

6.0 EFFECT ON THE ENVIRONMENT: FLORA, FAUNA & NATURE CONSERVATION

6.1. Introduction.

6.1.1 This chapter has been prepared by NATURA Environmental Consultants who carried out an Ecological Impact Assessment (EcIA) of the Draft Planning Scheme for inclusion in the EIS and describes the existing ecological environment within the peninsula itself as well as in the surrounding area of Dublin Bay.

6.2. Assessment Methodology

6.2.1. Desk Study and Consultations.

6.2.1.1 A desk study was carried out to collate the available information on the ecological environment. The National Parks and Wildlife Service (NPWS) of the Department of the Environment, Heritage and Local Government (DoEHLG) database of designated areas and records of rare species (www.npws.ie) was accessed to review recent and historic data. The methodology follows the *Guidelines on the information to be contained in Environmental Impact Statements* (Environmental Protection Agency, 2002), the *Advice Notes on Current Practice in the Preparation of Environmental Impact Assessments* (EPA, 2003) and the European Communities *Environmental Impact Assessment Regulations*, 1989-2001.

6.2.1.2 As part of the EIA process a scoping exercise was undertaken. As part of this process a draft Scoping Report was produced and issued to the prescribed group of statutory consultees for comment. The DoEHLG and the Eastern Regional Fisheries Board (ERFB) were included in this consultation exercise.

6.2.1.3 In its response on nature conservation the DoEHLG (NPWS) acknowledged that the policies presented in the *Dublin Docklands Master Plan 2008* will apply to the Draft Planning Scheme. They also stated that, as the Draft Planning Scheme has the potential to impact upon Natura 2000 sites, it should be subject to appropriate assessment screening (in accordance with Article 6(3) of the EU Habitats Directive (*Council Directive 92/42/EEC*)) and, if necessary, a full appropriate assessment procedure. The appropriate assessment has been carried out for the proposed Draft Planning Scheme and is presented in Appendix 6.1 of this chapter.

6.2.1.4 The ERFB, in its response, noted that the Draft Planning Scheme Area is located within the catchment of the River Liffey, one of the foremost salmonid fisheries in the eastern region. Poolbeg Peninsula is immediately adjacent to the tidal section of the Liffey system and has significant potential to impact on the aquatic ecology of the area.

6.2.1.5 Various information sources were reviewed where relevant including:

- *Dublin Docklands Master Plan 2008*;
- *Strategic Environmental Assessment* that accompanies the *2008 Draft Docklands Master Plan*;
- Previously compiled EISs for proposed developments on the peninsula;
- A report commissioned as part of this study: *Poolbeg Peninsula: Geomorphological Perspectives* (Cooper and Jackson, 2008) see Appendix 6.2;
- Recent and historical data relating to use of the peninsula by birds;
- Published literature, including the *Flora of County Dublin* (Doogue *et al.*, 1998);
- Dublin City Council, Dublin Bay Project, Ecological Monitoring Programme, annual reports by Environmental Consultancy Services.

6.2.1.6 Recent Ordnance Survey of Ireland (OSi) background mapping was reviewed, as was recent aerial photography (oblique and plan).

6.2.1.7 As part of the EIS process, all plans and proposals put forward by the urban design and planning teams on the project were critically reviewed and commented on from the perspective of nature conservation, particularly with regard to the designated areas of Dublin Bay.

6.2.2. *Field surveys.*

6.2.2.1 Although the major part of the information gathered for this study has been compiled from previous studies and existing literature, the peninsula was visited on a number of occasions between October 2007 and November 2008 in order to validate the information and to ensure that the study team remains fully familiar with the peninsula. A geomorphological assessment of the Draft Planning Scheme Area as it relates to Dublin Bay was carried out by Prof. Andrew Cooper and Dr. Derek Jackson (University of Ulster) in February 2008. This is attached as Appendix 6.2.

6.2.2.2 In this report, scientific and common names for plants follow Webb *et al.* (1996) and Scannell and Synnott (1987) respectively. Only the common names are given for mammals and birds.

6.3. The Receiving Environment.

6.3.1. General Study Area.

6.3.1.1 Poolbeg Peninsula is located in the eastern part of Dublin City, on the southern side of the River Liffey estuary. Essentially, the peninsula is an area of land that has been formed as a result of many phases of reclamation which have been on-going since the building of the Great South Wall (completed in 1786). Large parts of the peninsula were built by municipal dumping. As a result, parts of the peninsula are home to a wide variety of plant species, including, in particular, a great many alien species. The peninsula is virtually surrounded by Dublin Bay and its environment is closely linked to that of the bay.

6.3.1.2 Within the Draft Planning Scheme Area itself there are very few areas of ecological significance. Of particular note however is Irishtown Nature Park and some grassland areas used by wintering water birds. Important areas for ecological conservation occur in the immediate vicinity of the Draft Planning Scheme Area and these are dealt with in the following sections of this report.

6.3.1.3 Overall the area supports a variety of common flora and fauna typically associated with an urban environment, as well as less common species such as various bats and birds. Dublin Bay hosts large numbers of water birds in the winter months including internationally important numbers of three species and nationally important numbers of a further 19 species. It holds the seventh largest concentration of water birds in Ireland with an average peak of 28,300 birds (Crowe 2005). These water birds, notably Brent Geese, also use some grassland sites within the Draft Planning Scheme Area during the winter months, notably, Sean Moore Park and the grassland north of Irishtown Nature Park.

6.3.2. Designated Areas for Nature Conservation.

6.3.2.1 Neither Poolbeg Peninsula nor the Draft Planning Scheme Area itself is currently covered by any nature conservation designations. However, the southern edge of the

peninsula is adjacent to Dublin Bay. This is covered by multiple Irish and European designations, namely candidate Special Area of Conservation (cSAC), Special Protection Area (SPA) and proposed Natural Heritage Area (pNHA).

- 6.3.2.2 The DoEHLG commenced a review of SPA boundaries in 2002 which is ongoing. Relevant landowners and public bodies have been notified of a proposed revision to the South Dublin Bay and River Tolka Estuary (formerly Sandymount Strand and River Tolka Estuary SPA) SPA boundary. The proposed extension of the SPA includes an area (approximately 2.3ha in size) north of Irishtown Nature Park and south of Ringsend Wastewater Treatment Plant (WWTP) which was set aside as part of the planning permission for the WWTP for use as a feeding area for Brent geese. This proposed extension to the SPA is within the Draft Planning Scheme Area. The proposed extension to the SPA also includes a man made structure known as the ESB mooring dolphin. This is immediately offshore on the northern side of the peninsula at Pigeon House Dock. Both common tern and Arctic tern breed on this mooring structure. The DDDA has made an observation to the DoEHLG on the proposed SPA extension. It has been proposed that an adjustment is made to the proposed extension of the SPA so as not to limit potential linkages along the southern portion of the peninsula and to improve the area in question for wintering brent geese.
- 6.3.2.3 Proposed Natural Heritage Areas (pNHA) are sites of national significance that have been proposed but not yet formally designated. When formally designated, an NHA is legally protected from damage under Irish legislation in the form of the Wildlife (Amendment) Act 2000. Prior to statutory designation, pNHAs are subject to limited protection, including recognition of the ecological value of pNHAs by Planning and Licensing Authorities.
- 6.3.2.4 The EU Birds Directive (*Council Directive 79/409/EEC on the Conservation of Wild Birds*) is the main mechanism for protecting wild bird species that occur within the European Union. It provides for the protection, management and control of bird species and defines rules for their exploitation. According to Article 4 of the Birds Directive “*species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution*”. The key element of the Birds Directive is that it provides for the creation of Special Protection Areas (SPAs) for the protection of Annex I species as well as for regularly occurring migratory species not listed in

Annex I. The Birds Directive is implemented in Ireland under the Wildlife Act (1976) and the Wildlife (Amendment) Act (2000).

- 6.3.2.5 The main aim of the EU Habitats Directive (*Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna*) is “to contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies”. Any actions taken must be designed to “maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest”. The Directive provides for the creation of protected sites known as Special Areas of Conservation (SACs) for a number of habitat types and certain species of flora and fauna. The Directive was transposed into Irish law by the European Communities (Natural Habitats) Regulations, SI 94/1997.
- 6.3.2.6 The Natura 2000¹ network is a European network of ecologically important sites (SPAs and SACs) that have been designated for protection under either the *Birds Directive* or the *Habitats Directive*. The statutory agency responsible for these designated areas is the National Parks and Wildlife Service (NPWS) of the DoEHLG.
- 6.3.2.7 The various nature conservation designations within 5km of the Draft Planning Scheme Area are summarised in Table 6.3.2.1 below. Figure 6.3.2.2 defines the existing boundaries of the designated areas. It should be noted that although the boundaries along the shore line appear to differ between the designations, for all practical purposes the National Parks and Wildlife Service (NPWS) treat the boundary as being at the high tide mark.

¹ The EU Habitats Directive, Article 3.1, states “A Coherent European ecological network of Special Areas of Conservation and Special Protection Areas pursuant to Directive 79/409/EEC shall be set up under the title Natura 2000”

Table 6.3.2.1 - Designated Areas for Nature Conservation within 5km of the Draft Planning Scheme Area.

Site name	Site code	Status	Approximate distance from study area
South Dublin Bay and River Tolka Estuary (including ESB dolphin)	004024	SPA	Adjacent
North Bull Island	004006	SPA	2km northeast
North Dublin Bay	000206	cSAC, pNHA	2km northeast
South Dublin Bay	000210	cSAC, pNHA	Adjacent
Dolphins, Dublin Docks ²	000201	pNHA	Adjacent
Boosterstown Marsh	001205	pNHA	2.5km south
Royal Canal	002103	pNHA	1.5km upstream
Grand Canal	002104	pNHA	1 upstream

6.3.2.8 The River Liffey itself, while not designated at this location, is designated as a pNHA approximately 9km upstream of the Poolbeg Peninsula. The River Liffey is an important salmonid system with resident populations of brown trout and migratory populations of Atlantic salmon and sea trout.

6.3.3 *Natura 2000 Sites.*

6.3.3.1 The following provides a brief summary of the Natura 2000 sites that have the potential to be negatively impacted by any proposed development on, or alteration to Poolbeg Peninsula (Information from NPWS site synopses).

6.3.3.2 **South Dublin Bay and River Tolka Estuary SPA:** This comprises a large part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, the estuary of the River Tolka to the north of the River Liffey and Booserstown Marsh. A portion of the shallow marine waters of the bay is also

² The eastern mooring dolphin (the ESB dolphin) has been included in the revised South Dublin Bay and River Tolka Estuary SPA.

included. It is also proposed that an area of grassland north of Irishtown Nature Park will be included in the revised SPA. This is subject to confirmation by Statutory Instrument.

- 6.3.3.3 The site is of special conservation interest for a number of bird species (Light-Bellied Brent Goose, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-Headed Gull, Roseate Tern, Common Tern and Arctic Tern) and is important for wintering waterfowl and wintering gulls. An internationally important population of Light-bellied Brent Goose feed on the eelgrass (*Zostera noltii*) bed at Merrion and is also known to feed on the grassland at Poolbeg. The SPA is of international importance for Light-bellied Brent Geese and of national importance for nine other waterfowl species. It is also of international importance as an autumn tern roost.
- 6.3.3.4 Dublin Bay is also a Ramsar site under the Ramsar Convention, 1971 which was an intergovernmental treaty for the conservation of internationally important wetlands.
- 6.3.3.5 **North Bull Island SPA:** North Bull Island is a sand spit that developed after the construction of the North Bull Wall. This island is covered in dune grassland. Other important ecosystems associated with the island are salt marsh and mud flats. The reserves are of international scientific importance for Brent geese and also on botanical, ornithological, zoological and geomorphological grounds.
- 6.3.3.6 North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. It also qualifies for international importance as the numbers of two species exceed the international threshold – Brent Goose and Bar-tailed Godwit. A further 15 species have populations of national importance – Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Curlew, Redshank and Turnstone. The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank.
- 6.3.3.7 **North Dublin Bay cSAC:** Habitats listed on Annex I of the *EU Habitats Directive* include fixed dunes, marram/shifting dunes, embryonic shifting dunes, dune slack, annual vegetation of drift lines, salicornia mud and sand flats, Atlantic salt meadows, Mediterranean salt meadows, mud and sand flats. Species listed on Annex II of the

EU Habitats Directive include Petalwort. The site overlaps with North Bull Island SPA.

- 6.3.3.8 **South Dublin Bay cSAC:** The site has extensive areas of sand and mudflats, a habitat listed on Annex I of the *EU Habitats Directive*. A large stand of eelgrass occurs at Merrion Gates. New habitats are developing just south of Merrion Gates including embryonic dunes and a sand spit. This area is becoming increasingly important as a high tide roost site for waterfowl. The site overlaps with South Dublin Bay and River Tolka Estuary SPA.
- 6.3.3.9 Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/Boosterstown. Driftline vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide. The habitat occurs just above the High Water Mark and below the area of embryonic dune. Lugworm and cockles and other annelids and bivalves are frequent throughout the site.
- 6.3.3.10 As part of this study a report was prepared on the geomorphological and sedimentological aspects of the Draft Planning Scheme by Professor Andrew Cooper and Dr Derek Jackson of the University of Ulster and is attached as Appendix 6.2 of this chapter.
- 6.3.3.11 The southern shore of Poolbeg Peninsula varies in composition from west to east. The western section, the northwestern most part of Sandymount Strand, is composed of fine sand with a measurable mud content. Further east, between Sandymount Strand and the eastern corner of Irishtown Nature Park the shoreline is made up of a line of rock armour. A permanent tidal channel exists at this point, adjacent to the sea defenses. In the eastern part is a sandy beach (Shelly Banks), supported by a high tide beach composed of sand, shells and pebbles. In this area limited sand dune accumulation has occurred at the rear of the beach.

