating to a level determined by geotechnical engineers to build the road (Typically 750mm-1250mm deep). The location of the industrial estate site is indicated in Figure 1, Figure 2, Figure 3 and Figure 4. The survey area within the industrial estate site is indicated in Figure 5. Draft plans for the road scheme are illustrated in Figure 6. In October of 2017, FERS Ltd was commissioned to provide an ecological survey of the survey area within the industrial estate site.

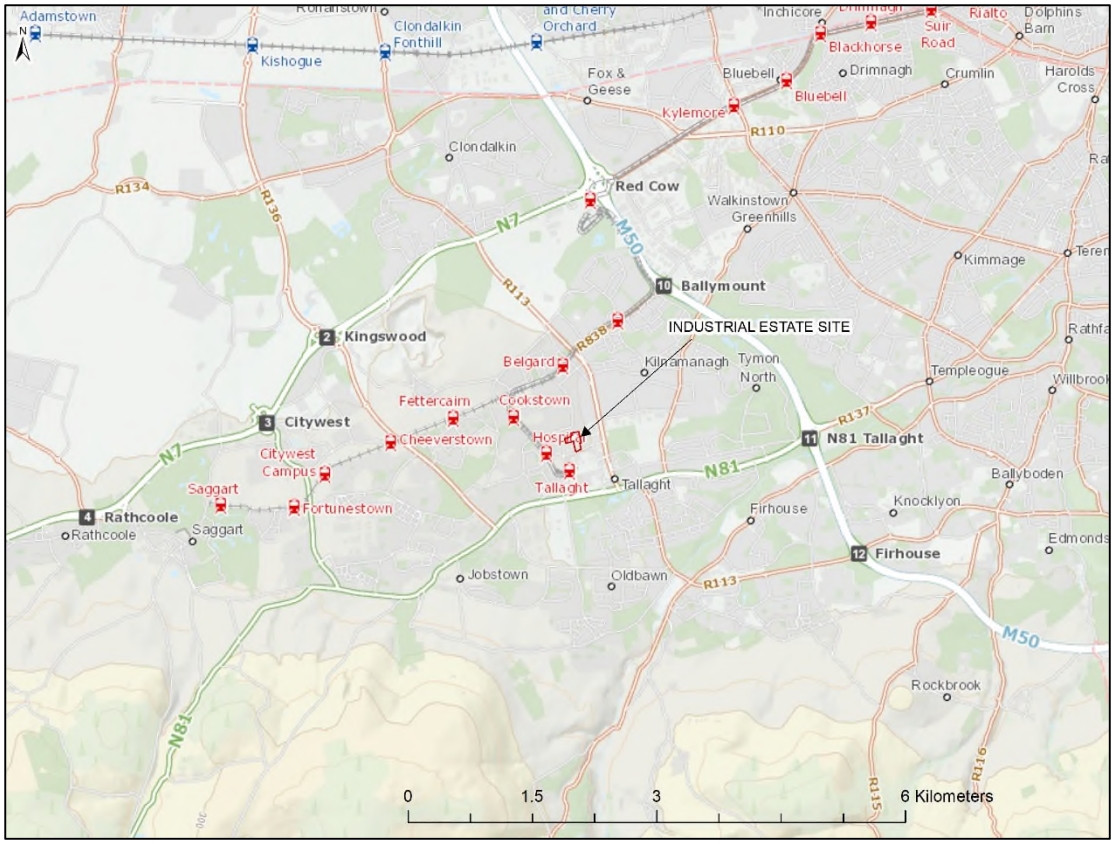

Figure 1: Approximate location of industrial estate site (1:50,000)

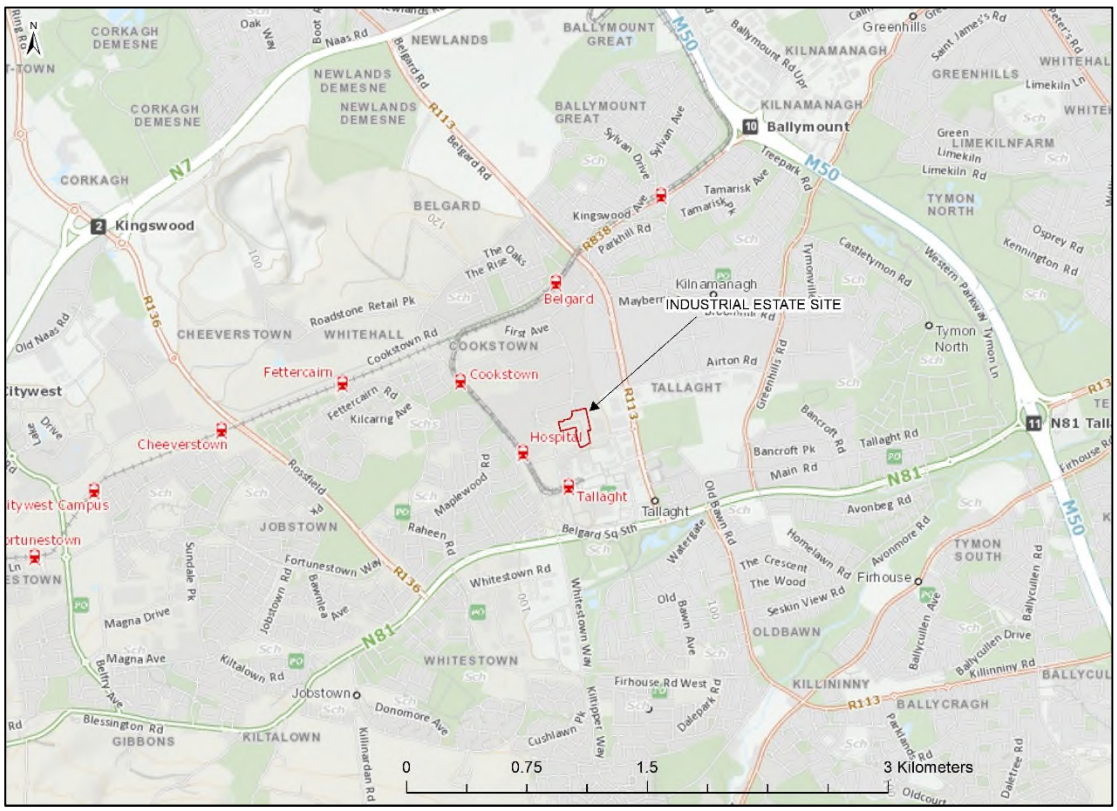

Figure 2: Approximate location of industrial estate site (1:25,000)

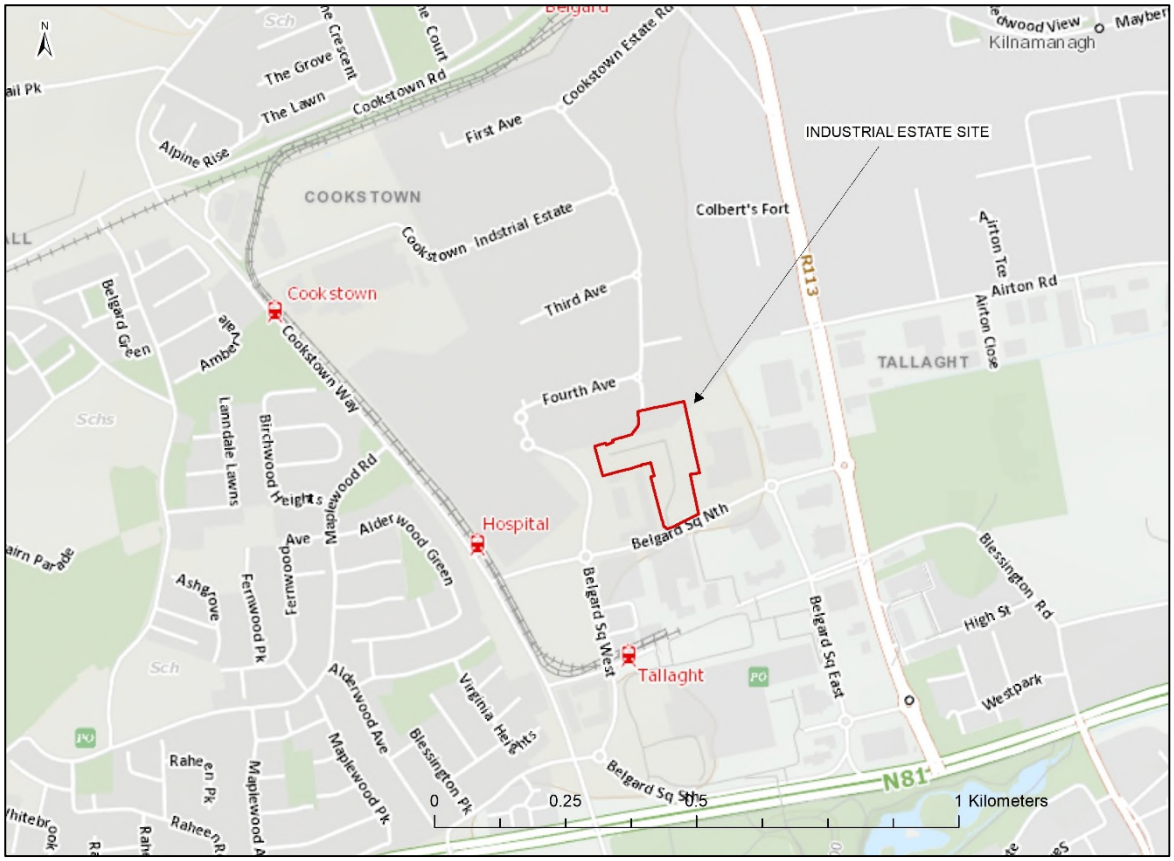

Figure 3: Approximate location industrial estate site (scale 1:8,000)

Figure 4: Aerial imagery indicating location of industrial estate site (1:2000)

Figure 5: Map provided by SDCC indicating approximate extent of survey area overlain on aerial imagery

Figure 6: Proposed road scheme Belgard Square North – Cookstown Industrial Estate (extract from Part 8 Planning Draft)

2.1.2 Description of existing conditions at site

The survey area as outlined in Figure 5 is comprised of three habitats:

- Grassland best described as “Dry meadow and Grassy Verges (GS2)”;
- Developing scrub (WS1); and
- Artificial surfaces and Buildings (BL3).

A general habitat map (generated in ArcGIS 10.2) presenting the distribution of habitat types within the study area to Fossitt Level 3 is presented in Figure 7.

Figure 7: Habitat map of survey area overlain on digital globe satellite imagery

There were no habitats listed on Annex I of the EU Habitats Directive observed during the site visit. There were no species listed on Annex II of the EU Habitats Directive observed during the course of the field visit. Peregrine Falcon, a species listed on Annex I of the EU Birds Directive was observed flying over the site, but not using the habitats present at the site directly. There were no plant species listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011.

It is of note that there was abundant evidence of use of the area for antisocial behaviour, with evidence for alcohol and drug abuse. Photographs of the habitats present are provided in Figure 8, Figure 9 and Figure 10.

Figure 8: Photograph illustrating grassland habitat occurring

Figure 9: Grassland habitat grading into scrub

Figure 10: Well established scrub habitat, with young fruiting apple tree

2.2 Description of scope

The geographical scope of the assessment is the 15 km buffer zone around the proposed works. Given the nature of the works, the "Zone of Influence" is restricted to the immediate vicinity of the proposed works.

2.3 Identification of Natura 2000 sites potentially impacted upon by the surveying and "Zone of Influence"

It is general practice, when screening a plan or project for compliance with the Habitats Directive, to identify all Natura 2000 sites within the functional area of the plan/project itself and within 15 km of the boundaries of the area the plan/project applies to (with an appropriate "Zone of Influence" identified from any Source-Pathway-Receptor linkages). This approach is currently recommended in the Department of the Environmental, Heritage and Local Government's document Guidance for Planning Authorities and as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the screening process. The maintenance of habitats and species within individual Natura 2000 sites at favourable conservation condition contributes to the overall maintenance of favourable conservation status of those habitats and species at a national level. It is therefore necessary to identify any potential impacts of the proposed surveying on the conservation status of Natura 2000 sites. The National Parks and Wildlife Service deem that the favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, is stable or increasing.
- The ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.

The National Parks and Wildlife Service deem that the favourable conservation status of a species is achieved when:

- Population data on the species concerned indicate that it is maintaining itself.
- The natural range of the species is neither being reduced, or likely to be reduced in the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

There are seven areas designated as a special area of conservation (SAC), and four areas designated as a special protection area within 15 km of the proposed works (see Table 1, Figure 11 and Figure 12– mapping based on NPWS shapefiles SAC_ITM_2016_09 and SPA_ITM_2016_09).

