

HABITATS DIRECTIVE ASSESSMENT
(Stage 1 Screening)

Barrysparks, Swords Local Area Plan
FINAL REPORT

August 2010



Broomhall Business Park
Rathnew, Wicklow, Ireland
T: +353 (1) 4880500
E: info@natura.ie
W: www.naturaconsultants.com

TABLE OF CONTENTS

- 1. INTRODUCTION 1
- 2. STAGE 1 – SCREENING..... 4
- 3. SCREENING MATRIX 7
- 4. REFERENCES 14
- APPENDIX 1 15
- APPENDIX II 17
- APPENDIX III 18

1. INTRODUCTION

Natura Environmental Consultants were commissioned to carry out a Stage 1, Habitats Directive Assessment (HDA) for a proposed Local Area Plan (LAP) for lands at Barrysparks, east of Swords in north County Dublin (Figure 1). The purpose of this report is to determine the effects, if any, of the proposed plan on Broadmeadow Estuary SPA and Malahide Estuary cSAC and other Natura 2000 sites. And to further assess if any of the predicted impacts have the potential to have significant negative impacts on the qualifying interests or on the conservation objectives of these designated areas for nature conservation.

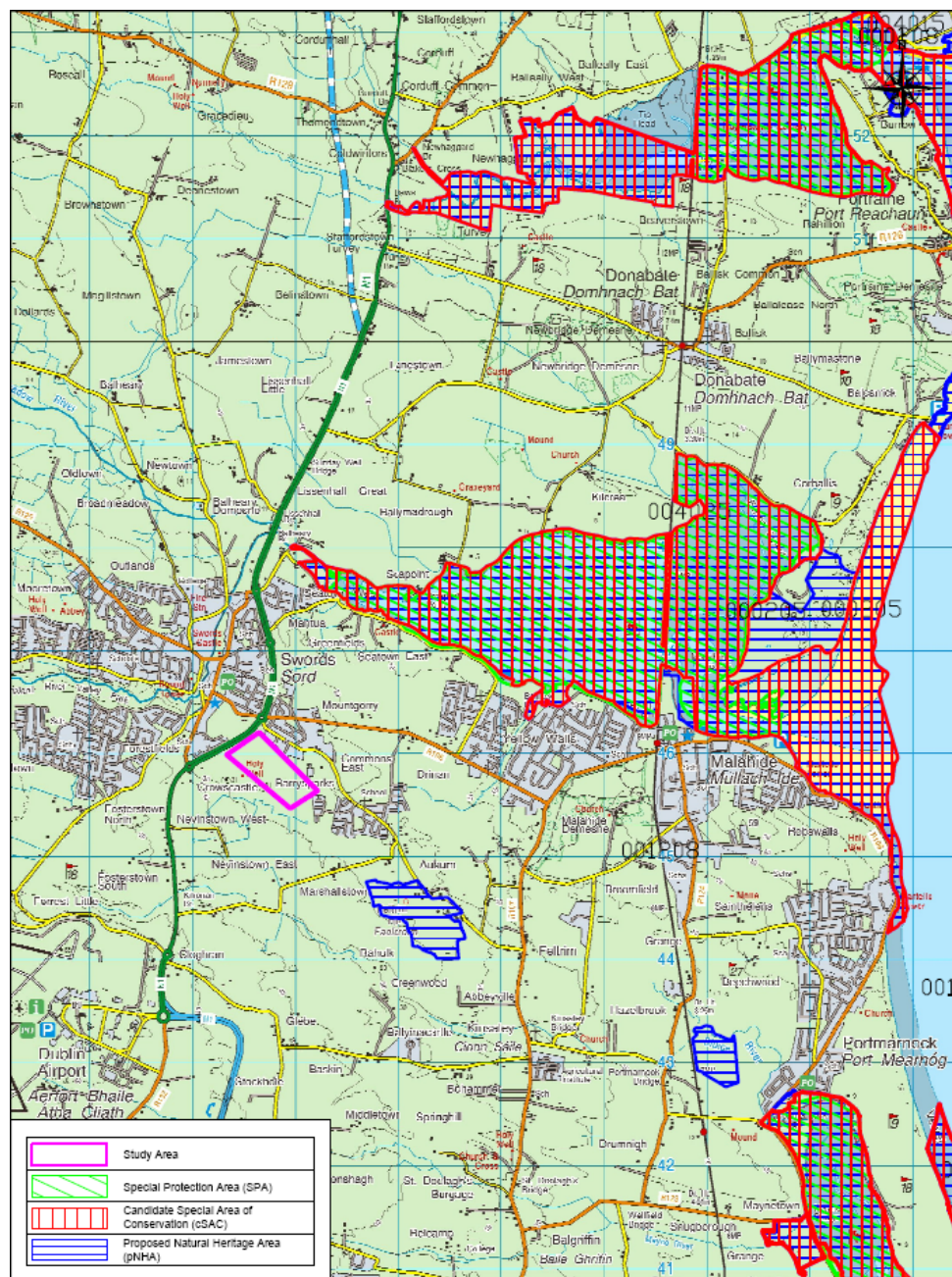


Figure 1: Barrysparks LAP location in relation to designated conservation areas.

1.1 Habitats Directive Assessment

Habitats Directive Assessment (HDA) is an assessment of the potential effects of a proposed Plan, on its own or in combination with other Plans or projects, on one or more Natura 2000 sites which includes (Special Protection Areas (SPA) for birds, Special Areas of Conservation (SAC) for habitats and species, or Ramsar wetland sites). HDA is a requirement of Article 6(3) and 6(4) of Council Habitats Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. The HDA findings must be taken into account by the competent authority, Fingal County Council, in reaching its decision to authorise the Barrysparks Local Area Plan. A final statement on whether or not the Development Plan, on its own or in combination with other Plans or projects, will affect the integrity of Natura 2000 sites, is also required, prior to adoption of the Plan.