6.3.4 *Protected Flora Species.*

6.3.4.1 Some 200 different plant species have been recorded from the area of Irishtown Nature Park alone (Doogue *et al.*, 1998). However, the majority of these are common species and introduced alien species.

6.3.4.2 The NPWS database was checked for records of rare species (Curtis & McGough, 1988) and species protected under the Flora Protection Order (1999) that are known to occur in the general area. Several rare and protected species have been recorded along the coastline of Dublin Bay. However there are no records of rare or protected flora within the Draft Planning Scheme Area. The most recent record is of tufted salt-marsh grass (*Puccinellia fasciculata*). This protected species was last recorded on Pigeon House Road in 1906 (source: www.npws.ie). The lack of any records can be attributed to the highly artificial and modified nature of the Draft Planning Scheme Area.

6.3.5 *Sites within the Planning Scheme Area.*

6.3.5.1 The study area can be divided into a number of discrete parcels of land in ecological terms. These are described in the following paragraphs in terms of their habitats and ecological value. Habitats are classified using *A Guide to Habitats in Ireland* (Fossitt, 2000).

6.3.5.2 **Sean Moore Park:** This park, in the south western part of the peninsula, is bounded by Beach Road and Sean Moore Road to the north west and south west, by Sandymount Strand to the north east and by the Irish Glass Bottle and Fabrizia. It consists mainly of amenity grassland (GA2), with areas of scrub (WS1) and ornamental/non-native shrubs (WS3) also present. Although amenity grassland is of no ecological value in itself, Sean Moore Park is used as a feeding area by flocks of over-wintering Brent geese. The birds are subject to disturbance by walkers and cyclists, and by dogs in particular (Phalan and Nairn, 2007).

6.3.5.3 **Irish Glass Bottle (IGB) Site:** The former IGB site is bounded by Sean Moore Road to the west, South Bank Road to the north, the Fabrizia site to the east and Sean Moore Park to the south. It is approximately 10.1ha in area and is now a brown field site, all of the buildings having been recently demolished.

- 6.3.5.4 **The Fabrizia Site:** The Fabrizia site is bounded by the IGB site to the west, South Bank Road to the north, Sandymount Strand and the South Shore Concrete Facility to the east and Sean Moore Park to the south. It is approximately 4.6ha in area. It is a derelict brown field site largely made up of rubble and waste material. There is an earth/rubble berm along the eastern edge although the site is generally flat. The Fabrizia site contains large amounts of dumped material. The habitats present include recolonising bare ground (ED3), spoil and bare ground (ED2), refuse and other waste (ED5), earth banks (BL2), scrub (WS1) and a Leyland cypress (*Cupressocyparis leylandii*) treeline (WL2) (Reid Associates, 2004).
- 6.3.5.5 **Container Park and Molasses Industrial Park:** The Container Park and Molasses Industrial Park occupy an area of 8.3ha between them. This area is bounded by Pigeon House Road to the north, by South Bank Road to the south and west and by the Synergen Power Station site to the east. The site is primarily made up of buildings and artificial surfaces (BL3), with occasional scrub (WS1), amenity grassland (GA2) and other habitats of low ecological value.
- 6.3.5.6 **South Shore Concrete Factory and Industrial Area:** This 10.6ha site is bounded by Dublin Bay to the south, Irishtown Nature Park to the east, the Fabrizia site to the west and a heavily industrialised area to the north. A former pitch and putt course is located immediately north of the centre of this site.
- 6.3.5.7 The western part of this site is currently in use as a concrete production facility (BL3 – buildings and artificial surfaces). The remaining part of this disused concrete production facility can be termed a recolonising brown field site (ED3). It is used by roosting water birds including black-headed gull, grey heron, little egret, brent goose and oystercatcher.. It is subject to relatively low levels of disturbance by people and dogs. The former pitch and putt site is heavily overgrown and comprises a mix of amenity grassland (GA2), scrub (WS1) and ponds (FL8).
- 6.3.5.8 **Dublin Port Industrial Area (with Synergen Cooling Race):** This 5.9ha site is located on the northern edge of the peninsula. It is bounded to the north by the River Liffey and to the south by Pigeon House Road. To the east is Pigeon House Dock and to the west is the Dublin Port LoLO facility. The site is heavily industrialised in nature, with fuel storage tanks, a metal recycling plant, concrete works and the cooling race for the Synergen power plant.

- 6.3.5.9 **Industrial Area North of Overflow Tanks:** An area of recently reclaimed land, 1.7ha in size, this site is immediately east of Pigeon House Dock, north of the Waste Water Treatment Plant overflow tanks.
- 6.3.5.10 **Wastewater Treatment Plant and Overflow Tanks:** This 5.8ha site is bordered by Pigeon House Road to the north and Ringsend WWTP to the south. It includes Pigeon House Fort and the overflow tanks north of Pigeon House Road. The habitats present at this site include an area of amenity grassland (GA2) as well as recolonising bare ground (ED3) and scrub (WS1).
- 6.3.5.11 **Pigeon House Dock:** This part of the peninsula is adjacent to the River Liffey and includes the Pigeon House Hotel, the disused Pigeon House power station and Pigeon House Dock. It is approximately 2.5ha in size. The habitats present are buildings and artificial surfaces (BL3) and marine water (MW1).
- 6.3.5.12 The habitat here is not of ecological value, however, as with all buildings on the peninsula, particularly the older brick and stone buildings, there is the possibility that bat roosts may be present.
- 6.3.5.13 **Eastern End of Peninsula with ESB Tank Farm:** This is the area of the peninsula east of Ringsend WWTP and Pigeon House Dock. It includes the eastern part of Pigeon House Road as far as Poolbeg Lighthouse as well as the storage tanks for the ESB power station and the National Oil Reserve Agency (NORA) tank farm and concrete bund.
- 6.3.5.14 This area mostly comprises buildings and built land (BL3) however there are pockets of amenity grassland (GA2) and scrub (WS1). There is a section of ornamental shrubbery (WS3) south east of the power station adjacent to Shellybanks Road. This is predominantly made up of escallonia (*Escallonia* spp.). Brambles (*Rubus fruticosus* agg.) are also present as are various non-native trees including sycamore (*Acer pseudoplatanus*) and Leyland cypress (Elsam, 2006). The road south of the ESB owned land is frequently covered in wind-blown sand that is then mechanically removed and placed on the beach.

- 6.3.5.15 **Irishtown Nature Park:** Irishtown Nature Park is located in the south eastern part of the peninsula and consists of an elevated area sloping steeply to the sea on the southern and eastern edges. The northern edge is bounded by an area of amenity grassland that has been set aside for over-wintering brent geese as part of the planning permission for the Ringsend Wastewater Treatment Plant. The western edge of the park slopes down to an area of recolonising bare ground that forms part of the south shore concrete works and industrial area.
- 6.3.5.16 The Nature Park, built as it is on a former land fill site, contains very few natural or semi-natural habitats. This is reflected in the make up of the habitats and plant species present. In total, over 200 plant species have been recorded from the area known as Ringsend Dump and Dublin Port with many garden plants, ornamental and non native species present (Doogue 1998).
- 6.3.5.17 Along the southern and eastern boundaries the influence of the sea is most obvious, with coastal vegetation having developed. The main habitat on the site is amenity grassland (GA2), containing the grasses perennial rye grass (*Lolium perenne*), red fescue (*Festuca rubra*) and creeping bent (*Agrostis stolonifera*). Creeping thistle (*Cirsium arvense*) and blackberry (*Rubus fruticosus*) are also present. Several uncommon species including pyramidal orchid (*Anacamptis pyramidalis*) and bee orchid (*Ophrys apifera*) have been confirmed here recently. Native scrub (WS1) is the other main habitat to be found at Irishtown Nature Park. It consists primarily of blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*) and ash (*Fraxinus excelsior*). This scrub is encroaching into the grassland areas (Elsam, 2006).
- 6.3.5.18 Non-native species form part of the species mix of the scrub, including sycamore and the particularly invasive Japanese knotweed (*Fallopia japonica*). There is also a significant amount of non-native scrub (WS3) present, consisting of species such as escallonia (*Escallonia macrantha*), butterfly bush (*Buddleja davidii*), field maple (*Acer campestre*) and various cotoneasters. Tree species present include evergreen oak (*Quercus ilex*), sessile oak (*Q. petraea*) and Italian alder (*Alnus cordata*). Other parts of the park are made up of re-colonising bare ground (ED3), with coltsfoot (*Tussilago farfara*) and hoary mustard (*Hirschfeldia incana*) present. (Elsam, 2006).
- 6.3.5.19 The eastern and southern edges of the park, facing the sea, are made up of rocks and boulders which define the edge of the peninsula. There are very few species other

than teasel (*Dipsacus fullonum*), mugwort (*Artemisa vulgaris*), common mallow (*Malva sylvestris*) and red valerian (*Centranthus ruber*). Nearer to the sea, sea beet (*Beta maritima*) and sea mayweed (*Matricaria maritima*) can be found. This man-made habitat comes into the category of sea walls (CC1) (Elsam, 2006).

6.3.5.20 The insect fauna of Irishtown Nature Park has been well studied by Dublin Naturalists' Field Club (DNFC). The site holds some of the best remaining habitat for butterflies in urban Dublin with up to 15 species recorded breeding there. Among these is the wall brown butterfly which is scarce in Britain and Ireland. At least seven species of bumblebee have been recorded at Irishtown Nature Park, including the now rare species *Bombus lapidarius* and *Bombus muscorum* (B. Aldwell, DNFC, in litt.)

6.3.5.21 Irishtown Nature Park is subject to low levels of maintenance and its habitat and species make-up reflects its peculiar origins and location. The Park is of immense value as a green space and amenity area. It is also of interest due to the presence of a variety of non-native introduced species. Irishtown Nature Park is not covered by any nature conservation designations however.

6.3.6 *Fauna.*

6.3.6.1 A detailed faunal survey was not carried out as part of this study but information was collated from a number of sources as listed in section 6.2.1. The majority of protected mammal species would not be expected to occur within the vicinity of the study area, due to its highly artificial and urban nature which would not be capable of supporting or sustaining their populations. Those species which could potentially occur in the vicinity of the study area are discussed below.

6.3.6.2 **Otter:** The otter is listed in Annex II and Annex V of the *EU Habitats Directive*. There are no records of otter from the study area and there are no suitable breeding or resting places (holts) within the study area. A study carried out by Hamilton and Rochford (2000) only recorded one site within the greater Dublin area (near Chapelizod, exact location not given) as positive for the presence of otter. This indicates that the urban environment is sub-optimal for otter and they would not be expected to occur within the study area.

6.3.6.3 **Bats:** All Irish bats are protected under Annex IV of the *EU Habitats Directive* (92/43/EEC), under the *Wildlife (Amendment) Act 2000* and in Appendix II of the

Bern convention as species requiring strict protection. Bats are widespread in Ireland and can generally be found in areas where suitable roost sites (trees, disused buildings, old stone walls and bridges, or caves) occur in close proximity to areas of suitable foraging habitat (woodland, scrub, hedgerows, wetland areas and open water). There are buildings within the Draft Planning Scheme Area which could potentially be suitable for roosting bats. Further bat surveys will need to be carried out by developers before buildings are demolished as part of any development on Poolbeg Peninsula. Bat surveys were carried out on the IGB site prior to demolition of buildings there. No bats were recorded at this site (Natura, 2008).

- 6.3.6.4 Other mammal species that are likely to occur within the peninsula are brown rat, house mouse, pygmy shrew, fox, rabbit and hedgehog.
- 6.3.6.5 **Birds:** During the course of the walk-over surveys the following bird species were observed: wren, robin, dunnock, starling, blackbird, tits, finches, hooded crow, rook, magpie, jackdaw, skylark, wood pigeon, pied wagtail and house sparrow. A kestrel was also seen flying over the peninsula and this species has been recorded nesting in the old Pigeon House Power station building. According to information provided by NPWS, peregrine falcon are also present in the area. This species is listed in Annex I of the EU Birds Directive.
- 6.3.6.6 At least one pair of skylarks was noted within the peninsula according to the Waste to Energy Project EIS (Elsam, 2006). This species has bred at Irishtown Nature Park. Black guillemot, a common seabird species, nests in the harbour at Pigeon House Dock. Wintering flocks of waders, such as redshank and oystercatcher, together with grey heron and little egret, use the rock armoury to the south of Irishtown Nature Park as a roosting (resting) site during high tide periods. This is the least disturbed part of the rock armoury on the south side of the peninsula.
- 6.3.6.7 Light-bellied Brent geese regularly use parts of the Draft Planning Scheme Area during the winter months. The principal areas are grassland at Sean Moore Park, Irishtown Stadium and the “replacement grassland” which lies between the present Waste Water Treatment Works (WWTW) and the Irishtown Nature Park. The latter area comprises a total of 2.3ha of grassland which is managed for the benefit of wintering Brent geese. The certification for the Dublin Bay Project extension to the WWTW in 1997 contained a number of conditions. Condition 10 states: “The

mitigation measures outlined in the EIS of providing 2ha of grassland to accommodate numbers of Brent Geese comparable to present levels, both during and after construction, must be implemented”.

6.3.6.8 In January 2004, the grassland was transferred to Dublin City Council Parks Department for maintenance and has been regularly mown to maintain a short sward since then. The geese did start to use the grassland for feeding from February 2004 and a consistency of use was observed in the period January-April 2005. There was some disturbance to the area in 2005 and 2006 arising from upgrading works at the WWTW but the grassland has been maintained and regularly mown since then. A peak number of 266 geese was recorded on the site in February 2005 (data courtesy of Dublin City Council, Dublin Bay Project, Ecological Monitoring Programme, annual reports by Environmental Consultancy Services). Significant flocks of brent geese also use Sean Moore Park and Irishtown Stadium on a regular basis each winter.

