

Screening Report for Appropriate Assessment of a Strategic Housing Development at Auburn, Malahide, County Dublin

prepared by OPENFIELD Ecological Services
for Kinwest Limited

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www.openfield.ie

1.0 INTRODUCTION

1.1 About OPENFIELD Ecological Services

OPENFIELD Ecological Services is headed by Pádraic Fogarty who has worked for 25 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EclA) in Ireland. Pádraic has a primary degree in Analytical Science from DCU, and diplomas in Field Ecology (UCC), Environment and Geography (Open University) and Environmental Protection (IT Sligo). Since its inception in 2007 OPENFIELD has carried out numerous EclAs for Environmental Impact Assessment (EIA), Appropriate Assessment under the EU Habitats Directive, as well as individual planning applications. Pádraic is a full member of the Institute of Environmental Management and Assessment (IEMA).

1.2 Protection of biodiversity

This report has been prepared by Padraic Fogarty of OPENFIELD Ecological Services. Pádraic Fogarty has worked for 25 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EclA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA).

This report finds that significant effects to Natura 2000 sites will not arise as a result of this project, either alone or in combination with other plans and projects, and that this conclusion is beyond a reasonable scientific doubt on the basis of the best scientific knowledge available.

Biodiversity is a contraction of the words 'biological diversity' and describes the enormous variability in species, habitats and genes that exist on Earth. It provides food, building materials, fuel and clothing while maintaining clean air, water, soil fertility and the pollination of crops. A study by the Department of Environment, Heritage and Local Government placed the economic value of biodiversity to Ireland at €2.6 billion annually (Bullock et al., 2008) for these 'ecosystem services'.

All life depends on biodiversity and its current global decline is a major challenge facing humanity. In 1992, at the Rio Earth Summit, this challenge was recognised by the United Nations through the Convention on Biological Diversity which has since been ratified by 193 countries, including Ireland. Its goal to significantly slow down the rate of biodiversity loss on Earth has been echoed by the European Union, which set a target date of 2010 for halting the decline. This target was not met but in 2010 in Nagoya, Japan, governments from around the world set about redoubling their efforts and issued a strategy for 2020 called 'Living in Harmony with Nature'. In 2011 the Irish Government incorporated the goals set out in this strategy, along with its commitments to the conservation of biodiversity under national and EU law, in the second national biodiversity action plan (Dept. of Arts, Heritage and the Gaeltacht, 2011). A third plan was published in 2017.

The main legislation for conserving biodiversity in Ireland have been the Directive 2009/147/EC of the European Parliament and of the Council of November 2009 on the conservation of wild birds (Birds Directive) and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive). Among other things, these require member states to designate areas of

their territory that contain important bird populations in the case of the former; or a representative sample of important or endangered habitats and species in the case of the latter. These areas are known as Special Protection Areas (SPA) and Special Areas of Conservation (SAC) respectively. Collectively they form a network of sites across the European Union known as Natura 2000. A report into the economic benefits of the Natura 2000 network concluded that “there is a new evidence base that conserving and investing in our biodiversity makes sense for climate challenges, for saving money, for jobs, for food, water and physical security, for cultural identity, health, science and learning, and of course for biodiversity itself” (EU, 2013).

Unlike traditional nature reserves or national parks, Natura 2000 sites are not ‘fenced-off’ from human activity and are frequently in private ownership. It is the responsibility of the competent national authority to ensure that ‘good conservation status’ exists for their SPAs and SACs and specifically that Article 6(3) of the Habitats Directive is met. Article 6(3) states:

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.

Sections 177U of the Planning and Development Act 2000 sets out the purpose of AA Screening as follows:

A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site. This places specific obligations on the relevant competent authority to assess the impact of a plan or project on any European sites within a reasonable proximity of the proposed development (usually considered to be 15km) or within the functional area of the competent authority. A planning authority or the Board may grant consent with modifications or conditions where they are satisfied that the proposed development, if carried out in accordance with the consent (and its modifications or conditions), would not adversely affect the integrity of the European Site concerned.

There is a two-stage process of screening and, if necessary, Stage II appropriate assessment. The competent national authority is required to decide whether a ‘plan’ or ‘project’ is likely to have a significant effect on a designated site. The first stage of the procedure requires the carrying out of a ‘screening’ exercise. If the screening exercise produces a ‘positive’ result, i.e. the plan or project is likely to have a significant effect, then it is necessary for the competent authority to carry out an ‘appropriate assessment’. This involves a preliminary screening for appropriate assessment in order to determine whether the plan or project is likely to have a significant effect on a European site.

The test at stage 1 AA Screening is that:

The competent authority shall determine that an appropriate assessment of a proposed development is required if it cannot be excluded, on the basis of objective information,

that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

The test at stage 2 (Appropriate Assessment) is:

Whether or not the proposed development, individually or in-combination with other plans or projects would adversely affect the integrity of a European site.

However, where this is not the case, a preliminary screening must first be carried out to determine whether or not a full AA is required. In this case, this screening is carried out by An Bord Pleanála.

1.3 Purpose of this Report

This document provides for a screening of a proposed development at Auburn, Malahide, Co. Dublin, and its potential effects in relation to Natura 2000 sites (SACs and SPAs).

Under the Planning and Development Act 2000 (as amended), the planning authority cannot grant planning permission where the proposed development would adversely affect the integrity of a European site. In order to make that decision the development must be screened for AA. This report provides the necessary information to allow An Bord Pleanála to carry out this screening and to state reasons for a screening decision, albeit only in circumstances where it is determined by the competent authority that full appropriate assessment is required.

1.4 Methodology

The methodology for this screening statement is clearly set out in a document prepared for the Environment DG of the European Commission entitled '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' (Oxford Brookes University, 2001). Chapter 3, part 1, of the aforementioned document deals specifically with screening while Annex 2 provides the template for the screening/finding of no significant effects report matrices to be used.

In accordance with this guidance, the following methodology has been used to produce this screening statement:

Step 1: Management of the Natura 2000 site

This determines whether the project is necessary for the conservation management of the site in question.

Step 2: Description of the Project

This step describes the aspects of the project that may have an impact on the Natura 2000 site.

Step 3: Characteristics of the Natura Site

This process identifies the conservation objectives of the site and determines whether significance effects to Natura 2000 sites will arise as a result of the plan. This is done through a literature survey and consultation with relevant stakeholders – particularly

the National Parks and Wildlife Service (NPWS). All potential effects are identified including those that may act alone or in combination with other projects or plans.

Using the precautionary principle, and through consultation and a review of published data, it is normally possible to conclude at this point whether potential impacts are likely. Deficiencies in available data are also highlighted at this stage.

Step 4: Assessment of Significance

Assessing whether an effect is significant must be made in light of the conservation objectives for that SAC or SPA.

A full AA of a proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

The 2009 Guidance issued by the NPWS on “Appropriate Assessment of Plans and Projects in Ireland” states at pp.27-28 that “screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project in which case the screening process is repeated on the altered plan.” The Guidance also states that the appropriate assessment stage should consider any mitigation measures which “may be an integral part of the specifications of a plan or project or an add-on...and may be proposed by the plan or project proponent and/or required by the competent authorities”. The NPWS Guidance broadly suggests that mitigation measures should not be considered at the screening stage (Stage 1) but may be considered as part of the full appropriate assessment (Stage 2). However, it does indicate that mitigation measures may be considered during screening if impacts can be clearly avoided by redesigning or modifying the project. The European Court has also clarified that measures which are intended to avoid or reduce an impact on a European site shall not be considered at the mitigation stage: see Case C-323/17, *People Over Wind v Coillte*. This approach has been adopted by the Irish High Court, e.g. *Heather Hill Management Co. CLG v An Bord Pleanála* [2019] IEHC 450, and has been applied in preparing this AA screening report.

A full list of literature sources that have been consulted for this study is given in the References section to this report while individual references are cited within the text where relevant.

2.0 Step 1 – Analysis of the Natura 2000 network

2.1 Site location and extent

The development site is located east of the R107 Road, Co. Dublin, approximately 2.km south-west of the town of Malahide. This location is shown in figure 1 which also shows its position in relation to nearby water courses and the Malahide Estuary SAC/SPA and Baldoyle Bay SAC/SPA.

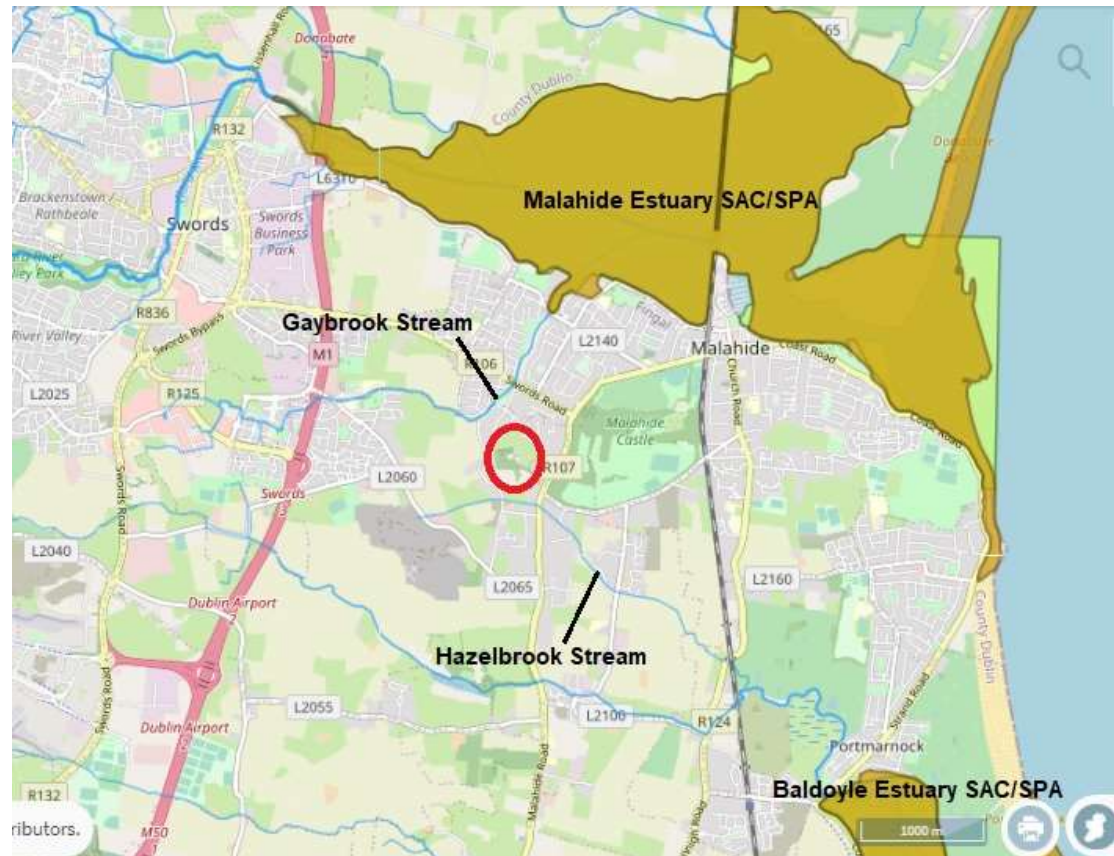


Figure 1 – Location of development (red circle) site in Malahide, Co. Dublin. Malahide Estuary to the north-east, and Baldoyle Bay to the south-east, are covered by both SAC and SPA designations (from www.epa.ie).

There is no prescribed radius around a site for determining what Natura 2000 sites should be studied and this is determined by the zone of influence of the project. Figure 1 shows the site location and as can be seen there are two Natura 2000 sites in this vicinity: Malahide Estuary SPA and SAC. In addition to these European designations Malahide Estuary is also recognised as a wetland of international importance under the RAMSAR Convention (site 833). It is also a proposed Natural Heritage Area, a designation under national legislation. There is no direct pathway from the development site to the Natura 2000 sites in Malahide Estuary.

