Screening Report for Appropriate Assessment of a proposed Strategic Housing Development at Edmondstown, Whitechurch Road, Rathfarnham, Dublin 16

Compiled by OPENFIELD Ecological Services

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1.0 Introduction

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).

The main policy instruments for conserving biodiversity in Ireland have been the Birds Directive of 1979 and the Habitats Directive of 1992. 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" (EC, 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 and 177V of the Planning and Development Act 2000 sets out the purpose of AA Screening is 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.

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. This screening is carried out by An Bord Pleanála.

2.0 The Purpose of this document

This document provides a screening report of a residential development along the Whitechurch Road, Rathfarnham, Dublin 16 and its potential effects in relation to Natura 2000 sites (SACs and SPAs).

This document will assess whether effects to the Natura 2000 network are likely to occur in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act, 2010.

It should be noted that under the European Communities (Birds and Natural Habitats Regulations) 2011 it is the relevant competent authority, in this case An Bord Pleanála, which carries out any AA or screening for AA. This report therefore aids in that decision.

3.0 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 (EcIA) in Ireland. Since its inception in 2007 OPENFIELD has carried out numerous EcIAs for Environmental Impact Assessment (EIA), Appropriate Assessment in accordance with the EU Habitats Directive, as well as individual planning applications. Pádraic is a full member of the Institute of Environmental Management and Assessment (IEMA).

4.0 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 in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC' (EC, 2021).

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: Identify which Natura 2000 sites may be affected by the plan or project
This process identifies the conservation aspects of the Natura 2000 sites within the zone of influence of the project. This is done through a literature survey and consultation with relevant stakeholders – particularly the National Parks and Wildlife Service (NPWS).

Step 4: Assess whether likely significant effects can be ruled out in view of the site's conservation objectives
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. Assessing whether an effect is significant or not must be measured against the conservation objectives of the Natura site in question.

If this analysis shows that significant effects are likely then a full AA will be required.

The steps are compiled into a screening matrix, a template of which is provided in Appendix II of the EU methodology.

Reference is also made to guidelines for Local Authorities from the Department of the Environment, Heritage and Local Government (DoEHLG, 2009) as well as 'Appropriate Assessment Screening for Development Management' (Office of the Planning Regulator, 2021).

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.

Screening Template as per Annex 2 of EU methodology:

This plan is not necessary for the management of any Natura 2000 site and so Step 1 as outlined above is not relevant.

5.0 Brief description of the project

The project is described thus, as per the planning application:

The proposed development on a site that extends to 6.77 hectares includes the derelict Kilmashogue House (southern lands) and Coill Avon house (northern lands), adjacent roads in the control of South Dublin County and Dun Laoghaire Rathdown County Councils and consists of the following developments: -

- Demolition of Kilmashogue House and outbuildings and demolition of Coill Avon house and outbuildings;
- The refurbishment and re-use of 2 no. stone outbuildings for community use, to be incorporated into an area of public open space on the southern lands;
- The construction of a mixed-use development comprising neighbourhood centre and 178 no. residential units comprising 72 no. houses, 38 no. apartments and 68 no. duplex apartments;
- The 72 no. houses will comprise 2, 2.5 and 3-storey detached, semi-detached and terraced units to include:-
    - 6 no. 2-bed houses;
    - 45 no. 3-bed houses;
    - 21 no. 4-bed houses;
- The 38 no. apartments and 68 no. duplex apartments are located across 7 no. buildings ranging in height from 3 to 5-storey consisting of 1 no. Block A/B, 1 no. Block C, 1 no. Block E, 1 no. Block S and 3 no. Blocks T-type as follows: -
    - **Block A/B:** 5-storey over basement and podium accommodating 10 no. 1-bed apartments, 16 no. 2-bed duplex apartments and 1 no. 3-bed duplex apartment with associated balconies/terraces;
    - **Block C:** 5-storey over basement accommodating 4 no. 1-bed apartments and 8 no. 2-bed duplex apartments with associated balconies/terraces;
    - **Block E:** 4-storey over basement accommodating 8 no. 1-bed apartments and 16 no. 2-bed duplex apartments with associated balconies/terraces;

- **Block S:** 3-storey accommodating 2 no. 2-bed duplex apartments and 1 no. 3-bed apartment and 1 No. 3-bed duplex apartments with associated balconies/terraces;
- **Block T:** 3no. 3-storey buildings accommodating 6 no. 1-bed apartments, 18 no. 2-bed duplex apartments, 9 no. 3-bed apartments and 6 no. 3-bed duplex apartments, all with associated balconies/terraces;