Table 1: Natura 2000 sites within 15km of the proposed surveying works

Site Code	Designation	Site Name
000206	SAC	NORTH DUBLIN BAY
000210	SAC	SOUTH DUBLIN BAY
000397	SAC	RED BOG KILDARE
000725	SAC	KNOCKSINK WOOD
001209	SAC	GLENASMOLE VALLEY
001398	SAC	RYE WATER VALLEY/CARTON
002122	SAC	WICKLOW MOUNTAINS
004006	SPA	NORTH BULL ISLAND
004024	SPA	SOUTH DUBLIN BAT AND RIVER TOLKA ESTUARY SPA
004040	SPA	WICKLOW MOUNTAINS
004063	SPA	POULAPHOUCA RESERVOIR

Figure 11: Location of proposed works relative to SACs

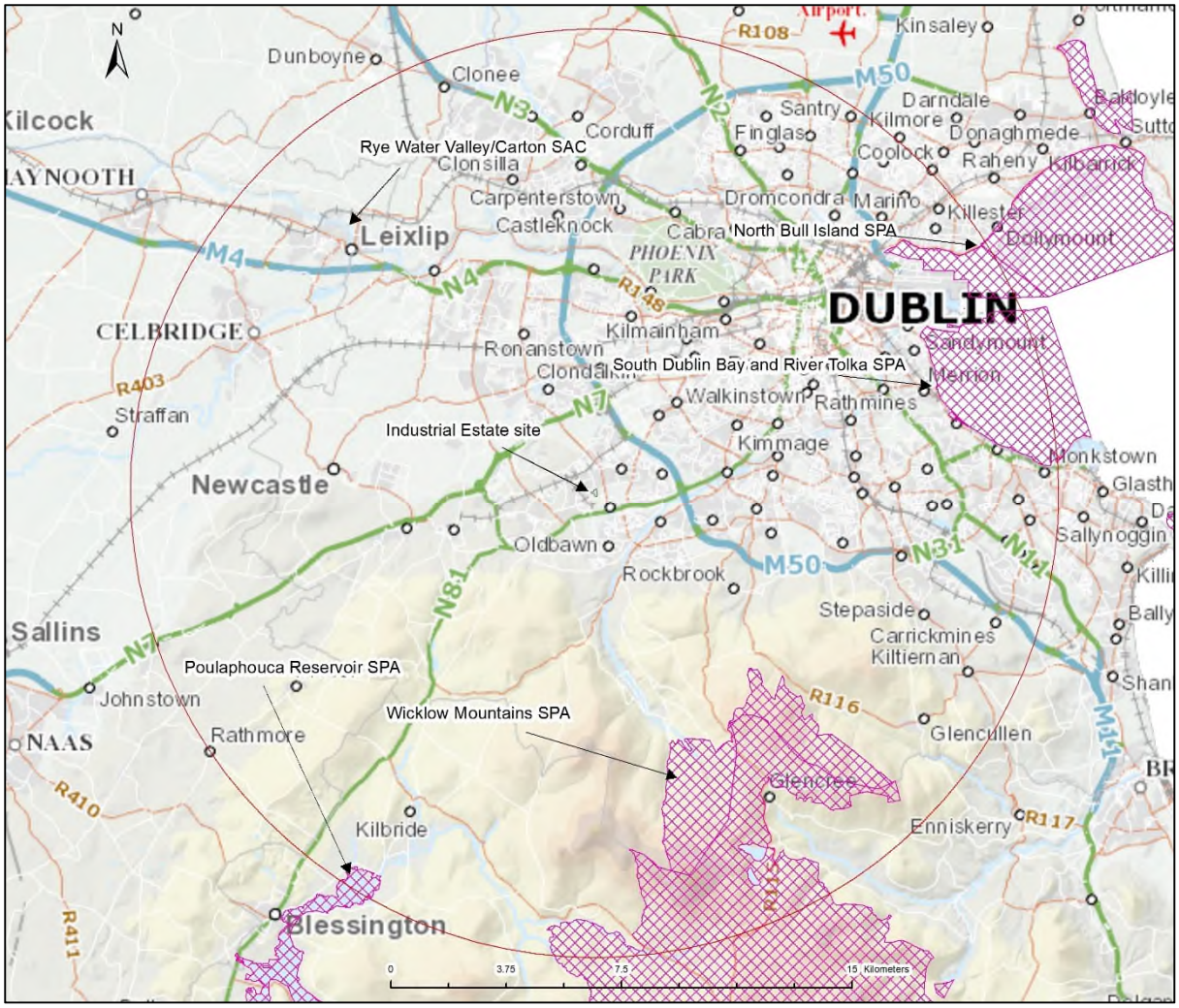

Figure 12: Location of proposed works relative to SPAs

2.4 Identification of "Zone of Influence" and S-P-R linkages

Owing to the nature and location of the proposed works, the "Zone of Influence" is limited to the immediate vicinity of the proposed works. Analysis of the proximity of the proposed works sites to water courses utilizing GIS (ArcGIS 10.2) indicates that there are no water courses within 400m of the proposed works site (see Figure 13). It must be noted, however, that the link road will be serviced by the existing storm water system, which eventually discharges to Dublin Bay.

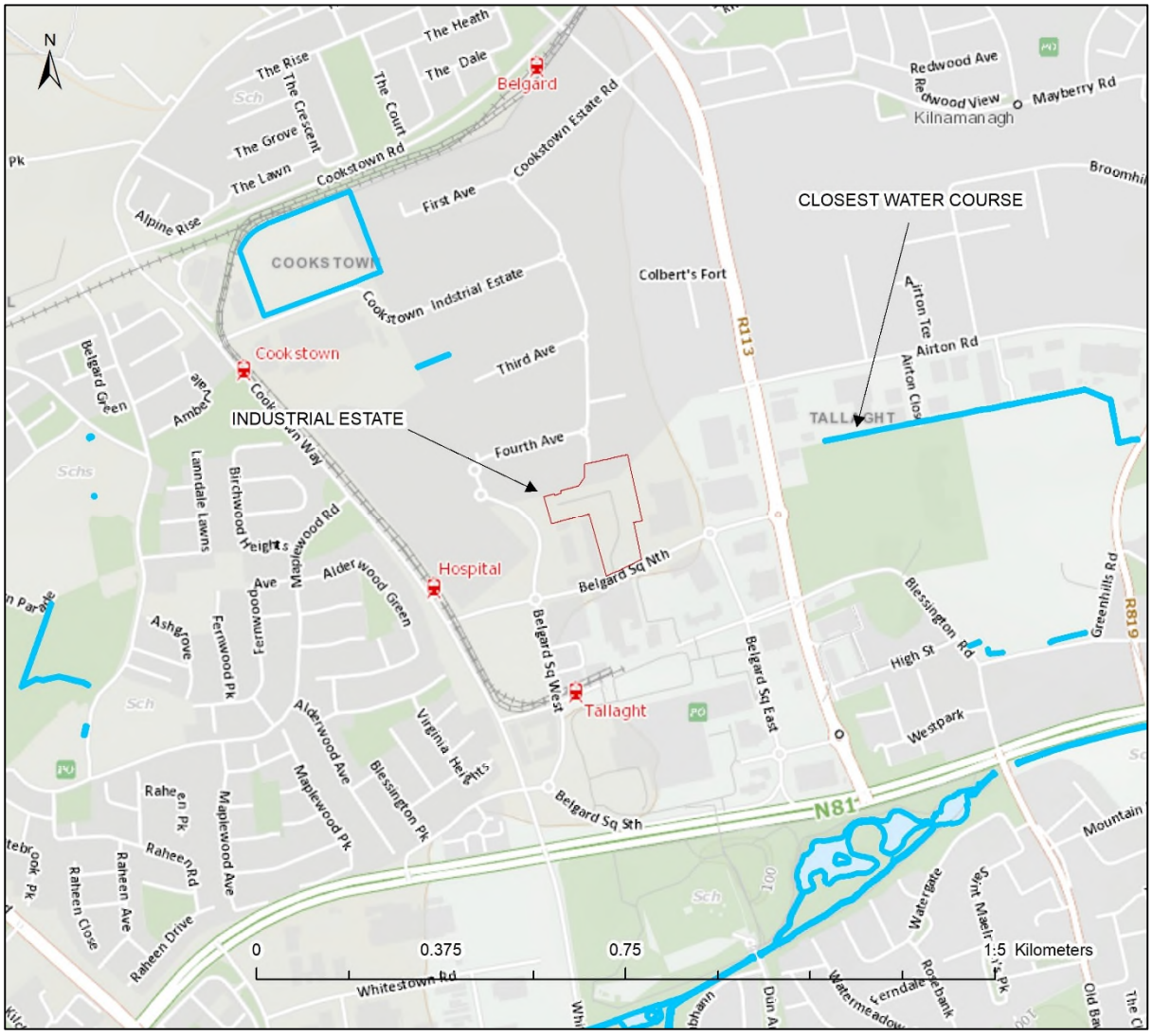

Figure 13: Map indicating nearest water course to the proposed disused industrial estate in which links road will be constructed

2.5 Description of Natura 2000 sites potentially impacted upon by the proposed works

Please note that it is the goal of NPWS to draw up conservation plans for all areas designated for nature conservation, and that these plans will, among other things, set clear objectives for the conservation of the features of interest within a site. Where a detailed Conservation Objectives Document is not available, NPWS have provided a site synopsis, generic Conservation Objectives and a Natura 2000 data form from which information is sourced.

In this section, the Natura 2000 sites potentially impacted upon by the proposed works are described according to:

1) General description of the site;
2) Qualifying Interests (QI) of the site;
3) Threats, pressures and activities with negative impacts on the site;
4) Conservation Objectives of the site; and
5) Conservation status of the site.

The codes utilized within the Natura 2000 forms are available from http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

A description of the Natura 2000 sites potentially impacted upon by the proposed works including conservation objectives, qualifying interests, vulnerability and conservation status of habitats/species within individual sites and conservation status of qualifying interests on a national basis, is provided as follows.

2.5.1 North Dublin Bay SAC (Site synopsis version date 12/08/13, Natura 2000 form update 12/15, Conservation Objectives Version 1, 06/11/13)

2.5.1.1 General description

The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5km long and 1km wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. Between the island and the mainland there occurs two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. The interior of the island is excluded from the site as it has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main land-use within the site. Site possesses an excellent diversity of coastal habitats. The North

Bull Island dune system is one of the most important systems on the east coast and is one of the few in Ireland that is actively accreting. It possesses extensive and mostly good quality examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Both Atlantic and Mediterranean salt marshes are well represented and a particularly good marsh zonation is shown. The salt marshes grade into mudflats and sandflats, some of which are dominated by annual Salicornia species. *Petalophyllum ralfsii* occurs at its only known station away from the western seaboard. The site has five Red Data Book vascular plant species and four Red Data Book bryophyte species. This is one of the most important sites for wintering waterfowl in Ireland, with internationally important populations of *Branta bernicla horta*, *Calidris canutus* and *Limosa lapponica*, plus nationally important numbers of a further 14 species. 20% of the national total of *Pluvialis squatarola* occurs here. Formerly it had important colony of *Sterna albifrons*. North Dublin Bay is nationally important for three insect species. The scientific interests of the site have been well documented and future prospects are good owing to the various designations assigned to site.

2.5.1.2 Qualifying Interests

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000206.pdf

Details from this document are reproduced here. The qualifying interests of the site are identified in Table 2.

Table 2

Qualifying Interests

** indicates a priority habitat under the Habitats Directive*

000206	North Dublin Bay SAC
1140	Mudflats and sandflats not covered by seawater at low tide
1210	Annual vegetation of drift lines
1310	*Salicornia* and other annuals colonising mud and sand
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
1395	Petalwort *Petalophyllum ralfsii*
1410	Mediterranean salt meadows (Juncetalia maritimi)
2110	Embryonic shifting dunes
2120	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)*
2190	Humid dune slacks

2.5.1.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites, and are illustrated in Table 3.

Table 3

Negative Impacts

Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	F02.03		i
M	G01.01		i
M	F02.03.01		i
L	I01		i
H	G01.02		i
H	E01		o
H	G02.01		o
M	A04		i
H	E03		i
H	E02		o

Positive Impacts

Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	A04		i
L	F02.03		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.1.4 Conservation Objectives of the site

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000206.pdf

Details from this document are reproduced in Table 4, Table 5, Table 6, Table 7, Table 8, Table 9, Table 10, Table 11, Table 12 and Table 13

Table 4

Conservation Objectives for : North Dublin Bay SAC [000206]			
1140	**Mudflats and sandflats not covered by seawater at low tide**		
To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay SAC, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 3	Habitat area was estimated using OSi data as 578ha
Community extent	Hectares	Maintain the extent of the *Mytilus edulis*-dominated community, subject to natural processes. See map 4	Estimated during site walkover in March 2012. See marine supporting document for further information
Community structure: *Mytilus edulis* density	Individuals/m²	Conserve the high quality of the *Mytilus edulis*-dominated community, subject to natural processes	Observed during site walkover in March 2012. See marine supporting document for further details
Community distribution	Hectares	Conserve the following community types in a natural condition: Fine sand to sandy mud with *Pygospio elegans* and *Crangon crangon* community complex; Fine sand with *Spio martinensis* community complex. See map 4	Based on an intertidal survey undertaken in 2010 (ASU, 2011). See marine supporting document for further information

Table 5

Conservation Objectives for : North Dublin Bay SAC [000206]

1210 Annual vegetation of drift lines

To restore the favourable conservation condition of Annual vegetation of drift lines in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area increasing, subject to natural processes, including erosion and succession. Total area mapped: South Bull - 0.11ha. See map 6	Based on data from the Sand Dune Monitoring Project (SDM) (Delaney et al., 2013). Habitat is very difficult to measure in view of its dynamic nature, which means that it can appear and disappear within a site from year to year. This habitat was recorded from both North Bull and South Bull sub-sites by the Coastal Monitoring Project (CMP) (Ryle et al., 2009) but was only recorded in South Bull by the SDM. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 6	Based on data from Delaney et al., (2013). Strandline is more extensive at South Bull sub-site than at North Bull. See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Delaney et al., (2013). As well as the transitions between sand dune habitats, the transitions from sand dune to saltmarsh communities at Bull Island are of significant value. See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*), prickly saltwort (*Salsola kali)* and orache (*Atriplex* spp.)	Based on data from Delaney et al., (2013). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. See coastal habitats supporting document for further details

Table 6

Conservation Objectives for : North Dublin Bay SAC [000206]