6.3.6.9 Immediately adjacent to the Draft Planning Scheme Area, South Dublin Bay is an internationally important site for birds. Apart from the Brent Geese, the species present include oystercatcher, ringed plover, sanderling, redshank, turnstone, dunlin, black-headed gull, common gull and herring gull. The bay, including the mooring dolphins immediately north of Pigeon House Dock, is an important breeding area for both common terns and arctic terns (Merne, 2004). Both of these species are listed in Annex I of the EU Birds Directive.

6.3.7 *Aquatic Environment and Fisheries.*

6.3.7.1 As previously detailed, Dublin Bay is covered by several nature conservation designations, both Irish and European. The bay is designated primarily because of the important bird populations that are present as well as the various habitats that are present throughout the bay, in particular the large expanses of mud and sand flats and the infauna (including various species of polychaete worms and bivalves) contained therein as well as the eel grass (*Zostera noltii*) beds. The estuary of Dublin Bay provides nursery habitat for the larval and juvenile forms of a number of fish species, in addition to providing shelter and food for many young and adult fish and shellfish. The high densities of benthic fauna are a key food resource for these fish.

6.3.7.2 The River Liffey, which flows along the northern edge of the peninsula is not a designated salmonid watercourse. It is nonetheless an important salmonid system, with migratory populations of Atlantic salmon and sea trout present. Atlantic salmon is listed as an Annex II and Annex V of the *EU Habitats Directive*. The ERFB has collected data from the nearby Poolbeg water intake and has recorded up to 28 species of fish over a sampling season. It is likely that many of these species utilise the area in and around the Draft Planning Scheme Area (information provided by the ERFB). Other species recorded from the marine waters of the Liffey Estuary include European eel, sprat, common goby and flounder (Ecological Consultancy Services 2008).

6.3.8 *Site Evaluation.*

6.3.8.1 Overall the area supports a variety of common flora and fauna typically associated with an urban environment. The majority of the habitats within the Draft Planning Scheme Area itself, such as built land, recolonising bare ground and ornamental, non-native scrub are heavily modified and are of very low ecological value. There are some areas of disturbed ground that support a range of alien and native species. There are no legally protected flora species within the Draft Planning Scheme Area.

6.3.8.2 Certain parts of the peninsula, particularly Irishtown Nature Park, have local ecological value. Irishtown Nature Park currently comprises a mix of amenity grassland and native scrub with a good diversity of bird and insect species including some species which are scarce elsewhere in urban Dublin. However, alien invasive species, particularly Japanese knotweed and sycamore are spreading within the park. This, coupled with the spread of the native scrub into the grassland areas, may result in a long term decline in the numbers of species present.

6.3.8.3 Sean Moore Park, in the western part of the Draft Planning Scheme Area, comprises mainly amenity grassland and exotic shrub species. However it is important as a feeding ground for Brent Geese and other water birds in winter. Kestrels breed on the peninsula and many of the buildings present may be suitable for roosting bats. The South Shore Concrete Factory site has regularly occurring roosting flocks of water birds.

6.3.8.4 Outside of the Draft Planning Scheme Area itself Dublin Bay and its associated nature conservation designations hosts large numbers of water birds including internationally important numbers of Brent geese and other species. The water birds

also use some grassland sites within the Draft Planning Scheme Area during the winter months, including the area north of Irishtown Nature Park and south of Ringsend Wastewater Treatment Plant (WWTP) which is part of the proposed extension of the South Dublin Bay and River Tolka Estuary SPA. The proposed SPA extension also includes the ESB Dolphin immediately offshore on the northern side of the peninsula at Pigeon House Dock.

6.4 Relevant Characteristics of the Draft Planning Scheme.

- 6.4.1 The proposed Draft Planning Scheme can broadly be split into two broad themes: Building with Nature and Building with Heritage. It aims to infuse the peninsula with the same high qualities that are already present within Dublin Bay to the south and the River Liffey to the north. In doing this it seeks to link the existing green spaces and to improve access to the area.
- 6.4.2 It is proposed to create a new “beach park” located on the southern edge of the peninsula, along the shore between Sandymount Strand and Irishtown Nature Park. Currently there is no direct connection between the bay and the land (particularly in the area south of the South Shore Concrete Factory and Industrial Area). This is mainly due to the presence of the rock armour along the shore. Access to this shoreline is limited to a path running parallel to the rock armour.
- 6.4.3 Whilst it is proposed to retain Irishtown Nature Park, however, the Draft Planning Scheme incorporates proposals to continue the walkway from the proposed urban beach to the Shellybanks. In order to achieve this, the southern and eastern edges of Irishtown Nature Park, would need to be reshaped. The shoreline of Irishtown Nature Park would not be altered as part of the Draft Planning Scheme. The Draft Planning Scheme also caters for a redesign of the existing space of Sean Moore Park and includes proposals for tree planting and improved linkages to the bay.
- 6.4.4 There is also a proposal to create “Dublin Bay Valley”. This would comprise a wedge shaped public park located within the existing IGB and Fabrizia sites, linking this area to Sandymount Strand, the proposed South Shore Beach Park and Dublin Bay. It would incorporate planting (grass, trees and shrubs) as well as ponds that would form part of the overall Sustainable Urban Drainage System (SuDS) for the proposed Draft Planning Scheme. It is proposed to locate an “ecological park” in this location, along

the southern edge of the existing utilities site, north of the proposed South Shore Village. This would be a vegetated amenity park.

6.5 Likely Impact of the Draft Planning Scheme.

6.5.1 The potential impacts associated with the Draft Planning Scheme are varied. They may include direct impacts on habitats within the Draft Planning Scheme Area as well as both direct and indirect impacts on the designated areas of Dublin Bay. Such potential impacts may include disturbance and removal of habitats, disturbance to fauna due to increased levels of light and noise (both during construction and operation), the release of contaminated sediments and run-off into Dublin Bay as well as direct impacts on Dublin Bay from any alterations to the existing coastline. In the following paragraphs, impacts are assessed firstly, during construction and secondly, during operation of the Draft Planning Scheme.

Construction Impacts

6.5.2 Appendix 6.1 contains an Appropriate Assessment of the Draft Planning Scheme under the terms of *Article 6(3) of the EU Habitats Directive*, which includes an assessment of the construction impacts of the Draft Planning Scheme.

6.5.3 *Dublin Docklands Master Plan 2008.*

6.5.3.1 Dublin Docklands Development Authority (DDDA) has recently adopted the *Dublin Docklands Master Plan 2008* and an associated Strategic Environmental Assessment (SEA) Report. The *Dublin Docklands Master Plan 2008* contains certain policies and objectives with regard to nature conservation. Any planning scheme or proposed development that falls within the Master Plan area must adhere to these policies. The proposed Draft Planning Scheme is one such proposal.

6.5.3.2 Master Plan policies such as the maintenance of the variety and diversity of the environmental character of the Area, the enhancement and provision of open space areas and the continued remediation of contaminated soil, have the potential to increase opportunities for biodiversity, flora and fauna throughout the Area. However, any direct interventions (such as alterations to coastal morphology or land reclamation) within the designated areas of Dublin Bay or any potential

contamination of water bodies (surface and coastal) in and adjoining the Area could have significant adverse consequences on biodiversity.

6.5.3.3 The *Dublin Docklands Master Plan's* policies are designed to ensure that there will be no net loss of land within the Natura 2000 sites. There will be no habitat or species fragmentation, nor will there be any reduction in species density or changes in indicators of conservation value as a result of the *Dublin Docklands Master Plan's* policies and objectives with which the Draft Planning Scheme is consistent.

6.5.3.4 According to the *Dublin Docklands Master Plan 2008* without strict adherence to the mitigation policies and objectives for both biodiversity and water, there are the following potential impacts on Natura 2000 sites.

- A potential impact on the structure and function of the habitats in and around Dublin Bay that support wetland bird species, including a risk of alteration of the geomorphological / sedimentological regime of Dublin Bay as a whole;
- A risk of disturbance on the key bird species that use the SPAs and cSACs for feeding, roosting or breeding, particularly during construction. The Natura 2000 sites could also be vulnerable to the effects of development such as disturbance from noise, lighting and increased movement of people;
- A risk of degradation to the habitat that supports the birds within the Natura 2000 sites.

6.5.4 *Designated Areas for Nature Conservation.*

6.5.4.1 The Draft Planning Scheme would not have any direct or indirect impacts on Booterstown Marsh, Royal Canal or Grand Canal pNHAs. The Draft Planning Scheme will not reduce the area of any Natura 2000 sites. However, there are potential direct and/or indirect impacts on the following designated areas:

- South Dublin Bay and River Tolka SPA (including the proposed extension of its boundaries);
- South Dublin Bay cSAC/pNHA;
- Dolphins, Dublin Docks pNHA;
- North Bull Island SPA;

- North Dublin Bay cSAC/pNHA.

The “Beach Park”.

6.5.4.2 There are potentially negative impacts associated with the proposed “beach park” on the southern edge of the peninsula, especially during operation of the scheme (see para. 6.5.4.4 below). Currently, the rock armour that forms the southern boundary between Sandymount Strand and Irishtown Nature Park provides a hard, stable edge. This hard edge defines the southern side of the peninsula and has been an important influence on the geomorphological environment in the southern part of the bay (Cooper and Jackson, 2008). The solid barrier is also important in ensuring that the contaminated ground upon which the peninsula is built is kept separate from the bay. The Draft Planning Scheme will not involve any direct changes to the rock armour on the south side of the peninsula.

6.5.4.3 To avoid any potential impacts on the Natura 2000 sites of Dublin Bay as a result of this proposal there is a need to prevent release of contaminated water and sediments during the construction of the urban beach above the rock armour. Such contamination can be prevented by ensuring adequate storage of construction materials and limiting any disturbance to existing contaminated land close to the high tide mark. A operational plan for the construction works for any new significant development in this area should be provided by the developer of any sites in this area and should involve consultation with the DoEHLG National Parks and Wildlife Service. Such an operational plan may be incorporated within a Construction Management Plan that should be provided as part of the Section 25 Application Process.

Operational Impacts

6.5.4.4 The way in which any sand or other sediment is used to construct the “beach park” will influence whether it is wholly contained within the land area during operation of the scheme. For example, high winds can move sand around and some of this may be deposited within the designated area. The quantities, origin and chemical nature of this sand will be of significance if it is deposited within the designated areas.

Proposals for Irishtown Nature Park.

- 6.5.4.5 Although Irishtown Nature Park, like the proposed beach park, is outside any designated area, any alterations to the park have the potential to impact on Dublin Bay in a similar manner to the proposed urban beach

Construction Impacts

- 6.5.4.5 As described previously, the Draft Planning Scheme would link the new beach park to the Shellybanks via a continuous walkway. This would require the alteration and re-shaping of the southern and eastern edges of Irishtown Nature Park.
- 6.5.4.6 The potential for possible negative impacts of these proposals through release of contaminants or alteration of the geomorphological regime in the bay can be significantly reduced by the same measures outlined in paragraph 6.5.4.4

Operational Impacts

The operational impacts upon flora and fauna are not expected to be significant.

Mooring dolphins adjacent to the northern edge of Poolbeg Peninsula.

- 6.5.4.7 There structures will not be impacted by any proposals within the Draft Planning Scheme either in the construction or operational phases.

6.5.5 Sites within the Draft Planning Scheme Area.

- 6.5.5.1 The Draft Planning Scheme will result in the removal of areas of built land, recolonising bare ground, native and non-native scrub and other habitats typical of highly modified environments. These habitats are not of conservation value and there are no rare or protected plant species present. These areas will be replaced with a mix of development and new green spaces, including areas set aside to enhance the biological diversity of the peninsula. This will result in a minor positive impact.

Irishtown Nature Park.

Construction Impacts

- 6.5.5.2 The proposed interventions to the southern and eastern edges of Irishtown Nature Park, discussed above in relation to their potential impacts on the designated areas,

would not result in a reduction in the existing area of the park. They would however result in a change in the proportion of existing habitat types, with the replacement of sections of amenity grassland and scrub with structures such as gabions to retain the side slopes, and a walkway. This would have slight negative impacts of a temporary nature and of local significance. Care will be taken to avoid damage to habitats which support scarce or sensitive plant and animal species. The route of the public pathway on the south side of Irishtown Nature Park will be selected to screen roosting waders on the rock armoury from any additional human disturbance and this can be considered a positive impact.

Operational Impacts

- 6.5.5.3 The Draft Planning Scheme will include measures to enhance biodiversity in the park, including management to control invasive species such as Japanese knotweed and sycamore. A low level programme of management will also be put in place to control scrub encroachment into the grassland areas
- 6.5.5.4 Overall, the Draft Planning Scheme would have a neutral impact on Irishtown Nature Park in the long term.

Other sites within the Draft Planning Scheme Area.

Construction Impacts

- 6.5.5.5 The area set aside as part of the planning permission for the WWTP extension for use as a feeding area for Brent Geese, which is currently included within the proposed extension to the South Dublin Bay and River Tolka SPA, will be impacted by a proposed access road, which is the preferred access option at this stage, which runs along its northern perimeter. This will involve the permanent loss of an area of grassland habitat currently used by the geese in winter. The construction of the road in this location will be carried out in the period May to September to avoid the wintering period of use by geese and other water birds. It is likely that the presence of traffic and pedestrians on this section of road will cause sufficient disturbance to reduce the numbers and frequency of bird usage of the remaining area of grassland. Mitigation measures can be introduced to screen the remaining area of grassland used by the birds from traffic and pedestrians. However, there will be a net loss of feeding

area for water birds which is considered to be a significant negative impact of the scheme. As brent geese are among the qualifying interests of the SPA, this loss of habitat will cause an indirect impact on the integrity of the designated area.