According www.catchments.ie and site investigations by Waterman Moylan Engineers the proposed development site is in the catchment of the Hazelbrook Stream which in turns enters the Irish sea at Baldoyle Bay. Baldoyle Bay is designated as an SAC and an SPA and can be found approximately 3.5km to the south-east.

The development site is in an area shown as open land in aerial photography but is largely surrounded by built development with housing estates etc. The site boundary is shown in figure 2.



Figure 2 – Indicative site boundary (excluding rising main on Back Road and Kinsealy Lane) with habitats (www.google.com).

2.2 Natura 2000 Sites

In assessing the zone of influence of this project upon Natura 2000 sites the following factors must be considered:

- Potential impacts arising from the development
- The location and nature of Natura 2000 sites
- Pathways between the development and the Natura 2000 network

It has already been stated that the site is not located within or directly adjacent to any Natura 2000 site. For projects of this nature an initial 15km radius is normally examined. This is an arbitrary distance however and impacts can occur at distances greater than this. There are a number of Natura areas within this radius.

In preparing this AA Screening report, account was taken of both the Natura 2000 sites within a 15km radius but also potential pathways between the development and Natura 2000 sites.

A pathway analysis (presented later in this report) showed that no Natura 2000 sites beyond 15km of the development site are within the zone of influence of the development project.

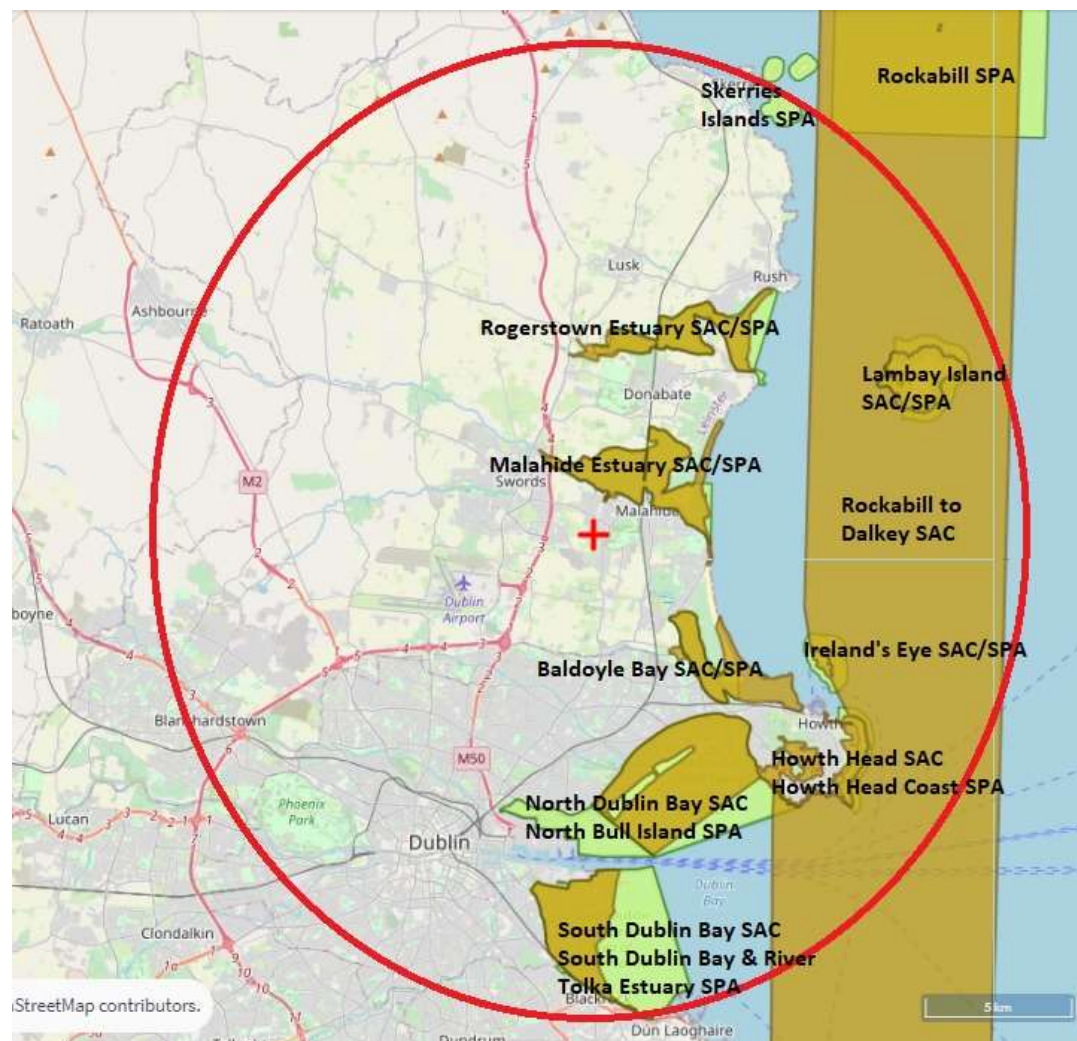


Figure 4 – Approximate 15km radius around the proposed development (red circle) site and Natura 2000 sites.

Baldoyle Bay SAC/SPA. 4km from the development site.

This SAC (site code: 0199) is the estuary of the Sluice and the Mayne Rivers that is largely enclosed by a sand spit that stretches from Portmarnock to Howth. At low tide it has large areas of exposed mud and sediment that support rich invertebrate communities. There are a number of habitats here that are listed in the EU's Habitats Directive Annex I while there are two plants recorded from the Bay that are protected under the Flora Protection Order: Borrer's Saltmarsh-grass *Puccinellia fasciculata* and Meadow Barley *Hordeum secalinum* (NPWS, 2013a & 2014a).

The reasons why the bay falls under the SAC designation are set out in the qualifying interests. They are either habitat types listed in Annex I or species listed in Annex II of the Habitats Directive. This information is provided by the National Parks and Wildlife Service (NPWS) and is shown in table 1 below. In this case the SAC is designated only for protected habitat types. Status is based on the NPWS national assessments under Article 17 of the Habitats Directive and unless otherwise stated do not refer to the status within the SAC in question.

Table 1 – Qualifying interests for the Baldoyle Bay SAC (from NPWS)

Code	Habitats	Status
1140	Mudflats and sandflats	Intermediate
1310	Salicornia and other annuals colonizing mud and sand	Intermediate
1330	Atlantic salt meadows	Intermediate
1410	Mediterranean salt meadows	Intermediate

- Tidal mudflats (1140). This is an intertidal habitat characterised by fine silt and sediment. The overall status of the habitat is inadequate and declining due to pollution from agriculture, forestry, wastewater sources and marine aquaculture.
- Salicornia mudflats (1310): This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependent upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass *Spartina anglica*. Erosion can be destructive but in many cases this is a natural process.
- Atlantic and Mediterranean salt meadows (1330 & 1410): these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.

Site specific conservation objectives for this SAC have been published (NPWS, 2012) and can be summarised as:

Mudflats (code 1140)

Permanent habitat area stable or increasing (estimated at 409 hectares); estuarine muds dominated by polychaetes and crustaceans community complex maintained in a natural condition.

Salicornia mudflats (1310)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Atlantic/Mediterranean Salt Meadows (1330/1410)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

The Baldoyle Bay SPA (site codes: 4016) is composed of estuarine habitats. They are some of the most productive in the world and the nutrients that are deposited here fuel primary and secondary production (levels in the food chain) that in turn provide food for internationally significant numbers of wintering birds (Little, 2000). Specifically, it has a number of species which are 'features of interest' of the SPA, along with 'wetlands and waterbirds'. Table 2 details these. Species summaries below and throughout this report are taken from Balmer et al. (2013).

Table 2 – Features of Interest for the Baldoyle Bay SPA (from NPWS)

Species	National Status ¹	SPA Status ²
<i>Branta bernicula hrota</i> Light-bellied brent goose	Amber (Wintering)	Favourable
<i>Charadrius hiaticula</i> Ringed plover	Amber (Breeding & Wintering)	Intermediate unfavourable
<i>Limosa lapponica</i> Bar-tailed godwit	Red (Wintering)	Highly unfavourable
<i>Pluvialis apricaria</i> Golden plover	Red (Breeding & Wintering)	Unfavourable
<i>Pluvialis squatarola</i> Grey plover	Red (Wintering)	Unfavourable
<i>Tadorna Tadorna</i> Shelduck	Amber (Breeding & Wintering)	Favourable
Wetlands & Waterbirds		

- **Light-bellied Brent Goose.** In Ireland, there has been a 67% increase in the distribution of this goose which winters throughout the Irish coast since the early 1980s. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- **Ringed Plover.** This bird is a common sight around the Irish coast where it is resident. They breed on stony beaches but also, more recently, on cut-away bog in the midlands.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.

¹ Birds of Conservation Concern in Ireland. Gilbert et al., 2021

² Conservation Objectives Supporting Document. Version 1. National Parks & Wildlife Service. 2012.

- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range are considered stable.

Of those species with unfavourable status in the SPA, Ringed Plover and Bar-tailed Godwit have exhibited losses at Baldoyle Bay while the national population remains stable or has increased (NPWS, 2012b). It is therefore reasonable to assume that local factors are leading to declines. The NPWS list a number of factors that may be contributing to this including human disturbance (walkers with or without dogs) and nutrient enrichment (pollution). The latter effect is exhibited by algal mats, typically Sea-lettuce *Ulva* sp. which covers the sediment surface at low tide. This is good for those species which feed on Sea-lettuce but bad for those which cannot reach their favoured prey under the mats.

Table 3 – Mean count of bird species (qualifying interests) for Baldoyle Bay SPA from the Irish Wetland Birds Survey (IWeBS) from 2015 - 2020³

Species	Mean
Light-bellied brent goose	506
Ringed plover	25
Bar-tailed godwit	67
Golden plover	1,020
Grey plover	13
Shelduck	143

Site specific conservation objectives have been published for this SPA (NPWS, 2013a) and are similar for each bird species. They can be summarised as:

Birds (similar for all species)

Long term population trend stable or increasing; there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.

³ <https://c0amf055.caspio.com/dp/f4db30005dbe20614b404564be88>

North Dublin Bay SAC/ North Bull Island SPA. 6.9km from the development site.

The North Dublin Bay SAC (site code: 0206) is focussed on the sand spit on the North Bull island. The qualifying interests for it are shown in table 4. The status of the habitat is also given and this is an assessment of its range, area, structure and function, and future prospects on a national level and not within the SAC itself.

Table 4 – Qualifying interests for the North Dublin Bay SAC

Code	Habitat/Species	Status
1140	Mudflats and sandflats not covered by seawater at low tide	Inadequate
1310	Salicornia and other annuals colonizing mud and sand	Favourable
1330	Atlantic salt meadows	Inadequate
1410	Mediterranean salt meadows	Inadequate
1210	Annual vegetation of drift lines	Inadequate
2110	Embryonic shifting dunes	Inadequate
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	Inadequate
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	Bad
2190	Humid dune slacks	Inadequate
1395	<i>Petalophyllum ralfsii</i> Petalwort	Good

- **Annual vegetation of drift lines (1210)** This habitat of the upper shore is characterised by raised banks of pebbles and stones. They are inhabited by a sparse but unique assemblage of plants, some of which are very rare. The principle pressures are listed as gravel extraction, the building of pipelines and coastal defences.
- **Embryonic shifting dunes (2110).** As their name suggests these sand structures represent the start of a sand dune's life. Perhaps only a meter high they are a transient habitat, vulnerable to inundation by the sea, or developing further into white dunes with Marram Grass. They are threatened by recreational uses, coastal defences, trampling and erosion.
- **Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120).** These are the second stage in dune formation and depend upon the stabilising effects of Marram Grass. The presence of the grass traps additional sand, thus growing the dunes. They are threatened by erosion, climate change, coastal flooding and built development.
- **Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130 – priority habitat).** These are more stable dune systems, typically located on the landward side of the mobile dunes. They have a more or less permanent, and complete covering of vegetation, the quality of which depends on local hydrology and grazing regimes. They are the most endangered of the dune habitat types and are under pressure from built developments such as golf courses and caravan parks, over-grazing, under-grazing and invasive species.