1.2 Legislative Requirements

Article 6(3) and 6(4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, states:

“Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 sites) but likely to have 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 sites 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.”

In February 2008, the requirement for an HDA of all land use plans was outlined in a circular letter issued by the Department of the Environment, Heritage and Local Government (DoEHLG)¹.

In the preparation of this assessment regard has been given to EU guidance outlined in *Assessment of places 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*. In the context of Ireland, the DoEHLG guidance; “Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, December 2009” has been followed. Consideration has also been given to the following documentation for guidance purposes: *Appropriate Assessment of Plans, September 2006, Authors: Scott Wilson, Levett – Therivel Sustainability Consultants, Treweek Environment Consultants and Land Use Consultants*, and workshop material on the *Habitats Directive Assessment of Plans*, by Riki Therivel, Lovett-Therivel Sustainability Consultants on behalf of the Heritage Council in February 2009.

¹ Circular letter SEA 1/08 & NPWS 1/08

1.3 Objectives of Habitats Directive Assessment

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the HDA process.

1. Firstly, a plan should aim to **avoid** any negative impacts on Natura 2000 sites by identifying possible impacts early in plan making, and writing the plan in order to avoid such impacts.
2. Secondly, **mitigation measures** should be applied during the AA process to the point where no adverse impacts on the site(s) remain.
3. Under a worst-case scenario, a plan may have to undergo an assessment of alternative solutions. Under this stage of the assessment, **compensatory measures** are required for any remaining adverse effects, but they are permitted only if (a) there are no alternative solutions and (b) the plan is required for imperative reasons of overriding public interest (the 'IROPI test'). European case law highlights that consideration must be given to alternatives outside the plan boundary area in carrying out the IROPI test. It is a rigorous test which plans are generally considered unlikely to pass.

1.4 Habitats Directive Assessment Process

There are four stages of the Habitats Directive Assessment (HDA) process as follows:

- Stage 1 (Screening)
- Stage 2 (Appropriate Assessment)
- Stage 3 (Alternatives)
- Stage 4 (IROPI and Compensatory Measures)

The aim of the screening process (Stage 1) is to determine whether or not an Appropriate Assessment (AA) is required. The aim of the AA (Stage 2) is to: identify potential impacts of the plan on its own or in combination with other plans or projects; identify policy and objectives that will avoid and mitigate any negative impacts on Natura 2000 sites; and avoid the need to progress to Stages 3 and 4.

Plan adoption may only proceed if the Plan will not affect the integrity of a Natura 2000 site. Progression to stage 3 would result in changes to the Plan in its current form, and would require the implementation of compensatory measures for impacts on Natura 2000 sites. If recommendations of Stage 2 are incorporated into the Development Plan, then Stages 3 and 4, relating to alternative solutions and compensatory measures, will not be required.

This HDA report for the Barrysparks LAP, covers Stage 1 (Screening) only.

2. STAGE 1 – SCREENING

3.1 Introduction

Screening requires a review of all Natura 2000 sites that could potentially be subject to impacts. It involves identifying whether sites should be included in Stage 2 of the HDA.

The first step is to develop a list of Natura 2000 sites potentially affected by the Plan. NPWS has recommended a pre-cautionary approach, with a buffer zone of 10km from the Plan boundary in compiling this list. Details of the Natura 2000 sites located within 10km of Swords are shown in Table 3.1. One site which is covered by both SPA and cSAC designations is located within 1.5km of the LAP. An additional four sites are located within 10km of the Plan boundary.

Each Natura 2000 site has been reviewed to establish whether or not the plan is likely to have a significant effect on the integrity of the site as defined by its structure and function and its conservation objectives. The qualifying interests of each Natura 2000 site was identified and set out in Appendix I. Tables 4.1 and 4.2. The sensitivities and threats to individual qualifying interests were assessed with reference *The Report on Status of Habitats and Species in Ireland: Technical reports and forms* (NPWS, 2008). The potential threats are summarised into the following categories for screening process:

- **Direct impacts** refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct impacts can be a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.
- **Indirect and secondary impacts** do not have a straight-line route between cause and effect and it is potentially more challenging to ensure that all the possible indirect impacts of the plan – in combination with other plans and projects - have been established. Deterioration in water quality can occur as an indirect consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals, birds in particular. The introduction of invasive species can also be defined as an indirect impact, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.
- **Disturbance** to fauna can arise directly through the loss of habitat (e.g. bat roosts) or indirectly through noise, vibration and increased activity associated with construction and operation.

Table 3.2 and 3.3 lists potential impacts on the Natura 2000 sites within 10km of Barrysparks. There is one site that has clear links to the Barrysparks LAP; The Broadmeadow/Swords SPA and Malahide Estuary cSAC. Only this site is considered to have the potential to be significantly impacted by the LAP, therefore the remaining Natura 2000 sites are not considered further in the Screening Matrix.

This screening process will involve consultation with NPWS,

Table 3.1: Details of Natura 2000 Sites located within 10km of Barrysparks Local Area Plan Boundary

Site Name	Site Code	Approximate Location in relation to Barrysparks
Malahide Estuary cSAC* Broadmeadow/Swords Estuary SPA**	000205 004025	1.5km north east
Rogerstown Estuary cSAC Rogerstown SPA	000208 004015	5km north
Baldoyle Bay cSAC Baldoyle Bay SPA	000199 004016	5km south east
Howth Head cSAC Howth Head Coast SPA	000202 004113	7km south east
North Bull Island SPA North Dublin Bay cSAC	004006 000206	10km south

A Natura 2000 site includes the following conservation designations:

* A candidate Special Area of Conservation is designated under the EU Habitats Directive (92/43/EEC) for the protection of certain habitats and species as listed in the Directive.