1310 ***Salicornia*** **and other annuals colonising mud and sand**

To restore the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 29.10ha. See map 5	Based on data from Saltmarsh Monitoring Project (SMP) (McCorry, 2007). Habitat surveyed and mapped at a single sub-site, giving a total estimated area of 29.10ha, including mosaics. NB some further small unsurveyed areas may be present within this site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 5 for known distribution	Based on data from McCorry (2007). *Salicornia* is an annual species, so its distribution can vary significantly from year to year. The largest area of *Salicornia* flats occurs north of the central causeway. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry (2007). Sediment supply is particularly important for this pioneer saltmarsh community, as its distribution depends on accretion rates. It appears that the extent of the *Salicornia* flats was much lower before the construction of the causeway. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry (2007). Creeks deliver sediment throughout the saltmarsh system. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Based on data from McCorry (2007). This pioneer saltmarsh community requires regular tidal inundation. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry (2007). At Bull Island there are transitional communities between the *Salicornia* flats, Atlantic salt meadows and Mediterranean salt meadows. These saltmarsh habitats also form transitional communities with a range of sand dune habitats. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from McCorry (2007). Wildfowl and water birds graze and forage on the *Salicornia* flats at Bull Island. See coastal habitats supporting document for details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Based on data from McCorry (2007). See coastal habitats supporting document for details
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)	Based on data from McCorry (2007). See coastal habitats supporting document for further details
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Based on data from McCorry (2007). *Spartina* is frequent at Bull Island. While it occurs within a mosaic with *Salicornia* flats, it generally does not dominate the vegetation cover and only forms small swards. See coastal habitats supporting document for further details

Table 7

Conservation Objectives for : North Dublin Bay SAC [000206]

1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

To maintain the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 81.84ha. See map 5	Based on data from Saltmarsh Monitoring Project (SMP) (McCorry, 2007). Atlantic salt meadow (ASM) surveyed and mapped at a single site, giving an estimated area of 81.84ha, including mosaics. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 5 for known distribution	Based on data from McCorry (2007). The ASM at Bull Island was the largest single section of saltmarsh surveyed by the SMP in 2006. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry (2007). The construction of the causeway had a significant impact on the saltmarsh at Bull Island. Within the ASM there is some erosion at a slow rate at the seaward side of the northern tip. This erosion is offset by accretion along the northside of the causeway. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry (2007). Within Bull Island, the ASM topography is well developed and there is a very complex creek and salt pan structure. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry (2007). At Bull Island there are transitional communities between the *Salicornia* flats, Atlantic salt meadows and Mediterranean salt meadows. These saltmarsh habitats also form transitional communities with a range of sand dune habitats. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from McCorry (2007).There is some light grazing by hares (*Lepus timidus hibernicus*) and wildfowl. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated	Based on data from McCorry (2007). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009)	See coastal habitats supporting document for further details
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Based on data from from McCorry (2007). *Spartina* is widely distributed on ASM though found at low cover values. See coastal habitats supporting document for further details

Table 8

Conservation Objectives for : North Dublin Bay SAC [000206]

1410 Mediterranean salt meadows (Juncetalia maritimi)

To maintain the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha. See map 5	Based on data from the Saltmarsh Monitoring Project (SMP) (McCorry, 2007). One sub-site that supports Mediterranean Salt Meadow (MSM) was surveyed and mapped, giving an estimated area of 7.98ha, including mosaics. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 5 for known distribution	Based on data from McCorry (2007). The MSM is restricted to the area north of the causeway along the boundary with dune habitats and of St Annes Golf Course; the extent of the habitat here is likely to have been greater in the past. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry (2007). See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry (2007). The MSM at North Bull Island not as well developed as the ASM. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	MSM is found high up in the saltmarsh but requires occasional tidal inundation. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry (2007). At Bull Island there are transitional communities between the *Salicornia* flats, Atlantic salt meadows and Mediterranean salt meadows. These saltmarsh habitats also form transitional communities with a range of sand dune habitats. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward	Based on data from McCorry (2007). There is some light grazing by hares (*Lepus timidus hibernicus*) and wildfowl. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Based on data from McCorry (2007). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with characteristic species listed in SMP (McCorry and Ryle, 2009)	See coastal habitats supporting document for further details
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Based on data from McCorry (2007). *Spartina* is widely distributed at this site. See coastal habitats supporting document for further details

Table 9

Conservation Objectives for : North Dublin Bay SAC [000206]

2110 Embryonic shifting dunes

To restore the favourable conservation condition of Embryonic shifting dunes in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: North Bull - 2.64ha; South Bull - 3.43ha. See map 6	Based on data from the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Embryo dunes were surveyed and mapped at two sub-sites, giving a total estimated area of 6.07ha. Habitat is very difficult to measure in view of its dynamic nature and is more extensive on North Bull than South Bull. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on data from Delaney et al. (2013). Mechanical beach cleaning may be contributing to limited distribution of this habitat, particularly at South Bull. See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. At North Bull, movement of sediment towards the recurved northern tip of the dune has resulted in the formation of a wide area of foredune habitat. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Delaney et al. (2013). As well as the transitions between sand dune habitats, the transitions from sand dune to saltmarsh communities at Bull Island are of significant value. See coastal habitats supporting document for further details
Vegetation composition: plant health of foredune grasses	Percentage cover	More than 95% of sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Delaney et al. (2013). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*)	Based on data from Delaney et al. (2013). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. See coastal habitats supporting document for further details

Table 10

Conservation Objectives for : North Dublin Bay SAC [000206]

2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. North Bull - 2.20ha; South Bull - 0.97ha. See map 6	Based on data from the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). These dunes were surveyed and mapped at two sub-sites, giving a total estimated area of 3.18ha. Habitat is very difficult to measure in view of its dynamic nature. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on Delaney et al. (2013). At South Bull and North Bull this habitat forms a continuous strip at or near the seaward edge of the dunes. See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Marram grass (*Ammophila arenaria*) reproduces vegetatively and requires constant accretion of fresh sand to maintain active growth encouraging further accretion. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Gaynor (2008) and Delaney et al. (2013). As well as the transitions between sand dune habitats, the transitions from sand dune to saltmarsh communities at Bull Island are of significant value. See coastal habitats supporting document for further details
Vegetation composition: plant health of dune grasses	Percentage cover	95% of marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Delaney et al. (2013). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*)	Based on data from Delaney et al. (2013). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Delaney et al. (2013). Negative indicators include non-native species; species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. See coastal habitats supporting document for further details

Table 11

Conservation Objectives for : North Dublin Bay SAC [000206]

2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For sub-sites mapped: North Bull - 40.29ha; South Bull - 64.56ha. See map 6	Based on data from the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Habitat was surveyed and mapped at two sub-sites to give a total estimated area of 104.85ha. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on data from Delaney et al. (2013). See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation resulting in increased rates of erosion. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Delaney et al. (2013). As well as the transitions between sand dune habitats, the transitions from sand dune to saltmarsh communities at Bull Island are of significant value. See coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes	Based on data from Gaynor (2008) and Delaney et al. (2013). Pedestrian tracks that are devoid of vegetation occur throughout the island. See coastal habitats supporting document for further details
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward	Based on data from Delaney et al. (2013). Grazing by livestock is absent from the island. However, the dunes are grazed by rabbits (*Oryctolagus cuniculus*) and hares (*Lepus timidus hibernicus*). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney et al. (2013)	Based on data from Gaynor (2008) and Delaney et al. (2013). The protected and Red Data Book species red hemp nettle (*Galeopsis angustifolia*), meadow saxifrage (*Saxifraga granulata*), wild clary (*Salvia verbenaca*) and spring vetch (*Vicia lathyroides*) represent indicators of local distinctiveness. See coastal habitats supporting document for further details.
Vegetation composition: negative indicator species (including *Hippophae rhamnoides*)	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. It occurs as occasional patches at this site. See coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Delaney et al. (2013). There are numerous small trees and shrubs throughout the site but are not currently a significant management issue. See coastal habitats supporting document for further details

Table 12

Conservation Objectives for : North Dublin Bay SAC [000206]			
2190	**Humid dune slacks**		
To restore the favourable conservation condition of Humid dune slacks in North Dublin Bay SAC, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Habitat area	Hectares	Area increasing, subject to natural processes including erosion and succession. For sub-sites mapped: North Bull – 2.96ha; South Bull - 9.15ha. See map 6	Based on data from the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Habitat was surveyed and mapped at two sub-sites to give a total estimated area of 12.11ha. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on data from Delaney et al. (2013). The dune slack on North Bull consists of a long stretch of habitat that lies between successive dune ridges over a distance of approx. 700m. The dune slack topography is similar on South Bull with a number of individual long slacks between dune ridges. See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation, resulting in increased rates of erosion. See coastal habitats supporting document for further details
Physical structure: hydrological and flooding regime	Water table levels; groundwater fluctuations (metres)	Maintain natural hydrological regime	Based on data from Delaney et al. (2013). On Bull Island there is some concern that the alder marsh at the North Bull is becoming increasingly brackish in nature. There is also the potential problem of fertiliser run-off, leading to an increase in nutrient levels. Water abstraction could result in a lowering of the water table, negatively affecting the dune slacks. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Gaynor (2008) and Delaney et al. (2013). As well as the transitions between sand dune habitats, the transitions from sand dune to saltmarsh communities at Bull Island are of significant value. The transitional area between the fixed dunes and dune slacks are particularly important for a range of rare bryophytes (Lockhart et al., 2012). See coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground	Based on data from Gaynor (2008), Ryle et al. (2009) and Delaney et al. (2013). Walking tracks traverse the dune slack at North Bull and have led to some erosion and poaching of soil. The slacks at the South Bull are close to the main access points to the island and pedestrian tracks have been created, leading to some erosion of vegetation cover. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from Gaynor (2008), Ryle et al. (2009) and Delaney et al. (2013). Grazing by livestock is absent from the island. However, the dunes are grazed by rabbits (*Oryctolagus cuniculus*) and hares (*Lepus timidus hibernicus*). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney et al. (2013)	Based on data from Gaynor (2008) and Delaney et al. (2013). The Annex II liverwort, petalwort (*Petalophyllum ralfsii*) has its only station away from the western seaboard at this site. See coastal habitats supporting document and conservation objective for 1395 for further details. See coastal habitats supporting document for further details
Vegetation composition: cover of *Salix repens*	Percentage cover; centimetres	Maintain less than 40% cover of creeping willow (*Salix repens*)	Based on data from Delaney et al. (2013). Cover of creeping willow (*Salix repens*) needs to be controlled (e.g. by an appropriate grazing regime) to prevent the development of a coarse, rank vegetation cover. See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. Patches of the shrub, particularly near the golf course boundaries, need to be kept in check on both the North and South Bull. See coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Delaney et al. (2013). There are numerous shrubs and small trees throughout both sub-sites, but not to an extent that would require intensive management. See coastal habitats supporting document for further details

Table 13

Conservation Objectives for : North Dublin Bay SAC [000206]

1395 Petalwort *Petalophyllum ralfsii*

To maintain the favourable conservation condition of Petalwort in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution of populations	Number and geographical spread of populations	No decline. See map 6	The known population of *Petalophyllum ralfsii* at Bull Island occurs along the track that cuts through the Alder marsh, south and east of St. Anne's Golf Club. Data from NPWS surveys and Campbell (2013)
Population size	Number of individuals	No decline. Population at Bull Island estimated at a maximum of 5,824 thalli. Actual population is more likely to be 5% of this, or c. 300 thalli	Counts of thalli are based on the mean of number of thalli in three 1 x 1m plots, averaged for 12 counts from February 2009 to March 2012: = 7.9 thalli per m² (Campbell, 2013). Maximum estimated population at Bull Island is therefore 7.86 x 741 = 5,824 thalli. As not all the habitat within the area of occupancy is suitable habitat, the actual number of thalli is likely to be much less, perhaps 5% of this figure, i.e. 291 (or c. 300)
Area of suitable habitat	Hectares	No decline. Area of suitable habitat at Bull Island is estimated at c. 0.04ha. See map 6	The area of occupancy is along the track through the Alder marsh, south and east of St. Anne's Golf Club. The width of the track is estimated to be about 1m. The length, measured by GPS co-ordinates, is 741m. The maximum area is thus 741m² (= 0.0741 ha). Not all the track is actually suitable habitat for *Petalophyllum ralfii*. Some sections are too dry, some too permanently wet, and some sections too overgrown with coarse vegetation. Therefore c. 5% is suitable i.e. c. 37m² (=0.0037ha). See also conservation objectives for humid dune slacks (2190)
Hydrological conditions: soil moisture	Occurrence	Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to prolonged inundation by flooding in winter	*Petalophyllum ralfsii* grows in damp conditions. Attribute and target based on Campbell (2013)
Vegetation structure: height and cover	Centimetres and percentage	Maintain open, low vegetation with a high percentage of bryophytes (small acrocarps and liverwort turf) and bare ground	*Petalophyllum ralfsii* grows in compacted, sandy ground, maintained at this site by rabbit (*Oryctolagus cuniculus*) grazing and trampling (by walkers). Campbell (2013) recorded a mean height of vegetation of 3.3cm, with bryophyte cover c. 30% and bare ground c. 15% (based on three 1 x 1m plots between 2009 and 2011)

2.5.1.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 14 and Table 15

Table 14: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1140			577.7261		M	A	B	B	A
1210			0.1075		M	B	C	B	B
1310			29.10315		M	A	C	A	A
1320			73.75		M	D			
1330			82.2717		M	A	C	B	A
1410			7.98135		M	B	C	B	B
2110			6.0703		M	B	C	A	A
2120			3.1752		M	B	C	B	B
2130			104.8424		M	A	C	A	A
2190			12.1142		M	A	C	A	A