- **Humid dune slacks (2190).** These are wet, nutrient enriched (relatively) depressions that are found between dune ridges. During winter months or wet weather these can flood and water levels are maintained by a soil layer or saltwater intrusion in the groundwater. There are found around the coast within the larger dune systems.
- **Petalwort (1395).** There are 30 extant populations of this small green liverwort, predominantly along the Atlantic seaboard but also with one in Dublin. It grows within sand dune systems and can attain high populations locally.

Site specific conservation objectives are available for this SAC (NPWS, 2013b) and are summarised as:

Atlantic/Mediterranean Salt Meadows (1330/1410)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Annual vegetation of drift lines (code: 1210)

Habitat areas stable or increasing subject to natural variation; no decline in habitat distribution; maintain physical and vegetation structure without any physical obstructions, maintain vegetation structure and composition subject to natural variations.

Embryonic shifting dunes (code: 2110)

Habitat areas stable or increasing subject to natural variation; no decline in habitat distribution; maintain physical and vegetation structure without any physical obstructions, maintain vegetation structure and composition subject to natural variations.

Salicornia and other annuals colonising mud and sand (code: 3110)

Habitat area stable or increasing; no decline in habitat distribution; maintain physical and vegetation structure.

Fixed Coastal Dunes/Shifting Dunes (2130/2120)

Maintain habitat area and distribution including physical structure (functionality and sediment supply, percentage of bare ground, sward height). Maintain vegetation structure as measured by zonation, vegetation cover, typical species and sub-communities. Absences of the invasive *Hippophae rhamnoides*.

Humid dune slacks (code: 2190)

Area increasing, subject to natural processes including erosion and succession; No decline or change in habitat distribution, subject to natural processes; Maintain the natural circulation of sediment and organic matter, without any physical obstructions; Maintain natural hydrological regime; Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground; Maintain structural variation within sward; Maintain range of subcommunities with typical species; Maintain less than 40% cover of creeping willow (*Salix repens*); Negative indicator species (including non-natives) to represent less than 5% cover.

Petalwort *Petalophyllum ralfsii* (code: 1395)

No decline in known populations. No decline in population, estimated at 5,824 thalli. No decline in area of suitable habitat. Maintain hydrological conditions; maintain open, low vegetation, with a high percentage cover of bryophytes (small acrocarps and liverwort turf) and bare ground.

The North Bull Island SPA (site code: 0206) is largely coincident with the North Dublin Bay SAC with the exception of the terrestrial portion of Bull Island. Table 5 lists its features of interest

Table 5 – Features of interest for the North Bull Island SPA

North Bull Island SPA	National Status
Light-bellied Brent Goose <i>Branta bernicla hrota</i>	Amber (Wintering)
Oystercatcher <i>Haematopus ostralegus</i>	Red (Breeding & Wintering)
Teal <i>Anas crecca</i>	Amber (Breeding & Wintering)
Pintail <i>Anas acuta</i>	Amber (Wintering)
Shoveler <i>Anas clypeata</i>	Amber (Wintering)
Shelduck <i>Tadorna tadorna</i>	Amber (Breeding & Wintering)
Golden Plover <i>Pluvialis apricaria</i>	Red (Breeding & Wintering)
Grey Plover <i>Pluvialis squatarola</i>	Red (Wintering)
Knot <i>Calidris canutus</i>	Red (Wintering)
Sanderling <i>Calidris alba</i>	Green (Wintering)
Dunlin <i>Calidris alpina</i>	Red (Breeding & Wintering)
Black-tailed Godwit <i>Limosa limosa</i>	Red (Wintering)
Bar-tailed Godwit <i>Limosa lapponica</i>	Red (Wintering)
Curlew <i>Numenius arquata</i>	Red (Breeding & Wintering)
Redshank <i>Tringa totanus</i>	Red (Breeding & Wintering)
Turnstone <i>Arenaria interpres</i>	Amber (Wintering)
Black-headed Gull <i>Larus ridibundus</i>	Amber (Breeding)
Wetlands & Waterbirds	

- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **Teal.** In winter this duck is widespread throughout the country. Land use change and drainage however have contributed to a massive decline in its breeding range over the past 40 years.

- **Pintail.** Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- **Shoveler.** Favoured wintering sites for this duck are inland wetlands and coastal estuaries. While there have been local shifts in population and distribution, overall their status is stable in Ireland.
- **Knot.** These small wading birds do not breed in Ireland but gather in coastal wetlands in winter. Their numbers have increased dramatically since the mid-1990s although the reasons for this are unclear.
- **Sanderling.** This small bird breeds in the high Arctic and winters in Ireland along sandy beaches and sandbars. Its wintering distribution has increased by 21% in the previous 30 years.
- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- **Curlew.** Still a common sight during winter at coastal and inland areas around the country it breeding population here has effectively collapsed. Their habitat has been affected by the destruction of peat bogs, afforestation, farmland intensification and land abandonment. Their wintering distribution also appears to be in decline.
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.
- **Turnstone.** This winter visitor to Irish coasts favours sandy beaches, estuaries and rocky shores. It is found throughout the island but changes may be occurring due to climate change.
- **Black-headed Gull.** Widespread and abundant in winter these gulls are nevertheless considered to be in decline. The reasons behind this are unclear but may relate to the loss of safe nesting sites, drainage, food depletion and increase predation.

Site specific conservation objectives have been published for this SPA (NPWS, 2015a) and are similar for each bird species. They can be summarised as:

Birds (similar for all species)

Long term population trend stable or increasing; there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

The South Dublin Bay and Tolka Estuary SPA (side code: 4024). 9.6km from the development site.

This SPA is largely coincident with the South Dublin Bay SAC boundary with the exception of the Tolka Estuary. These designations encompass all of the intertidal areas in Dublin Bay from south of Bull Island to the pier in Dun Laoghaire. Wintering birds in particular are attracted to these areas in great number as they shelter from harsh conditions further north and avail of the available food supply within sands and soft sediments. Table 6 lists the features of interest.

- **Light-bellied Brent Goose.** There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- **Sanderling.** This small bird breeds in the high Arctic and winters in Ireland along sandy beaches and sandbars. Its wintering distribution has increased by 21% in the previous 30 years.
- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Knot.** These small wading birds do not breed in Ireland but gather in coastal wetlands in winter. Their numbers have increased dramatically since the mid-1990s although the reasons for this are unclear.
- **Black-headed Gull.** Widespread and abundant in winter these gulls are nevertheless considered to be in decline. The reasons behind this are unclear but may relate to the loss of safe nesting sites, drainage, food depletion and increase predation.
- **Ringed Plover.** This bird is a common sight around the Irish coast where it is resident. They breed on stony beaches but also, more recently, on cut-away bog in the midlands.
- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Roseate Tern.** This tern breeds at only a few stations along Ireland's east coast. Most of these are in decline although at Dublin their colony is increasing.
- **Common Tern.** This summer visitor nests along the coast and on islands in the largest lakes. Its breeding range has halved in Ireland since the 1968-1972 period.
- **Arctic Tern.** These long-distance travellers predominantly breed in coastal areas of Ireland. They have suffered from predation by invasive mink and are declining in much of their range.
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.

Bird counts from BirdWatch Ireland are taken from Dublin Bay as a whole and are not specific to any particular portion of the Bay. Dublin Bay is recognised as an

internationally important site for water birds as it supports over 20,000 individuals. Table 6 shows the most recent count data available⁴.

Table 6 – Mean count of birds species (qualifying interests of SPAs) for Dublin Bay from the Irish Wetland Birds Survey (IWeBS) from 2010 - 2020

Species	Mean
Light-bellied Brent Goose	3,453
Sanderling	500
Dunlin	5,951
Knot	5,093
Black-headed Gull	3,340
Ringed Plover	176
Oystercatcher	3,419
Bar-tailed Godwit	1,965
Grey Plover	328
Roseate Tern	0
Common Tern	23
Arctic Tern	0
Redshank	2,050
Teal	1,335
Pintail	184
Shoveler	101
Black-tailed Godwit	2,038
Curlew	882
Turnstone	272

There were also internationally important populations of particular birds recorded in Dublin Bay (i.e. over 1% of the world population): Light-bellied brent geese *Branta bernicla hrota*; Black-tailed godwit *Limosa limosa*; Knot *Calidris canutus* and Bar-tailed godwit *L. lapponica*.

Table 7 – Qualifying interests for the South Dublin Bay & River Tolka Estuary SPA (EU code in square parenthesis)

South Dublin Bay and Tolka Estuary SPA
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]
Oystercatcher (<i>Haematopus ostralegus</i>) [A130]
Ringed Plover (<i>Charadrius hiaticula</i>) [A137]
Grey Plover (<i>Pluvialis squatarola</i>) [A140]

⁴ <https://c0amf055.caspio.com/dp/f4db30005dbe20614b404564be88>

Knot (<i>Calidris canutus</i>) [A143]
Sanderling (<i>Calidris alba</i>) [A144]
Dunlin (<i>Calidris alpina</i>) [A149]
Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]
Redshank (<i>Tringa totanus</i>) [A162]
Black-headed Gull (<i>Croicocephalus ridibundus</i>) [A179]
Roseate Tern (<i>Sterna dougallii</i>) [A192]
Common Tern (<i>Sterna hirundo</i>) [A193]
Arctic Tern (<i>Sterna paradisaea</i>) [A194]
Wetlands & Waterbirds [A999]

Site specific conservation objectives have been published for this SPA (NPWS, 2015b) and are similar for each bird species. They can be summarised as:

Birds (similar for all species)

Long term population trend stable or increasing; there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

The **South Dublin Bay SAC** (side code: 0210; 12km from the development site)

This SAC is concentrated on the intertidal area of Sandymount Strand (NPWS, 2015d). It has four qualifying interests: mudflats and sandflats not covered by seawater at low tide (1140), annual vegetation of drift lines (1210), Salicornia and other annuals colonising mud and sand (1310) and Embryonic shifting dunes (2110).

- **Annual vegetation of drift lines (1210)** This habitat of the upper shore is characterised by raised banks of pebbles and stones. They are inhabited by a sparse but unique assemblage of plants, some of which are very rare. The principle pressures are listed as gravel extraction, the building of pipelines and coastal defences.
- **Embryonic shifting dunes (2110)**. As their name suggests these sand structures represent the start of a sand dune's life. Perhaps only a meter high they are a transient habitat, vulnerable to inundation by the sea, or developing further into white dunes with Marram Grass. They are threatened by recreational uses, coastal defences, trampling and erosion.
- **Tidal mudflats (1140)**. This is an intertidal habitat characterised by fine silt and sediment. The overall status of the habitat is inadequate and declining due to pollution from agriculture, forestry, wastewater sources and marine aquaculture.
- **Salicornia mudflats (1310)**: This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependant upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly

threatened by the advance of the alien invasive Cordgrass *Spartina anglica*. Erosion can be destructive but in many cases this is a natural process.

Site specific conservation objectives have been set out for mudflats in this SAC (NPWS, 2013c) and are summarised as:

Mudflats (code 1140)

Permanent habitat area stable or increasing (estimated at 720 hectares); Maintain the extent of the *Zostera*-dominated community, subject to natural processes; Conserve the high quality of the *Zostera*-dominated community, subject to natural processes; Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex.

For other qualifying interests, only generic conservation objectives are available.

Malahide Estuary SAC and SPA (code: 0205 and 4025). 1.3km from the development site.

The estuary is designated for its intertidal habitats and important wintering bird population as detailed in table 8.

In addition to its Natura 2000 designations it is also a Ramsar site (Broadmeadow estuary no. 833) and a Marine Protected Area under the OSPAR Convention (site code: O-IE-0002967).

The qualifying interests for the SAC (the reasons why the site is of European value) are detailed in table 8 while the qualifying interests for the SPA are given in table 9.