Operational Impacts

- 6.5.5.6 The proposed alterations to Sean Moore Park will have a minor direct impact on the area available for feeding birds. The likely increase in recreational use of the park during operation of the scheme will cause greater indirect disturbance to the birds using this area, forcing them to fly out to sea more frequently. This will have a moderate negative impact but could be reduced if a fence were provided.

Construction Impacts

- 6.5.5.7 The potential impact of building on the south shore concrete factory and industrial area, will have a negative impact on birds as these disused areas are currently used by roosting herons, geese, waders and gulls.
- 6.5.5.8 The eastern end of the peninsula, south of the existing ESB generating station and east of Irishtown Nature Park and Ringsend WWTP, including the beach and sand dunes at the Shellybanks will not be directly affected by the Draft Planning Scheme. The impact of the Draft Planning Scheme on this area will be neutral although increased disturbance from people may lead to a minor negative impact on birds on the intertidal area. The land area is already used as a road and public footpath and birds have habituated to people walking here.

6.5.6 *Fauna.*

Construction Impacts

- 6.5.6.1 There will be no impacts on large mammals as a result of the proposed Draft Planning Scheme as the habitats currently available are not suitable for these species.

6.5.6.2 There are potential impacts on bats as a result of renovation and/or demolition of existing buildings as part of the Draft Planning Scheme, as well as disturbance and lighting. However, mitigation can be introduced by developers to provide alternative roosting sites for bats, should any roosts be discovered in buildings due for demolition (see 6.6.4.3 below).

6.5.6.3 Noise and disturbance during construction activities may cause some temporary impacts on birds, especially during the winter months. There may be direct disturbance to feeding Brent geese and other water birds due to construction traffic or the presence of people close by their feeding areas, especially during the months of October to April.

6.5.7 *Aquatic Environment and Fisheries.*

6.5.7.1 There is the potential for significant pollution of the River Liffey estuary and Dublin Bay from construction activities and from discharge of contaminated surface water over the long term. A large or particularly toxic spillage could lead to major negative impacts, particularly on migrating salmonid fish. This can be prevented by following good practices during construction and operation of any developments within the Draft Planning Scheme Area and this potential issue is dealt with in Chapter 7 and 8 in particular of this EIS. A Construction Management Plan will be requested of developers to reduce this as a potential impact as set out in Section 6.6.

6.5.7.2 No land reclamation or alterations to the existing shoreline will take place. Therefore there will be no direct impact on the aquatic environment or fisheries as a result of habitat loss.

6.6 Mitigation.

6.6.1 *Dublin Docklands Master Plan 2008.*

6.6.1.1 As its starting point the Draft Planning Scheme for the Poolbeg Peninsula must abide by the *Dublin Docklands Master Plan 2008*, which includes a number of relevant policies and objectives in terms of mitigation.

6.6.1.2 Comprehensive mitigation measures have been incorporated into the *Dublin Docklands Master Plan 2008* and the Environmental Report. Within the Master Plan

the environmental protection objective that has been identified in relation to biodiversity, flora and fauna is as follows:

- Protect and enhance biodiversity, flora and fauna.

6.6.1.3 Four mitigation measures in relation to biodiversity, flora and fauna are recommended in the form of additional Urban Design Master Plan policies in the Environmental Report. These measures will ensure that the integrity of all Natura 2000 sites is maintained and that no developments will proceed that would negatively impact in any way on the sites. These measures are directly relevant to the proposed Draft Planning Scheme.

1. Any Planning Scheme or any Amended Planning Scheme to be implemented in a manner that protects the integrity of the designated nature areas (SPA, cSAC and pNHA);
2. Prevent contamination of waters (surface, ground and coastal) arising from disturbance of existing contaminated lands;
3. Minimise potential negative impacts on waters (surface, ground and coastal) during construction reflecting best practice;
4. Co-operate with Dublin City Council in the achievements of the objectives of the Dublin City Biodiversity Action Plan 2008-2012.

6.6.1.4 Additional measures, in the form of additional Infrastructure Master Plan policies have also been included in the Environmental Report. These measures are designed to ensure that there will be no deterioration in water quality in Dublin Bay as a result of any development that is consistent with the *Dublin Docklands Master Plan 2008* and the policies of the Draft Planning Scheme.

6.6.1.5 Mitigation measures 1-4 above of the Environmental Report to the adopted masterplan specifically relate to biodiversity, flora and fauna. They protect nature conservation areas (particularly Natura 2000 sites) from any impacts that might arise from development as part of Planning Schemes, including during the construction phase, particularly as a result of disturbance to contaminated land.

6.6.1.6 Mitigation measures 16-19 are related to protection of surface and coastal water quality. Mitigation Measure 19 is of particular importance as it deals with the

provision of adequate wastewater treatment for development in all Planning Scheme Areas. If adequate treatment is not available at regional level, it will have to be provided locally until regional facilities become available. This will protect the water quality in Dublin Bay and reduce risk to any nature conservation areas in the bay.

6.6.1.7 Climate change is predicted to result in overall sea level rises. The *Dublin Docklands Master Plan 2008* contains policies and objectives that emphasise flood protection, which are also contained in the Draft Planning Scheme. Mitigation measures will substantially reduce the risk of flooding.

6.6.1.8 Any Planning Scheme within the *Dublin Docklands Master Plan 2008* area will be bound by the Master Plan policies, including the measures outlined above, as well as Master Plan policies UD 40, UD 41 and UD 71.

UD 39: Minimise potential negative impacts on waters (surface, ground and coastal) during construction, reflecting best practice;

UD 40: Create a landscape network as part of the Master Plan that not only acts as a flood protection measure but also enhances the potential for biodiversity and movement;

UD 70: Co-operate with Dublin City Council in the achievement of the objectives of the *Dublin City Biodiversity Action Plan 2008-2012*.

6.6.2 *Other Mitigation Measures.*

6.6.2.1 No special mitigation measures are required for the areas of ornamental and non-native shrubs, recolonising bare ground, spoil, refuse and waste areas, and other, similar habitats, which are not of significant ecological value. However, there will be opportunities within the Draft Planning Scheme to enhance the biodiversity value of the peninsula. Specific plans will be drawn up at the detailed design (Section 25 application) stage by developers of any developments being undertaken as part of the Draft Planning Scheme. These will include the following:

6.6.2.2 The creation and management of ecological areas includes:

- To designate areas (both existing and newly created) to be managed primarily for ecology, with low maintenance and low human disturbance. This would include Irishtown Nature Park.

- To provide opportunities for public involvement and awareness of ecology, with information boards on features of ecological interest, particularly in Irishtown Nature Park;
- To develop an appropriate long-term management and maintenance plan for green spaces and other features that will maintain and improve the ecological value of the entire Draft Planning Scheme Area, and Dublin Bay as a whole;
- To cooperate with Dublin City Council in order to achieve the objectives of the *Dublin City Biodiversity Action Plan 2008-2012*.
- To eradicate invasive alien species (particularly Japanese knotweed) from the site.

6.6.2.3 The introduction of appropriate habitats and native species include:

- Advice on the enhancement of biodiversity in medium to high-density urban developments is given by Brennan and O'Connor (2008).
- To plant wildflower gardens to encourage bees, butterflies and other invertebrates;
- Where appropriate, to plant up sides of buildings, and create roof gardens
- To incorporate bat boxes/tubes into buildings as advised by a bat specialist, if bats are found to be present;
- To incorporate ledges for peregrine falcons on buildings as appropriate.

6.6.2.4 Multiple functions for green spaces include:

- To design SuDS features (Sustainable urban Drainage Systems – green roofs/swales/ponds/wetland habitat) with ecological protection/enhancement as a priority.

6.6.3 *Designated Areas for Nature Conservation.*

6.6.3.1 There will be no direct impact on the designated areas of Dublin Bay. Mitigation measures for potential impacts on the bay through contamination are presented in section 6.6.5 below.

6.6.4 *Fauna.*

6.6.4.1 Where programmed construction activities permit under the Construction Management Plan to be implemented by developers, there will be no clearance of vegetated sites during the period March to August inclusive to prevent disturbance to

breeding bird populations. The construction of the access road, as the preferred option at this stage, to the south of Ringsend Waste Water Treatment Works, will be undertaken in the summer months May to September, to avoid direct impacts on the use of this grassland area by wintering water birds.

6.6.4.2 Brent geese in Dublin Bay are increasingly dependent on grassland feeding during late winter to sustain their population. Where feasible, consideration should be given by developers/operators to the creation and management of mown grassland within the Draft Planning Scheme Area for this purpose. Such areas could be integrated within the beach park area.

6.6.4.3 Dedicated bat surveys, carried out at the appropriate times of the year, will be required to be undertaken by developers prior to the renovation or demolition of any buildings. Depending on the results of these bat surveys, bat boxes and/or other features will be incorporated into buildings and other features as appropriate.

6.6.5 *Aquatic Environment and Fisheries.*

6.6.5.1 The ERFB, in its response to the first draft Scoping Report for the Draft Planning Scheme, has stated that a comprehensive and integrated approach for achieving aquatic ecological protection both during construction and operation should be implemented.

6.6.5.2 This includes protection of the River Liffey from suspended solids and hydrocarbons. Such protection features would include on-site attenuation ponds as well as class 1 oil/petrol interceptors, silt/grit traps and hydrobrakes to control surface water discharges. Silt proof fencing will be used in order to prevent any contamination of Dublin Bay from surface water run-off, particularly during any works affecting the existing rock armour.

6.6.5.3. The publication *Requirements for the Protection of Fisheries Habitat during Construction and Development Work at River Sites* (ERFB) should be consulted by developers as appropriate during the construction of any elements of the Draft Planning Scheme. All works directly affecting watercourses or fisheries waters will be submitted to the ERFB for assessment and approval.

- 6.6.5.4 As the proposed works may generate quantities of dust, which may impact on the aquatic environment, a dust minimisation strategy will be implemented. This will be part of the Construction Management Plan for any new developments, including the watering of areas with the potential to generate dust during dry weather, wheel washes for construction vehicles and reduced speeds for vehicles.

6.7 Predicted Residual Impacts.

- 6.7.1 The residual impacts will include the loss of some of the grassland feeding area for brent geese and other water birds to the south of the existing Ringsend WWTW and the loss of a roosting site for birds on the open area of land east of the South Shore concrete facility. This will have indirect negative impacts for the water birds which use the adjacent SPA. There will also be a general increase in indirect disturbance to water birds using the remaining areas of grassland in the Draft Planning Scheme Area. Some positive impacts will arise through the creation of newly vegetated areas within the scheme. This will be as a result of the increase in green open space and other features including SuDS techniques within the Draft Planning Scheme.

- 6.7.2 Any severe long term negative impacts on the designated areas of Dublin Bay will be avoided if the southern boundary of the peninsula is not altered in such a way as to alter the existing high tide line or in any way change the existing geomorphological and sedimentological situation that exists in the bay. Strict adherence to the proposals set out in the Draft Planning Scheme, coupled with the policies and objectives outlined in the *Dublin Docklands Master Plan 2008* particularly the strict protection of the existing high tide mark along the southern boundary of the peninsula, will ensure that the impact on the Natura 2000 sites in Dublin Bay will be neutral.

- 6.7.3 The residual risk of a pollution event, which could have a significant negative impact on Dublin Bay, will be minimised by mitigation measures during construction works and by containment of any contaminated soils during removal in keeping with the developer's Construction Management Plan.

6.8 Monitoring.

- 6.8.1 All construction works undertaken by developers close to the southern boundary of the peninsula will be monitored by the developer to ensure that no contaminated sediment or run-off is allowed to enter the bay.

- 6.8.2 Regular monitoring of all hydrocarbon and/or silt traps as well as any surface water discharge points will be undertaken to ensure that all mitigation measures are operating effectively and that any waters which ultimately discharge to Dublin Bay are of a satisfactory standard. Should a contamination problem arise, all discharges of surface water must cease immediately and alternative disposal must be arranged
- 6.8.3 Regular bird monitoring (such as that undertaken as part of the Dublin Bay Project) will be undertaken by developers as a condition of Certification under Section 25 to ensure that there are no negative impacts on any of the bird species that utilise Poolbeg Peninsula, particularly the internationally important flocks of brent geese and common and Arctic tern.

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APPENDIX 6.1

Appropriate Assessment
Assessment of the Implications of the Draft Planning
Scheme on Natura 2000 Sites.

DUBLIN DOCKLANDS DEVELOPMENT AUTHORITY

DRAFT POOLBEG PLANNING SCHEME

APPROPRIATE ASSESSMENT

**(ASSESSMENT OF THE IMPLICATIONS OF THE DRAFT MASTER
PLAN ON NATURA 2000 SITES)**

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INTRODUCTION

A Draft Planning Scheme and associated Environmental Impact Statement (EIS) are currently being prepared for the Poolbeg Peninsula on behalf of The Dublin Docklands Development Authority (DDDA)

As part of the EIS process a scoping letter was sent to the designated Environmental Authorities, including the Minister for the Environment, Heritage and Local Government (DoEHLG). In a response letter dated 11th August 2008 the DoEHLG stated that an appropriate assessment should be carried out of the environmental implications of the Master Plan on Natura 2000 sites in accordance with Article 6(3) of the EU Habitats Directive (Council Directive 92/42/EEC).

This document forms an addendum to the Environmental Impact Statement that accompanies the Draft Planning Scheme. This document is issued without prejudice to any future surveys and assessments that may be required as part of any planning application or any information that may be made available by the National Parks and Wildlife Service (NPWS) or others.