- Block A/B and Block C are arranged around a landscaped podium. The neighbourhood centre is located below this podium and accommodates a 2-level creche (313m²) at lower ground and ground floor level, and 3 no. retail/non-retail service/cafe units (470m^2) at ground level;
- The basement below Block A/B and Block C accommodates 50 no. car parking spaces, bicycle parking, bin stores, plant and staff service area (80m^2);
- The basement below Block E accommodates 35 no. car parking spaces, bicycle parking, bin store and plant;
- A section of link street with footpath and cycle path (approx. 438 linear metres) extending from the junction of Whitechurch Road and College Road on an alignment parallel to the M50, to provide access to the southern development lands and incorporating a bus turning circle;
- Upgrade works to College Road including a new two-way cycle track and relocated footpath from the Whitechurch Road junction to provide connectivity to the Slang River pedestrian/cycle Greenway;
- A new signalised crossroads junction to connect the proposed link street with Whitechurch Road and College Road;
- Upgrade to the existing vehicular access at the entrance to Coill Avon house on Whitechurch Road;
- Foul sewer drainage works along Whitechurch Road from the Kilmashogue junction to the existing junction at Glinbury housing estate;
- All landscaping, surface car parking, boundary treatments, infrastructure works, ESB substation, and associated site works and services.

The site location is shown in figures 1 and 2.

Figure 1 – Site location (red circle) with local water courses. There are no Natura 2000 sites in this view (from www.epa.ie).

The development site is not located within or directly adjacent to any Natura 2000 site (SAC or SPA). This part of Dublin lies on the southern fringes of the city which has traditionally been open farmland but in more recent decades has become more built up with the construction of the M50 motorway and nearby residential developments. Current land use in the vicinity is a combination of low-density residential along with agricultural grassland and transport arteries. The Whitechurch Stream (also referred to as the Kilmashogue) flows from south to north along the eastern boundary and is culverted under the existing site entrance. This is a tributary of the River Dodder. The Dodder river system is of significant value to wildlife within the urban context of Dublin City although this stretch is not within any area designated for nature conservation.

The development site was visited for this study on January 29th and October 31st 2019 and May 27th 2020. Habitats are described here in accordance with standard classifications (Fossitt, 2000). The site is divided into two separate portions: a northern portion (site 2) and a southern portion (site 1).

Site 1 is a series of fields of **improved agricultural grassland – GA1** which are grazed by cattle and sheep. This is composed of grasses such as Cock's-foot *Dactylis glomerata,* Creeping Bent *Agrostis stolonifera* and Perennial Rye *Lolium perenne* along with White Clover *Trifolium repens,* Docks *Rumex sp.,* Thistle *Cirsium sp.* and other common grassland plants. The boundary with the motorway is a recently-planted **hedgerow – WL1** with Maple *Acer sp.,* Birch *Betula sp.,* Beech *Fagus sylvatica* and Larch *Larix decidua.* Nearby **buildings**

and artificial surfaces – BL3 are associated with stretches of the non-native New Zealand Broadleaf *Grisilinea littoralis,* Sycamore *Acer pseudoplatanus* and very large Cypress *Cuprocyparis sp.*

Traditional field boundaries elsewhere are native hedgerows composed of Elder *Sambucus nigra,* Hawthorn *Crataegus monogyna,* Blackthorn *Prunus spinosa,* Grey Willow *Salix cinerea* and Ash *Fraxinus excelsior.*

The main parcel of land on Site 2 is a **dry meadow – GS2** and has not been recently grazed by animals. There are grasses such as Cock's-foot *Dactylis glomerata* and Creeping Bent *Agrostis stolonifera* as well as typical grassland plants such as Nettle *Urtica dioica* and Broad-leaved Dock *Rumex obtusifolius* with occasional Brambles *Rubus fruticosus agg.* Within this field there is a disused **building – BL3**.

Tall **treelines – WL2** to the south are dominated by the non-native Leyland Cypress *Cuprocyparis leylandii* and so are of low nature value. A **hedgerow – WL1** to the north-west and north-east is of native origin with Hawthorn *Crataegus monogyna,* Brambles, Ivy *Hedera helix* but also the non-native Snowberry *Symphoricarpos albus.*

The Whitechurch Stream is an **eroding river – FW1** with a riparian vegetation including Cherry Laurel *Prunus laurocerasus,* Sycamore *Acer pseudoplatanus* and Winter Heliotrope *Petasites fragrans.* It forms a corridor with a tall treeline and **broadleaved woodland – WD2** with tall Ash, Sycamore, Horse Chestnut *Aesculus hippocastanum* and the non-native Snowberry *Symphoricarpos albus*. At site 2 there is a large Crack Willow *Salix fragilis.* The stream forms the eastern boundary of both Site 1 and Site 2 but is not fish passable as it is culverted under the M50 motorway as well as a number of other sections downstream of this point.