Table 8 – Site qualifying interests for the Malahide estuary SAC

Aspect	Level of Protection	Status
Fixed coastal dunes with herbaceous vegetation (grey dunes) (code: 2130)	Habitats Directive Annex I priority habitat	Bad
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') (code: 2120)	Habitats Directive Annex I	Inadequate
Salicornia and other annuals colonizing mud and sand (code: 1310)		Inadequate
Mediterranean salt meadows (code: 1410)		Inadequate
Atlantic salt meadows (code: 1330)		Inadequate
Mudflats and sandflats not covered by seawater at low tide (code: 1140)		Inadequate

- **Tidal mudflats (1140).** This is an intertidal habitat characterised by fine silt and sediment. The overall status of the habitat is inadequate and declining due to pollution from agriculture, forestry, wastewater sources and marine aquaculture.

- **Salicornia mudflats (1310):** This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependent upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass *Spartina anglica*. Erosion can be destructive but in many cases this is a natural process.
- **Atlantic and Mediterranean salt meadows (1330 & 1410):** these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.
- **Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120).** These are the second stage in dune formation and depend upon the stabilising effects of Marram Grass. The presence of the grass traps additional sand, thus growing the dunes. They are threatened by erosion, climate change, coastal flooding and built development.
- **Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130 – priority habitat).** These are more stable dune systems, typically located on the landward side of the mobile dunes. They have a more or less permanent, and complete covering of vegetation, the quality of which depends on local hydrology and grazing regimes. They are the most endangered of the dune habitat types and are under pressure from built developments such as golf courses and caravan parks, overgrazing, under-grazing and invasive species.

Site specific conservation objectives have been published for this SAC (NPWS, 2013d) and are summarised here:

Mudflats (code 1140)

Permanent habitat area stable or increasing (estimated at 311 hectares); Maintain the extent of the *Zostera*-dominated community and the *Mytilus edulis*-dominated community complex, subject to natural processes; Conserve the high quality of the *Zostera*-dominated community, subject to natural processes; Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes; Conserve the following community types in a natural condition: Fine sand with oligochaetes, amphipods, bivalves and polychaetes community complex; Estuarine sandy mud with Chironomidae and *Hediste diversicolor* community complex; and Sand to muddy sand with *Peringia ulvae*, *Tubificoides benedii* and *Cerastoderma edule* community complex.

Salicornia mudflats (1310)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Atlantic/Mediterranean Salt Meadows (1330/1410)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Fixed Coastal Dunes/Shifting Dunes (2130/2120)

Maintain habitat area and distribution including physical structure (functionality and sediment supply, percentage of bare ground, sward height). Maintain vegetation structure as measured by zonation, vegetation cover, typical species and sub-communities. Absences of the invasive *Hippophae rhamnoides*.

Table 10 – Qualifying Interests for Malahide Estuary SPA

Species	National Status ⁵
<i>Anas acuta</i> Pintail	Amber (Wintering)
<i>Branta bernicula hrota</i> Light-bellied brent goose	Amber (Wintering)
<i>Bucephala clangula</i> Goldeneye	Red (Wintering)
<i>Calidris alpina</i> Dunlin	Red (Breeding & Wintering)
<i>Calidris canutus</i> Knot	Red (Wintering)
<i>Haematopus ostralegus</i> Oystercatcher	Red (Breeding & Wintering)
<i>Limosa lapponica</i> Bar-tailed godwit	Red (Wintering)
<i>Limosa limosa</i> Black-tailed godwit	Red (Wintering)
<i>Mergus serrator</i> Red-breasted Merganser	Amber (Breeding & Wintering)
<i>Pluvialis apricaria</i> Golden Plover	Red (Breeding & Wintering)
<i>Pluvialis squatarola</i> Grey Plover	Red (Wintering)
<i>Podiceps cristatus</i> Great-crested Grebe	Red (Breeding & Wintering)
<i>Tadorna tadorna</i> Shelduck	Amber (Breeding & Wintering)
<i>Tringa totanus</i> Redshank	Red (Breeding & Wintering)
Wetlands & Waterbirds	

- **Pintail.** Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- **Light-bellied Brent Goose.** There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- **Goldeneye.** This duck wintering throughout Ireland on suitable coastal areas, river valleys and wetlands. There has been an 11% contraction in its Irish wintering range since the early 1980s and a 37% decline in abundance since the 1990s.
- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Knot.** These small wading birds do not breed in Ireland but gather in coastal wetlands in winter. Their numbers have increased dramatically since the mid-1990s although the reasons for this are unclear.
- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.

⁵ Birds of Conservation Concern in Ireland. Gilbert et al., 2021

- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- **Red-breasted Merganser.** A widely distributed duck in winter Red-breasted Mergansers also breed in Ireland at certain coastal and inland locations to the north and west. They have suffered small declines in both their wintering and breeding ranges and possible reasons have been cited as predation by American Mink and shooting.
- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Great-crested Grebe.** These birds breed predominantly on freshwater sites north of the River Shannon while coastal areas along the east and south are used for wintering. Numbers in Ireland have decline by over 30% since the 1990s.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.

Table 11 – Mean count of bird species (qualifying interests) for Malahide Estuary SPA from the Irish Wetland Birds Survey (IWeBS) from 2010 - 2020⁶

Species	Mean
Light-bellied Brent Goose	3,453
Sanderling	500
Dunlin	5,951
Knot	5,093
Black-headed Gull	3,340
Ringed Plover	176
Pintail	19
Light-bellied Brent Goose	932
Goldeneye	34
Dunlin	515
Knot	414
Oystercatcher	1,050
Bar-tailed Godwit	89
Black-tailed Godwit	387

⁶ <https://c0amf055.caspio.com/dp/f4db30005dbe20614b404564be88>

Red-breasted Merganser	71
Golden Plover	77
Grey Plover	54
Shelduck	322
Redshank	

Site specific conservation objectives have been published for this SPA (NPWS, 2013e) and are similar for each bird species. They can be summarised as:

Birds (similar for all species)

Long term population trend stable or increasing; there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

Rogerstown estuary SAC (code: 0208) SPA (code: 4015). 7.3km from the development site.

This area is also a Statutory Nature Reserve, a proposed Natural Heritage Area (code: 0208) and is listed under the international Ramsar convention on the protection of wetlands (site no. 412).

The estuary is situated north of Donabate and is transected by the Rogerstown viaduct, built in the 1840s and rebuilt after a section of it collapsed in 2009. The mudflats, salt marsh and sand dune habitats are all important and during winter there are internationally important populations of the pale-bellied brent goose *Branta bernicula hrota*. The site is also of international importance as it supports in excess of 20,000 waterbirds each season.

There is site-specific information available for the SAC and SPA available from the NPWS as 'site synopsis' reports. 'Site qualifying interests' (i.e. the reasons the site is designated) are given by the NPWS for the SAC. For the SPA qualifying interests are given. These are shown in tables 12 & 13.

Table 12 – Site qualifying interests for the Rogerstown estuary SAC

Habitat and EU code	Current national status
Fixed coastal dunes with herbaceous vegetation (grey dunes) (code: 2130)	Bad
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') (code: 2120)	Inadequate
Salicornia and other annuals colonizing mud and sand (code: 1310)	Favourable
Mediterranean salt meadows (code: 1410)	Inadequate
Atlantic salt meadows (code: 1330)	Inadequate

Estuaries (code: 1130)	Inadequate
Mudflats and sandflats not covered by seawater at low tide (code: 1140)	Inadequate

- **Estuary (1130):** This is the portion of a river that is influenced by the tide but retaining a significant freshwater influence. Substrates can range from rocks and boulders, to expanses of fine mud and sand. They are an important resource for birds and other fauna and many estuaries have twin designations (i.e. both SAC and SPA). It considered that the majority of estuary habitat is in good condition however approximately a quarter is negatively affected by excess nutrient input and damaging fishing practices.

Site specific conservation objectives have been published for this SAC (NPWS, 2013f) and are summarised here:

Estuaries (code: 1130)

Permanent habitat area stable or increasing (estimated at 268 hectares); Maintain the extent of the *Zostera*-dominated community and the *Mytilus edulis*-dominated community, subject to natural processes; Conserve the high quality of the *Zostera*-dominated community, subject to natural processes; Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes; Conserve the following community types in a natural condition: Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex; Estuarine sandy mud to mixed sediment with *Tubificoides benedii*, *Hediste diversicolor* and *Peringia ulvae* community complex.

Mudflats (code 1140)

Permanent habitat area stable or increasing (estimated at 370 hectares); Maintain the extent of the *Zostera*-dominated community and the *Mytilus edulis*-dominated community, subject to natural processes; Conserve the high quality of the *Zostera*-dominated community, subject to natural processes; Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes; Conserve the following community types in a natural condition: Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex; Estuarine sandy mud to mixed sediment with *Tubificoides benedii*, *Hediste diversicolor* and *Peringia ulvae* community complex.

Salicornia mudflats (1310)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Atlantic/Mediterranean Salt Meadows (1330/1410)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Fixed Coastal Dunes/Shifting Dunes (2130/2120)

Maintain habitat area and distribution including physical structure (functionality and sediment supply, percentage of bare ground, sward height). Maintain vegetation structure as measured by zonation, vegetation cover, typical species and sub-communities. Absences of the invasive *Hippophae rhamnoides*.

Table 13 – Site features of interest for the Rogerstown Estuary SPA

Species and EU Code	National Status
Shoveler (<i>Anas clypeata</i>) [A056]	Amber (Wintering)
Greylag Goose (<i>Anser anser</i>) [A043]	Amber (Wintering)
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Amber (Wintering)
Knot (<i>Calidris canutus</i>) [A143]	Red (Wintering)
Dunlin (<i>Calidris alpina</i>) [A149]	Red (Breeding & Wintering)
Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	Green
Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Red (Breeding & Wintering)
Black-tailed Godwit (<i>Limosa limosa</i>) [A156]	Red (Breeding)
Grey Plover (<i>Pluvialis squatarola</i>) [A141]	Red (Wintering)
Shelduck (<i>Tadorna tadorna</i>) [A048]	Amber (Breeding & Wintering)
Redshank (<i>Tringa totanus</i>) [A162]	Red (Breeding & Wintering)
Wetlands and waterbirds	-

The status given for each species is taken from BirdWatch Ireland's 'Birds of Conservation Concern in Ireland' (Gilbert et al., 2021) while the summaries below are all from the *Bird Atlas 2007-11* (Balmer et al., 2013).

- **Shoveler.** Favoured wintering sites for this duck are inland wetlands and coastal estuaries. While there have been local shifts in population and distribution, overall their status is stable in Ireland.
- **Greylag Goose.** Wintering Greylag Geese are very scattered in Ireland and occur on both coastal in inland sites. Their population has expanded greatly in their more northerly ranges (Iceland and Scotland) and this has coincided with losses elsewhere.
- **Ringed Plover.** This bird is a common sight around the Irish coast where it is resident. They breed on stony beaches but also, more recently, on cut-away bog in the midlands.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range are considered stable.

Site specific conservation objectives have been published for this SPA (NPWS, 2013g) and are similar for each bird species. They can be summarised as:

Birds (similar for all species)

Long term population trend stable or increasing; there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

Howth Head SAC and Howth Head Coast SPA. 9km from the development site.

The Howth Head SAC (site code: 0202) is designed for two qualifying interests: vegetated sea cliffs and dry heath.

- **Vegetated sea cliffs (1230)** These coastal habitats can be composed of hard or soft material which in turn influences the rate at which erosion occurs. Vegetation can be sparse but composed of a variety of specially adapted species. It is nationally assessed as of intermediate status.
- **Dry heath (4030):** This is a community of heather shrubs that occurs on well-drained, acidic, nutrient-poor mineral or peaty soils. Pressures on this habitat arise from high levels of sheep grazing, as well as afforestation, mining and quarrying. Unregulated burning is also identified as an important threat to the structure of this habitat. It is nationally assessed as of bad status.

Howth Head is also a pNHA and is home to a number of threatened plant species as well as locally rare or noteworthy habitats, such as patches of blanket bog.