LEGISLATION

Proposed Natural Heritage Areas (pNHA) are sites of national significance that have been proposed but not yet formally designated. When formally designated, an NHA is legally protected from damage under Irish legislation in the form of the Wildlife (Amendment) Act 2000. However, as this Appropriate Assessment report deals only with Natura 2000 sites the pNHAs are not considered further in this study, other than in the description of the study area.

The EU Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds) is the main mechanism for protecting wild bird species that occur within the European Union. It provides for the protection, management and control of bird species and defines rules for their exploitation. According to Article 4 of the Birds Directive "*species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution*". The key element of the Birds Directive is that it provides for the creation of Special Protection Areas (SPAs) for the protection of Annex I species as well as for regularly occurring migratory species not listed in Annex I. The Birds Directive is implemented in Ireland under the Wildlife Act (1976) and the Wildlife (Amendment) Act (2000).

The main aim of the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is "*to contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies*". Any actions taken must be designed to "*maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*". The Directive provides for the creation of protected sites known as Special Areas of Conservation (SACs) for a number of habitat types and certain species of flora and fauna. The Directive was transposed into Irish law by the European Communities (Natural Habitats) Regulations, SI 94/1997.

The Natura 2000³ network is a European network of ecologically important sites (SPAs and SACs) that have been designated for protection under either the Birds Directive or the Habitats Directive. The statutory agency responsible for these designated areas is the National Parks & Wildlife Service of the Department of Environment, Heritage and Local Government.

³ The EU Habitats Directive, Article 3.1, states "A Coherent European ecological network of Special Areas of Conservation and Special Protection Areas pursuant to Directive 79/409/EEC shall be set up under the title Natura 2000"

The following paragraphs are taken from the EU Habitats Directive and describe the restrictions placed on any development that may negatively impact on the integrity of a designated area.

Article 6(3)

“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.”

Article 6(4) (extract)

“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a 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.”

Broadly, the first stage in any plan or project is to ensure that all negative impacts on any Natura 2000 site are avoided by early identification of impacts and alterations to the plan to avoid such impacts. If complete avoidance is not possible then mitigation measures must be implemented to ensure that there are no adverse impacts on the Natura 2000 sites. If it is found that the plan would result in adverse effects that cannot be mitigated then it should not proceed without an assessment of alternative solutions. Should there be no alternative solutions then the plan can only proceed if it is required for Imperative Reasons of Overriding Public Interest (IROPI).

In any case where there is uncertainty as to whether the plan may have an adverse effect on a Natura 2000 site or if this effect cannot be mitigated then the Precautionary Principle must be used. This means that the following steps must be taken:

- Consider alternative solutions that do not have an adverse impact;
- Declare Imperative Reasons of Overriding Public Interest (IROPI Test);
- Develop and agree compensation measures.

If it has been proven that there are no feasible alternatives the competent authority must decide whether there are imperative reasons of overriding public interest that require the plan to proceed. If the plan must proceed then compensation measures must be identified and agreed.

Normally IROPI include reasons of a social or economic nature. However if the Natura 2000 site in question is host to a *“priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission to other imperative reasons of overriding public interest”* (Article 6(4), paragraph 2).

The European Court of Justice has recently (December 13 2007) issued a judgement in a legal case against Ireland that found that Ireland has failed in its statutory duty to confer adequate protection on designated areas. Following on from this the Circular Letter *SEA 1/08 & NPWS 1/08 on Appropriate Assessment of Land Use Plans* (from

the Department of the Environment, Heritage and Local Government) states that all plans and projects will be subject to critical assessment to ensure that they comply with all relevant legislation.

The appropriate assessment is focused on the potential impacts on the “integrity of the site”. This relates to the conservation objectives of the Natura 2000 site. The integrity of the site has been defined as “*the coherence of the site’s ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified*” (PPG 9, UK Department of the Environment, October 1994). In accordance with the precautionary principle, if there is insufficient information available to make a judgment decision, it should be assumed that there is potential for a significant effect.

THE STAGES IN AN APPROPRIATE ASSESSMENT

There are four stages in an Appropriate Assessment as outlined in the European Commission Guidance document (2001). The following is a brief summary of these steps.

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

Appropriate Assessment: In this stage, the impact of the project on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function.

Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary.

This report only covers Stage 1 and Stage 2.

A summary of Stage 1: the Screening Matrix is given in Appendix 1 of this report. This is a stand-alone document.

A summary of Stage 2: Appropriate Assessment is given in Appendix 2 of this report. This is a stand-alone document.

METHODOLOGY

The appropriate assessment of potential impacts on the integrity of Natura 2000 sites is based on a review of existing ecological information, including documented information about the sites themselves, previous EISs and a review of the Draft Planning Scheme itself and the plans and proposals put forward by the urban design and planning teams.

A desk study was carried out to collate the available information on the local ecological environment.

Various information sources were reviewed where relevant including:

- Dublin Docklands Development Authority (DDDA) Draft Docklands Master Plan, 2008;
- Strategic Environmental Assessment that accompanies the Draft Docklands Master Plan;
- Previously compiled EISs for proposed developments on the peninsula;
- A report commissioned as part of this study: Poolbeg Peninsula: Geomorphological Perspectives (Cooper and Jackson, 2008);
- Recent and historical data relating to use of the peninsula by birds;
- The standard literature, including the *Flora of County Dublin* (Doogue *et al.*, 1998);
- Dublin City Council, Dublin Bay Project, Ecological Monitoring Programme, annual reports by Environmental Consultancy Services.

Although the major part of the information gathered for this study has been compiled from previous studies and existing literature, the peninsula was visited on a number of occasions between October 2007 and November 2008, as part of the EIS process, in order to validate the information and to ensure that the study team remains fully familiar with the peninsula. A geomorphological assessment of the Draft Planning Scheme Area as it relates to Dublin Bay was carried out by Prof. Andrew Cooper (University of Ulster) in February 2008 and is attached to the EIS as an appendix.

This report describes the Draft Planning Scheme and the potential ecological impacts on Natura 2000 sites. The findings of this Appropriate Assessment are summarised in Appendix 1 (Screening Matrix) and Appendix 2 (Appropriate Assessment).

STUDY AREA DESCRIPTION

Poolbeg Peninsula is located in the eastern part of Dublin City, on the southern side of the River Liffey estuary. Essentially, the peninsula is an area of land that has been formed as a result of many phases of reclamation which have been on-going since the building of the Great South Wall (completed in 1786). Large parts of the peninsula were built by municipal dumping. As a result, parts of the peninsula are home to a wide variety of plant species, including, in particular, a great many alien species.

Within the Draft Planning Scheme Area itself there are very few areas of ecological significance. Of particular note however is Irishtown Nature Park. Important areas for ecological conservation occur in the immediate vicinity of the Draft Planning Scheme Area and these are dealt with in the following sections of this report.

Overall the area supports a variety of common flora and fauna typically associated with an urban environment, as well as species such as various bats and raptorial birds (such as kestrel and peregrine falcon). Dublin Bay hosts large numbers of water birds in the winter months including internationally important numbers of Brent Geese and other species. The water birds also use some grassland sites within the Draft Planning Scheme Area during the winter months.

Neither Poolbeg Peninsula nor the Draft Planning Scheme Area itself is currently covered by any nature conservation designations. However, the southern edge of the

peninsula is adjacent to Dublin Bay. This is covered by multiple Irish and European designations, namely candidate Special Area of Conservation (cSAC), Special Protection Area (SPA) and proposed Natural Heritage Area (pNHA).

The NPWS commenced a review of SPA boundaries in 2002 which is ongoing. Relevant landowners and public bodies have been notified of a proposed revision to the South Dublin Bay and River Tolka Estuary (formerly Sandymount Strand and River Tolka Estuary SPA) SPA boundary. The proposed extension of the SPA includes an area (approximately 2.3ha in size) north of Irishtown Nature Park and south of Ringsend Wastewater Treatment Plant (WWTP) which was set aside as part of the planning permission for the WWTP for use as a feeding area for Brent geese. This proposed extension to the SPA is within the Draft Planning Scheme Area. The proposed extension to the SPA also includes a man made structure known as the ESB Dolphin. This is immediately offshore on the northern side of the peninsula at Pigeon House Dock. Both common tern and Arctic tern breed on this mooring structure.

Table 1: Designated Areas for Nature Conservation within 5km of the study area

Site name	Site code	Status	Approximate distance from study area
South Dublin Bay and River Tolka Estuary	004024	SPA	Adjacent
North Bull Island	004006	SPA	2km northeast
North Dublin Bay	000206	cSAC, pNHA	2km northeast
South Dublin Bay	000210	cSAC, pNHA	Adjacent
Dolphins, Dublin Docks*	000201	pNHA	Adjacent
Boosterstown Marsh	001205	pNHA	2.5km south
Royal Canal	002103	pNHA	1.5km upstream
Grand Canal	002104	pNHA	1 upstream

* The eastern mooring dolphin (the ESB dolphin) has been included in the revised South Dublin Bay and River Tolka Estuary SPA

BRIEF DESCRIPTION OF NATURA 2000 SITES

The following provides a brief summary of the Natura 2000 sites that have the potential to be negatively impacted by any proposed development on, or alteration to Poolbeg Peninsula (Information from NPWS site synopses).

South Dublin Bay and River Tolka Estuary SPA: This comprises a large part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, the estuary of the River Tolka to the north of the River Liffey and Booserstown Marsh. A portion of the shallow marine waters of the bay is also included.

The site is of special conservation interest for a number of bird species (Light-Bellied Brent Goose, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-Headed Gull, Roseate Tern, Common Tern and Arctic Tern) and is important for wintering waterfowl and wintering gulls. An internationally important population of Light-bellied Brent Goose feed on the eelgrass (*Zostera noltii*) bed at Merrion and is also known to feed on the grassland at Poolbeg. The SPA is of international importance for Light-bellied Brent Goose and of national importance for nine other waterfowl species. It is also of international importance as an autumn tern roost.

Dublin Bay is also a Ramsar site under the Ramsar Convention, 1971 (an intergovernmental treaty for the conservation of internationally important wetlands).

North Bull Island SPA: North Bull Island is a sand spit that developed after the construction of the North Bull Wall. This island is covered in dune grassland. Other important ecosystems associated with the island are salt marsh and mud flats. The

reserves are of international scientific importance for Brent geese and also on botanical, ornithological, zoological and geomorphological grounds.

North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. It also qualifies for international importance as the numbers of two species exceed the international threshold – Brent Goose and Bar-tailed Godwit. A further 15 species have populations of national importance – Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Curlew, Redshank and Turnstone. The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank.

North Dublin Bay cSAC: Habitats listed on Annex I of the EU Habitats Directive include fixed dunes, marram/shifting dunes, embryonic shifting dunes, dune slack, annual vegetation of drift lines, salicornia mud and sand flats, Atlantic salt meadows, Mediterranean salt meadows, mud and sand flats. Species listed on Annex II of the EU Habitats Directive include Petalwort. The site overlaps with North Bull Island SPA.

South Dublin Bay cSAC: The site has extensive areas of sand and mudflats, a habitat listed on Annex I of the EU Habitats Directive. A large stand of eelgrass occurs at Merrion Gates. New habitats are developing just south of Merrion Gates including embryonic dunes and a sand spit. This area is becoming increasingly important as a high tide roost site for waterfowl. The site overlaps with South Dublin Bay and River Tolka Estuary SPA.

Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/Boosterstown. Driftline vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide. The habitat occurs just above the High Water Mark and below the area of embryonic dune. Lugworm and cockles and other annelids and bivalves are frequent throughout the site.

The southern shore of Poolbeg Peninsula varies in composition from west to east. The western section, the northwestern most part of Sandymount Strand, is composed of fine sand with a measurable mud content. Further east, between Sandymount Strand and the eastern corner of Irishtown Nature Park the shoreline is made up of a line of rock armour. A permanent tidal channel exists at this point, adjacent to the sea defenses. In the eastern part is a sandy beach (Shelly Banks), supported by a high tide beach composed of sand, shells and pebbles. In this area limited sand dune accumulation has occurred at the rear of the beach.

POTENTIAL IMPACTS ON THE INTEGRITY OF NATURA 2000 SITES

No land reclamation or alterations to the existing shoreline will take place as part of the Draft Planning Scheme. Therefore there will be no direct impact on the designated areas, aquatic environment or fisheries as a result of habitat loss. There will be permanent loss of a minor part of the grassland to the south of the Ringsend Waste Water Treatment Works which has been reserved for winter feeding by brent geese. This area is part of the proposed extension of the SPA of South Dublin Bay and the Tolka Estuary.

There is a risk of disturbance on the key bird species that use the SPAs and cSACs for feeding, roosting or breeding, particularly during construction. The Natura 2000 sites could also be vulnerable to the effects of development such as disturbance from noise, lighting and increased movement of people;

The permanent loss of part of the grassland feeding area for brent geese within the Draft Planning Scheme area will have negative impacts on this species, which is a qualifying interest of the SPA.

MITIGATION MEASURES

A suite of mitigation measures is listed within the EIS itself. In the case of the Natura 2000 sites, the most important mitigation measure is of avoidance of any impacts in the first place.

There will be no direct impact on the designated areas of Dublin Bay. However, a comprehensive and integrated approach for achieving aquatic ecological protection both during construction and operation should be implemented. This includes protection of the River Liffey from suspended solids and hydrocarbons. Such protection features would include on-site attenuation ponds as well as class 1 oil/petrol interceptors, silt/grit traps and hydrobrakes to control surface water discharges. Silt proof fencing will be used in order to prevent any contamination of Dublin Bay from surface water run-off, particularly during any works affecting the existing rock armour.

Brent geese in Dublin Bay are increasingly dependent on grassland feeding during late winter to sustain their population. Where feasible, consideration should be given to the creation and management of mown grassland within the Draft Planning Scheme Area for this purpose.