** A special Protection Area is designated under the EU Birds Directive (79/409/EEC) for the protection of birds as listed in the Directive.

Table 3.2: Potential impacts of Barrysparks Local Area Plan on Natura 2000 cSAC Sites located within 10km of the LAP Boundary

Site ID	Site Name	Direct impacts e.g. habitat loss	Indirect impacts e.g. alteration to the hydrological regime	Surface or ground water contamination	Disturbance to protected species (Habitats Directive Annex II or IV)	AA required
000205	Malahide Estuary	No	Yes	Yes	Yes	Yes
000199	Baldoyle Bay	No	No	No	No	No
000202	Howth Head	No	No	No	No	No
000204	Lambay Island	No	No	No	No	No
000206	North Dublin Bay	No	No	No	No	No
000208	Rogerstown Estuary	No	No	No	No	No
000210	South Dublin Bay	No	No	No	No	No
002193	Ireland'S Eye	No	No	No	No	No

Table 3.3 Potential impacts of Barrysparks Local Area Plan on Natura 2000 SPA Sites located within 10km of the LAP Boundary

Site ID	Site Name	Is there potential for:				AA required
		Direct impacts e.g. habitat loss	Indirect impacts e.g. alteration to the hydrological regime	Surface or ground water contamination	Disturbance to protected species (Habitats Directive Annex II or IV)	
004025	Broadmeadow/Swords Estuary SPA	No	Yes	Yes	Yes	Yes
004006	North Bull Island SPA	No	No	No	No	No
004015	Rogerstown SPA	No	No	No	No	No
004016	Baldoyle Bay SPA	No	No	No	No	No
004024	South Dublin Bay And River Tolka Estuary Spa	No	No	No	No	No
004069	Lambay Island SPA	No	No	No	No	No
004113	Howth Head Coast SPA	No	No	No	No	No
004117	Ireland's Eye SPA	No	No	No	No	No
004122	Skerries Islands SPA	No	No	No	No	No

3. SCREENING MATRIX

For Broadmeadow/Swords SPA, and Malahide Estuary cSAC NATURA SITE 2000

(Following Article 6 (3) of the European Union Habitats Directive (92/43/EEC))

***Assessment of the effects of the Barrysparks Local Area Plan (LAP) on the integrity of the Broadmeadow/Swords Special Protection Area (Site Code 004025) and Malahide Estuary candidate Special Area of Conservation (Site Code 000205) and Broadmeadow Ramsar site.	
Description of the project or plan	
Location	The Barrysparks Local Area Plan site is located at the edge of Swords town to the east of Swords bypass (R132) in north County Dublin
Distance from designated site	1.5km south-west of Broadmeadow Estuary.
Brief Description of the project or plan	<p>The Barrysparks LAP is located on a 10.3 hectare site and is zoned as a Major Town Centre (MC). Immediately adjoining to the south are lands totalling 9.3 hectares, which are zoned as Science and Technology (ST1 zoning). The Barrysparks MC LAP area is currently comprised of a number of large agricultural fields bounded by hedges. A watercourse flows across the ST1 zoned lands and ultimately flows into the Broadmeadow estuary 1.5km to the north-east.</p> <p>The objective of the plan is to develop a major town centre that will link in with the greater Swords Strategic Vision 2035. Within the MC zoning there will be residential, commercial, retail, office, and leisure development. The quantity or density of development and the mix of uses are expressed as a range of retail; 35,000 – 60,000 sqm, Commercial 20,000 – 40,000 sqm, Residential c450 units – c800 units. The type of residential dwellings will include apartment blocks, houses and duplexes. The estimated residential population will be up to 1,800.</p> <p>The ST1 zoned area to the south does not form part of the subject LAP area and a separate LAP will be prepared for these adjoining lands in due course. However, there are elements of the subject LAP which are dependent upon infrastructure on these adjoining ST1 lands (e.g. drainage, urban park and road access) and this report considers these adjoining lands in relation to this supporting infrastructure.</p>
Is the project or plan directly connected with or necessary to the Natura 2000 site management for nature conservation?	No

*** Prepared in accordance with documents: European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC and European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative reasons of overriding public interest, Compensatory Measures, Overall Coherence, Opinion of the Commission.

Brief Description of the Natura 2000 site	
Name	Broadmeadow/Swords Estuary SPA and Malahide Estuary cSAC.
Site designation status	Designations: Special Protection Area for birds (004025) Candidate Special Area of Conservation (000205) Ramsar Site
Natura 2000 Site description	<p>Broadmeadow/Malahide Estuary is located 1.5km north-east of the proposed Barrysparks LAP. It is the nearest Natura 2000 site to the LAP and is covered by two Conservation Designations: Broadmeadow/Swords Estuary SPA for the bird species it contains and Malahide Estuary cSAC primarily for the habitats it contains. The estuary is traversed by a viaduct which divides the outer (Malahide) estuary from the inner (Broadmeadow) estuary.</p> <p>The whole estuary is of high importance for wintering waterfowl. It has an internationally important population of Brent Goose and nationally important populations of 12 other bird species. The habitats of the estuary provide roosting and feeding areas. Water quality is critical to maintaining favourable habitat for the birds. See Appendix 3 for the full NPWS Site Synopses.</p> <p>Other Natura sites</p> <p>There are four other Natura sites within 10km of the LAP (See Table 3.1). They are all coastal sites. Each is designated both as a cSAC and SPA. They are all important for birds in particular wintering waterfowl. Like Broadmeadow/Malahide Estuary, three of them are characterised by extensive intertidal mudflats. They include; Rogerstown Estuary, Baldoyle Estuary, North Dublin Bay. Brent Goose is a qualifying interest of each of these sites. The geese regularly move between these sites.</p>
Qualifying species (Annex II)	<ul style="list-style-type: none"> ▪ See Appendix 1, Table 4.1
Qualifying habitats (Annex I)	<ul style="list-style-type: none"> ▪ See Appendix 1 Table 4.2
Non-qualifying habitats or species of interest	<ul style="list-style-type: none"> ▪ See Appendix 1 Table 4.2
Unit size	9 km ² (approximately)