Site specific conservation objectives have been published for this SAC (NPWS, 2016) and are summarised here:

Vegetated sea cliffs (code: 1230)

Habitat areas stable or increasing subject to natural processes; no decline in habitat distribution; No alteration to natural functioning of geomorphological and hydrological processes, including groundwater quality, due to artificial structures; maintain range of sea cliff habitat zonation including transitional zones, subject to natural processes including erosion and succession; maintain vegetation structure, composition.

European Dry Heaths (4030)

Habitat area stable or increasing subject to natural processes; no decline in habitat distribution; maintain soil nutrient status within natural range; maintain vegetation composition and structure (including negative indicator species and absence of burning); less than 10% disturbed/bare ground.

The Howth Head Coast SPA (code: 4133) is home to large colonies of breeding seabirds, particularly Kittiwake, the SPAs only feature of interest. These vocal seagulls spend most of their time at sea, returning to favoured coastal sites for breeding. Nesting is on suitable rocky cliffs around the Irish coast (NPWS, 2011a). These Irish colonies are considered stable (Balmer et al., 2013).

Generic conservation objectives only are available for this SPA (NPWS, 2022a).

Rockabill to Dalkey Island SAC (site code: 0300). 9.5km from the development site.

This is an off-shore (i.e. marine) SAC (NPWS, 2014d). It has two qualifying interests which are reefs and Harbour Porpoise *Phocoena phocoena*. Conservation objectives for this SAC have been published to maintain or restore the area of habitat and status of the population to 'favourable conservation status'.

- Reefs can be intertidal or subtidal features and are characterised by hard or rocky substrates. The main pressures that have been identified by the NPWS are commercial fishing, aquaculture, water pollution and commercial/recreational uses of the marine environment. Nationally their status is assessed as 'bad' (NPWS, 2013).
- Harbour porpoise This is the smallest cetacean species regularly occurring in Irish waters. It is commonly found in residential pods close to the shore and it is not considered threatened in Irish waters. Its status nationally is 'good'.

Specific conservation objectives are provided for this SAC (NPWS, 2013h) and are summarised as:

Reefs (code: 1170)

The permanent habitat area and distribution of the habitat are stable or increasing; the biological composition is conserved.

Harbour Porpoise (code: 1351)

Species range within the site should not be restricted by artificial barriers to site use; Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Ireland's Eye SAC/SPA. 8.5km from the development site.

Ireland's Eye is an uninhabited island 1.5km north of Howth harbour. Its southern side is gently sloping however steep cliffs descend to the seas on its northern and eastern coasts. The thin soil and maritime influence provide habitat for an assemblage of notable plant species, including the rare Sea-Kale *Crambe maritima*. The SAC (site code: 2193) has two qualifying interests: vegetated sea cliffs and perennial vegetation of stony banks. The latter habitat is nationally of intermediate status. It is a habitat of the high tide line characterised by loose stones and shingle. It is a highly dynamic feature, being continually reshaped by tides and waves. It can be home to very rare plants and a number of coastal nesting birds.

Specific conservation objectives are provided for this SAC (NPWS, 2017) and are summarised as:

Perennial vegetation of stony bank (code: 1220)

Habitat areas stable or increasing subject to natural variation; no decline in habitat distribution; maintain physical and vegetation structure without any physical obstructions, maintain vegetation structure and composition subject to natural variations.

Vegetated sea cliffs (code: 1230)

Habitat areas stable or increasing subject to natural processes; no decline in habitat distribution; No alteration to natural functioning of geomorphological and hydrological processes, including groundwater quality, due to artificial structures; maintain range of sea cliff habitat zonation including transitional zones, subject to natural processes including erosion and succession; maintain vegetation structure, composition.

The Ireland's Eye SPA (code: 4117) is centred on the island's value as a large seabird colony. It is one of only six number of locations where Gannets *Morus bassanus* regularly breed in Ireland. The features of interest for the SPA are given in table 14.

Table 14 – Features of Interest for the Ireland's Eye SPA (from NPWS)

Species	National Status
<i>Phalacrocorax carbo</i> Cormorant	Amber (Breeding & Wintering)
<i>Larus argentatus</i> Herring Gull	Amber (Breeding)
<i>Rissa tridactyla</i> Kittiwake	Red (Breeding)
<i>Uria aalge</i> Guillemot	Amber (Breeding)
<i>Alca torda</i> Razorbill	Red (Breeding)

- **Cormorant.** Wintering populations of this large, fish-eating bird have increased in Ireland since the early 1980s. Breeding also occurs widely along the coast and inland waterways. It is amber-listed due to a moderate decline in numbers.
- **Herring Gull.** This large gull breeds predominantly around the Irish coast and only occasionally inland. Numbers at these colonies have fallen by 60% since 1969, a decline which is attributed to a number of sources including a reduction in available food at landfill, botulism and predation.
- **Guillemot.** This member of the auk family is found only near land during the breeding season. They nest on suitable rocky outcrops and cliffs where there is protection from predators. The population at four of Ireland's largest colonies is estimated to have increased by 22% over the past decade.
- **Razorbill.** This member of the auk family breeds exclusively at suitable coastal sites, where there are rocky cliffs to provide protection from predators. Indications are that populations at Irish colonies are stable.

Generic conservation objectives only are available for this SPA (NPWS, 2022b).

Lambay Island SAC/SPA. 10.8km from the development site.

This island is located 4km off the coast of North Dublin and is characterised by steep cliffs on three sides. The SAC (site code: 0204) is designated for marine and terrestrial habitats as well as Ireland's two resident seal species. The cliffs are important for a range of breeding seabirds and for this reason the island is also an SPA (site code: 4069). The qualifying interests of the SAC are given in table 15 while the features of interest of the SPA are given in table 16.

Table 15 – Site qualifying interests for the Lambay Island SAC

Aspect	Level of Protection	Status
Reefs (1170)	Habitats Directive Annex I	Bad
Vegetated sea cliffs (1230)		Inadequate
Grey seal <i>Halichoerus grypus</i>	Habitats Directive Annex II	Good
Common Seal <i>Phoca vitulina</i>		Good

- **Reefs (1170)** can be intertidal or subtidal features and are characterised by hard or rocky substrates. The main pressures that have been identified by the NPWS are commercial fishing, aquaculture, water pollution and commercial/recreational uses of the marine environment.
- **Vegetated sea cliffs (1230)** These coastal habitats can be composed of hard or soft material which in turn influences the rate at which erosion occurs. Vegetation can be sparse but composed of a variety of specially adapted species.
- **Grey seal (1364)**. The larger of Ireland's two resident seal species can be found in breeding colonies around our coast including on off-shore islands. It is predominantly a marine species but they come ashore in autumn to mate and give birth.
- **Common seal (1365)**. The smaller of Ireland's two resident seal species, common seals breed all around the coast. A predominantly marine species they also 'haul out' at favoured resting sites at low tide.

Specific conservation objectives are provided for this SAC (NPWS, 2013i) and are summarised as:

Vegetated sea cliffs (code: 1230)

Habitat areas stable or increasing subject to natural processes; no decline in habitat distribution; No alteration to natural functioning of geomorphological and hydrological processes, including groundwater quality, due to artificial structures; maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession; maintain vegetation structure, composition.

Reefs (code: 1170)

The permanent habitat area and distribution of the habitat are stable or increasing; the biological composition is conserved.

Grey Seal (code: 0204)

Species range within the site should not be restricted by artificial barriers to site use; The breeding sites should be maintained in a natural condition; The moult haul-out sites should be maintained in a natural condition; the resting haul-out sites should be maintained in a natural condition; human activities should occur at levels that do not adversely affect the seal population at the site.

Table 16 – Features of Interest for the Lambay Island SPA (from NPWS)

Species	National Status
<i>Phalacrocorax carbo</i> Cormorant	Amber (Breeding & Wintering)
<i>Larus argentatus</i> Herring Gull	Amber (Breeding)
<i>Rissa tridactyla</i> Kittiwake	Red (Breeding)
<i>Uria aalge</i> Guillemot	Amber (Breeding)
<i>Alca torda</i> Razorbill	Red (Breeding)
<i>Fulmarus glacialis</i> Fulmar	Amber (Breeding)
<i>Phalacrocorax aristotelis</i> Shag	Amber (Breeding)
<i>Anser anser</i> Greylag Goose	Amber (Wintering)
<i>Larus fuscus</i> Lesser Black-backed Gull	Amber (Breeding)
<i>Fratercula arctica</i> Puffin	Red (Breeding)

- **Razorbill.** This member of the auk family breeds exclusively at suitable coastal sites, where there are rocky cliffs to provide protection from predators. Indications are that populations at Irish colonies are stable.
- **Greylag Goose.** Wintering Greylag Geese are very scattered in Ireland and occur on both coastal and inland sites. Their population has expanded greatly in their more northerly ranges (Iceland and Scotland) and this has coincided with losses elsewhere.
- **Puffin.** This unmistakable auk spends the winter far out to sea, only coming to shore in the summer to breed. Colonies are scattered around the coasts and the birds face an uncertain future due to the scale of industrial fishing combined with climate change.
- **Lesser Black-backed Gull.** The wintering range of this distinctive gull has expanded in Ireland by 55% since the early 1980s while breeding colonies have similarly increased.
- **Shag.** Nearly half of the global population of this seabird is to be found around Ireland and Britain. Its population has shown great fluctuation since counts began although the reasons for this are largely unknown. It is to be found around the Irish coast throughout the year.
- **Cormorant.** Wintering populations of this large, fish-eating bird have increased in Ireland since the early 1980s. Breeding also occurs widely along the coast and inland waterways. It is amber-listed due to a moderate decline in numbers.
- **Kittiwake.** These vocal seagulls spend most of their time at sea, returning to favoured coastal sites for breeding. Nesting is on suitable rocky cliffs around the Irish coast. These Irish colonies are considered stable.
- **Guillemot.** This member of the auk family is found only near land during the breeding season. They nest on suitable rocky outcrops and cliffs where there is protection from predators. The population at four of Ireland's largest colonies is estimated to have increased by 22% over the past decade.

Generic conservation objectives only are available for this SPA (NPWS, 2022c).

Skerries Island SPA (code: 4122); c.15km from the development site.

This is a collection of three uninhabited islands between 1-1.5km off the coast of Dublin. The SPA boundary includes not only the islands themselves but a 200m wide band of marine habitat around each one of them. The islands are of international importance for both breeding seabirds and wintering species (NPWS, 2009).

The special conservation interests for the SAC (the reasons why the site is of European value) are detailed in table 17.

Table 17 – Special Conservation Interests for Skerries Islands SPA

Species	National Status ⁷
<i>Arenaria interpres</i> Turnstone	Amber (Wintering)
<i>Branta bernicula hrota</i> Light-bellied brent goose	Amber (Wintering)
<i>Calidris maritima</i> Purple Sandpiper	Green (Wintering)
<i>Larus argentatus</i> Herring Gull	Amber (Breeding)
Shag <i>Phalacrocorax aristotelis</i>	Amber (Breeding)
<i>Phalacrocorax carbo</i> Cormorant	Amber (Breeding & Wintering)

- **Turnstone.** This winter visitor to Irish coasts favours sandy beaches, estuaries and rocky shores. It is found throughout the island but changes may be occurring due to climate change.
- **Light-bellied Brent Goose.** There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- **Purple Sandpiper.** Wintering Purple Sandpipers are found on rocky shores around the Irish coast. Although some range contraction has been recorded this may be due to poor recording coverage rather than an underline decline in population.
- **Herring Gull.** This large gull breeds predominantly around the Irish coast and only occasionally inland. Numbers at these colonies have fallen by 60% since 1969, a decline which is attributed to a number of sources including a reduction in available food at landfill, botulism and predation.
- **Shag.** Nearly half of the global population of this seabird is to be found around Ireland and Britain. Its population has shown great fluctuation since counts began although the reasons for this are largely unknown. It is to be found around the Irish coast throughout the year.
- **Cormorant.** Wintering populations of this large, fish-eating bird have increased in Ireland since the early 1980s. Breeding also occurs widely along the coast and inland waterways. It is amber-listed due to a moderate decline in numbers.

Generic conservation objectives only are available for this SPA (NPWS, 2022d).