The Draft Planning Scheme must adhere to the set of mitigation measures that have been incorporated into the Draft Dublin Docklands Area Master Plan, 2008 and the accompanying Environmental Report.

Four mitigation measures in relation to biodiversity, flora and fauna are recommended in the form of additional Urban Design Master Plan policies in the Environmental Report of the Draft Masterplan. These measures will ensure that the integrity of all Natura 2000 sites is maintained and that no developments will proceed that would negatively impact in any way on the sites.

1. Any Planning Scheme or any Amended Planning Scheme to be implemented in a manner that protects the integrity of the designated nature areas (SPA, cSAC and pNHA);
2. Prevent contamination of waters (surface, ground and coastal) arising from disturbance of existing contaminated lands;
3. Minimise potential negative impacts on waters (surface, ground and coastal) during construction reflecting best practice;

4. Cooperate with Dublin City Council in the achievements of the objectives of the Dublin City Biodiversity Action Plan 2008-2012.

Additional measures, in the form of additional Infrastructure Master Plan policies have also been included in the Environmental Report. These measures are designed to ensure that there will be no deterioration in water quality in Dublin Bay as a result of any development that might arise out of the Draft Master Plan.

MONITORING

Regular monitoring of all hydrocarbon and/or silt traps as well as any surface water discharge points will take place to ensure that all mitigation measures are operating effectively and that any waters discharge to Dublin Bay are of a satisfactory standard. Should a contamination problem arise, all discharges of surface water must cease immediately and alternative disposal must be arranged

Regular bird monitoring (such as that undertaken as part of the Dublin Bay Project) will be undertaken to ensure that there are no negative impacts on any of the bird species that utilise Poolbeg Peninsula, particularly the internationally important flocks of Brent Geese and Common and Arctic tern.

CONCLUSIONS

Dublin Bay contains several Natura 2000 sites, both SPA and cSAC, some of which overlap with each other. The Draft Planning Scheme Area is directly adjacent to these designated areas, and any plans or projects undertaken within the Draft Planning Scheme Area have the potential to negatively impact on the integrity and the conservation objectives of the Dublin Bay designated areas.

An Appropriate Assessment was undertaken in response to a request from the Department of the Environment, Heritage and Local Government to the EIS coordinators, Cunnane Stratton Reynolds Ltd, in a letter dated 11th February 2008. Stages 1 and 2 of the Appropriate Assessment process were completed and are presented in this document.

Stage 1 Screening was undertaken to determine the potential for negative impacts on any Natura 2000 sites. The Screening matrix, contained in Appendix 1, concluded that based on the available information there was a potential significant negative impact on the Natura 2000 sites and an Appropriate Assessment was therefore required.

Stage 2 Appropriate Assessment was undertaken which included a review of existing relevant information and a review of the Draft Planning Scheme. The report concludes that no direct impacts on the Dublin Bay Natura 2000 sites are expected, provided that the mitigation policies and objectives set out are strictly adhered to. The loss of a minor area of artificial grassland within the draft planning scheme area for an access road will have indirect negative impacts for wintering Brent Geese which are a qualifying interest of the SPA. This will have negative impacts on the integrity of one of the existing Natura 2000 sites. The Appropriate Assessment matrix is contained in Appendix 2.

There could be severe long term negative impacts on the designated areas of Dublin Bay, particularly if the southern boundary of the peninsula is altered in such a way as to alter the existing high tide line or in any way change the existing geomorphological and sedimentological situation that exists in the bay. However, strict adherence to the proposals set out in the Draft Planning Scheme, coupled with the policies and objectives outlined in the Draft Dublin Docklands Masterplan, 2008 particularly the

strict protection of the existing high tide mark along the southern boundary of the peninsula, will ensure that the impact on the Natura 2000 sites in Dublin Bay will be neutral.

REFERENCES AND IMPORTANT INFORMATION SOURCES

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 (2001).

Circular Letter PD 2/07 and NPWS 1/07, Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites. Author: Phillip Nugent, Assistant Planning Officer, Planning Section, DoEHLG

Circular Letter SEA 1/08 and NPWS 1/08, Appropriate Assessment of Land Use Plans. Author: Peter Carvill, Assistant Principal, DoEHLG (15 February 2008).

Department of the Environment (1994). Planning and Policy Guidance: Nature Conservation (PPG9) (HMSO)

Dublin Docklands Development Authority (2008). *Draft Dublin Docklands Area Master Plan 2008*

Dublin Docklands Development Authority (2008). *Draft Dublin Docklands Area Master Plan 2008 – Environmental Report*

European Communities (Natural Habitats) Regulations, 1997.

European Union Birds Directive (1979). *Council Directive 79/209/EEC of 2 April 1979 on the conservation of wild birds.*

European Union Habitats Directive (1992). *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.*

Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC - Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion Of The Commission. European Commission (January 2007).

Judgement of the European Court of Justice. Case 418/04. Official Journal of the European Union (13 December 2007)

Managing Natura 2000 Sites - The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (2000).

Wildlife Act (1976). Government of Ireland.

Wildlife (Amendment) Act (2000). Government of Ireland.

APPENDICES

APPENDIX 1: SCREENING MATRIX

Stage 1: SCREENING MATRIX FOR THE DRAFT POOLBEG PENINSULA PLANNING SCHEME WITH REGARD TO POTENTIAL IMPACTS ON NATURA 2000 SITES (which include both Special Protection Areas* (SPA) and candidate Special Conservation Areas** (cSAC).

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

<p>***Assessment of the effects of the Draft Poolbeg Planning Scheme on the integrity of South Dublin Bay and River Tolka Estuary SPA (Site code 004024), North Bull Island SPA (Site code 004006), South Dublin Bay cSAC (Site code 000210) and North Dublin Bay cSAC (Site code 000206).</p>	
<p>• Description of the project or plan</p>	
Location	Poolbeg Peninsula is located in the eastern part of Dublin City, on the southern side of the River Liffey estuary. Essentially, the peninsula is an area of land that has been formed as a result of many phases of reclamation which have been on-going since the building of the Great South Wall (completed in 1786).
Distance from designated sites	The Draft Planning Scheme Area is directly adjacent to South Dublin Bay and River Tolka Estuary SPA and South Dublin Bay cSAC. It is within 3km of North Bull Island SPA and North Dublin Bay cSAC.
Brief Description of the project or plan	The Draft Planning Scheme is proposed to develop a large part of Poolbeg Peninsula, to build a high quality urban area. Increased linkages to Dublin Bay are proposed, along with proposals to incorporate new green areas into the peninsula. No direct interventions are proposed in Dublin Bay itself.
Is the plan directly connected with or necessary to the Natura 2000 site management for nature conservation?	No

* A Special Protection Area (SPA) is a designated under the EU Birds Directive (79/209/EEC) for the protection of named bird species.

** 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.

*** 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.

2. Brief Description of the Natura 2000 sites

Names and designations	South Dublin Bay and River Tolka Estuary SPA North Bull Island SPA North Dublin Bay cSAC South Dublin Bay cSAC
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<p>Site descriptions and qualifying interests</p> <p>(extracted from the NPWS Site Synopses)</p>	<p>South Dublin Bay and River Tolka Estuary SPA</p> <p>This site comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.</p> <p>The NPWS commenced a review of SPA boundaries in 2002 which is ongoing. Relevant landowners and public bodies have been notified of a proposed revision to the South Dublin Bay and River Tolka Estuary (formerly Sandymount Strand and River Tolka Estuary SPA) SPA boundary. The proposed extension of the SPA includes an area (approximately 2.3ha in size) north of Irishtown Nature Park and south of Ringsend Wastewater Treatment Plant (WWTP) which was set aside as part of the planning permission for the WWTP for use as a feeding area for Brent geese. This proposed extension to the SPA is within the Draft Planning Scheme Area. The proposed extension to the SPA also includes a man made structure known as the ESB Dolphin. This is immediately offshore on the northern side of the peninsula at Pigeon House Dock. Both common tern and Arctic tern breed on this mooring structure.</p> <p>In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. 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. There is a bed of Dwarf Eelgrass below Merrion Gates which is the largest stand on the east coast. Green algae are distributed throughout the area at a low density. The macro-invertebrate fauna is well-developed, and is characterised by annelids such as Lugworm and Sand Mason, and bivalves, especially Cockle and Baltic Tellin. The small gastropod Spire Shell occurs on the muddy sands off Merrion Gates, along with the crustacean <i>Corophium volutator</i>. Sediments in the Tolka Estuary vary from soft thixotropic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley Stream. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.</p> <p>The site is a Special Protection Area (SPA) under the EU Birds Directive, of special conservation interest for the following species: Light-Bellied Brent Goose, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-Headed Gull, Roseate Tern, Common Tern and Arctic Tern. The EU Birds Directive pays particular attention to wetlands, and these form part of the SPA, the site and its associated waterbirds are of special conservation interests for Wetlands and Waterbirds.</p> <p>Both Common Tern and Arctic Tern breed in Dublin docks, on a man-made mooring structure known as the ESB dolphin – this is included within the site.</p> <p>The main threat to this site is further reclamation for industrial and/or infra-structural purposes. The intertidal areas receive water that is somewhat polluted though there are no apparent impacts on the associated flora and fauna. Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a threat. Commercial bait digging may be a problem - this causes disturbance to wintering birds. Disturbance to birds is also caused by walkers and dogs.</p> <p>North Bull Island SPA</p> <p>This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. 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 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses.</p> <p>A well-developed and dynamic dune system stretches along the seaward side of the</p>
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	<p>island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass is dominant on the outer dune ridges. A feature of the dune system is a large dune slack with a rich flora, usually referred to as the 'Alder Marsh' because of the presence of Alder trees. The water table is very near the surface and is only slightly brackish. The orchid flora is notably diverse in this area. Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. On The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The site includes a substantial area of the shallow marine bay waters.</p> <p>The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. It also qualifies for international importance as the numbers of two species exceed the international threshold – Brent Goose and Bar-tailed Godwit A further 15 species have populations of national importance – Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Curlew, Redshank and Turnstone. The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank.</p> <p>The site has five Red Data Book vascular plant species, four rare bryophyte species, and is nationally important for three insect species. A rare liverwort, <i>Petalophyllum ralfsii</i>, was first recorded from the North Bull Island in 1874 and its presence here has recently been re-confirmed. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. A well-known population of Irish Hare is resident on the island.</p> <p>The main landuses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. North Bull Island is also a Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. Much of the SPA is also a candidate Special Area for Conservation. The site is used regularly for educational purposes and there is a manned interpretative centre on the island.</p> <p>The North Bull Island SPA is an excellent example of an estuarine complex and is one the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Brent Goose and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit but also Ruff and Short-eared Owl.</p> <p>North Dublin Bay cSAC</p> <p>This site covers the inner part of North Dublin Bay, the seaward boundary extending from the North Bull Wall Lighthouse to the Martello Tower at Howth Head.</p> <p>The North Bull Island is the focal point of this site. The island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes.</p> <p>About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees. The water table is very near the surface and is only slightly brackish.</p> <p>Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay.</p>
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	<p>Three Rare plant species legally protected under the Flora Protection Order 1987 have been recorded on the North Bull Island. These are Lesser Centaury, Hemp Nettle and Meadow Saxifrage. Two further species listed as threatened in the Red Data Book, Wild Sage and Spring Vetch, have also been recorded. A rare liverwort, <i>Petalophyllum ralfsii</i>, was first recorded from the North Bull Island in 1874 and has recently been confirmed as being still present there. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.</p> <p>The main landuses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site.</p> <p>This site is an excellent example of a coastal site with all the main habitats represented. The holds good examples of ten habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.</p> <p>South Dublin Bay cSAC</p> <p>This site lies south of the River Liffey and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats, a habitat listed on Annex I of the E.U. Habitats Directive. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion gates. The main channel which drains the area is Cockle Lake.</p> <p>There is a bed of Eelgrass below Merrion Gates which is the largest stand on the east coast. Green algae are distributed throughout the area at a low density. Fucoïd algae occur on the rocky shore in the Maretime to Dún Laoghaire area.</p> <p>Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/Boosterstown. Driftline vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide, though at Boosterstown this zone is wider in places. The habitat occurs just above the High Water Mark and below the area of embryonic dune. A small area of pioneer salt marsh now occurs in the lee of an embryonic sand dune just north of Boosterstown Station.</p> <p>Lugworm and Cockles and other annelids and bivalves are frequent throughout the site. The small gastropod <i>Hydrobia ulvae</i> occurs on the muddy sands off Merrion Gates.</p> <p>South Dublin Bay is an important site for waterfowl. (See preceding paragraphs on Dublin Bay's SPAs).</p> <p>At low tide the inner parts of the south bay are used for amenity purposes. Bait digging is a regular activity on the sandy flats. At high tide some areas have windsurfing and jet-skiing.</p> <p>This site is a fine example of a coastal system with extensive sand and mudflats, a habitat listed on Annex I of the E.U. Habitats Directive. South Dublin Bay is also an internationally important bird site.</p>
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Assessment Criteria	
<p>3. Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.</p>	<p>No land reclamation or alterations to the existing shoreline will take place. Therefore there will be no direct impact on existing designated areas, the aquatic environment or fisheries as a result of habitat loss.</p> <p>The loss of a minor area of artificial grassland within the draft planning scheme area for an access road will have negative impacts for wintering brent geese which are a qualifying interest of the SPA.</p> <ul style="list-style-type: none"> •
<p>4. 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>Without strict adherence to the mitigation measures, there are potential impacts on Natura 2000 sites. These include habitat and species loss and fragmentation due to land reclamation, contamination of water and alterations to the geomorphology and sedimentology of Dublin Bay.</p> <p>The Draft Planning Scheme Area is directly adjacent to the Natura 2000 sites of Dublin Bay. The proposed South Dublin Bay and River Tolka Estuary SPA Boundary covers an area on Poolbeg Peninsula. Part of this grassland area is proposed for development as an access road. This will involve the permanent loss of a minor area of the grassland as feeding area for Brent Geese and other water birds. While this area is not currently confirmed as part of the SPA the Brent Geese which use it are among the qualifying interests of the SPA and the draft planning scheme will therefore indirectly affect the integrity of the SPA.</p>
<p>5. 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>There will be no loss of habitat area within any existing Natura 2000 site.</p> <p>The loss of habitat within the grassland area south of the Ringsend WWTP will cause displacement of Brent Geese and other water birds, which are a qualifying interest of the Natura 2000 site. This may result in reduction in the numbers and density of these species in the SPA.</p> <p>There is the potential for increased disturbance to key bird species that may use Dublin Bay, particularly at Poolbeg Peninsula and Sandymount Strand, during the construction phase of any development. Contamination of water (surface, ground or coastal) would cause negative impacts on the Natura 2000 sites.</p> <p>Climate change is predicted to result in overall sea level rises. The Draft Planning Scheme contains measures that emphasise flood protection. Mitigation measures will substantially reduce the risk of flooding.</p>
<p>6. 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. 	<ul style="list-style-type: none"> • The most likely impacts of the planning scheme on the adjacent Natura 2000 sites is an increase in indirect disturbance to birds using the intertidal area for feeding and roosting. <p>The Natura 2000 sites could be vulnerable to the effects of development such as disturbance from noise, lighting and increased movement of people as well as potential pollution of surface, ground and coastal waters, both during construction and operation of any development.</p>