Assessment criteria	
Describe the individual elements of the plan (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.	<p>The individual elements of the draft Plan have been identified that may result in impacts on Natura 2000 sites. The elements are outlined below;</p> <p>Waste Water Discharge</p> <p>The Barrysparks MC LAP will generate between 1,900PE up to a maximum of 3,500PE foul waste water. There is a planned upgrade of the existing Swords Waste Water Treatment Plant (SWWTP) by Fingal Co. Co. from 60,000 PE to 90,000PE by 2013. The current SWWTP is at its design capacity. The Barrysparks MC LAP will not be constructed before the upgrade</p>

to the Swords Waste Water Treatment Plant is completed so that it will only discharge its waste water into the public sewer network.

Surface water drainage

The land drains naturally to the south to the watercourse on the ST1 zoned lands. This watercourse traverses a marshy area before discharging into a 1.2m diameter culvert at the eastern boundary of the site through the Organan factory lands and then continues as a culvert beneath the Feltrim Business Park and M1 Motorway. Further downstream, the watercourse becomes the Gaybrook Stream and flows towards Broadmeadow Estuary discharging at Yellow Walls. There will be no untreated direct discharges to the Barrysparks watercourse from the LAP lands.

A sustainable urban drainage system (SUDS) will be used as part of the development and will include on-site storage and an attenuation pond. Discharge of surface waters will be designed in accordance with the Greater Dublin Strategic Drainage study (GSDSDS) requirements. The use of green roofs and permeable pavements will be a means of reducing the S/W runoff from the site. It is intended that there will only be one S/W outfall to the Barrysparks stream and there will be a silt trap and petrol interceptor used upstream of that discharge location.

Increase in population Amenity pressure

There will be an estimated increase in residential population of up to 1,800 residents in the Barrysparks LAP. Some of those residents are likely to use the Broadmeadow/Malahide estuary for recreation/amenity in the form of walking, (with or without dogs), beach activities and water sports. The estuary is already a popular location for such activities. The dune habitats at Corballis beach and on Malahide Golf course support some rare and legally protected plant species, such as hairy violet (*Viola hirta*). Increased visitor pressure may threaten the habitat of such species due to excessive trampling and dune erosion. However the increase in visitors to the estuary/beach is likely to be relatively small. It is estimated that a population of 1,800 people will result in 20 additional people with an interest in boating.²

The mixed land use of Barrysparks will include the provision of urban parks, open spaces and linkage to a Regional Park, that includes the enhancement of (*Ward River Valley Park and Broadmeadow River Park*) as outlined in “Your Swords: Strategic Vision 2035”, so there will be alternative areas for leisure and walking for the new residents, that will reduce amenity pressure on Broadmeadow estuary and Malahide coastal habitats.

² 1.16% of the UK population participated in small sail boating activities in 2007. British Marine Federation/Maritime and Coastguard Agency/Royal National Lifeboat Institution/Royal Yachting Association ‘*Watersports and Leisure Participation Survey*’

	<p>Potential In Combination Effects,</p> <p>Swords Strategy 2035 Fingal Co. Co. is currently developing a new town plan for Swords which will cater for a population of 100,000 and comparable increases in employment and services. The potential effects of such an increase in population on Natura 2000 sites will be far greater than the Barrysparks LAP. This will be subjects to it's own HDA and SEA.</p> <p>Metro North Under the National Transport 21 Strategy, the programme of rail based works for the Greater Dublin Area includes the development of Metro North from St. Stephens Green to Swords, via Ballymun and Dublin Airport. This means Swords will be a major transport hub and will attract more people to the area for a variety of reasons including amenity and leisure in and around Broadmeadow/Malahide Estuary.</p>
<p>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</p> <ul style="list-style-type: none"> ▪ Size and scale; ▪ Land-take; ▪ Distance from Natura 2000 site or key features of the site; ▪ Resource requirements; ▪ Emissions; ▪ Excavation requirements; ▪ Transportation requirements; ▪ Duration of construction, operation etc.; ▪ Others. 	<p>Direct Impacts: As the proposed LAP is 1.5km from the nearest Natura 2000 site, there will be no direct impact in terms of land take on Broadmeadow/Swords estuary SPA.</p> <p>Indirect impacts Barrysparks LAP has hydrological connections to, Broadmeadow/Malahide estuary Natura 2000 site. Waste water ultimately discharges to the estuary, whose favourable conservation status is partly determined by water quality. Impacts can arise indirectly through contamination of the water resources which affect the habitat and invertebrate species on which the birds depend. Main threat to water quality is nutrient enrichment of the water (eutrophication). The water quality of the Inner Broadmeadow Estuary is currently classified as eutrophic. The Outer Malahide Estuary as Intermediate (Ref: http://www.epa.ie/downloads/pubs/water/coastal/Estuarine%20water%20quality%20map.jpg)</p> <p>Indirect impacts on the water quality of Broadmeadow Estuary through waste water (foul and surface water) discharges will be avoided by only discharging to the Swords public sewer network when there is available capacity after it has been upgraded.by 2013 (estimated date)..</p> <p>Surface waste water will also be treated on site using a SUDS system.</p> <p>In accordance with the GDSDS, the overall S/W run-off rate will be controlled to equal the existing green field run off. Therefore there will be no significant impact on the Broadmeadow Estuary</p> <p>Disturbance Impacts to birds Broadmeadow estuary is already a popular amenity area for water sports, walkers and dog walking. These activities do cause some disturbance to birds. Dogs, not on leads appear to cause the greatest disturbance (Nairn/Phelan 2006).</p> <p>Water sports such as jet skis also cause at least temporary</p>

disturbance. Birds will move to another location within the site or a nearby suitable site if disturbed. The LAP will result in at least some increase in numbers of people using the estuary for amenity purposes.