Table 15: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A054	Anas acuta			w	334	334	i		G	A	A	C	A
B	A056	Anas clypeata			w	239	239	i		G	B	A	C	A
B	A052	Anas crecca			w	1512	1512	i		G	B	A	C	B
B	A050	Anas penelope			w	1166	1166	i		G	C	A	C	B
B	A169	Arenaria interpres			w	197	197	i		G	C	A	C	B
B	A046	Branta bernicla			w	2333	2333	i		G	B	A	C	A
B	A144	Calidris alba			w	357	357	i		G	B	A	C	A
B	A149	Calidris alpina			w	6238	6238	i		G	B	A	C	A
B	A143	Calidris canutus			w	4423	4423	i		G	A	A	C	A
B	A137	Charadrius hiaticula			w	346	346	i		G	B	A	C	B
B	A130	Haematopus ostralegus			w	2190	2190	i		G	B	A	C	B
B	A157	Limosa lapponica			w	1586	1586	i		G	B	A	C	A
B	A156	Limosa limosa			w	156	156	i		G	C	A	C	B
B	A160	Numenius arquata			w	1193	1193	i		G	C	A	C	B
P	1395	Petalophyllum ralfsii			p	37	37	area		G	C	B	B	A
B	A140	Pluvialis apricaria			w	1000	1000	i		G	C	C	C	C
B	A141	Pluvialis squatarola			w	816	816	i		G	A	A	C	A
B	A195	Sterna albifrons			r		1	p		G	C	B	C	C
B	A048	Tadorna tadorna			w	1505	1505	i		G	B	A	C	A
B	A162	Tringa totanus			w	1175	1175	i		G	B	A	C	B

2.5.2 South Dublin Bay SAC (Site synopsis version date 10/12/15, Natura 2000 form update 12/15, Conservation Objectives Version 1 22/08/13)

2.5.2.1 General Description

This intertidal site extends from the South Wall at Dublin Port to the West Pier at Dun Laoghaire, a distance of c. 5 km. At their widest, the intertidal flats extend for almost 3 km. The seaward boundary is marked by the low tide mark, while the landward boundary is now almost entirely artificially embanked. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. A number of small streams and drains flow into the site. The proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes. Site possesses a fine and fairly extensive example of intertidal flats. Sediment type is predominantly sand, with muddy sands in the more sheltered areas. A typical macro-invertebrate fauna exists. Has the largest stand of Zostera on the east coast. Supports part of the important wintering waterfowl populations of Dublin Bay. Regularly has an internationally population of *Branta bernicila horta*, plus nationally important numbers of at least a further 6 species, including *Limosa lapponica*. Regular autumn roosting ground for significant numbers of Sterna terns, including *S. dougallii*. The scientific interests of the site have been well documented.

2.5.2.2 Qualifying Interests

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000210.pdf

Details from this document are reproduced here. The qualifying interests of the site are identified in Table 2.

Table 16

Qualifying Interests	
** indicates a priority habitat under the Habitats Directive*	
000210	South Dublin Bay SAC
1140	Mudflats and sandflats not covered by seawater at low tide

2.5.2.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites, and are illustrated in Table 17.

Table 17

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	K02.02		i
M	F02.03.01		i
H	D01.02		o
M	G01.01		i
H	J02.01.02		o
H	E03		i
H	E02		o
H	G01.02		i
M	K02.03		i
H	E01		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	G01.01		i
H	D01.02		o

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.2.4 Conservation Objectives of the site

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000210.pdf

Details from this document are reproduced Table 18.

Table 18

Conservation Objectives for : South Dublin Bay SAC [000210]			
1140	**Mudflats and sandflats not covered by seawater at low tide**		
To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 3	Habitat area was estimated using OSi data as 720ha
Community extent	Hectares	Maintain the extent of the *Zostera*-dominated community, subject to natural processes. See map 4	Based on an intertidal survey undertaken in 2011 (MERC, 2012). See marine supporting document for further information
Community structure: *Zostera* density	Shoots/m²	Conserve the high quality of the *Zostera*-dominated community, subject to natural processes	Based on an intertidal survey undertaken in 2011 (MERC, 2012). See marine supporting document for further details
Community distribution	Hectares	Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex. See map 4	Based on intertidal surveys undertaken in 2006 (Aquafact, 2006) and 2011 (MERC, 2012). See marine supporting document for further information

2.5.2.5 Conservation Status of the site

A synopsis of the conservation status of this site is provided in Table 19 and Table 20.

Table 19: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	**PF**	**NP**	**Cover [ha]**	**Cave [number]**	**Data quality**	**A|B|C|D**	**A|B|C**		
						Representativity	**Relative Surface**	**Conservation**	**Global**
1140			719.9478		M	B	B	B	B
1210			0.01		G	A	C	B	B
1310			0.01		G	A	C	B	B
2110			0.03		G	A	C	B	B

Table 20: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A169	Arenaria interpres			w	45	45	i		G	C	B	C	C
B	A046	Branta bernicla			w	299	299	i		G	C	B	C	A
B	A144	Calidris alba			w	344	344	i		G	B	B	C	A
B	A149	Calidris alpina			w	2628	2628	i		G	B	B	C	B
B	A143	Calidris canutus			w	432	432	i		G	C	B	C	B
B	A137	Charadrius hiaticula			w	120	120	i		G	C	B	C	B
B	A130	Haematopus ostralegus			w	1215	1215	i		G	C	B	C	B
B	A157	Limosa lapponica			w	565	565	i		G	B	B	C	B
B	A192	Sterna dougallii			c	150	300	i		G	B	B	C	A
B	A193	Sterna hirundo			c	1000	2000	i		G	B	B	C	A
B	A194	Sterna paradisaea			c	500	1000	i		G	B	B	C	A
B	A162	Tringa totanus			w	356	356	i		G	C	B	C	B

2.5.3 Red Bog Kildare SAC (Site synopsis version date 22/08/13, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 5.0)

2.5.3.1 General Description

The site comprises a relatively small wetland which lies between moranic ridges. Open water is a principal habitat though there are no obvious inflowing or outflowing streams. Open water is fringed by various wetland habitats, with bog (raised type), fens and freshwater marsh. Some willow (*Salix* spp.) occurs. The surrounding land is improved grassland. An extensive quarrying operation occurs to the east and south of site. The site displays a succession from open water (eutrophic in status) to ombrotrophic bog. Transition mire vegetation is considered to be well represented at this site, with some typical species. A small colony of *Larus ridibundus* has bred in the past (current status unknown),

which is one of few nesting sites in eastern Ireland, and the site also has breeding *Aythya fuligula* and *Fulica atra*.

2.5.3.2 Qualifying Interests

The Qualifying Interest (QI) of this SAC is:

- [7140] Transition Mires and Quaking Bogs

2.5.3.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites, and are illustrated in Table 21. It is important to note that the assessment of potential threats, pressures and activities of the operations at Boliden includes, but is not restricted to, those identified in the Natura 2000 form.

Table 21: Threats, pressures and activities with impacts on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	F03.01		i
H	C01.01		o
M	F02.03		i
M	A08		o
M	E01.03		o
M	A04		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	E01.03		o
M	A04		o
M	F02.03		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.3.4 Conservation Objectives

The primary conservation objective (generic) of this site is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected:

- [7140] Transition Mires and Quaking Bogs

There are no detailed Conservation Objectives for this habitat.

2.5.3.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 22 and Table 23.

Table 22: Habitat types present on the site and assessment them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
3150			14.59		M	D			
7110			1.82		M	D			
7140			5.47		M	B	C	B	C

Table 23: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A179	Larus ridibundus			r	1	20	p		M	C	C	C	C

2.5.4 Knocksink Wood SAC (Site synopsis version date 23/09/13, Natura 2000 form update 12/2015, Conservation Objectives (generic) version 5.0)

2.5.4.1 General Description

A wooded valley cut through calcareous glacial drift, with the fast-flowing Glencullen river flowing west to east through it. Vegetation types include broadleaf deciduous woods, including wet woodland near the river, heath and a number of tufa-forming springs and seepage areas. A relatively small, but diverse wooded valley, notable for the occurrence of good examples of tufa-forming springs and associated alluvial forest. The site is also important for a number of rare plants, including *Erigeron acer, Lamiastrum galeobdolon* and *Wahlenbergia hederacea*, and a particularly diverse woodland invertebrate fauna. Its proximity to Dublin adds to its value as an educational and amenity resource.

2.5.4.2 Qualifying Interests

The Qualifying Interest (QI) of this SAC is:

- [7220] Petrifying Springs with Tufa formation (*Cratoneurion*)*; and

2.5.4.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites, and are illustrated in Table 21. It is important to note that the assessment of potential threats, pressures and activities of the operations at Boliden includes, but is not restricted to, those identified in the Natura 2000 form.

Table 24: Threats, pressures and activities with impacts on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	F03.01		i
H	C01.01		o
M	F02.03		i
M	A08		o
M	E01.03		o
M	A04		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	E01.03		o
M	A04		o
M	F02.03		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.4.4 Conservation Objectives

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 7220 (in this case 002162) – see Table 25.

Table 25

Attribute	Measure	Target
Habitat Area	Square metres	Stable or increasing
Habitat Distribution	Occurrence	No decline
Hydrological Regime	Metres, metres per second	Maintain appropriate regimes
Water quality	Water chemistry measures	Maintain conditions
Vegetation Composition	Occurrence	Maintain typical species

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)*

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 91E0 (in this case 002162) – see Table 26.

Table 26

ATTRIBUTE	MEASURE	TARGET
HABITAT AREA	HECTARES	AREA STABLE OR INCREASING
HABITAT DISTRIBUTION	OCCURRENCE	NO DECLINE
WOODLAND SIZE	HECTARES	AREA STABLE OR INCREASING
WOODLAND STRUCTURE: COVER AND HEIGHT	PERCENTAGE AND METRES	DIVERSE STRUCTURE
WOODLAND STRUCTURE: COMMUNITY DIVERSITY AND EXTENT	HECTARES	MAINTAIN DIVERSITY AND EXTENT OF COMMUNITY TYPES
WOODLAND STRUCTURE: NATURAL REGENERATION	SEEDLING:SAPLING: POLE RATIO	SEEDLINGS, SAPLINGS AND POLE AGE-CLASSES OCCUR IN ADEQUATE PROPORTIONS TO ENSURE SURVIVAL OF WOODLAND CANOPY
HYDROLOGICAL REGIME: FLOODING DEPTH/HEIGHT OF WATER TABLE	METRES	APPROPRIATE HYDROLOGICAL REGIME
WOODLAND STRUCTURE: DEAD WOOD	NUMBER PER HECTARE	AT LEAST 30M3/HA OF FALLEN TIMBER GREATER THAN 10CM DIAMETER; 30 SNAGS/HA; BOTH CATEGORIES SHOUD INCLUDE STEMS GREATER THAN 40 CM DIAMETER (GREATER THAN 20 CM DIAMETER IN THE CASE OF ALDER)
WOODLAND STRUCTURE: VETERAN TREES	NUMBER PER HECTARE	NO DECLINE
WOODLAND STRUCTURE: INDICATORS OF LOCAL DISTINCTIVENESS	OCCURRENCE	NO DECLINE
VEGETATION COMPOSITION: NATIVE TREE COVER	PERCENTAGE	NO DECLINE. NATIVE TREE COVER NOT LESS THAN 95%
VEGETATION COMPOSITION: TYPICAL SPECIES	OCCURRENCE	A VARIETY OF TYPICAL NATIVE TREE SPECIES PRESENT
VEGETATION COMPOSITION: NEGATIVE INDICATOR SPECIES	OCCURRENCE	NEGATIVE INDICATOR SPECIES, PARTICULARLY NON-NATIVE INVASIVE SPECIES ABSENT OR UNDER CONTROL

2.5.4.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 27.

Table 27: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
7220			0.9		M	B	C	A	A
91E0			4.49		M	B	C	B	B

2.5.5 Glenasmole Valley SAC (Site synopsis version date 30/09/2013, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 5.0)

2.5.5.1 General Description

Glenasmole Valley lies at the northern foothills of the Dublin and Wicklow Mountains. It is a glaciated valley, with drift deposits, consisting of fluvioglacial sands and gravels of varying thickness and rich in Carboniferous limestone, occurring on the slopes. Spring lines occur along both sides of the northern part of the valley. The River Dodder flows through the valley and within the site the river has been impounded to form two reservoirs. Associated with the reservoirs are areas of swamp and marsh vegetation. The valley is heavily wooded, mostly with mixed woodland of both deciduous and coniferous species but also some native woodland. Dry calcareous pasture grassland, improved to varying degrees, is a main habitat of the valley sides and occurs in association with wet grassland and, in places of seepage, fen or marsh type vegetation. The site has important examples of petrifying springs. The physical and chemical properties of the springs have been studied. Good examples of orchid rich calcareous grassland, including Pseudorchis albida (legally protected) and *Orchis morio* (Red Data Book species) are found. The quality of grassland is variable owing to agricultural improvement. Molinia meadows are also represented. Several other Red Data Book plant species occur, along with a host of rare or scarce plant species for Co. Dublin. The botany of this site has been well studied since the 19th century. The site has *Alcedo atthis*, and is important for bats, with four Red Data Book species present (*Pipistrellus pipistrellus, Nyctalus leisleri, Myotis daubentoni, Plecotus auritus*).

2.5.5.2 Qualifying Interests

The Qualifying Interest (QI) of this SAC is:

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia) (* important orchid sites)*
- 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
- 7220 Petrifying springs with tufa formation (Cratoneurion)*

2.5.5.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 28.

Table 28: Threats, pressures and activities with impacts on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	A04		i
M	F02.03		i
M	A08		o
M	A04		o
M	B		o
H	J02		i
H	I01		i
M	A08		i

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	J02		i
M	F02.03		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.5.4 Conservation Objectives

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 6210 (in this case 000268) – see Table 29.