⁷ Birds of Conservation Concern in Ireland. Gilbert et al., 2021

Pathway Analysis

There is an indirect hydrological pathway from the development site to Baldoyle Bay via surface drains and the Hazelbrook Stream. There is an indirect hydrological pathway through the foul sewer to Dublin Bay via the Ringsend WWTP.

Water quality in Baldoyle Bay (Mayne Estuary; code: IE_EA_080_0100) was assessed by the EPA as 'intermediate' for the 2018-2020 reporting period. The ecological status of Baldoyle Bay under the Water Framework Directive is under review. The principle river feeding into the Baldoyle Bay is the River Mayne (code: IE_EA_09M030500) and this is 'poor status. According to the sub-catchment report on www.catchments.ie the principle pressure on the transitional water is "anthropogenic pressure". This may be due to nutrient sources/urban run-off. Although the exact cause of this is unknown, this may arise from misconnections whereby effluent from homes is discharging straight to the environment rather than the foul sewer. Unattenuated surface run-off may also be a contributing factor.

Sampling of water quality in Dublin Bay (and presented in the Annual Environmental Report for the WWTP) indicates that the discharge from the wastewater treatment plant is having an observable effect in the 'near field' of the discharge. This includes the inner Liffey Estuary and the Tolka Estuary, but not the coastal waters of Dublin Bay. This indicates that potential effects arising from the treatment plant are confined to these areas, and that the zone of influence does not extend to the coastal waters or the Irish Sea.

There are consequently pathways to a number of Natura 2000 sites. There are surface hydrological links to the Baldoyle Bay SAC (site code: 0199) and SPA (site code: 4016), and indirect, wastewater links to the South Dublin Bay and River Tolka Estuary SPA (site code: 4024), the South Dublin Bay SAC (site code: 0210), the North Bull Island SPA (site code: 4006) and the North Dublin Bay SAC (site code: 0206).

There are no direct or indirect, hydrological or surface pathways to the Malahide Estuary SAC/SPA or any other Natura 2000 site either within 15km of the development site or beyond this radius. Beyond the points of discharge to Baldoyle Bay and Dublin Bay from surface water and wastewater respectively, the enormous dilution effect of the Irish Sea means that there can be no pathway to other Natura 2000 sites in the marine or coastal zone.

Significance of Effects

Whether effects are significant or not must be measured against the conservation objectives of the SAC or SPA in question.

The specific conservation objectives which have been set for mudflats in the South Dublin Bay SAC (generic objectives only are available for other qualifying interests) and qualifying interests in the North Dublin Bay SAC and Baldoyle Bay SAC relate to habitat area, community extent, community structure and community distribution within the qualifying interest. There are no objectives in relation to water quality (NPWS, 2013).

For the Baldoyle Bay SPA, South Dublin Bay & Tolka Estuary SPA and the North Bull Island SPA the conservation objectives for each bird species relates to maintaining a population trend that is stable or increasing, and maintaining the current distribution in time and space (NPWS, 2015a & b).

2.3 Literature Review and Site Survey

As can be seen from figures 1 and 2, the site is not located within or directly adjacent to any area Natura 2000 site. It is situated approximately 1.3km from the boundary of the Malahide Estuary SAC & SPA (as the crow flies). These are the closest Natura 2000 sites to the development site. The development site is not situated within the catchment of any significant water course. The engineering report prepared by Waterman Moylan for this planning application has confirmed that surface drainage pathways lead to the Hazelbrook Stream. The Hazelbrook Stream flows a short distance to the south (~130m) and this leads to Baldoyle Bay.

The Environmental Protection Agency (EPA) monitors water bodies in compliance with the Water Framework Directive (WFD). The WFD status of the inner portion of the Malahide Estuary (Broadmeadow Water) has been assessed as of 'poor' status. Beyond the railway line that dissects the estuary the status was assessed as 'moderate' (Malahide Bay). These data indicate point or diffuse pollution sources, or other ecological problems such as obstructions. The status of the Baldoyle Bay water body meanwhile is under review.

Site visits were carried out on May 15th and June 25th 2019, February 11th, August 27th 2020 and January 26th 2022 and the lands were surveyed in accordance with best practice guidance (Smith et al., 2010).

The site is centred on Auburn House with surrounding lands which are a combination of **improved agricultural grassland – GA1** and **broadleaved woodland – WD1**. Grasslands are grazed by farm animals and are made up of grasses such as Timothy *Phleum pratense*, False Oat *Arrhenatherum elatius*, Sweet Vernal-grass *Anthoxanthum odoratum* and Annual Meadow-grass *Poa annua*. Broad-leaved species include Creeping Thistle *Cirsium arvense*, Mouse-ear *Cerastium fontanum*, Meadow Buttercup *Ranunculus acris* and Docks *Rumex sp.*

Field boundaries are a combination of **hedgerows – WL1** and **treelines – WL2**. Hedgerows are native in origin with Hawthorn *Crataegus monogyna*, Elder *Sambucus nigra*, Holly *Ilex aquilinum*, and Ash *Fraxinus excelsior* along with Honeysuckle *Lonicera periclymenum*, Dog Violet *Viola riviniana*, Vetches *Vicia sp.* and Dog Rose *Rosa canina*. Due to their age, structure and species diversity those hedgerows in the northern part of the site are assessed as of 'higher significance'. Those bordering the field in the south-west are of 'lower significance' due to poor structure and low species diversity. Treelines are highly variable with some dominated by very low biodiversity value conifers, particularly Leyland Cypress *Cuprocyparis leylandii*, while other are mixed but predominantly non-native in composition, with Sitka Spruce *Picea stichensis*, Aspen *Populus tremula*, Beech *Fagus sylvatica*, Horse Chestnut *Aesculus hippocastanum* and Maple *Acer sp.* Patches of the non-native Spanish Bluebell *Hyacinthoides hispanica* and Three-cornered Garlic *Allium triquetrum* are found in these areas and both of these plants are listed as alien invasive on Schedule 3 of SI No. 477 of 2011. **Drainage ditches – FW4** accompany these field boundaries in two locations. These are very small water courses which are not accompanied by wetland flora.

Drainage ditches have been shown to lead to the Hazelbrook Stream which discharges to Baldoyle Bay. The ditches on the development site are of low fisheries significance and are culverted in a number of locations within the development site as well as under the main R107 Malahide Road. Where the ditches are open, they were found to be slow flowing, with minimal vegetation and with substrates characterised by sediment. These habitats are highly modified and are of low value for aquatic biodiversity. They

are not suitable for migratory or salmonid fish such as Atlantic Salmon *Salmo salar*, Trout *S. trutta*, Lamprey *Lampetra sp.* or European Eel *Anguilla anguilla*.

A large area of woodland surrounds Auburn House (**buildings and artificial surfaces – BL3**). This extends in parallel with the entrance driveway and the roadside treeline boundary. The large trees are mostly non-native, with Beech and Horse Chestnut, and while Oak *Quercus sp.*, Elm *Ulmus glabra*, Holly and Yew *Taxus baccata* are also present, however these species form a relatively low component of the woodland overall. Cherry Laurel *Prunus lauroceracus* is also found while this is not listed as alien invasive in legislation, it is considered to be an invasive plant in a native woodland context. Other flora includes abundant Ivy *Hedera helix*, Herb-robert *Geranium robertianum*, Wood Avens *Geum urbanum*, Lords-and-ladies *Arum maculatum* and Wood Dock *Rumex sanguineus*. The woodland is not a semi-natural, native woodland type as described in Fossitt or Annex I of the Habitats Directive. It is predominantly composed of non-native species however broadleaved woodland is rare in Ireland and provides habitat for a range of species which may be important at a local or county level. This habitat is considered to be of high local value.

The route of the new sewer line along Back Road and Kinsealy Lane is entirely composed of buildings and artificial surfaces. This route crosses the Hazelbrook Stream along Kinsealy Lane.

Surveys for breeding and wintering birds were undertaken in of May and June 2019, and August 2020 (breeding), and February 2020 and January 2022 (wintering) and no species which is a qualifying interest of Natura 2000 sites was recorded at any stage. The habitats on the development site are not suitable for regularly occurring populations of wintering/wetland birds which are qualifying interests of Natura 2000 sites. Habitats for those species for which Malahide Estuary and Baldoyle Bay are designated are centred upon coastal and intertidal habitats, particularly mudflats and sandflats. Some species, notably the Light-bellied Brent Goose, is known to feed on expanses of amenity grassland during winter months however no such grassland is present on the development site.

2.4 Trends affecting the SAC/SPA

Available data is presented here for Natura 2000 sites with direct pathways from the development site as well as those in Malahide Estuary as they are the closest Natura 2000 sites to the development site.

Table 11 shows the most recent bird count data from Malahide Estuary However a link between water quality and bird numbers has not been conclusively established. Discharge of nutrient effluent from agricultural run-off and poorly treated sewage can promote primary production that in turn provides food for wintering and resident birds in bays and estuaries (Nairn & O'Halloran eds., 2012). Elsewhere excessive growths of the green seaweed *Ulva sp.*, in response to polluted waters, can affect wading birds by obstructing access to sediments underneath. On the other hand these growths benefit those species which can feed upon them.

Bird trends in Malahide Estuary have been analysed by the NPWS in the Conservation Objectives supporting document (NPWS, 2013n). The long-term trends for Light-bellied Brent Geese, Redshank, Red-breasted Merganser, Great-crested Grebe, Pintail, Bar-tailed Godwit and Oystercatcher show increases in numbers; those for Shelduck, Black-tailed Godwit, Grey Plover, Knot are stable (although fluctuating greatly in the case of Knot and Black-tailed Godwit); while those for Golden Plover,

Dunlin and Goldeneye are decreasing. Based on these data the following status is given for each species:

Highly unfavourable: Golden Plover and Dunlin

Unfavourable: Goldeneye and Knot

Intermediate unfavourable: Grey Plover and Black-tailed Godwit

The remainder of the features of interest are considered to be of favourable status. Most of the species listed as 'unfavourable' are declining at a national level, as well as at Malahide estuary. Only the Knot has declined here while its national status is stable. It has therefore been concluded that these declines are related to factors that are specific to conditions at Malahide Estuary. Impacts in the estuary that have been analysed include recreational disturbance, pollution, fisheries and aquaculture and habitat loss from adjacent land use. Studies have concluded that walking, with or without dogs is causing significant displacement of water birds. Poor water quality in the estuary was not conclusively identified as a significant threat to water birds although potential effects can arise from the proliferation of mats of the green alga, *Ulva sp.*

Water quality in the catchment is monitored by the Environmental Protection Agency (EPA) which maintains a regular assessment programme. The status of Malahide estuary is 'poor' in the inner zone and 'moderate' in the outer zone (from www.epa.ie).

There is no clear evidence that poor water quality is currently negatively affecting the conservation objectives of Natura 2000 sites in Malahide Estuary. Water quality is not listed as a conservation objective for either the SAC or SPA. There is some evidence that elevated levels of nutrients are in fact benefiting wintering bird populations by fuelling primary production (Nairn & O'Halloran, eds, 2012). Research from Lough Neagh in Northern Ireland suggests that improvements to water quality there has resulted in dramatic declines in the populations of wintering ducks (Tomankova et al., 2013). It is not known whether similar effects will be seen in Irish estuaries as a result of improvements to water quality as a result of implementation of the Water Framework Directive. Where algal mats are a feature negative effects may be occurring to certain species.

There are no management plans for the designated areas in Baldoyle Bay however some work has been done to determine the site-specific trends or threats to their conservation status.

The status of features of interest in the Baldoyle Bay SPA has been assessed (NPWS, 2012b). Of those species with unfavourable status in the SPA, Ringed Plover and Bar-tailed Godwit have exhibited losses at Baldoyle Bay while the national population remains stable or has increased. It is therefore reasonable to assume that local factors are leading to declines. The NPWS list a number of factors that may be contributing to this including human disturbance (walkers with or without dogs) and nutrient enrichment (pollution). The latter effect is exhibited by algal mats, typically Sea-lettuce *Ulva sp.* which covers the sediment surface at low tide. This is good for those species which feed on Sea-lettuce but bad for those which cannot reach their favoured prey under the mats.