Fingal Co. Co. undertook a Visitor Usage Survey around Malahide Estuary in 2009. It collected a range of data including profile of visitor (Age, address, family status), purpose and frequency of visits, mode of transport. Although a quantitative assessment of total numbers visiting the area for recreational purposes was not possible, The overall trends were as follows::

- A broad mix of genders and ages use the Estuary, although a higher proportion of users are older (51% overall are aged 45+)
 - It will be important in future waves to conduct interviews/counts in the late evening (longer daylight hours), which appears to attract younger users.
- Half of all users fall into the C1 social classification category, likely to be reflective of the profile of those living in Malahide and environs
 - 1 in 3 users live in Malahide, while 1 in 5 live in Swords.
- The majority of users (over 3 in 4) are at the Estuary for walking, either for exercise or pleasure
 - The balance are there for other reasons, such as nature/sports pursuits.
- However, significant numbers of users (60%) say they usually drive to the Estuary.

Disturbance is a temporary phenomenon. It is diurnal and seasonal. People will visit the estuary during the day, which doesn't impact on night time feeding of the birds whose feeding habits are regulated by the tides rather than daylight. Also there are more visitors in the summer and the most important populations of birds use the estuary in the winter. Some birds are more sensitive than others. Of the three qualifying bird species for this Natura site, Brent Goose is already very habituated to human activities and feeds on grassland close to urban development in Portmarnock, Fairview, Clontarf and other sites in Dublin Bay. The two other bird species, for which the site was designated; Black-tailed Godwit and Goldeneye are likely to be more sensitive to disturbance.

The documented evidence as outlined in Davidson et. al (1983) would suggest that disturbance to birds in estuaries is very variable and may be difficult to quantify, but that birds can be very adaptable to ongoing non-threatening types of 'disturbance'

In recent years with all the development that has been undertaken in the Swords/Malahide area including the M1 Broadmeadow bridge, the numbers of birds in the Estuary have increased over the period 1994/95 to 2006/07. See Appendix II graph. This would suggest that birds are able to co-exist with urban development and or the increases may be due to other causes such as increased breeding rates in Iceland.

Construction impacts

During construction, there is the potential for an increase in

	<p>siltation and runoff containing polluting substances from the construction site to enter the watercourses within the LAP area and indirectly impact on Broadmeadow estuary into which they discharge 1.5km to the north east. Appropriate mitigation and a robust construction methodology will ensure no such significant impacts on the Natura site occur. There will be an increase in vehicular traffic around the construction site. A plan to minimise or avoid use of Estuary Road by construction traffic will be included. Construction will be on a phased basis. and may take up to 10 years,</p> <p>Operational Impacts Provided the waste water treatment systems operate effectively, there will be no significant adverse impact on the water quality of the Broadmeadow/Malahide Estuary.</p> <p>In combination effects There is a Strategic Vision 2035 which aims to grow Swords as a city of up to 100,000 people. Such expansion of the area would be likely to have a far greater effect on the Natura 2000 site at Broadmeadow/Malahide Estuary than the Barrysparks LAP. At present this vision does not have a statutory basis. The current Fingal County Development Plan 2005-2011 includes lands adjoining Barrysparks which are primarily zoned GI for industrial development and some STI for Science and Technology. These lands are located west of the M1. Such developments have the potential to have adverse effects on the estuary and will be subject to separate LAP's and HDA's. Provided they mitigate potential adverse effects, there should be no significant in combination effects. The lands east of the M1 and between the M1 and Broadmeadow Estuary are zoned GB Green Belt, which will help to buffer potential effects on the estuary.</p>
<p>Describe any likely changes to the site arising as a result of:</p> <ul style="list-style-type: none"> ▪ Reduction of habitat area; ▪ Disturbance of key species; ▪ Habitat or species fragmentation; ▪ Reduction in species density; ▪ Changes in key indicators of conservation value; ▪ Climate change. 	<p>Broadmeadow Estuary SPA Broadmeadow/Malahide Estuary SPA is an area of high biodiversity and supports a range of protected habitats and bird species, which require certain environmental conditions to be maintained. Alteration to the hydrological regime, contamination events or disturbance would limit the extent of suitable habitat available to support the habitats and species for which the site is designated. It is also likely that these events would alter the natural food chain, resulting in likely alterations to the distribution of species. These changes could negatively affect the structure and function of the site, and impact on the long-term distribution of species for which the site is designated.</p> <p>Birds are susceptible to disturbances such as, noise, vibration, light etc., which can alter their distribution and densities. Increases in amenity use of the estuary following the LAP, especially walkers with unleashed dogs can cause birds to move off from a feeding or roosting area. The impact of such disturbances is difficult to quantify. Frequently birds will move to another quieter location within the estuary or move to another nearby site such as Rogerstown Estuary. In severe cases birds may abandon nesting sites if repeatedly disturbed.</p> <p>A reduction in water quality through sedimentation or contamination by pollutants could directly affect all aquatic plant and animals. Eutrophication is the main threat due to the discharge of nutrient rich waste water into the estuary. This has</p>