The development lands are adjacent to farmland to the west and south with residential development to the north. The construction phase will see land clearance and use of standard building materials along with the generation of noise associated with the movement of machinery, heavy vehicles etc. The crossing of the stream is to be widened to accommodate this development.

Currently surface water from the site percolates to soil or runs directly off hard surfaces to the Whitechurch Stream. The proposed development complies with the Greater Dublin Strategic Drainage Study (GDSDS). According to the Engineering Services Report prepared by CS Engineering:

In accordance with South Dublin County Council requirements, storm water shall be managed in two phases.

The first is to restrict storm water runoff from the proposed development to greenfield runoff rates. The second aspect to be included in new applications is to incorporate sustainable urban drainage systems (SuDs) proposals into the scheme. The SuDs concept requires that storm water quality is improved before

disposal and, where applicable, storm water is discharged into the ground on site. […]

The proposed SuDS features shall consist of:
a) Low water usage sanitary appliances to reduce the reliance on potable water supplies;
b) Permeable paving - Where feasible local footpaths, hardstanding areas will be directed into tree pits or landscaped areas to allow for local infiltration;
c) Road gully's will be trapped to allow for the removal of grit and other potentially harmful material entering the storm network;
d) Oil Separator, at the end of the storm water network a suitable oil separator is to be fitted to allow any hydrocarbons which may have built up from on-site traffic to be removed from storm water prior to disposal.
e) Infiltration trenches to the rear of housing units, with a proposed overflow system to drain into the main drainage network.

Storm water will ultimately discharge to the Whitechurch Stream via a new outfall pipe each for site 1 and site 2.

Foul wastewater from the proposed development will be sent to the wastewater treatment plant at Ringsend in Dublin via the local sewerage system. Emissions from the plant are currently not in compliance with the Urban Wastewater Treatment Directive. Irish Water, the authority in charge of the wastewater treatment network, has prioritised the enhancement of the Ringsend plant. In April 2020 Irish Water was granted planning permission to upgrade the Ringsend plant. This will see improved treatment standards and will increase network capacity on a phased basis, with an expected completion date of all phases by 2026.

Fresh water supply for the development will be via a mains supply. This may originate in the Poulaphouca Reservoir. The proposed development is not likely to significantly affect the demand for freshwater water from the site.

Figure 2 – indicative site boundary overlain on recent aerial photograph (from www.google.com).