Table 29

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes
Vegetation composition: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%
Vegetation composition: typical species	Number	At least 7 positive indicator species present, including 2 "high quality" species
Vegetation composition: negative indicator species	Percentage	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%. Non-native invasive species, absent or under control
Vegetation structure: sward height	Percentage	30-70% of sward 5-40cm high
Vegetation structure: woody species and bracken (*Pteridium aquilinum*)	Percentage	Cover of bracken (*Pteridium aquilinum*) and woody species (except juniper (*Juniperus communis*)) not more than 5% cover
Physical structure: bare ground	Percentage	Not more than 10% bare ground

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 6410 (in this case 002165) – see Table 30.

Table 30

6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

To maintain the favourable conservation condition of *Molinia* meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*) in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Full extent of this habitat in this site is currently unknown- see distribution below
Habitat distribution	Occurrence	No decline, subject to natural processes	This habitat has been recorded on the eastern bank of the Shannon, just north of Castleconnell, Co. Limerick (NPWS internal files). Full distribution of this habitat in this site is currently unknown and it almost certainly occurs elsewhere. The Irish semi-natural grasslands survey will cover Co. Limerick in 2012 and additional information is likely to be available following this survey
Vegetation structure: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%	Attribute and target based on O'Neill et al. (2010)
Vegetation structure: sward height	Percentage	30-70% of sward between 10 and 80cm high	Attribute and target based on O'Neill et al. (2010)
Vegetation composition: typical species	Number	At least 7 positive indicator species present, including 1 "high quality" species	List of positive indicator species, including high quality species, identified by O'Neill et al. (2010). Note that purple moor-grass (*Molinia caerulea*) is a positive indicator species, but not necessarily an essential component of the habitat
Vegetation composition: notable species	Number	No decline, subject to natural processes	A number of notable species have been recorded in this habitat at this site including smooth brome (*Bromus racemosus*), pale sedge (*Carex pallescens*) and blue-eyed grass (*Sisyrinchium bermudiana*) (Reynolds et al., 2006)
Vegetation composition: negative indicator species	Percentage	Negative indicator species collectively not more than 20% cover, with cover by an individual species less than 10%. Non-native invasive species, absent or under control	List of negative indicator species identified by O'Neill et al. (2010)
Vegetation composition: negative indicator moss species	Percentage	Bog mosses (*Sphagnum* spp.) not more than 10% cover; hair mosses (*Polytrichum* spp.) not more than 25% cover	Attribute and target based on O'Neill et al. (2010)

Continued overleaf

6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

To maintain the favourable conservation condition of *Molinia* meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*) in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation structure: woody species and bracken (*Pteridium aquilinum*)	Percentage	Cover of woody species and bracken not more than 5% cover	Attribute and target based on O'Neill et al. (2010)
Physical structure: bare ground	Percentage	Not more than 10% bare ground	Attribute and target based on O'Neill et al. (2010)

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 7220 (in this case 002162) – see Table 31.

Table 31

Attribute	Measure	Target
Habitat Area	Square metres	Stable or increasing
Habitat Distribution	Occurrence	No decline
Hydrological Regime	Metres, metres per second	Maintain appropriate regimes
Water quality	Water chemistry measures	Maintain conditions
Vegetation Composition	Occurrence	Maintain typical species

2.5.5.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 32 and Table 33.

Table 32: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
6210	X		29.86		M	B	C	B	B
6410			7.46		M	B	C	B	C
7220			1.49		M	B	C	B	B

Table 33: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A229	Alcedo atthis			p	1	1	p		G	C	B	C	C

2.5.6 Rye Water Valley/Carton SAC (Site synopsis version date 11/10/2013, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 5.0)

2.5.6.1 General Description

This is a river valley site which includes at its western end a large area of estate woodland and an artificial lake. The eastern section of the site includes a section of railway, canal and aquaduct; it continues as far as leixlip town. The site is underlain by carboniferous limestone over which has been laid a layer of glacial drift. The importance of the site lies in the presence of a number of rare plant and animal species and a rare habitat, i.e. thermal, mineral, petrifying spring. The spring gives rise to a calcareous marsh, the habitat for *Vertigo angustior* and *Vertigo moulinsiana*. This marsh is species-rich and holds a number of plant and insect species which are rare or locally uncommon in Ireland. Four Red Data Book plant species have been recorded from the site, two of which, *Hypericum hirsutum* and *Viola hirta* are legally protected. The woods at the eastern end of the site have some ornithological interest.

2.5.6.2 Qualifying Interests

The Qualifying Interest (QI) of this SAC is:

- 7220 Petrifying springs with tufa formation (Cratoneurion)*
- 1014 Narrow-mouthed Whorl Snail Vertigo angustior
- 1016 Desmoulin's Whorl Snail *Vertigo moulinsiana*

2.5.6.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 34.

Table 34: Threats, pressures and activities with impacts on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	A08		i
L	A04		o
M	B		i
M	J02.05.02		i
L	E01.03		o
L	A04		i
L	D01.02		o
L	A08		o
L	A10.01		i
M	E01.01		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	D01.02		o
L	A08		o
L	A04		i
M	E01.01		o
L	E01.03		o
L	A04		o

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.6.4 Conservation Objectives

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 7220 (in this case 002162) – see Table 35.

Table 35

Attribute	Measure	Target
Habitat Area	Square metres	Stable or increasing
Habitat Distribution	Occurrence	No decline
Hydrological Regime	Metres, metres per second	Maintain appropriate regimes
Water quality	Water chemistry measures	Maintain conditions
Vegetation Composition	Occurrence	Maintain typical species

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 1014 (in this case 002165) -see Table 36

Table 36

Attribute	Measure	Target
Distribution: occupied sites	Number	No decline. There is one known site for this species in this SAC. See map 8
Presence	Occurrence	Adult or sub-adult snails are present in at least 3 places on the transect where optimal or sub-optimal habitat occurs (minimum 5 samples)
Abundance	Number per sample	At least 2 samples on the transect have more than 10 *V. angustior* individuals (minimum 5 samples)
Transect habitat quality	Metres	At least 20m of habitat along the transect is classed as optimal or sub-optimal
Transect optimal wetness	Metres	Soils, at time of sampling, are damp (optimal wetness) and covered with a layer of humid thatch for at least 20m along the transect
Habitat extent	Hectares	1.5ha of sub-optimal with optimal areas

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 1016 (in this case 002162) – see Table 37.

Table 37

Attribute	Measure	Target
Distribution: occupied sites	Number	No decline. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois. See map 7
Population size: adults	Number per positive sample	At least 5 adults snails in at least 50% of samples
Population density	Percentage positive samples	Adult snails present in at least 60% of samples per site
Area of occupancy	Hectares	Minimum of 1ha of suitable habitat per site
Habitat quality: vegetation	Percentage of samples with suitable vegetation	90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011)
Habitat quality: soil moisture levels	Percentage of samples with appropriate soil moisture levels	90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011)

2.5.6.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 38 and Table 39.

Table 38: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
7220			0.72		M	B	B	B	B

Table 39: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A229	Alcedo atthis			p	1	1	p		G	C	A	C	C
I	1014	Vertigo angustior			p				P	M	B	A	A	A
I	1016	Vertigo moulinsiana			p				P	M	B	B	B	B

2.5.7 Wicklow Mountains SAC (Site synopsis version date 11/12/2013, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 4.0)

2.5.7.1 General Description

An extensive upland site comprising much of the Wicklow Mountains and extending into Co. Dublin. The solid geology is mainly Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area has been glaciated and features fine examples of high corrie lakes, deep valleys and moraines. Most of the site is over 300m, with much ground over 600m and the highest peak of Lugnaquillia at 925m. The site includes the headwaters of several major rivers, including the Liffey, the Dargle and the Slaney. The substrate over much of the site is peat, with poor mineral soil on the slopes and lower ground. Exposed rock and scree is a feature. The dominant habitats on the site are blanket bog, heaths and upland grassland. The site comprises the largest complex of upland habitats

in eastern Ireland, with important examples of blanket bog, wet heath and dry heath, extensive in area and mostly of good quality. Alpine heath occurs at high levels, along with calcareous and siliceous rocky habitats harbouring an arctic-alpine flora. A fine series of upland oligotrophic lakes occur and some have *Salvelinus alpinus*. Several oakwoods of moderate quality, typical of the dry acidic woods of eastern Ireland, are found. Seven Red Data Book plant species occur, including the rare *Alchemilla alpina* and *Nitella gracilis* at its only Irish station. The site supports significant populations of breeding *Falco columbarius* and *Falco peregrinus*. The site is important for rare breeding passerines of oakwoods, notably *Phoenicurus phoenicurus* and *Phylloscopus sibilatrix*. The site also has breeding *Turdus torquatus* and *Lagopus lagopus*. *Lutra lutra* occurs on several of the riverine systems.

2.5.7.2 Qualifying Interests

The Qualifying Interest (QI) of this SAC is:

- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea;
- 3160 Natural dystrophic lakes and ponds;
- 4010 Northern Atlantic wet heaths with Erica tetralix;
- 4030 European dry heaths;
- 4060 Alpine and Boreal heaths;
- 6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)*;
- 7130 Blanket bogs (* if active bog);
- 8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani);
- 8210 Calcareous rocky slopes with chasmophytic vegetation;
- 8220 Siliceous rocky slopes with chasmophytic vegetation;
- 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles denotes a priority habitat; and
- 1355 Otter Lutra lutra.

2.5.7.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 40.

Table 40: Threats, pressures and activities with impacts on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	A04		i
M	E01.03		o
H	G01.02		i
M	A04		o
M	C01.03		i
L	J01		i
M	I01		i
H	B		o
M	B		i
L	D01.02		o
L	F02.03		i
H	K01.01		i

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	D01.02		o
M	E01.03		o
L	F02.03		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.7.4 Conservation Objectives

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 7220 (in this case 002162) – see Table 41.

Table 41

Attribute	Measure	Target
Habitat Area	Square metres	Stable or increasing
Habitat Distribution	Occurrence	No decline
Hydrological Regime	Metres, metres per second	Maintain appropriate regimes
Water quality	Water chemistry measures	Maintain conditions
Vegetation Composition	Occurrence	Maintain typical species

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 1014 (in this case 002165) --see Table 42.

Table 42

Attribute	Measure	Target
Distribution: occupied sites	Number	No decline. There is one known site for this species in this SAC. See map 8
Presence	Occurrence	Adult or sub-adult snails are present in at least 3 places on the transect where optimal or sub-optimal habitat occurs (minimum 5 samples)
Abundance	Number per sample	At least 2 samples on the transect have more than 10 *V. angustior* individuals (minimum 5 samples)
Transect habitat quality	Metres	At least 20m of habitat along the transect is classed as optimal or sub-optimal
Transect optimal wetness	Metres	Soils, at time of sampling, are damp (optimal wetness) and covered with a layer of humid thatch for at least 20m along the transect
Habitat extent	Hectares	1.5ha of sub-optimal with optimal areas

There are no detailed conservation objectives for this site. There are no detailed conservation objective documents for a number of the habitats and species for which this SAC is designated, namely:

- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea;
- 3160 Natural dystrophic lakes and ponds;
- 4010 Northern Atlantic wet heaths with Erica tetralix;
- 4060 Alpine and Boreal heaths;
- 6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)*;
- 7130 Blanket bogs (* if active bog);
- 8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani);
- 8210 Calcareous rocky slopes with chasmophytic vegetation; and

- 8220 Siliceous rocky slopes with chasmophytic vegetation.

In the case of these qualifying interests, the generic conservation objective must be applied, i.e. “To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”

There are no detailed conservation objectives for this site – conservation objectives can be inferred from a similar site for 4030 (in this case 002162) - see Table 43.

Table 43

Attribute	Measure	Target
Vegetation structure: native trees and shrubs	Percentage cover	Cover of scattered native trees and shrub less than 20%
Vegetation composition: positive indicator species	Number	Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora
Vegetation structure: positive indicator species	Percentage cover	Cover of positive indicator species at least 60%. This should include plant species characterisitic of dry heath in this SAC including gorse, bilberry and associated acid grassland flora
Vegetation composition: bryophyte and non-crustose lichen species	Number	Number of bryophyte or non-crustose lichen species present at least 2
Vegetation composition: bracken (*Pteridium aquilinum*)	Percentage cover	Cover of bracken less than 10% - however see 'Notes'

Continued overleaf…

Attribute	Measure	Target
Vegetation structure: weedy negative indicator species	Percentage cover	Cover of agricultural weed species (negative indicator species) less than 1%
Vegetation composition: non-native species	Percentage cover	Cover of non-native species less than 1%.
Vegetation composition: rare/scarce heath species	Location, area and number	No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (*Orobanche rapum-genistae)* and the legally protected clustered clover (*Trifolium glomeratum*)
Vegetation structure: disturbed bare ground	Percentage cover	Cover of disturbed bare ground less than 10% (but if peat soil less than 5%)
Vegetation structure: burning	Occurrence	No signs of burning within sensitive areas

2.5.7.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 44 and Table 45.