	<p>the effect of increasing algal growth and in the short term it may provide more food for some water fowl, but in the longer term is likely to reduce biodiversity of invertebrate and aquatic species which would have knock-on effects throughout the food chain on birds, fish and mammals.</p> <p>Climate change will result in a rise in sea levels over time. Broadmeadow Estuary has extensive exposed mud flats in the inner estuary at low tide, with increasing sea levels over time, the extent of mud flat habitat available at low tide to species dependent on intertidal areas may be reduced.</p>
<p>Describe any likely impacts on the Natura 2000 site as a whole in terms of:</p> <ul style="list-style-type: none"> ▪ Interference with the key relationships that define the structure of the site; ▪ Interference with key relationships that define the function of the site. 	<p>Broadmeadow/Malahide Estuary is a dynamic estuarine and coastal ecosystem which is a designated conservation area primarily for birds and certain coastal habitats. The site is under ongoing pressures from increasing levels of urban development all around it. The main issues are deteriorating water quality due to increasing levels of discharges to the estuary and disturbance due to amenity pressure in the bay. The Barrysparks LAP has already taken into consideration the above issues into the LAP design in terms of alternatives for the surface water drainage (SUDS) system, such that there will be no significant deterioration in water quality in the estuary.</p> <p>There will be an increase in amenity use around the Natura site, but this will be offset by improved parks and linkages to Broadmeadow and Ward River parks, which will divert some people away from the coast.</p>
<p>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale of magnitude of impacts is not known.</p>	<p>The Barrysparks LAP with its design measures for the surface and foul waste water treatment are unlikely to cause significant adverse impact on the water quality of the estuary and hence the birds for which it was designated. Disturbance to birds due to increased amenity pressure is unlikely to be a significant issue. In combination effects from proposed industrial developments between the R132 and the M1 should not be significant.</p> <p>The in combination effect with the Swords Strategic Vision 2035, which will provide for a city of 100,000 people, although likely to have a potential significant adverse impact on the Natura site is not considered here as it is not yet a statutory Plan.</p> <p>Overall, it can be concluded that the Barrysparks LAP is not likely to have significant adverse impacts on the integrity of the Natura 2000 site which includes Broadmeadow/Swords SPA and Malahide Estuary cSAC.</p>

4. REFERENCES

- Council of the European Communities (1992). Council Directive of 21 May 1992 on The Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). O. J. L 206/35, 22 July 1992.
- Council of the European Communities (1979). Council Directive of 02 April 1979 on The Conservation of Wild Birds (79/409/EEC). O. J. L. 103, 25 April 1979.
- Crowe, O. (2005) *Irish Wetlands and their Waterbirds: Status and Distribution*. Birdwatch Ireland
- Davidson, N, Rothwell, P. (1983) eds. *Disturbance to Waterfowl on Estuaries*. Wader Study Group Bulletin 68, Special Issue. Published by the RSPB.
- EPA (2006). *Interim Report on the Biological Survey of River Quality. Results of the 2005 Investigations*. Environmental Protection Agency (EPA), Ireland.
- European Commission (2001) *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*. European Commission DG Environment.
- Fingal County Council (2004), *Ecological Study of the Coastal Habitats in County Fingal Phase I, Habitats and Flora*. Prepared by Doogue, D., Tiernan, D, Vissar, H.
- Fingal County Council (2004), *Ecological Study of the Coastal Habitats in County Fingal Phase II, Birds*. Prepared by Vissar, H. , Coveney, J., Kelly, D., and Birdwatch Ireland, Fingal Branch.
- Fingal County Council (2007). *Your Swords, An Emerging City. Strategic Vision 2035*. Prepared under the direction of the County Manager and Director of Services.
- Fingal County Council (2009). *Visitor/User Survey of Malahide Estuary*. Power Point Presentation of the Final Report of Findings April 2009
- Flora (Protection) Order (1999). Statutory Instrument, S. I. No. 94 of 1999. Published by the Stationary Office, Dublin.
- Mullarkey, R. (2009) Summary Report of Water and Drainage Services at Barrysparks. Unpublished report by Pat O’Gorman and Associates.
- NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, DoEHLG.
- Natura Environmental Consultants (2008). Rush Kenure Local Area Plan Appropriate Assessment. Prepared for Fingal County Council.
- Phalan, B. and Nairn, R. G. (2007). The effects of human Disturbance to waterbirds in South Dublin Bay. *Irish Birds* 8: 223 -230.