<p>7. Provide indicators of significance as a result of the identification of effects set out above in terms of:</p> <ul style="list-style-type: none">▪ Loss;▪ Fragmentation;▪ Disruption;▪ Disturbance;▪ Change to key elements of the site.	<p>The significance of the impacts listed above would be indicated by a reduction in numbers and diversity of wintering water birds using the areas of the Natura 2000 sites adjacent to the Planning Scheme area.</p>
<p>8. 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>Although the Draft Planning Scheme is intended to protect and enhance biodiversity, it was nonetheless deemed necessary to proceed with the preparation of an appropriate assessment of the Draft Planning Scheme. Significant effects are potentially likely to arise as a result of the elements of the plan as described above. The scale or magnitude of these impacts cannot be predicted at present.</p>

APPENDIX 2: APPROPRIATE ASSESSMENT

STAGE 2 APPROPRIATE ASSESSMENT OF THE DRAFT POOLBEG PLANNING SCHEME WITH REGARD TO POTENTIAL IMPACTS ON NATURA 2000 SITES

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

*Assessment of the effects of the Draft Poolbeg Planning Scheme on the integrity of Natura 2000 sites.	
<i>Describe the elements of the project that are likely to give rise to significant effects on the site</i>	<p>No land reclamation or alterations to the existing shoreline will take place. Therefore there will be no direct impact on the designated areas, aquatic environment or fisheries as a result of habitat loss.</p> <p>The Draft Planning Scheme Area is directly adjacent to the Natura 2000 sites of Dublin Bay. The proposed South Dublin Bay and River Tolka Estuary SPA Boundary covers an area on Poolbeg Peninsula. Part of this grassland area is proposed for development as an access road. This will involve the permanent loss of a minor area of the grassland as feeding area for Brent Geese and other water birds.</p>
<p>*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.</p>	
<i>Set out the conservation objectives of the sites</i>	<p>To maintain the favourable conservation status of the species listed on Annex I of the EU Birds Directive, Annex II of the EU Habitats Directive, and habitats listed on Annex I of the EU Habitats Directive, as well as other important species and habitats.</p> <p>South Dublin Bay and River Tolka Estuary SPA</p> <p>The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, the estuary of the River Tolka to the north of the River Liffey, Booterstown Marsh and an area of grassland at Poolbeg, north of Irishtown Nature Park. A portion of the shallow marine waters of the bay is also included. The site is of special conservation interest for a number of bird species (Light-Bellied Brent Goose, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-Headed Gull, Roseate Tern, Common Tern and Arctic Tern) and is important for wintering waterfowl and wintering gulls. An internationally important population of Light-bellied Brent Goose feed on the Eelgrass bed at Merrion and is also known to feed on the grassland at Poolbeg. The SPA is of international importance for Light-bellied Brent Goose and of national importance for nine other waterfowl species. It is also of international importance as an autumn tern roost.</p> <p>The EU Birds Directive pays particular attention to wetlands, and these form part of the SPA, the site and its associated waterbirds are of special conservation interests for Wetlands and Waterbirds.</p> <p>North Bull Island SPA: North Bull Island is a sand spit that developed after the construction of the North Bull Wall. This island is covered in dune grassland. Other important ecosystems associated with the island are salt marsh and mud flats. The reserves are of international scientific importance for Brent Geese and also on botanical, ornithological, zoological and</p>

	<p>geomorphological grounds.</p> <p>North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. It also qualifies for international importance as the numbers of two species exceed the international threshold – Brent Goose and Bar-tailed Godwit. A further 15 species have populations of national importance – Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Curlew, Redshank and Turnstone. The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank.</p> <p>North Dublin Bay cSAC: Annex I Habitats include fixed dunes, marram/shifting dunes, embryonic shifting dunes, dune slack, annual vegetation of drift lines, salicornia mud and sand flats, Atlantic salt meadows, Mediterranean salt meadows, mud and sand flats. Annex II species include Petalwort. The site overlaps with North Bull Island SPA.</p> <p>South Dublin Bay cSAC: The site has extensive areas of sand and mudflats, a habitat listed on Annex I of the EU Habitats Directive. The largest stand of Eelgrass on the east coast occurs at Merrion Gates. New habitats are developing just south of Merrion Gates including embryonic dunes and a sand spit. This area is becoming increasingly important as a high tide roost site for waterfowl. The site overlaps with South Dublin Bay and River Tolka Estuary SPA.</p>
<p><i>Describe how the project will affect key species and key habitats</i></p>	<ul style="list-style-type: none"> • There will be no direct loss of habitat within the existing Natura 2000 sites. Key species of water birds, including Brent Geese will be affected by the loss of a minor area of artificial grassland within the Draft Planning Scheme area. This will have indirect impacts on the integrity of the Natura 2000 sites themselves.
<p><i>Describe how the integrity of the site (determined by structure and function and conservation objectives) is likely to be affected by the project or plan (e.g. loss of habitat, disturbance, disruption, chemical changes, hydrological changes etc).</i></p>	<p>The only likely significant effect of the Draft Planning Scheme will be the permanent loss of part of an area of artificial grassland currently used for feeding by Brent Geese and other water birds. As these species are qualifying interests of the SPA, there will consequently be indirect impacts on the integrity of the Natura 2000 sites. The scale of these impacts cannot be predicted with certainty.</p>
<p><i>Describe mitigation measures that are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the site</i></p>	<p>A suite of mitigation measures is listed within the EIS itself. In the case of the Natura 2000 sites, the most important mitigation measure is of avoidance of any impacts in the first place.</p> <p>There will be no direct impact on the designated areas of Dublin Bay. However, a comprehensive and integrated approach for achieving aquatic ecological protection both during construction and operation should be implemented. This includes protection of the River Liffey from suspended solids and hydrocarbons. Such protection features would include on-site attenuation ponds as well as class 1 oil/petrol interceptors, silt/grit traps and hydrobrakes to control surface water discharges. Silt proof fencing will be used in order to prevent any contamination of Dublin Bay from surface water run-off, particularly during any works affecting the existing rock armour.</p> <p>Brent geese in Dublin Bay are increasingly dependent on grassland feeding during late winter to sustain their population. Where feasible, consideration should be given to the creation and</p>

	<p>management of mown grassland within the Draft Planning Scheme Area for this purpose.</p> <p>The Draft Planning Scheme must adhere to the set of mitigation measures that have been incorporated into the Draft Dublin Docklands Area Master Plan, 2008 and the accompanying Environmental Report. These are detailed below:</p> <p>Four mitigation measures in relation to biodiversity, flora and fauna are recommended in the form of additional Urban Design Master Plan policies in the Environmental Report of the Draft Masterplan. These measures will ensure that the integrity of all Natura 2000 sites is maintained and that no developments will proceed that would negatively impact in any way on the sites.</p> <ol style="list-style-type: none"> 1. Any Planning Scheme or any Amended Planning Scheme to be implemented in a manner that protects the integrity of the designated nature areas (SPA, cSAC and pNHA); 2. Prevent contamination of waters (surface, ground and coastal) arising from disturbance of existing contaminated lands; 3. Minimise potential negative impacts on waters (surface, ground and coastal) during construction reflecting best practice; 4. Cooperate with Dublin City Council in the achievements of the objectives of the Dublin City Biodiversity Action Plan 2008-2012. <p>Additional measures, in the form of additional Infrastructure Master Plan policies have also been included in the Environmental Report. These measures are designed to ensure that there will be no deterioration in water quality in Dublin Bay as a result of any development that might arise out of the Draft Master Plan.</p>
Results of consultation	
	<p>An EIS Scoping Report was sent to a range of statutory and non-statutory bodies during the preparation of the Draft Planning Scheme, no consultations have yet been undertaken specifically in relation to Appropriate Assessment, however, it was at the request of the DoEHLG that this document was prepared.</p>

APPENDIX 6.2

“POOLBEG PENINSULA: GEOMORPHOLOGICAL PERSPECTIVES”

Poolbeg Peninsula: Geomorphological Perspectives

J.A.G. Cooper & D.W.T. Jackson



Introduction

This report is concerned with the geomorphological and sedimentological aspects of proposed work at Poolbeg Peninsula. It offers comment on the design concept, assesses constraints and opportunities for dune restoration/creation in the dune management area and finally, outlines data collection needs for detailed design proposals.

Geomorphological setting

The 'Poolbeg Peninsula' is an area of land that has been produced by successive reclamations since construction of the South Wall at Dublin Port. Historical maps show a series of reclamations in Dublin Bay that even pre-date the South Wall.

Between 1685 and 1760, a substantial intake of land was engineered on both banks of the lower reaches of the River Liffey. Since then the intakes have proceeded incrementally as the high water mark has been pushed seaward. The associated formation and growth of North Bull Island, is well known but the area south of the South Wall has also seen significant changes in morphology.

Successive intakes of land south of the South Wall are evident on historic maps and most of the land that now forms the Poolbeg Peninsula is artificially reclaimed.

From a geomorphological perspective, this reclamation of the lower reaches of the Liffey Estuary will have reduced the estuary's tidal prism and hence reduced the strength of tidal currents. The growth of North Bull Island is likely, in part, linked to this reduction in tidal prism as the submarine delta of the Liffey was reduced in size in parallel with the tidal prism and the excess sediment has been reworked landward. Later phases of reclamation might have simply followed the accumulation of sediment on the foreshore. The question of most relevance to the proposed scheme at Poolbeg, however, is whether the sedimentary system is still supplying sediment landward at the present time.

There is circumstantial evidence that some of the reclamation may simply have followed shoreline progradation as land appeared to be forming. Thus land that was naturally being raised through sedimentation and even becoming vegetated as salt marsh or dunes would become more attractive for reclamation. The growth of North Bull Island through salt marsh and dune accumulation clearly shows the potential for sediment accumulation in inner Dublin Bay. Evidence from historical air photographs was examined to see if there was a discernible trend of sediment accumulation around the high water mark and in the intertidal zone of the Poolbeg area since the first air photographs of 1956. The photographs (Fig.1) were taken at different stages of the tide and are thus not directly comparable, however, some qualitative information can be gained from comparisons of the images from 1995 to 2000. (The 1950s images are of poor quality in the main areas of interest). Although this is a short period of time in which to expect to detect changes, it does appear that sediment accumulation is taking place at high tide and that this may be at the expense of the lower sections of the intertidal area. Along the southern margin of the Poolbeg Peninsula dunes of wind-blown sand have formed at the upper intertidal area against the artificially reclaimed land. The presence of these dunes indicates the availability of excess sand in the system and the occurrence of suitable winds and suitably dry sand at least occasionally. The persistence of the dunes over several years and their stabilisation by vegetation, rather than erosion by wave action suggests a positive sediment budget.

A series of large sandbars on the intertidal flats of Sandymount Strand appear to have become more elevated and have also migrated landwards between 1995 and 2000. At the same time, the position of the low tide mark seems to have migrated landward, suggesting the transfer of sand from the lower to upper intertidal areas.

The balance of available evidence suggests that the system is in a positive sediment budget situation. This would create the conditions for ongoing sediment accumulation and enhanced sand dune development around the shoreline. It would also act to mitigate coastal erosion and storm damage to infrastructure. Of relevance to the proposed works are the rates of sediment accumulation and whether this sediment accumulation is likely to continue. The available resources do not enable quantification of sedimentation rates and indeed these are probably spatially and temporally variable across the site. The long-term continuation of such trends is difficult to assess without comparison of the nearshore bathymetry and assessment of seabed sediment availability. The indication that high tide accumulation is at the expense of low tide erosion suggests that limited volumes of sediment are currently being supplied from the seabed. This is, however, based on limited photographic evidence and without analysis of historic changes in seabed bathymetry which would be necessary to establish long-term trends.



Figure 1. Images of Poolbeg Peninsula 1995 (left) -2000 (right) with an undated photograph from an intermediate date in between. Although taken at different stages of the tide and spanning a short interval, these images suggest accumulation of sediment at high tide, at the expense of erosion at low tide.