Table 44: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
3130			329.46		M	A	B	B	A
3160			329.46		M	A	C	B	B
4010			8236.43		M	A	A	B	A
4030			4941.86		M	A	A	B	A
4060			329.46		M	B	B	B	B
6230			329.46		M	C	C	B	C
7130	X		8236.43		M	A	B	B	A
8110			329.46		M	A	B	A	A
8210			329.46		M	B	C	B	B
8220			329.46		M	B	B	B	B
91A0			329.46		M	A	B	C	A

Table 45: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A098	Falco columbarius			p	8	8	i		G	B	A	C	A
B	A103	Falco peregrinus			p	20	20	p		G	B	A	C	A
B	A322	Ficedula hypoleuca			r	1	2	p		G	A	A	B	A
M	1355	Lutra lutra			p				P	M	C	B	C	B
B	A070	Mergus merganser			p					M	A	A	B	A
B	A274	Phoenicurus phoenicurus			r	2	3	p		G	A	A	B	A
B	A314	Phylloscopus sibilatrix			r	10	15	p		G	A	A	B	A
B	A275	Saxicola rubetra			r	10	10	p		G	C	B	C	B
B	A311	Sylvia atricapilla			r	50	100	p		G	C	A	C	B
B	A310	Sylvia borin			r	3	4	p		G	C	A	C	B
B	A282	Turdus torquatus			r	4	5	p		G	B	A	B	A

2.5.8 North Bull Island SPA (Site synopsis version date 11/12/2013, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 4.0)

2.5.8.1 General description

The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5km long and 1km wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. A well-developed dune system runs the length of the island, with good examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Extensive salt marshes also occur. Between the island and the mainland occur two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. Part of the interior of the island has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main land-use within the site. The site is among the top ten sites for wintering waterfowl in the country. It supports internationally important populations of *Branta bernicila hrota* and *Limosa lapponica* and is the top site in the country for both of these species. A further 14 species have populations of national importance, with particular notable numbers of *Tadorna tadorna* (8.5% of national total), *Anas acuta* (11.6% of national total), *Pluvialis squatarola* (6.9% of national total), *Calidris canutus* (10.5% of national total). North Bull Island SPA is a regular site for passage waders such as *Philomachus pugnax*, *Calidris ferruginea* and *Tringa erythropus*. The site supports *Asio flammeus* in winter. Formerly the site had an important colony of *Sterna albifrons* but breeding has not occurred in recent years. The site provides both feeding and roosting areas for the waterfowl species. Habitat quality for most of the estuarine habitats is very good. The site has a population of the rare *Petalophyllum ralfsii* which is the only known station away from the western seaboard as well as five Red Data Book vascular plant species and four bryophyte species. It is nationally important for three insect species. Wintering bird populations have been monitored more or less continuously since the late 1960s, and the other scientific interests of the site have also been well documented. Future prospects are good owing to various designations assigned to site.

2.5.8.2 Qualifying Interests

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004006.pdf

Details from this document are reproduced here. The qualifying interests of the site are identified in Table 46.

Table 46

004006	North Bull Island SPA
A046	Light-bellied Brent Goose *Branta bernicla hrota*
A048	Shelduck *Tadorna tadorna*
A052	Teal *Anas crecca*
A054	Pintail *Anas acuta*
A056	Shoveler *Anas clypeata*
A130	Oystercatcher *Haematopus ostralegus*
A140	Golden Plover *Pluvialis apricaria*
A141	Grey Plover *Pluvialis squatarola*
A143	Knot *Calidris canutus*
A144	Sanderling *Calidris alba*
A149	Dunlin *Calidris alpina alpina*
A156	Black-tailed Godwit *Limosa limosa*
A157	Bar-tailed Godwit *Limosa lapponica*
A160	Curlew *Numenius arquata*
A162	Redshank *Tringa totanus*
A169	Turnstone *Arenaria interpres*
A179	Black-headed Gull *Chroicocephalus ridibundus*
A999	Wetlands

2.5.8.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 47.

Table 47: Threats, pressures and activities with impacts on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	E03		i
M	F02.03.01		i
H	D03.02		o
M	G01.01		i
H	G02.01		i
H	E01.01		o
L	E01.04		i
H	E02		o
H	G01.02		i
H	D01.05		i
H	E03		o
H	D01.02		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	G03		i
H	D01.02		o
L	E01.04		i
H	D01.05		i
H	G02.01		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.8.4 Conservation Objectives

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004006.pdf

Details from this document are reproduced here.

Table 48

A046	Light-bellied Brent Goose *Branta bernicla hrota*		
To maintain the favourable conservation condition of Light-bellied Brent Goose in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part fiveof the conservation objectives supporting document

Table 49

A048	Shelduck *Tadorna tadorna*		
To maintain the favourable conservation condition of Shelduck in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 50

A052	Teal *Anas crecca*		
To maintain the favourable conservation condition of Teal in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by teal, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 51

A054	Pintail *Anas acuta*		
To maintain the favourable conservation condition of Pintail in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by pintail, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 52

A056	Shoveler *Anas clypeata*		
To maintain the favourable conservation condition of Shoveler in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by shoveler, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 53

A130	Oystercatcher *Haematopus ostralegus*		
To maintain the favourable conservation condition of Oystercatcher in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part four of the conservation objectives supporting document

Table 54

A140	Golden Plover *Pluvialis apricaria*		
To maintain the favourable conservation condition of Golden Plover in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by golden plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 55

A141	Grey Plover *Pluvialis squatarola*		
To maintain the favourable conservation condition of Grey Plover in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by grey plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 56

A143	Knot *Calidris canutus*		
To maintain the favourable conservation condition of Knot in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by knot, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 57

A144	Sanderling *Calidris alba*		
To maintain the favourable conservation condition of Sanderling in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by sanderling, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 58

A149	Dunlin *Calidris alpina alpina*		
To maintain the favourable conservation condition of Dunlin in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by dunlin, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 59

A156	Black-tailed Godwit *Limosa limosa*		
To maintain the favourable conservation condition of Black-tailed Godwit in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by black-tailed godwit, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 60

A157	Bar-tailed Godwit *Limosa lapponica*		
To maintain the favourable conservation condition of Bar-tailed Godwit in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 61

A160	Curlew *Numenius arquata*		
To maintain the favourable conservation condition of Curlew in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by curlew, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 62

A162	Redshank *Tringa totanus*		
To maintain the favourable conservation condition of Redshank in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by redshank, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 63

A169	Turnstone *Arenaria interpres*		
To maintain the favourable conservation condition of Turnstone in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by turnstone, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 64

A179	Black-headed Gull *Chroicocephalus ridibundus*		
To maintain the favourable conservation condition of Black-headed Gull in North Bull Island SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 65

A999	Wetlands		
To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:			
Attribute	**Measure**	**Target**	**Notes**
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation. See map 3	The wetland habitat area was estimated as 1,713ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document

2.5.8.5 Conservation Status

A synopsis of the conservation status of this site is provided in Table 66.

Table 66: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A054	Anas acuta			w	233	233	i		G	B	A	C	A
B	A056	Anas clypeata			w	141	141	i		G	B	A	C	A
B	A052	Anas crecca			w	953	953	i		G	C	A	C	B
B	A050	Anas penelope			w	660	660	i		G	C	A	C	C
B	A053	Anas platyrhynchos			w	87	87	i		G	C	A	C	C
B	A053	Anas platyrhynchos			c			i		G	C	A	C	C
B	A169	Arenaria interpres			w	157	157	i		G	C	A	C	B
B	A222	Asio flammeus			w	1	5	i		G	C	B	C	B
B	A046	Branta bernicla			w	1548	1548	i		G	B	A	C	A
B	A144	Calidris alba			w	141	141	i		G	B	A	C	A
B	A149	Calidris alpina			w	3926	3926	i		G	B	A	C	A
B	A143	Calidris canutus			w	2623	2623	i		G	B	A	C	A
B	A147	Calidris ferruginea			c	15	15	i		G	C	B	C	B
B	A145	Calidris minuta			c	5	5	i		G	C	B	C	C
B	A137	Charadrius hiaticula			w	129	129	i		G	C	A	C	B
B	A130	Haematopus ostralegus			w	1784	1784	i		G	B	A	C	A
B	A182	Larus canus			w	332	332	i		G	C	A	C	B

Continued overleaf

B	A179	Larus ridibundus			w	2196	2196	i		G	C	A	C	B
B	A157	Limosa lapponica			w	1529	1529	i		G	B	A	C	A
B	A156	Limosa limosa			w	367	367	i		G	B	A	C	B
B	A069	Mergus serrator			w	26	26	i		G	C	A	C	C
B	A160	Numenius arquata			w	937	937	i		G	C	A	C	B
B	A151	Philomachus pugnax			c	5	10	i		G	C	B	C	C
B	A140	Pluvialis apricaria			w	1681	1681	i		G	C	B	C	B
B	A141	Pluvialis squatarola			w	517	517	i		G	B	A	C	A
B	A048	Tadorna tadorna			w	1259	1259	i		G	B	A	C	A
B	A161	Tringa erythropus			c	3	3	i		G	C	B	C	C
B	A164	Tringa nebularia			w	16	16	i		G	C	A	C	C
B	A162	Tringa totanus			w	1431	1431	i		G	B	A	C	A

2.5.9 River Tolka and South Dublin Bay SPA (Site synopsis version date 30/05/2015, Natura 2000 form update 10/2015, Conservation Objectives version 1)

2.5.9.1 General description

This site comprises a substantial part of Dublin Bay. It includes virtually all of the intertidal area in the south bay, as well as much of the Tolka Estuary to the north of the River Liffey. A portion of the shallow bay waters is also included. In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. The sands support the largest stand of Zostera noltii on the East Coast. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. Sediments in the Tolka Estuary vary from soft thixotrophic muds with a high organic content in the inner estuary to exposed, well aerated sands off the Bull Wall. The proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes. The site possesses extensive intertidal flats which support wintering waterfowl which are part of the overall Dublin Bay population. It regularly has an internationally important population of *Branta bernicla hrota*, which feeds on *Zostera noltii* in the autumn. It has nationally important numbers of a further 6 species: *Haematopus ostralegus, Charadrius hiaticula, Calidris canutus, Calidris alba, Calidris alpina* and *Limosa lapponica*. It is an important site for wintering gulls, especially *Larus ridibundus* and *Larus canus*. South Dublin Bay is the premier site in Ireland for *Larus melanocephalus*, with up to 20 birds present at times. Is a regular autumn roosting ground for significant numbers of terns, including *Sterna dougallii, S. hirundo* and *S. paradisaea*.

2.5.9.2 Qualifying interests

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004024.pdf

Details from this document are reproduced here. The qualifying interests of the site are identified in Table 67.

Table 67

Qualifying Interests	
* indicates a priority habitat under the Habitats Directive	
004024	South Dublin Bay and River Tolka Estuary SPA
A046	Light-bellied Brent Goose *Branta bernicla hrota*
A130	Oystercatcher *Haematopus ostralegus*
A137	Ringed Plover *Charadrius hiaticula*
A141	Grey Plover *Pluvialis squatarola*
A143	Knot *Calidris canutus*
A144	Sanderling *Calidris alba*
A149	Dunlin *Calidris alpina alpina*
A157	Bar-tailed Godwit *Limosa lapponica*
A162	Redshank *Tringa totanus*
A179	Black-headed Gull *Chroicocephalus ridibundus*
A192	Roseate Tern *Sterna dougallii*
A193	Common Tern *Sterna hirundo*
A194	Arctic Tern *Sterna paradisaea*
A999	Wetlands

2.5.9.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 68.

Table 68

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	G01.01		i
M	F02.03.01		i
M	K02.03		i
H	G01.02		i
M	F02.03		i
H	E01		o
H	J02.01.02		o
H	E03		i
H	D01.02		o
H	E02		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	F02.03		i
M	G01.01		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.9.4 Conservation Objectives

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004024.pdf

Details from this document are reproduced here.

Table 69

A130	**Oystercatcher *Haematopus ostralegus***		
To maintain the favourable conservation condition of Oystercatcher in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part four of the conservation objectives supporting document

Table 70

A137	Ringed Plover *Charadrius hiaticula*		
To maintain the favourable conservation condition of Ringed Plover in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by ringed plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of conservation objectives supporting document

Table 71

A141	Grey Plover *Pluvialis squatarola*		
Grey Plover is proposed for removal from the list of Special Conservation Interests for South Dublin Bay and River Tolka Estuary SPA. As a result, a site-specific conservation objective has not been set for this species.			
Attribute	**Measure**	**Target**	**Notes**

Table 72

A143	Knot *Calidris canutus*		
To maintain the favourable conservation condition of Knot in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by knot, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 73

A144	Sanderling *Calidris alba*		
To maintain the favourable conservation condition of Sanderling in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by sanderling, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 74

A149	Dunlin *Calidris alpina alpina*		
To maintain the favourable conservation condition of Dunlin in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by dunlin, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 75

A157	Bar-tailed Godwit *Limosa lapponica*		
To maintain the favourable conservation condition of Bar-tailed Godwit in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 76

A162	**Redshank *Tringa totanus***		
To maintain the favourable conservation condition of Redshank in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by redshank, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 77

A179	**Black-headed Gull *Chroicocephalus ridibundus***		
To maintain the favourable conservation condition of Black-headed Gull in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Table 78