APPENDIX 1

Table4.1. Qualifying Interests of the cSAC's within 10km of Barrysparks LAP

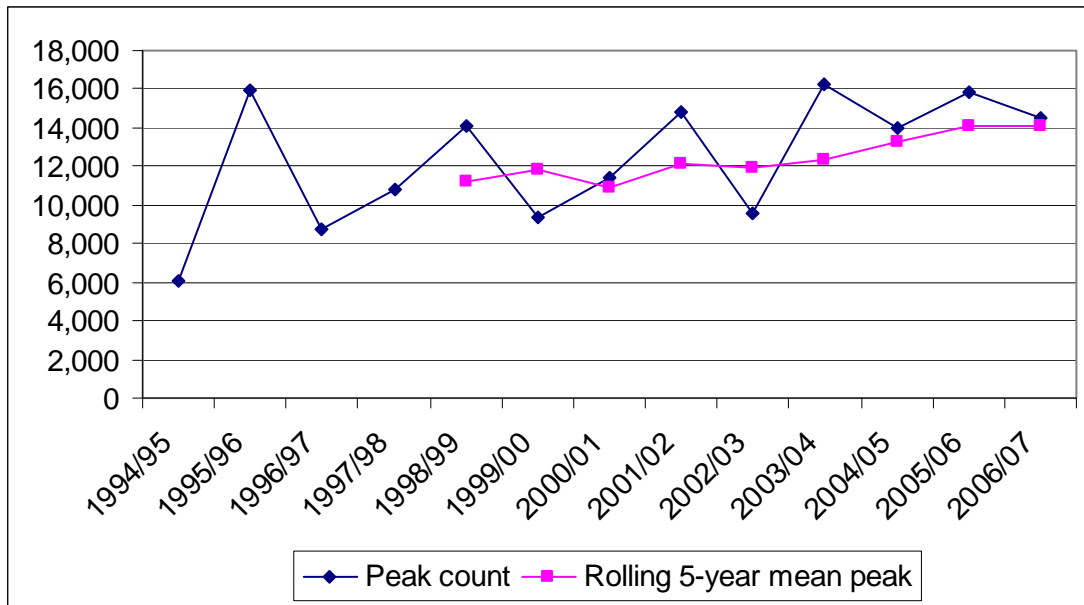
Site ID	Site Name	Qualifying interest
000205	Malahide Estuary	Fixed coastal dunes with herbaceous vegetation (grey dunes)
		Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)
		Mudflats and sandflats not covered by seawater at low tide
		Salicornia and other annuals colonizing mud and sand
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
		Spartina swards (<i>Spartinion maritima</i>)
000208	Rogerstown Estuary	Estuaries
		Mudflats and sandflats not covered by seawater at low tide
		Salicornia and other annuals colonizing mud and sand
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
		Fixed coastal dunes with herbaceous vegetation (grey dunes)
		Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)
Spartina swards (<i>Spartinion maritima</i>)		
000199	Baldoyle Bay	Mudflats and sandflats not covered by seawater at low tide
		Salicornia and other annuals colonizing mud and sand
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
000202	Howth Head	Vegetated sea cliffs of the Atlantic and Baltic coasts
		European dry heaths
000206	North Dublin Bay	Mudflats and sandflats not covered by seawater at low tide
		Salicornia and other annuals colonizing mud and sand
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>)
		Annual vegetation of drift lines
		Embryonic shifting dunes
		Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)
		Fixed coastal dunes with herbaceous vegetation (grey dunes)
		Humid dune slacks
		Spartina swards (<i>Spartinion maritima</i>)
<i>Petalophyllum ralfsii</i>		

Table 4.2 Qualifying interests of the SPA's within 10km of Barrysparks LAP

Site ID	Site Name	Proposed Special Conservation Interests	Additional Special Conservation Interests
004025	Broadmeadow/Swords Estuary SPA	Light-bellied Brent Goose	Great Crested Grebe
		Goldeneye	Shelduck
		Black-tailed Godwit	Pintail
			Red-Breasted Merganser
			Oystercatcher
			Golden Plover
			Grey Plover
			Knot
			Dunlin
			Bar-tailed Godwit
			Redshank
			Wetland and Waterbirds
004006	North Bull Island SPA	Light-bellied Brent Goose	Black-headed gull
		Shelduck	Sanderling
		Pintail	Teal
		Shoveler	Ringed Plover
		Oystercatcher	Golden plover
		Grey Plover	Curlew
		Knot	Wetland & Waterbirds
		Bar-tailed godwit	
		Dunlin	
		Black-tailed Godwit	
		Redshank	
		Turnstone	
		20,000 wintering waterbirds	
004015	Rogerstown Estuary SPA	Light-bellied Brent Goose	Greylag goose
		Shelduck	Shoveler
		Oystercatcher	Grey plover
		Ringed Plover	Dunlin
		Knot	Black-tailed Godwit
			Redshank
	Wetland & Waterbirds		
004016	Baldoyle SPA	Light-bellied Brent Goose	Shelduck
		Ringed plover	Golden Plover
		Bar-tailed godwit	Grey Plover
		Wetland & Waterbirds	
004113	Howth Head SPA	Kittiwake	

APPENDIX II

Figure 1. Total bird populations in Broadmeadow-Malahide Estuary SPA from 1994/95 to 2006/07 (after Boland, Crowe and Walsh, 2008 and earlier publications: Data published as part of the Irish Wetland Bird Survey - IWeBS)



APPENDIX III

SITE SYNOPSIS

SITE NAME: BROADMEADOW/SWORDS ESTUARY SPA

SITE CODE: 004025

This site is situated in north Co. Dublin, between the towns of Malahide and Swords. It is the estuary of the River Broadmeadow, a substantial river which drains a mainly agricultural, though increasingly urbanised, catchment. A railway viaduct, built in the 1800s, crosses the site and has led to the inner estuary becoming lagoonal in character and only partly tidal. Much of the outer part of the estuary is well-sheltered from the sea by a large sand spit, known as "The Island". This spit is now mostly converted to golf-course. The outer part empties almost completely at low tide and there are extensive intertidal flats exposed. The site extends eastwards to the rocky shore at Robswalls. Substantial stands of eelgrass (both *Zostera noltii* and *Z. angustifolia*) occur in the sheltered part of the outer estuary, along with Tasselweed (*Ruppia maritima*). Green algae, mostly *Enteromorpha* spp. and *Ulva lactuca*, are frequent on the sheltered flats. Common Cord-grass (*Spartina anglica*) is well established in the outer estuary and also in the innermost part of the site. The intertidal flats support a typical macroinvertebrate fauna, with polychaete worms (*Arenicola marina* and *Hediste diversicolor*), bivalves such as *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*, the small gastropod *Hydrobia ulvae* and the crustacean *Corophium volutator*. Salt marshes, which provide important roosts during high tide, occur in parts of the outer estuary and in the extreme inner part of the inner estuary. These are characterised by such species as Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Arrowgrass (*Triglochin maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*).