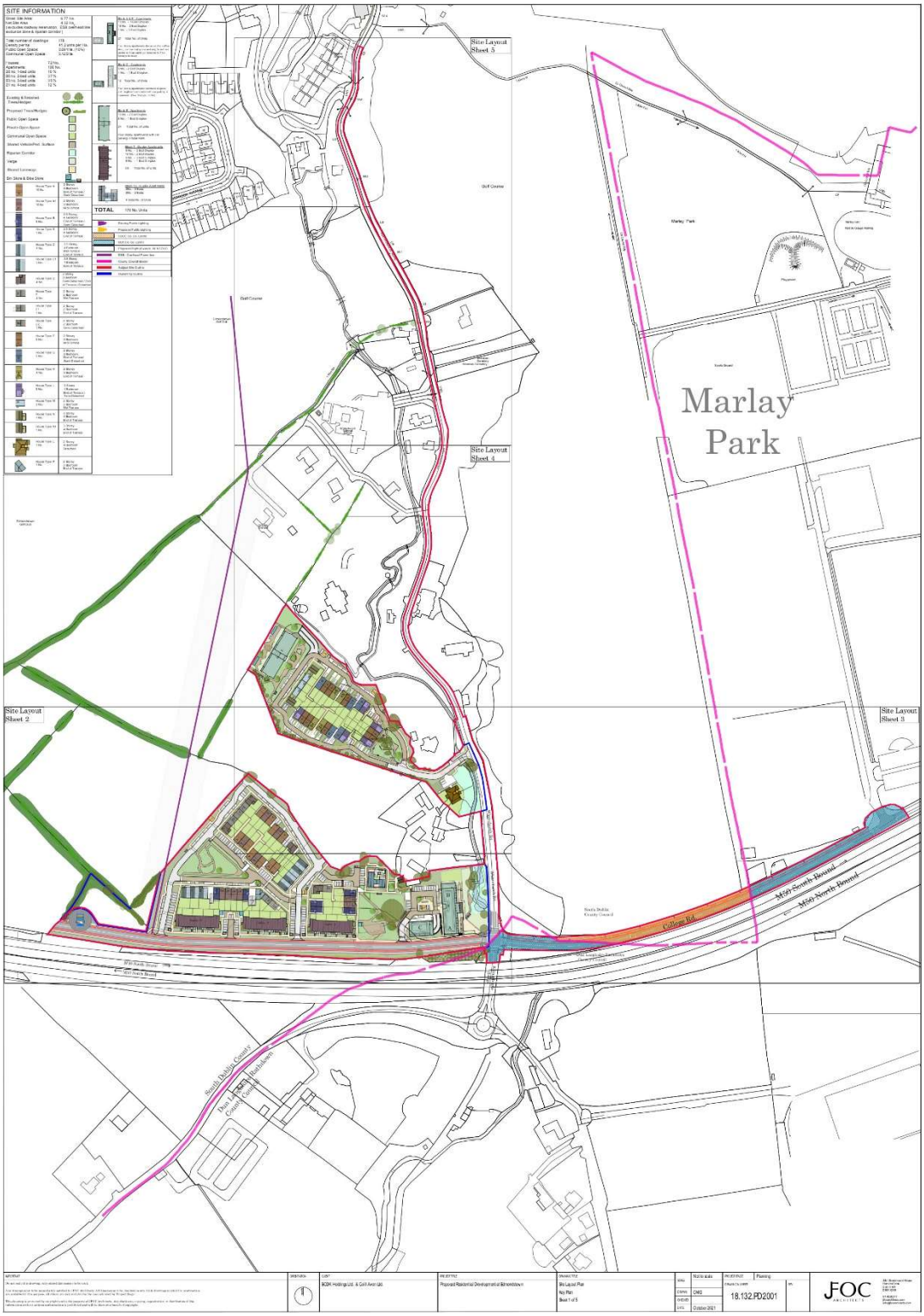

Figure 3 –site layout

6.0 Brief description of 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 2000 sites within this radius.

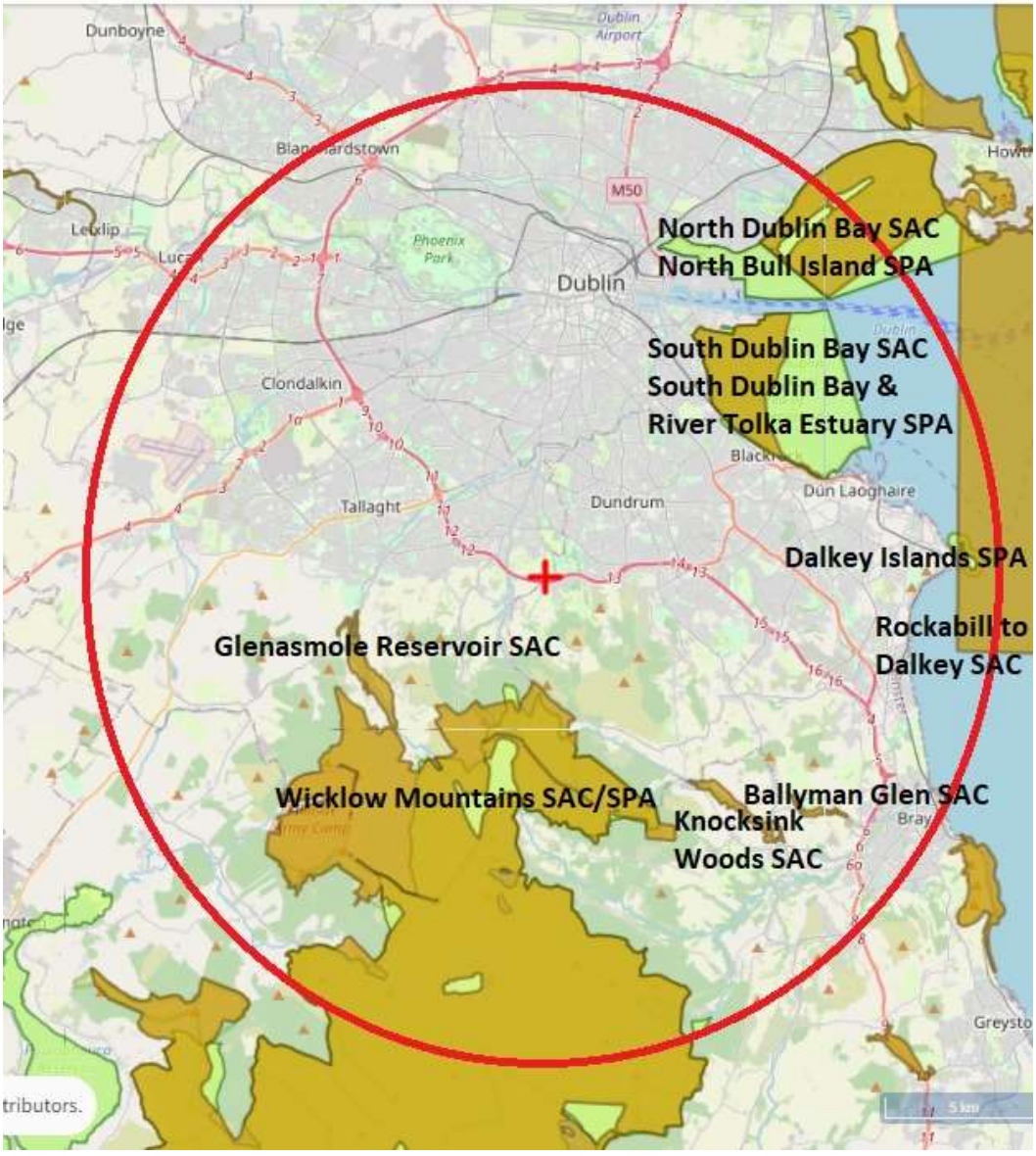

Figure 4 – Approximate 15km radius around the proposed development (red cross) site and Natura 2000 sites.

Glen of the Downs SAC (site code: 0719)
This glacial valley is bisected by the N11 Dublin to Wexford road but the valley on either side is clothed in semi-natural woodland. This is the subject of the SAC's sole qualifying interest and priority habitat: old oak woodland (code: 91A0). This is a very rare habitat type in Ireland and at a national level is assessed as being in 'bad' status. The forest is also home to rare or notable fungi and invertebrates (NPWS, 2013).

Site specific conservation objectives have been published for this SAC (NPWS, 2020a). These can be summarised as:

Old sessile oak woods (91A0)
Habitat area stable or increasing, subject to natural processes; No decline in habitat distribution subject to natural processes; woodland area stable or increasing; Total canopy cover at least 30%; median canopy height at least 11m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20 cm; bryophyte cover at least 4%; Maintain diversity and extent of community types; Seedlings, saplings and pole age-classes of target species for 91A0 woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy; At least 19 stems/ha of dead wood of at least 20cm diameter; No decline in veteran trees, maintain woodland structure and vegetation.

Rockabill to Dalkey Island SAC (site code: 0300). This is a recently designated off-shore (i.e. marine) SAC. 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, 2013a).
- 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, 2013a) 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.

Dalkey Islands SPA (site code: 4172) is protected for its breeding colonies of three tern species and is found approximately 4.3km south east of the West Pier at Dun Laoghaire.

- **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.

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

Knocksink Wood SAC (site code: 0725)