A192	Roseate Tern *Sterna dougallii*		
To maintain the favourable conservation condition of Roseate Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Passage population: individuals	Number	No significant decline	Evening surveys of roosting terns in South Dublin Bay and River Tolka Estuary SPA confirm the conservation importance of the south Dublin Bay area during the post-breeding/pre-migration period. Up to 11,700, 9,025 and 8,020 terns were recorded in 2006, 2007 and 2010 respectively. Given the counting conditions (i.e. low light levels and long distance recording) it was rarely possible to identify the terns to species level but the majority of the birds appear to have been common terns (*Sterna hirundo*), with smaller numbers of Arctic and roseate terns (*S. paradisaea, S. dougallii*) (sandwich, little and black terns (*S. sandvicensis, S. albifrons, Chlidonias niger*) were also recorded) (Merne et al., 2008; Merne 2010). At least 645 roseate tern have been recorded here during the aforementioned survey years. This estimate does not factor in turnover rates and therefore the total number of roseate tern using this SPA may be significantly higher
Distribution: roosting areas	Number; location; area (hectares)	No significant decline	Merne et al. (2008) describe the main roosting area as the exposed sand banks in south Dublin Bay primarily between the Martello Towers at Sandymount (319524, 232021) and Williamstown (320796, 229979). Terns have been occasionally recorded outside of this area on adjacent sandflats extending to Irishtown/South Bull Wall and to Blackrock but these birds eventually join the birds roosting in the main area (Merne et al., 2008)
Prey biomass available	Kilogrammes	No significant decline	Terns associated with the roost are thought to feed during the day in the wider Dublin Bay area but direct survey evidence is incomplete. Evening observations of terns arriving to the roosting area indicated that most flew in from an easterly and southeasterly direction leading the authors to suggest they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne et al., 2008). During the breeding season, roseate terns can make extensive use of marine waters adjacent to their breeding colonies. Key prey items: Small, schooling marine fish, very rarely small crustaceans. Key habitats: roseate tern forage in/over shallow and upwelling areas, including tide rips and shoals and over sandy bottoms. Foraging range: max. 30km, mean max. 18.28km, mean 12.3km (Birdlife International, 2014). As these foraging range estimates relate to birds during the breeding season, the distances between post-breeding roost sites and feeding areas may be greater

Continued overleaf

Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	Terns associated with the roost are thought to feed during the day in the wider Dublin Bay area but direct survey evidence is incomplete. Evening observations of terns arriving to the roosting area indicated that most flew in from an easterly and southeasterly direction leading the authors to suggest they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne et al., 2008). During the breeding season roseate terns can make extensive use of marine waters adjacent to their breeding colonies. Key habitats: roseate tern forage in/over shallow and upwelling areas, including tide rips and shoals and over sandy bottoms. Foraging range: max. 30km, mean max. 18.28km, mean 12.3km (Birdlife International, 2014). As these foraging range estimates relate to birds during the breeding season, the distances between post-breeding roost sites and feeding areas may be greater
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of roseate tern among the post-breeding aggregation of terns	Merne et al. (2008) describes the main roosting area as the exposed sand banks in south Dublin Bay primarily between the Martello Towers at Sandymount (319524, 232021) and Williamstown (320796, 229979). Although principally used as a night roost, birds begin to roost at least one hour before sunset during the period July - September with peak activity occurring between mid-August and mid-September (Merne et al., 2008; Merne, 2010). Merne (2010) recorded significant disturbance events to the roosting terns caused by people with dogs off the leash and kite surfing

Table 79

A193	Common Tern *Sterna hirundo*		
To maintain the favourable conservation condition of Common Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995). For more information on the history and recent population estimates of the tern colony at this SPA see Newton et al. (2014)
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995). For more information on the history and recent population estimates of the tern colony at this SPA see Newton et al. (2014)
Passage population: individuals	Number	No significant decline	Evening surveys of roosting terns in South Dublin Bay and River Tolka Estuary SPA confirm the conservation importance of the south Dublin Bay area during the post-breeding/pre-migration period. Up to 11,700, 9,025 and 8,020 terns were recorded in 2006, 2007 and 2010 respectively. Given the counting conditions (i.e. low light levels and long distance recording), it was rarely possible to identify terns to species level but the majority of the birds appear to have been common terns (*Sterna hirundo*), with smaller numbers of Arctic and roseate terns (*S. paradisaea, S. dougallii*); (sandwich, little and black terns (*S. sandvicensis, S. albifrons, Chlidonias niger*) were also recorded) (Merne et al., 2008; Merne 2010). At least 4,887 common tern have been recorded here during the aforementioned survey years. This estimate does not factor in turnover rates and therefore the total number of common tern using this SPA may be significantly higher
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	The common tern breeding colony in Dublin Bay is primarily sited on an artificial structure known as the 'ESB Dolphin' (see Newton et al., 2014)
Distribution: roosting areas	Number; location; area (Hectares)	No significant decline	Merne et al. (2008) describe the main roosting area as the exposed sand banks in south Dublin Bay, primarily between the Martello Towers of at Sandymount (319524, 232021) and Williamstown (320796, 229979). Terns have been occasionally recorded outside of this area on adjacent sandflats extending to Irishtown/South Bull Wall and to Blackrock but these birds eventually joined the birds roosting in the main area (Merne et al 2008)
Prey biomass available	Kilogrammes	No significant decline	During the breeding season, common terns can make extensive use of marine waters adjacent to their breeding colonies. Key prey items: Small fish, crustaceans, insects and occasionally squid. Key habitats: forage in/over shallow coastal waters, bays, inlets, shoals, tidal-rips, drift lines, beaches, saltmarsh creeks, lakes, ponds or rivers. Foraging range: max. 37km; mean max. 33.81km; mean 8.67km (Birdlife International, 2014). Terns associated with the roost are thought to feed during the day in the wider Dublin Bay area but direct survey evidence is incomplete. Evening observations of arriving terns to the primary roosting area indicated that most flew into Dublin Bay from an easterly and southeasterly direction leading the authors to suggest they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne et al., 2008). Foraging ranges between post-breeding roost sites and feeding areas may be greater than the estimates given for the breeding season

Continued overleaf…

Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	During the breeding season, common terns can make extensive use of marine waters adjacent to their breeding colonies. Foraging range: max. 37km; mean max. 33.81km; mean 8.67km (Birdlife International, 2014). Terns associated with the roost are thought to feed during the day in the wider Dublin Bay area but direct survey evidence is incomplete. Evening observations of arriving terns to the primary roosting area indicated that most flew into Dublin Bay from an easterly and southeasterly direction leading the authors to suggest the bird were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne et al., 2008). Foraging ranges between post-breeding roost sites and feeding areas may be greater than the estimates given for the breeding season
Disturbance at breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding common tern population	The common tern breeding colony in Dublin Bay is primarily sited on an artificial structure known as the 'ESB Dolphin' (see Newton et al., 2014)
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of common tern among the post-breeding aggregation of terns	Merne et al (2008) describes the main roosting area as the exposed sand banks in south Dublin Bay primarily between the Martello Towers at Sandymount (319524, 232021) and Williamstown (320796, 229979). Although principally used as a night roost, birds begin to roost at least one hour before sunset during the period July - September with peak activity occurring between mid-August and mid-September (Merne et al 2008; Merne 2010). Merne (2010) recorded significant disturbance events to the roosting terns caused by people with dogs off the leash and kite surfing

Table 80

A194 Arctic Tern *Sterna paradisaea*

To maintain the favourable conservation condition of Arctic Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Passage population	Number of individuals	No significant decline	Evening surveys of roosting terns in South Dublin Bay and River Tolka Estuary SPA confirm the conservation importance of the south Dublin Bay area during the post-breeding/pre-migration period. Up to 11,700, 9,025 and 8,020 terns were recorded in 2006, 2007 and 2010 respectively. Given the counting conditions (i.e. low light levels and long distance recording) it was rarely possible to identify the terns to species level but the majority of the birds appear to have been common terns (*Sterna hirundo*), with smaller numbers of Arctic and roseate terns (*S. paradisaea, S. dougallii*); (sandwich, little and black terns (*S. sandvicensis, S. albifrons, Chlidonias niger*) were also recorded) (Merne et al., 2008; Merne 2010). At least 200 Arctic tern have been recorded here during the aforementioned survey years. This estimate does not factor in turnover rates and therefore the total number of Arctic tern using this SPA may be significantly higher
Distribution: roosting areas	Number; location; area (hectares)	No significant decline	Merne et al. (2008) describe the main roosting area as the exposed sand banks in south Dublin Bay primarily between the Martello Towers at Sandymount (319524, 232021) and Williamstown (320796, 229979). Terns have been occasionally recorded outside of this area on adjacent sandflats extending to Irishtown/South Bull Wall and to Blackrock but these birds eventually join the birds roosting in the main area (Merne et al., 2008)
Prey biomass available	Kilogrammes	No significant decline	Terns associated with the roost are thought to feed during the day in the wider Dublin Bay area but direct survey evidence is incomplete. Evening observations of terns arriving to the roosting area indicated that most flew in from an easterly and southeasterly direction leading the authors to suggest they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne et al., 2008). During the breeding season Arctic terns can make extensive use of marine waters adjacent to their breeding colonies. Key prey items: Small fish, crustaceans and other invertebrates. Key habitats: forage in/over open waters and shallow bays, rocky shores, tidal flats, shoals, tide rips and ocean fronts. Foraging range: max. 20.6km, mean max. 12.24km, mean 11.75km (Birdlife International, 2014). As these foraging range estimates relate to birds during the breeding season, the distances between post-breeding roost sites and feeding areas may be greater

Continued overleaf

Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	Terns associated with the roost are thought to feed during the day in the wider Dublin Bay area but direct survey evidence is incomplete. Evening observations of arriving terns to the primary roosting area indicated that most flew into Dublin Bay from an easterly and southeasterly direction leading the authors to suggest the birds were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne et al., 2008). During the breeding season Arctic terns can make extensive use of marine waters adjacent to their breeding colonies. Foraging range: max. 20.6km, mean max. 12.24km, mean 11.75km (Birdlife International, 2014). As these foraging range estimates relate to birds during the breeding season, the distances between post-breeding roost sites and feeding areas may be greater
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of Arctic tern among the post-breeding aggregation of terns	Merne et al. (2008) describes the main roosting area as the exposed sand banks in south Dublin Bay primarily between the Martello Towers at Sandymount (319524, 232021) and Williamstown (320796, 229979). Although principally used as a night roost, birds begin to roost at least one hour before sunset during the period July - September with peak activity occurring between mid-August and mid-September (Merne et al., 2008; Merne, 2010). Merne (2010) recorded significant disturbance events to the roosting terns caused by people with dogs off the leash and kite surfing

Table 81

A999	Wetlands		
To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:			
Attribute	**Measure**	**Target**	**Notes**
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation. See map 3	The wetland habitat area was estimated as 2,192ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document

2.5.9.5 Conservation status

A synopsis of the conservation status of this site is provided in Table 84.

Table 82: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo
B	A169	Arenaria interpres			w	52	52	i		G	C	B	C	C
B	A046	Branta bernicla			w	368	368	i		G	C	A	C	A
B	A144	Calidris alba			w	321	321	i		G	B	A	C	A
B	A149	Calidris alpina			w	1923	1923	i		G	C	B	C	B
B	A143	Calidris canutus			w	548	548	i		G	B	B	C	B
B	A137	Charadrius hiaticula			w	161	161	i		G	C	B	C	B
B	A130	Haematopus ostralegus			w	1145	1145	i		G	C	B	C	B
B	A182	Larus canus			w	330	330	i		G	C	B	C	B
B	A176	Larus melanocephalus			c	10	20	i		G	B	A	C	A
B	A176	Larus melanocephalus			w	10	20	i		G	B	A	C	A
B	A179	Larus ridibundus			w	3040	3040	i		G	C	B	C	B
B	A157	Limosa lapponica			w	766	766	i		G	B	B	C	A
B	A069	Mergus serrator			w	17	17	i		G	C	B	C	C
B	A160	Numenius arquata			w	127	127	i		G	C	B	C	C
B	A017	Phalacrocorax carbo			w	24	24	i		G	C	B	C	C
B	A141	Pluvialis squatarola			w	45	45	i		G	C	B	C	C
B	A005	Podiceps cristatus			w	21	21	i		G	C	B	C	C
B	A192	Sterna dougallii			c	200	500	i		G	A	A	C	A
B	A193	Sterna hirundo			c	2000	3000	i		G	B	A	C	A
B	A194	Sterna paradisaea			c	1000	2000	i		G	B	A	C	A
B	A162	Tringa totanus			w	260	260	i		G	C	B	C	C

2.5.10 Wicklow Mountains SPA (Site synopsis version date 13/10/2010, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 5.0)

2.5.10.1 General description

This is an extensive upland site, comprising a substantial part of the Wicklow Mountains. The underlying geology of the site is mainly of Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area was subject to glaciation and features fine examples of glacial lakes, deep valleys and moraines. Most of site is over 300 m, with much ground over 600 m and the highest peak of Lugnaquillia at 925 m. The substrate over much of site is peat, with poor mineral soil occurring on the slopes and lower ground. Exposed rock and scree are features of the site. The dominant habitats present are blanket bog, heaths and upland grassland. Fine examples of native Oak woodlands are found in the Glendalough area. The site, which is within the Wicklow Mountains National Park, is fragmented into about 20 separate parcels of land. The site supports good examples of both upland and woodland bird communities. It has breeding *Falco columbarius* and *Falco peregrinus*, as well as *Turdus torquatus* and *Lagopus lagopus*, both of the latter being Red-listed in Ireland. It is the only site in Ireland where *Mergus merganser* breeds regularly. It is important for rare breeding passerines of oakwoods, notably *Phoenicurus phoenicurus* and *Phylloscopus sibilatrix*. It also has *Sylvia borin* and *Sylvia atricapilla*.

2.5.10.2 Qualifying interests

The Qualifying Interest (QI) of the Wicklow Mountains SPA is

- A098 Merlin*, Falco columbarius;* and
- A103 Peregrine*, Falco peregrinus.*

A detailed Conservation Objectives document has not been prepared for this site.

2.5.10.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 83.

Table 83

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	D01.01		i
H	B		o
M	C01.03		i
H	G01.02		i
M	A04		i

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	G01.02		i
H	G03		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.10.4 Conservation Objectives

A detailed Conservation Objectives document has not been prepared for this site. The primary conservation objective (generic) of this site is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

- A098 Merlin*, Falco columbarius;* and
- A103 Peregrine*, Falco peregrinus.*

2.5.10.5 Conservation status

A synopsis of the conservation status of this site is provided in Table 84.