This site is of high importance for wintering waterfowl and supports a particularly good diversity of species. It has an internationally important population of Brent Goose (956) or 4.8% of the national total (figures given here and below are average maximum counts for the five winters 1995/96-1999/00) and nationally important populations of a further 12 species as follows: Shelduck (439), Pintail (58), Goldeneye (215), Red-breasted Merganser (105), Oystercatcher (1,493), Golden Plover (1,843), Grey Plover (201), Knot (915), Dunlin (1,594), Black-tailed Godwit (409), Redshank (581) and Greenshank (38). A range of other species occur in numbers of regional importance, including Great Crested Grebe, Mute Swan, Pochard, Ringed Plover, Lapwing, Bar-tailed Godwit, Curlew and Turnstone. The high numbers of diving ducks reflects the lagoon-type nature of the inner estuary, and this is one of the few sites in eastern Ireland where substantial numbers of Goldeneye can be found.

The estuary also attracts on a regular basis migrant wader species such as Ruff, Curlew Sandpiper, Spotted Redshank, Green Sandpiper and Little Stint. These occur mainly in autumn, though occasionally in spring and winter. Breeding birds of the site include Ringed Plover, Shelduck and Mallard. Up to the 1950s there was a major tern colony at the southern end of Malahide Island. Grey Herons breed nearby and feed regularly within the site.

The inner part of the estuary is heavily used for water sports, which causes disturbance to the bird populations. A section of the outer estuary has recently been in-filled for a marina and housing development. Broadmeadow/Swords Estuary SPA is a fine example of an estuarine system, providing both feeding and roosting areas for a range of wintering waterfowl. The lagoonal nature of the inner estuary is of particular value as it increases the diversity of birds which occur. The site is of high conservation importance, with an internationally important population of Brent Goose and nationally important populations of a further 12 species. Three of the species which occur regularly (Golden Plover, Bar-tailed Godwit and Ruff) are listed on Annex I of the E.U. Birds Directive.

6.10.2004

SITE SYNOPSIS

SITE NAME : MALAHIDE ESTUARY cSAC

SITE CODE : 000205

Malahide Estuary is situated immediately north of Malahide and east of Swords. It is the estuary of the River Broadmeadow. The site is divided by a railway viaduct built in the 1800s. The outer part of the estuary is mostly cut off from the sea by a large sand spit, known as "the island". The outer estuary drains almost completely at low tide, exposing sand and mud flats. There is a large bed of Eelgrass (*Zostera noltii* and *Z. angustifolium*) in the north section of the outer estuary, along with Tassel Weed (*Ruppia maritima*) and extensive mats of green algae (*Enteromorpha* spp., *Ulva lactuca*). Cordgrass (*Spartina anglica*) is also widespread in this sheltered part of the estuary.

The dune spit has a well developed outer dune ridge dominated by Marram Grass (*Ammophila arenaria*). The dry areas of the stabilised dunes have a dense covering of Burnet Rose (*Rosa pimpinellifolia*), Red Fescue (*Festuca rubra*) and species such as Yellow Wort (*Blackstonia perfoliata*), Field Gentian (*Gentianella amarella*), Hound's Tongue (*Cynoglossum officinale*), Carline Thistle (*Carlina vulgaris*) and Pyramidal Orchid (*Anacamptis pyramidalis*). Much of the interior of the spit is taken up by a golf course. The inner stony shore has frequent Sea-holly (*Eryngium maritimum*). Well-developed saltmarshes occur at the tip of the spit. Atlantic salt meadow is the principle type and is characterised by species such as Sea Purslane (*Halimolobos portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Arrowgrass (*Triglochin maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*). Elsewhere in the outer estuary, a small area of Mediterranean salt meadow occurs which is characterised by the presence of Sea Rush (*Juncus maritimus*). Below the salt marshes there are good examples of pioneering Glasswort swards and other annual species, typified by *Salicornia dolichostachya* and Annual Sea-blite (*Suaeda maritima*).

The inner estuary does not drain at low tide apart from the extreme inner part. Here, patches of saltmarsh and salt meadows occur, with Sea Aster, Sea Plantain (*Plantago maritima*) and Sea Clubrush (*Scirpus maritimus*). Tassel Weed (*Ruppia maritima*) occurs in one of the channels. The site includes a fine area of rocky shore south-east of Malahide and extending towards Portmarnock. This represents the only continuous section through the fossiliferous Lower Carboniferous rocks in the Dublin Basin, and is the type locality for several species of fossil coral. The estuary is an important wintering bird site and holds an internationally important population of Brent Geese and nationally important populations of a further 15 species. Average maximum counts during the 1995/96-1997/98 period were Brent Geese 1217; Great Crested Grebe 52; Mute Swan 106; Shelduck 471; Pochard 200; Goldeneye 333; Red-breasted Merganser 116; Oystercatcher 1228; Golden Plover 2123; Grey Plover 190; Redshank 454; Wigeon 50; Teal 78; Ringed Plover 106; Knot 858; Dunlin 1474; Greenshank 38; Pintail 53; Black-tailed Godwit 345; Bar-tailed Godwit 99. The high numbers of diving birds reflects the lagoon-type nature of the inner estuary.

The estuary also attracts migrant species such as Ruff, Curlew Sandpiper, Spotted Redshank and Little Stint. Breeding birds of the site include Ringed Plover, Shelduck and Mallard. Up to the 1950s there was a major tern colony at the southern end of the island and the habitat remains suitable for these birds. The inner part of the estuary is heavily used for water sports. A section of the outer estuary has recently been infilled for a marina and housing development. This site is a fine example of an estuarine system with all the main habitats represented. The site is important ornithologically, with a population of Brent Geese of international significance.

3.10.2001