The lower Liffey Estuary (the boundary between the lower and upper estuaries is marked at the Custom House) and the coastal water beyond the estuary have also been assessed as 'good status'. These classifications indicate that water quality across Dublin Bay is currently meeting the requirements of the WFD. The estuary of the River Tolka meanwhile is 'moderate'.

A 'supporting document' has been published by the NPWS which gives a detailed assessment of the features of interest for which SPAs in Dublin Bay have been designated (NPWS, 2014). In particular it presents information on the trends of these features and the pressures which are likely to affect these trends. It has determined that five species: Grey Plover, Shelduck, Pintail, Shoveler, Golden Plover and Black-headed Gull, are of unfavourable status while the remainder are 'favourable'. In the case of the Grey Plover it was found that its population trend is decreasing both within Dublin Bay and at an all-Ireland level. For this reason it is reasonable to assume that the factors for its decline are not unique to Dublin Bay. The Black-headed Gull population was not assessed in this way. Only for Shoveler is it considered that significant declines are being experienced due to site conditions.

In 2020 the NPWS published a report entitled 'The monitoring and assessment of six EU Habitats Directive Annex I Marine Habitats' (Sally & Hewett, 2020). This report specifically assessed the status of the habitat: mudflats and sandflats not covered by seawater at low tide (1140) which is a qualifying interest of the North Dublin Bay SAC and the South Dublin Bay SAC. Table 22 of this report assessed the status of this habitat within both SACs as 'favourable'.

In June 2018 Irish Water applied for (and subsequently received) planning permission for works to the Ringsend Wastewater Treatment (WwTP) facility. As part of this application an Environmental Impact Assessment Report (EIAR) was submitted. Sections 5 and 6 of this EIAR related to Marine Biodiversity and Terrestrial Biodiversity respectively and each contained a section on the 'do-nothing scenario'. These review the effects to biodiversity in Dublin Bay in the absence of the upgrade works and so are relevant to this response. Extracts from these sections include:

"If the Proposed WwTP Component is not constructed, the nutrient and suspended solid loads from the plant into Dublin Bay will continue at the same levels and the impact of these loadings should maintain the same level of effects on marine biodiversity. [...]"

If the status quo is maintained there will be little or no change in the majority of the intertidal faunal assemblages found in Dublin Bay which would likely continue to be relatively diverse and rich across the bay [our emphasis]. Previous studies suggest that the outer and south bays are largely unaffected by the nutrient inputs from the WwTP at Ringsend and from the Liffey and Tolka rivers. Therefore, the sandy communities found in those areas will likely remain dominated by the same assemblage of Nephtys, tellinids and other pollution-sensitive species, albeit subjected to natural spatial and seasonal variations.

*However, the areas in the Tolka Estuary and North Bull Island channel will continue to be affected by the cumulative nutrient loads from the river Liffey and Tolka and the effluent from the Ringsend WwTP. These areas will likely continue to be colonised by opportunistic taxa tolerant of organic enrichment. There is a possibility that an increase in the nutrient outputs from the plant due to the operational overload and storm water discharges could result in a decline in the biodiversity of these communities as a result of low oxygen availability caused by increased organic enrichment. Considering the existing situation, it is possible that through the future oversupply of DIN to the area impacted by the existing outfall, benthic production could be adversely impacted due to hypoxic or even anoxic conditions. An increase in the cover of opportunistic macroalgae could lead to further deterioration in the lagoons in the North Bull as they add to the organic load on the benthos and further increase the BOD. These events, although localised, could deteriorate the biological status for Dublin Bay as a whole. **Nonetheless, it is unlikely, as existing historical data suggests that pollution in***

Dublin Bay has had little or no effect on the composition and richness of the benthic macroinvertebrate fauna [our emphasis]. Although a localised decline could occur, it is not envisaged to be to a scale that could pose a threat to the shellfish, fish, bird or marine mammal populations that occur in the area. (section 5.7.1) [...]

If there is no change to the treatment process at Ringsend WwTP then the terrestrial environment adjacent to the site will remain largely unchanged [our emphasis]. [...]

If the Proposed WwTP Component is not implemented, there will be little or no change in the majority of the intertidal faunal assemblages found in Dublin Bay which would likely continue to be relatively diverse and rich across the bay [...]. The sandy communities found in South Dublin Bay will likely remain dominated by the same assemblage of the polychaete worm *Nephtys caeca*, Cockle *Cerastoderma edula*, tellinids and other pollution-sensitive species, albeit subjected to natural spatial and seasonal variations. **Bird populations in these areas will be unaffected by the discharge from the WwTP** [our emphasis].

If the Proposed WwTP Component is not implemented, there is a possibility that an increase in the nutrient outputs from the plant due to operational overload and storm water discharges could result in a decline in the biodiversity of invertebrate communities in the Tolka Estuary and North Bull Island channel as a result of low oxygen availability caused by increased organic enrichment. An increase in the cover of opportunistic macroalgae could lead to further deterioration in the lagoons in the North Bull as they add to the organic load on the benthos and further increase the BOD. These events, although localised, could deteriorate the biological status for Dublin Bay as a whole. **It is unlikely that they would have any significant impact on the waterbird populations that forage on invertebrates in Dublin Bay** [our emphasis] (section 6.5.1)."

A graphic from the EIAR prepared by Irish Water in 2018 showed the zone of influence of the discharge from the Ringsend WwTP and this indicated that effects from the discharge do not extend to the south side of the bay. This is reproduced in figure 5.

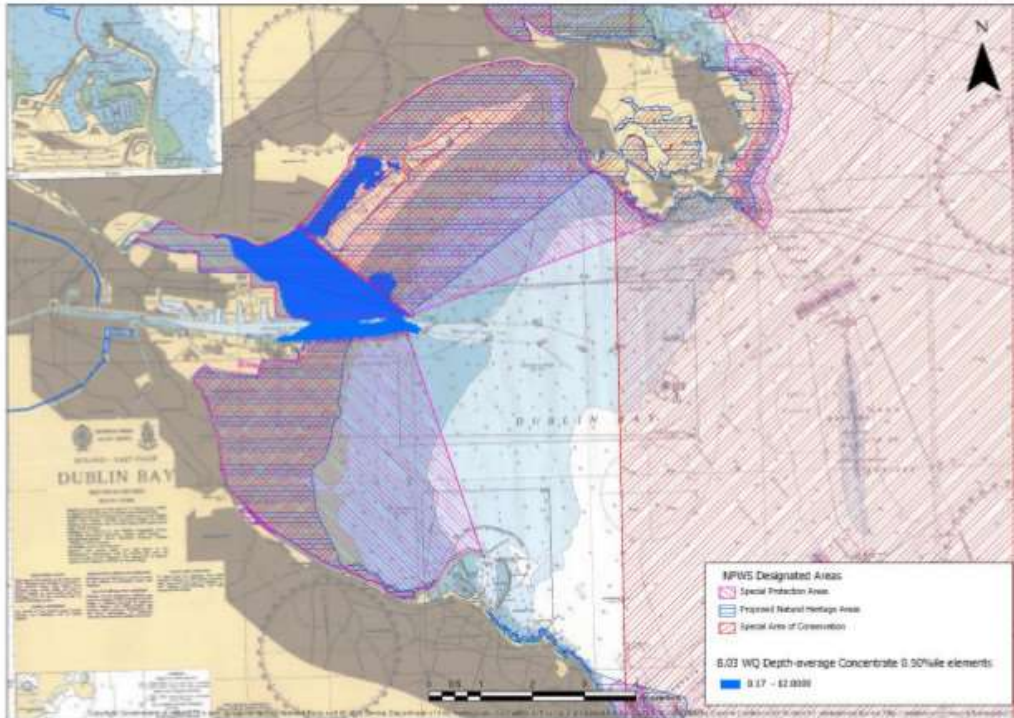


Figure 5-16: Extent of the Zone of Influence (in blue) of the effluent from the Proposed WwTP Component on the predicted modelled output for Winter depth averages 50%ile for Dissolved Inorganic Nitrogen (DIN)

Figure 5 – Extract from the EIAR prepared by Irish Water (2018) showing the zone of influence of the Ringsend WWTP outfall pipe.

3.0 Step 2 – Analysis of the Project

This application is for the construction and operation of a residential development. The construction phase will involve the use of standard construction materials. The project is described here as per the planning application:

The proposed development will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the conversion of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 368 no. new residential dwelling units (comprising 87 no. houses, 239 no. apartments & 42 no. duplex units) for an overall total of 369 no. residential units, including Auburn House. The development shall consist of 135 no. 1-bedroom apartments and duplex apartments, 138 no. 2-bedroom apartments and duplex apartments, 8 no. 3-bedroom apartments and duplex apartments, 47 no. 3-bedroom houses, 34 no. 4-bedroom houses, 6 no. 5-bedroom houses and the existing 11-bedroom Auburn House along with 1 no. childcare facility and 1 no. ancillary resident facility. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a secondary entrance comprising modifications of the existing vehicular entrance off Carey's Lane to the south west of the development, the closure of the existing vehicular entrance to Little Auburn, the provision of 4 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development. The building heights range from 2 storey to 5 storey buildings with balconies or terraces being provided to the apartments and duplex units.

According to the Engineering Assessment Report from Waterman Moylan it is proposed to divide the site into four separate sub-catchments:

Catchment 1, which comprises the main portion of the site including the houses and Blocks 1, 2 and 3, is approximately 63,600m². It will be attenuated in a proposed dry detention basin in the open space at the centre of the site.

Catchment 2, which includes Blocks 4 and 5 and the duplex units, is approximately 22,770m². It will utilise a private on-site attenuation tank / system beneath the courtyard area. This tank is to be privately managed and maintained. The location and level of these Blocks relative to the outfall surface water pipe does not allow for above ground attenuation.

Catchment 3, which includes Block 6, approximately 7,730m², is now proposed to be attenuated in the proposed dry detention basin in the open space at the centre of the site which also attenuation Catchment 1, following discussions with Fingal County Council Water Services to remove any underground attenuation tanks where possible.

Catchment 4, the entrance road, is approximately 3,040m² and will be attenuated in a dry detention basin near the site entrance.

Storm water from each catchment will discharge at a controlled rate, limited to the greenfield equivalent runoff, to the existing streams on the site. The proposed development will be designed to incorporate best drainage practice.

The drainage strategy will be fully compliant with the Greater Dublin Strategic Drainage Study (SUDS) and will include attenuation storage as well as SUDS measures to ensure that the quality and quantity of run-off remains at a 'greenfield' rate. The proposed surface water drainage system for this development has been designed as a sustainable urban drainage system and uses permeable paving, filter drains, green/sedum roofing on apartment and duplex blocks and bio-retention systems along with flow control devices and petrol interceptors.

The risk to water quality during the construction phase, from sediment or other harmful substances, is considered moderate as there are direct surface, hydrological pathways to the Baldoyle Bay SAC/SPA via drainage ditches.

Foul effluent from the proposed development will be sent to the wastewater treatment plant at Ringsend in Dublin. Emissions from the plant are currently not in compliance with the Urban Wastewater Treatment Directive. In April 2019 Irish Water was granted planning permission to upgrade the Ringsend plant. This will see improved treatment standards and will increase network capacity by 50%. There are no other discharges from this operation.

Wastewater will be pumped from the development site via Back Road and Kinsealy Lane to outfall via a stand-off manhole to the new gravity sewer, where it will drain by gravity to the new Chapel Road pumping station and ultimately to the North Fringe Interceptor Sewer. This route is shown in figure 4.

Water for domestic purposes will be sourced from a mains supply which originates in a reservoir along the River Liffey at Leixlip. This reservoir is not part of, or upstream of, any SPA or SAC along that river. The proposed site layout is shown in figure 3.