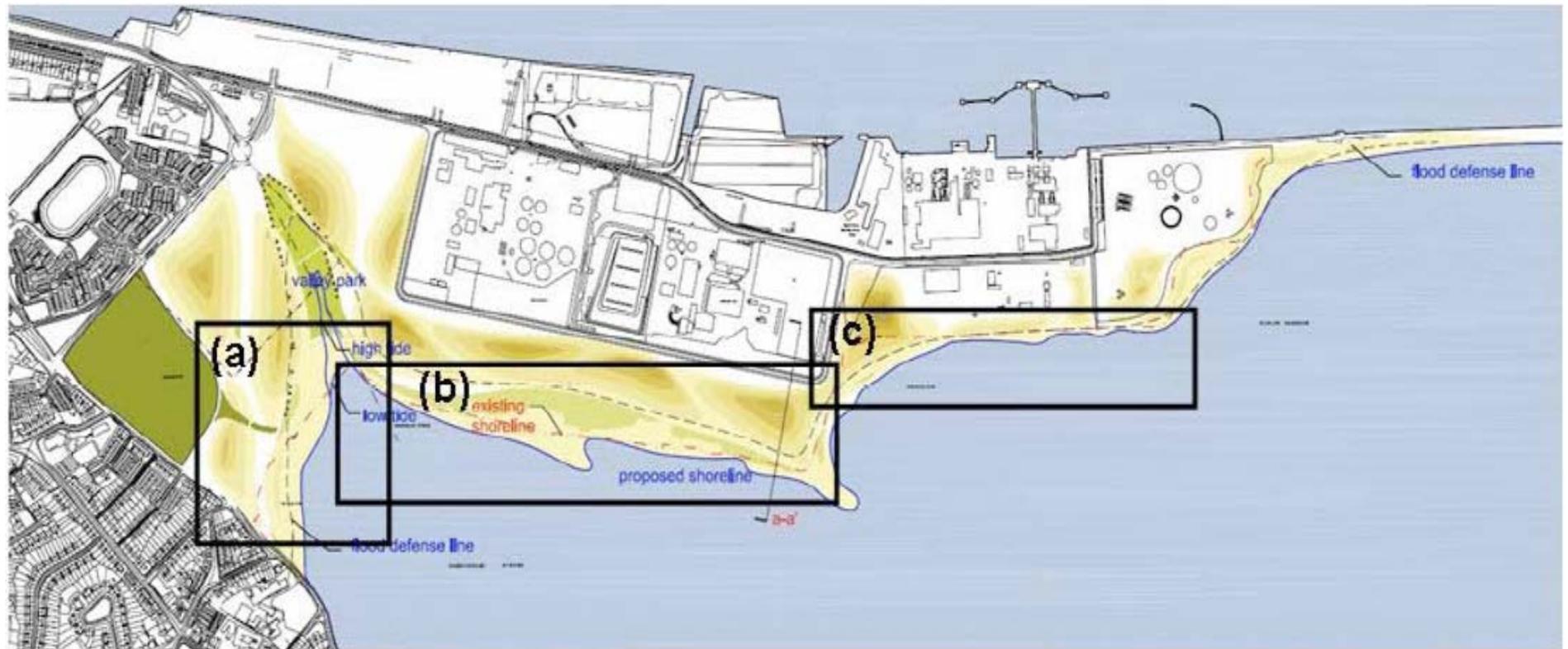


Figure 2. Three contemporary geomorphological zones on the Poolbeg peninsula (a,b and c) are discussed in the text

Contemporary coastal geomorphology

The contemporary shoreline along the Poolbeg Peninsula comprises a wide intertidal flat backed by a rock-armoured shoreline, a footpath or roadway and a bund that runs landward of the roadway. The intertidal flat is predominantly sandy but with increasing proportions of mud in a landward direction where wave action is attenuated. The geomorphology varies from east to west.

In the eastern section of the area (Zone a, Fig2), the tidal flat is composed of fine sand but with a measurable mud content. The tidal flat surface remains wet through most of the tidal cycle as water drains slowly from it during low tides. The rock armour and various forms of rubble deposited along the shoreline show no signs of recent erosion and this is consistent with the low energy conditions of this section of the coast (Fig.3). Given time and ongoing sediment supply this section of the coast might evolve into a salt marsh.



Figure 3. Western limit of Poolbeg Peninsula

In the central section (Zone b, Fig2), the intertidal flat becomes less muddy but permanent tidal channels exist, particularly adjacent to the sea defences (Fig.4). These serve to drain the upper reaches of the tidal flat and also effect some land drainage. The rock armour on south-facing sections of the peninsula appears to be stable but on the east-facing parts evidence of recent erosion can be seen (Fig.5)



Figure 4. Central section of Poolbeg Peninsula coast with permanent drainage channels.



Figure 5. Recent erosion of rubble armour on east-facing section of peninsula.

In the eastern section (Zone c, Figure 2) the tidal flat is almost entirely sandy and is backed by a high tide beach composed of sand, shells and pebbles (Figure 6). Erosion of an underlying pebble basement has contributed pebbles to this beach. Limited dune accumulation has occurred at the rear of the beach and some sections of the beach are armoured with a pebble layer where the overlying sand has been blown landward. The wind-blown sand has accumulated on top of the rock armour and formed a small dune that partly obscures it (Figure 7). There is much evidence of sand being blown from the dune across the road and accumulating around fences on the landward side of the road (Fig.8). A field visit in February 2008 showed recent evidence of sand having been mechanically removed from the road and placed back on the beach (Fig.9)



Figure 6. Sandy tidal flat backed by mixed sand, shell and pebble beach and narrow dune of wind-blown sand.



Figure 7. Wind-blown sand accumulation on top of rock armour.



Figure 8. Accumulation of wind-blown sand around fence on landward side of road.



Figure 9. Wind-blown sand recently cleared from the road has been dumped on the beach

Dune Formation

Observations at the site show that supratidal accumulations of aeolian sand are evident at a number of locations along the current backbeach zone in Zone c (Figure 2). These accumulations are early indicators of the potential for dune growth and show that local sediment is mobile under certain wind velocities. Detailed assessment of aeolian sand transport potential would require sediment analysis (grain size) of the upper intertidal and supratidal areas as well as topographical surveys. The amount of available sediment to supply the build up of wind blown morphology will be crucial in the natural development of any early dune forms and an ongoing positive sediment budget would be required to sustain dune growth. The total area of intertidal/supratidal sand capable of drying to sufficient levels and therefore becoming available for transport will dictate transport levels. There are indications that the area of supratidal sand is increasing at present.

There is currently insufficient environmental data available to derive estimates of the potential for sand dune development at the site. However, a qualitative assessment of the extent of available dry sand and the present Aeolian accumulations at the back beach zones would appear to, in general, indicate only a finite volume for dune growth. This would lead to a naturally restricted ability of foredune accumulation along most of the Poolbeg site. The local wind regime (Fig. 10, 1995 wind rose) appears to support the potential for aeolian transport but available dry sand for movement may be the driving factor in this case. Therefore for significant aeolian accumulations to occur within a relatively rapid timeframe, artificial intervention will most likely be required. This is particularly so when examining the extent of proposed new dune area within the site.

The local wind regime (Figs. 10,11) appears to support the potential for Aeolian transport as there is a strong onshore component to the Dublin wind field but available dry sand supply for movement may be the limiting factor for dune growth.

A number of intervention methods are available to encourage dune formation/genesis including:

- New dune profiling/sculpturing from introduced sediment placed directly on site at key locations
- Sand trapping techniques (e.g. similar to those used in Co. Donegal, see Fig. 4) using retention fencing. Modules are introduced along set spatial arrangements and at certain temporal intervals.
- Use of suitable dredge sediment (sedimentological details on dredge material is essential to assess its usability) for increasing intertidal zone and therefore potentially aeolian source zone to the back beach zone
- Extensive marram grass planting on new dune morphology at particular stages of dune growth
- A combination of several of the above

A detailed scheme for sand trapping and dune enhancement would be needed as part of detailed design proposals.

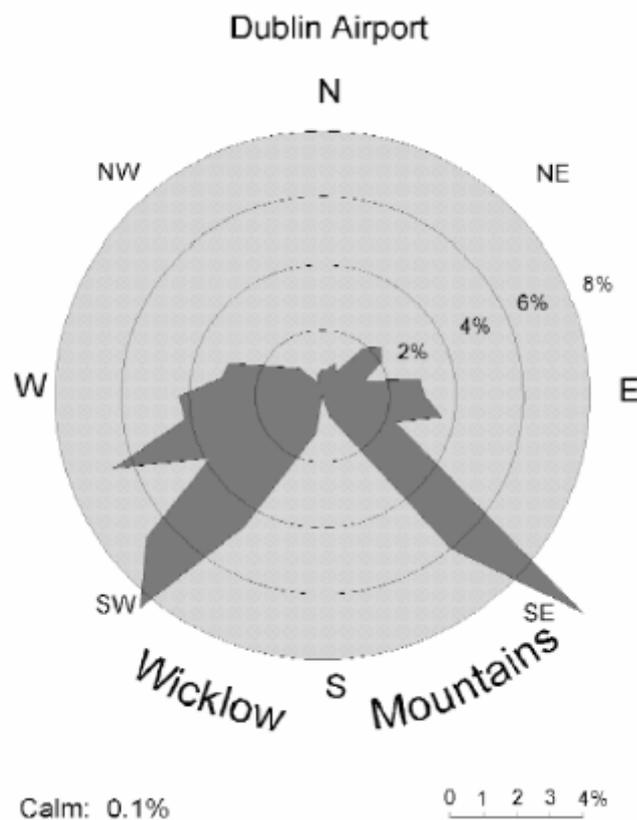


Figure 10. 1995 wind rose, Dublin Airport showing dominant winds from SE and SW, both of which would encourage dune development at Poolbeg.

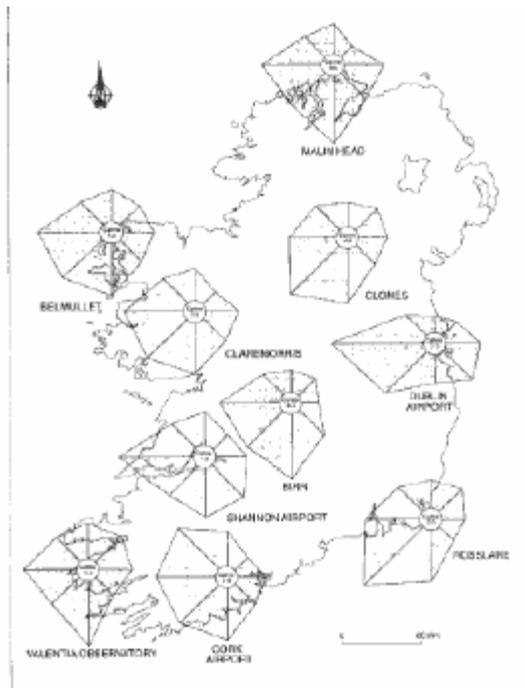


Figure 11. Multi-decadal Wind roses for Ireland. Here, the southerly dominance is reduced, with a stronger westerly component.

The texture of the tidal flat and its ability to dry out are key determinants of sediment supply for dune building. It seems likely from a preliminary analysis of the field site that the capacity for dune development in zones a and b (Figure 2) is very limited because of the limited supply of dry sand for transport. In contrast, zone c already has a dune and substantial wind-blown sand causes problems on the road (Fig.12). The potential certainly exists for this sand to be trapped in the existing dune before it reaches the roadway, but the long-term dune-building potential cannot be established with confidence with the available data.



Figure 12. Indications of blown sand problems on road at Poolbeg.

Because of the uncertainties regarding sediment supply, it is recommended that a pilot study be conducted initially in the form of sand retention modules (sand fencing arranged according to detailed specifications, Figure 13) within a test section of the back beach for a limited time over a specified operating season. Detailed monitoring is proposed before and during this period to establish the effectiveness and potential of the local environment to accumulate Aeolian sediment in the back beach zone. Results from the pilot experiment would then help advise implementation of future intervention combinations and options.



Figure13. Sand fences at Maghery, County Donegal were successful in trapping wind-blown sand and creating a new foredune.

If the system is in a positive sedimentary budget, sand dunes could probably be built on top of and in front of the existing sea defences as the coastline progrades. This would remove concerns about exposure of contaminated land if the walls had to be removed. A variety of potential sand-trapping schemes is available. A breach of the seawall opening onto Sandymount Strand is probably not necessary to establish a new dune morphology if sufficient sediment is available in the system. Sufficient marram planting of the site will enhance the dune's stability, providing pedestrian access is managed adequately.

It appears feasible that dunes could be established in front of and perhaps over the existing seawall at the eastern section of the Poolbeg Peninsula. These would act as sufficient storm wave buffers but may require intensive management/repair to maintain them. It is unlikely that natural dune accumulation would be expected in the western sections.

Future data Needs

To determine the overall sedimentary status, the evolution of the seabed as contained in historic navigation charts should be evaluated to provide further evidence as to whether sediment is being transferred from the seabed over the historical period. The Port of Dublin has been charted on numerous occasions and comparison of these charts would enable the sedimentary status of the seabed to be evaluated.

The rates of dune accumulation cannot be firmly established from the available evidence but could be estimated from trial deployments of sand-trapping devices. Whether the volume of sand envisaged in the scheme is available would require some calculations of the volume of sand involved and the volume of potential sources. This would inform the need for importation of additional sediment from other sources (Maintenance dredging is a potential source).

Environmental data required for more detailed understanding would include:

- Localised wind records (wind speed and direction) at the site running
- parallel with Dublin Airport met station data over a sufficient period (1 year
- at least)
- Total area of exposed and potentially mobile sand body(ies) (upper
- intertidal to supratidal)
- Detailed topographic survey of the latter
- Surface sediment survey to examine grain size (and sorting) information of
- the available sediment for aeolian supply
- The likely future climate and sea-level scenarios for the site should be assessed in order to assess likely future changes in sedimentary conditions.

References

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