Table 84: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A098	Falco columbarius			p	5	10	p		G	B	A	C	A
B	A103	Falco peregrinus			p	10	10	p		G	B	A	C	A
B	A274	Phoenicurus phoenicurus			r	1	2	p		G	A	A	B	A
B	A314	Phylloscopus sibilatrix			r	1	5	p		G	B	A	B	A
B	A275	Saxicola rubetra			r	5	5	p		G	C	B	C	B
B	A311	Sylvia atricapilla			r	50	100	p		G	C	A	C	B
B	A310	Sylvia borin			r	1	4	p		G	C	A	C	B
B	A282	Turdus torquatus			r	1	2	p		G	C	B	B	B

2.5.11 Poulaphouca Reservoir SPA (Site synopsis version date 02/03/2005, Natura 2000 form update 09/2014, Conservation Objectives (generic) version 4.0)

2.5.11.1 General description

Poulaphouca Reservoir, located in the western foothills of the Wicklow Mountains, was created in 1944 by damming of the River Liffey for the purpose of generating electricity from hydropower. The reservoir covers an area of approximately 20 square kilometres and is the largest inland water body in the mid-east and south-east regions. The reservoir receives water from two main sources, the River Liffey at the northern end, and the Kings River at the southern end. The exit is into the Liffey gorge at the western end. Underlying the reservoir are sands and gravels deposited during the last glaciation. The shores of the lake are mostly sandy. When water levels are low exposed lake muds are colonised by an ephemeral flora of annual plant species. The site is of national importance for its population of Anser anser, which is one of the largest in the country. The site provides the main roost for the birds, with feeding mostly on improved grassland outside of the site. A range of other waterfowl species occur in relatively low numbers, including *Cygnus cygnus, Anas penelope* and *Bucephala clangula*. The

reservoir attracts roosting gulls during winter, most notably a large population of *Larus fuscus*, which in Ireland is rare in winter away from the south coast.

2.5.11.2 Qualifying interests

The Qualifying Interest (QI) of the Poulaphouca Reservoir SPA is

- A043 Greylag Goose, *Anser anser;*
- A183 Lesser Black-backed Gull *Larus fuscus.*

A detailed Conservation Objectives document has not been prepared for this site.

2.5.11.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites are detailed in Table 85.

Table 85

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	F03.01		i
M	G01.01		i
H	B01		o
H	D01.05		i
L	F02.03		i

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	D01.05		i
H	B01		o
L	F03.01		i
L	F02.03		i
M	G01.01		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

2.5.11.4 Conservation Objectives

A detailed Conservation Objectives document has not been prepared for this site. The primary conservation objective (generic) of this site is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

- A043 Greylag Goose, *Anser anser;*
- A183 Lesser Black-backed Gull *Larus fuscus.*

2.5.11.5 Conservation status

A synopsis of the conservation status of this site is provided in Table 86.

Table 86: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A052	Anas crecca			w	107	107	i		G	C	B	C	C
B	A050	Anas penelope			w	180	180	i		G	C	B	C	C
B	A053	Anas platyrhynchos			w	186	186	i		G	C	B	C	C
B	A043	Anser anser			w	701	701	i		G	A	B	C	A
B	A067	Bucephala clangula			w	22	22	i		G	C	B	C	C
B	A038	Cygnus cygnus			w	22	22	i		G	C	C	C	C
B	A182	Larus canus			w	183	183	i		G	C	B	C	C
B	A183	Larus fuscus			w	651	651	i		G	C	B	C	C
B	A179	Larus ridibundus			w	915	915	i		G	C	B	C	C
B	A160	Numenius arquata			w	86	86	i		G	C	C	C	C
B	A017	Phalacrocorax carbo			w	11	11	i		G	C	B	C	C
B	A005	Podiceps cristatus			w	8	8	i		G	C	B	C	C

2.6 Sources and significance of potential Direct, Indirect or Secondary Impacts

For the purposes of Appropriate Assessment, a significant effect is any effect that may affect the Conservation Objectives for which a site was designated, but excluding inconsequential effects. If the effect is not relevant to the conservation objective, then it cannot be a significant effect for the purposes of Appropriate Assessment. A likely significant effect, for the purpose of Appropriate Assessment must be:

(a) Significant;

(b) Relevant to the conservation objective for that site; and

(c) The possibility of effects cannot be reasonably excluded.

2.6.1 Direct Impacts

The proposed works will not entail any land-take, habitat alteration, etc. within any Natura 2000 site, and as such there will be no direct impacts associated with the proposed survey.

2.6.2 Indirect Impacts

While the proposed development is more than 400m distant from the nearest watercourse, there will be drainage associated with the proposed development, both during construction and over the operational lifetime of the proposed development. Drainage will discharge to the public storm water system, which will eventually discharge to Dublin Bay, in the vicinity of numerous Natura 2000 sites. There is, therefore, potential for indirect impacts on surface and/or ground water quality and consequential impacts on the water quality of water-courses in the vicinity.

There are, however, strict guidelines and regulations to minimise any potential impacts of developments such as this on water quality. The proposed development must be SUDS-compliant. In addition, South Dublin County Council, like Co. Councils nationwide have rigorous requirements of all works undertaken to comply with the protection of water quality. Any contractor must undertake works in such a manner as to avoid degradation of river water quality either by pollution from oil spills, or contamination due to concreting or grouting operations, or by causing turbidity due to disturbance of silt or spoil from operations.

The following conditions should be part of any tender for the works in order to "reasonably exclude" the possibility of negative impacts on water quality:

Specific measures to be taken to prevent the above shall include the following:

- *Contractors plant, equipment etc. shall be free of any mechanical defects, and be well maintained so as to prevent soil or fuel leaks;*
- *The Contractor shall so arrange that the cleaning out of concrete delivery trucks and equipment does not cause run-off;*
- *The Contractor shall take special precautions in relation to protection of watercourses. Temporary environmental screens shall be erected sufficient to prevent construction debris, abrasive materials, oils, chemicals or other construction materials from entering any watercourse for the duration of the works. The Contractors method statement should make specific reference to measures for the protection of water quality;*
- *The Contractor shall take special precautions in relation to, for example, any cast insitu concrete. Temporary environmental screens shall be erected sufficient to prevent construction debris, grout, oils, chemicals or other construction materials from entering any water-course for the duration of the works. The Contractors method statement should make specific reference to measures for the protection of water quality.*
- *Measures to ensure no spillage of fuel or cement/lime based material or any other leakages occur to any watercourse for the duration of the works.*
- *The Contractor shall notify the Inland Fisheries Board 7 days in advance of commencement of the works and within 7 days of completion of the works.*
- *All works will be undertaken in accordance with the following best practice guidelines:*
    - *CIRIA Control of Water Pollution from Construction sites – Guidance for Consultants and Contactors (2001).*
    - *Eastern Regional Fisheries Board Guidance Notes 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (Eastern Regional Fisheries Board, 2006);*
    - *NRA Guidelines (2006) NRA Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.*

2.6.2.1 Secondary Impacts

The works will entail the disturbance of vegetation. There is a potential for the spread of Alien Invasive Plant Species in the event of such a species occurring at the site. During the site visit, no evidence of any Alien Invasive Plant Species listed on Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 was observed. Although not an optimal time of year for such a survey, evidence of any such species would almost certainly be observed. Given the lack of any evidence of any Alien Invasive Plant Species the potential risk of dispersal of Alien Invasive Plant Species is minimal, i.e. not significant. It should, however, be a condition of works that the contractor must guarantee that any machinery/equipment utilised at the site are not contaminated with the propagules of any Alien Invasive Plant Species.

2.6.3 Potential for impacts on Natura 2000-sites

The potential for impacts upon Natura 2000 sites within 15 km of the proposed works is summarized in Table 87. The potential for impacts upon the Natura 2000 network is summarized in Table 88. No impacts on the conservation status of qualifying interests of any Natura 2000 site are foreseen

Table 87: The potential for impacts upon Natura 2000 sites.

Site Name	Direct Impacts	Indirect/ Secondary Impacts	Resource requirements (water abstraction etc.)	Emissions (to land, water or air)	Excavation requirements	Duration of construction and operation
North Dublin Bay SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
South Dublin Bay SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Red Bog Kildare SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Knocksink Wood SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Glenasmole Valley SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Rye Water Valley/Carton SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Wicklow Mountains SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
North Bull Island SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
River Tolka and South Dublin Bay SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Wicklow Mountains SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Poulaphouca Reservoir SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen

Table 88: Potential changes to Natura 2000 sites.

Site Name	Reduction of habitat area	Disturbance to key species	Habitat/species fragmentation	Reduction in species density	Changes in Key Indicators of Conservation Value	Climate change
North Dublin Bay SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
South Dublin Bay SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Red Bog Kildare SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Knocksink Wood SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Glenasmole Valley SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Rye Water Valley/Carton SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Wicklow Mountains SAC	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
North Bull Island SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
River Tolka and South Dublin Bay SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Wicklow Mountains SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen
Poulaphouca Reservoir SPA	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen	None foreseen

2.6.4 Potential for cumulative impacts in association with other plans

Article 6(3) of the Habitats Directive requires an assessment of a plan/project to consider other plans/projects that might, in combination with the proposed plan/project, have the potential to adversely impact upon Natura 2000 sites. A list of plans and projects relevant to the proposed works is listed in Table 89, in addition to the potential for cumulative impacts.

Table 89: Potential cumulative impacts.

Plan	Purpose	Cumulative impact
EU Water framework Directive	Maintain and enhance water quality within the EU	None predicted
EU Freshwater Fish Directive	Protect freshwater bodies within the EU suitable for sustaining fish populations	None predicted
EU Groundwater Directive	Maintain and enhance the quality of groundwater within the EU	None predicted
EU Floods Directive	The Floods Directive applies to river basins and coastal areas at risk of flooding	None predicted
Nitrates Directive	Reducing water pollution within the EU	None predicted
Urban Waste-water treatment Directive	Protecting the environment from adverse impacts of waste-water discharge	None predicted
Sewage Sludge Directive	Regulate the use of sewage sludge	None predicted
The IPPC Directive	To achieve a high level of environmental protection	None predicted
National Development Plan	To promote more balanced spatial and economic development	None predicted
National Spatial Strategy	To achieve a better balance of social, economic and physical development across Ireland	None predicted
SDCC Development Plan (2016 – 2022)	Sustainable development of South Dublin	None predicted
Future phases of flood defence repairs	Repairing flood defences	None predicted
Local Area Development Plans	Various	None predicted
Current planning permissions in immediate vicinity	Various	None predicted
Future Planning Permissions	Various	None predicted

Owing to the nature and location of the proposed works, there are no cumulative impacts foreseen. Of note, the area is currently utilised heavily for antisocial behaviour, with evidence of alcohol and drug abuse. It is likely the location of the proposed link road may reduce, or eradicate this behaviour.

2.6.5 "Do nothing" scenario

There are no impacts foreseen, and as such no difference between the "Do Nothing" scenario and the proposed surveying going ahead.

2.6.6 Gauging of Impacts on Natura 2000 sites – Integrity of site checklist

The potential impacts of the proposed works on Natura 2000 sites are gauged using a checklist, which aids in determining whether the proposed surveying has the potential to have a significant negative impact on any Natura 2000 site. This checklist consists of a number of pertinent questions as set out in Table 90.

Table 90: Potential of the proposed surveying to impact on Natura 2000 sites

Does the Plan have the potential to:	**Yes/No**
Cause delays in progress towards achieving the conservation objectives of the Natura 2000 site?	NO
Interrupt progress toward achieving the conservation objectives of the Natura 2000 site?	NO
Disrupt those factors helping to maintain the favourable conditions at the Natura 2000 site?	NO
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the Natura 2000 site?	NO
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the Natura 2000 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 Natura 2000 site?	NO
Interfere with predicted or expected natural changes to the Natura 2000 site (such as water dynamics or chemical composition)?	NO
Reduce the area of key habitats within the Natura 2000 site?	NO
Reduce the population of key species of the Natura 2000 site?	NO
Alter the balance between key species of the Natura 2000 site?	NO
Reduce the biodiversity of the Natura 2000 site?	NO
Result in disturbance that could affect population size or density or the balance between key species within the Natura 2000 site?	NO
Result in fragmentation?	NO
Result in the loss or reduction of key features of Natura 2000 sites?	NO

2.7 Conclusions of screening

According to the guidance published by the NPWS (DoEHLG, 2009), Screening for Appropriate Assessment can either identify that a Natura Impact Statement (NIS) is not required where:

(1) A project/proposal is directly related to the management of the site; or

(2) There is no potential for significant effects affecting the Natura 2000 network

Where the screening process identifies that significant effects are certain, likely or uncertain the project must either proceed to Stage II Appropriate Assessment or be rejected.

The likely significant impacts that will arise from the proposed development have been examined in the context of a number of factors that could potentially impact upon the integrity of the Natura 2000 network. On the basis of the findings of this Screening for Appropriate Assessment, it is concluded that the proposed works:

(1) Is not directly connected with or necessary to the management of a Natura 2000 site; and

(2) Will have no significant impacts on any Natura 2000 site.

Screening having identified that (assuming all regulations are complied with and codes of best practice and management adhered to as regards road safety, vehicle maintenance, etc.) there is no potential for significant effects of the proposed works affecting the Natura 2000 network, Stage II Appropriate Assessment and the preparation of a Natura Impact Statement is not required in this case.

3 References and Bibliography

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www.sdcc.ie – official website of South Dublin Co Council

www.npws.ie – website of the National Parks and Wildlife Service, source of information for data regarding Natura 2000 sites and Article 17 Conservation Assessments.

www.europa.eu – official website of the European Union, source of information on EU Directives.
www.epa.ie – official website of the Environmental Protection Agency.