Figure 3 – Site layout plan

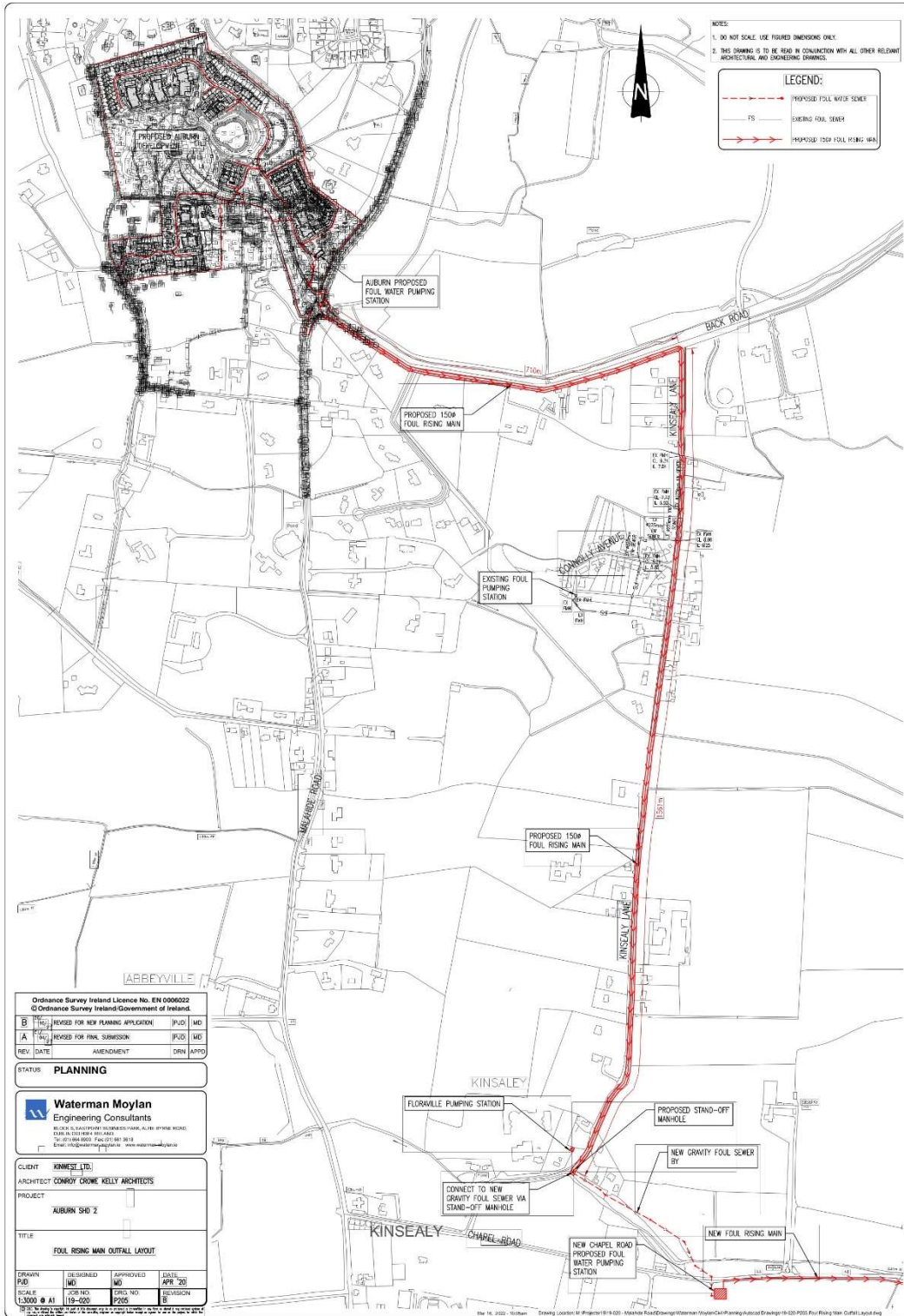


Figure 4 – Route of proposed new sewer line

4.0 Step 3 – Analysis of Other Plans and Projects

This development can be considered within the context of the broader urbanisation of lands that is accommodating the expansion of Dublin city and its hinterland. This is planned for under the Fingal County Development Plan 2017-2023. This type of urban expansion has been associated with a loss of habitat however the aforementioned plans envisage the preservation of 'green infrastructure' to preserve or augment local ecological features. A growing population is placing pressure on wastewater treatment facilities however a recent upgrade to the Swords wastewater treatment plant will provide for future development. An Natura Impact Statement for the Fingal CDP 2017-2023 found that adverse effects to the integrity of Natura 2000 sites would not arise from its implementation.

The cumulative effects of this type of urban growth can arise from replacing permeable ground with hard surfaces. This can result in increased risk of flooding and deterioration of water quality, primarily from the run-off of particulate matter and hydrocarbon residues (Mason, 1996). To combat this effect the Greater Dublin Strategic Drainage Study was finalised in 2005. This aims to ensure that new developments integrate sustainable drainage systems (SUDS) to maintain natural, or 'green field' rates of surface water run-off while also improving water quality in rivers. This development includes SUDS techniques that will maintain current levels of water quantity and quality.

The Water Framework Directive sets out to attain 'good ecological status' of all water bodies. A second River Basin Management Plan was published in 2018 which identifies 190 'priority areas for action' where resources are to be focussed over the 2018-2021 period.

Specific projects which are under consideration by the Board, or which may be coming before the Board, include:

- an SHD application (ref.: TC06F.310125) for 102 no. residential units (56 no. houses, 46 no. apartments), creche and associated site works at Lamorlaye, Back Road, Malahide, Co. Dublin.
- An SHD application (ref.: TC06F.308804) for 458 no. residential units (242 no. houses, 60 no. duplex units, 156 no. apartments), creche and all associated site works on lands at Back Road, Broomfield, Malahide, Co. Dublin

Both of these developments are within the catchment of the Hazelbrook Stream that leads to Baldoyle Bay.

In the event that this project is under construction at the same time as other projects there is a possibility that construction pollutants entering waterways leading to Baldoyle Bay SAC and SPA could act in combination to result in negative effects to invertebrate communities in the SAC and, by extension, birds which are qualifying interests of the SPA.

Other than during the construction phase, there are no projects or plans which could act in combination with the current proposal to result in significant effects to Natura 2000 sites.

5.0 Step 4: Determination of Significance

5.1 Impact prediction

Under Article 6 of the Habitats Directive the term 'significance' is taken to mean an effect on the SAC or SPA in question, as measured against the conservation objectives. Unlike Environmental Impact Assessment for instance, there are no degrees of significance and where an effect is determined to be significant mitigation or avoidance measures must be considered.

In order for an impact to occur there must be a pathway between the development (the source) and the SAC or SPA (the receptor). Where a pathway does not exist then an impact cannot occur.

The subject site is not located within, or directly adjacent to any SAC or SPA. However hydrological pathways for impacts do exist via surface and wastewater to Baldoyle Bay SAC/SPA and Natura 2000 sites in Dublin Bay respectively. These are considered to be the only Natura 2000 areas to fall within the zone of influence of this project.

The development will not result in direct impacts to habitats within any designated area, either through habitat removal or disturbance, due to the separation distances involved.

Following on from steps 1 – 3 of this process a number of specific impacts are considered:

5.1.1 Habitat loss

The development site is approximately 1.4km from the boundary of the Malahide Estuary SPA/SAC as the crow flies (the nearest Natura 2000 site) and the intervening land is occupied by residential development and transport links. Because of the distance separating the two areas there is no pathway for loss or disturbance of any habitats which are qualifying interests for Natura 2000 site or other semi-natural habitats that may act as ecological corridors for important species associated with the qualifying interests of the Natura 2000 sites.

This development will not result in the loss of semi-natural habitats connected to any Natura 2000 site.

No significant effects to any Natura 2000 site are likely to arise from this source.

5.1.2 Habitat disturbance

No habitats will be disturbed within or directly connected to Natura 2000 sites. This development is will not significantly increase recreational pressure on Malahide Estuary or any other Natura 2000 site as it lies a significant distance to accessible areas likely to be used by birds.

The lands themselves are not suitable for regularly occurring populations of wetland or wading birds which may be associated with Natura 2000 sites at Malahide Estuary or Baldoyle Estuary. Typical habitats for these species are coastal and intertidal habitats while certain species may use inland amenity grassland for feeding. There are no habitats for such species on the development site.

No significant effects to any Natura 2000 site are likely to arise from this source.

5.1.3 Pollution during construction

During the construction phase there will be extensive earth works and some sediment may enter the drainage ditches, entrained in rain run-off. While sediment can be detrimental to the ecological quality in rivers, the same is not the case for estuaries and tidally influenced habitats, which rely on vast quantities of sediment for their functioning.

During the work on the new sewer line there is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connections being made to live sewers.

In addition, extensive works are planned in close proximity to open water courses, including during the construction of the new sewer on Back Road and Kinsealy Lane (which crosses the Hazelbrook Stream), and using a precautionary approach, the potential for large quantities of silt or other construction pollutants to be washed downstream means that significant effects to the Baldoyle Bay SAC and SPA cannot be ruled out.

5.1.4 Pollution during normal operation - wastewater

The Ringsend plant is licenced to discharge treated effluent by the EPA (licence number D0034-01) and is managed by Irish Water. It treats effluent for a population equivalent (P.E.) on average of 1.65 million however weekly averages can spike at around 2.36 million. This variation is due to storm water inflows during periods of wet weather as this is not separated from the foul network for much of the older quarters of the city, including at the subject site. The Annual Environmental Report for 2020, the most recent available, indicated that there were a number of exceedences of the emission limit values set under the Urban Wastewater Treatment Directive and these can be traced to pulse inflows arising from wet weather. In April 2019 Irish Water was granted planning permission to upgrade the Ringsend plant. These works are underway and will see improved treatment standards and will increase network capacity by 50%.

While the issues at Ringsend wastewater treatment plant are being dealt with in the medium term evidence suggests that some nutrient enrichment is benefiting wintering birds for which SPAs have been designated in Dublin Bay (Nairn & O'Hallaran eds, 2012). No negative impacts to Natura 2000 sites can arise from the additional loading arising from this development as there is no evidence that negative effects are occurring to SACs or SPAs in Dublin Bay from water quality.

No significant effects to any Natura 2000 site is likely to arise from this source.

5.1.5 Pollution during normal operation – surface water

New surface water attenuation measures are designed so that there will be no net change to the quantity or quality of surface water leaving the site. These are standard measures which are included in all development projects and are not included here to

reduce or avoid any effect to a Natura 2000 site. No significant effects can occur to any Natura 2000 site arising from this source.

No significant effects to any Natura 2000 site are likely to arise from this source.

5.1.5 Abstraction

There is no SAC or SPA within the zone of influence of the abstraction point along the River Liffey at Leixlip.

Since SACs and SPAs in Dublin Bay are below the high tide mark effects to these areas cannot occur as a result of abstraction from the Liffey. They are therefore considered to be beyond the zone of influence of this project.

No significant effects to any Natura 2000 site is likely to arise from this source.

6.0 Conclusion

This proposed development is not located within or directly adjacent to any SAC or SPA but hydrological pathways exist to the Baldoyle Bay SAC and SPA and Natura 2000 sites in Dublin Bay (North Dublin Bay SAC, North Bull Island SPA, South Dublin Bay SAC and the South Dublin Bay and River Tolka Estuary SPA).

No negative effects to Natura 2000 sites in Dublin Bay are likely to arise.

Surface hydrological pathways exist to Baldoyle Bay; significant effects cannot be ruled out to the following areas:

- Baldoyle Bay SAC and SPA

It is considered that the potential for large quantities of sediment or other construction pollutants to be washed into the bay, due to the proximity of works to open water courses, either alone or in combination with other projects, means that significant effects to habitats within the SAC cannot be ruled out at this stage. As any effect to the habitats in the SAC could have knock-on effect to birds which depend upon them for feeding, significant effects to the Baldoyle Bay SPA cannot be ruled out. As a result a separate Natura Impact Statement (NIS) has been prepared on the basis that AA is required to be carried out.

An assessment of the aspects of this project has shown that significant effects are not likely to occur to any other Natura 2000 site either alone or in combination with other plans and projects. This conclusion is based upon the best available scientific evidence.

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