This important woodland site is located near Enniskerry, Co. Wicklow and is within the valley of the Glencullen River. It has mature stands of Oak forest with two important habitats at a European level: alluvial wet woodland, and petrifying springs; both listed on Annex I of the Habitats Directive. The Wood is also of note for its bird and mammal fauna and its particularly rich community of invertebrates.

Knocksink is a National Nature Reserve and so is of significance for a range of wildlife as well as being of amenity value. It should be reiterated that the AA process strictly looks at potential effects to the SAC in light of the conservation objectives which have been set.

Table 1 – Qualifying interests for the Knocksink Wood SAC (from NPWS)

Code	Habitats/Species	Status
7220	Petrifying springs	Inadequate
21E0	Alluvial forests	Bad
91A0	Old oak woodlands	Bad

- **Alluvial Wet Woodland (91E0 – priority habitat)**: This is a native woodland type that occurs on heavy soils, periodically inundated by river water but which are otherwise well drained and aerated. The main pressures

are identified as alien invasive species, undergrazing and overgrazing. Pollution from agricultural land may also be significant.

- **Petrifying Springs (7220 – priority habitat)**: These are very localised habitats that arise from the precipitation of excess calcium carbonate in supersaturated running water. They are associated with characteristic bryophytes. They are vulnerable to changes in water quality, flow regime and intensification of land use practices.
- **Old Oak Woodlands (91A0)**: This native woodland type is typified by Sessile Oak *Quercus patrea,* Holly *Ilex aquifolium* and Hard Fern *Blechnum spicant.* Its range is much reduced from historic levels while the principle threats are alien invasive species and overgrazing by deer but also cattle, goats and sheep.

Specific conservation objectives are provided for this SAC (NPWS, 2021a) and are summarised as:

Petrifying springs – priority habitat (7220)
Habitat area stable or increasing subject to natural variations; no decline in habitat distribution; maintain appropriate hydrological regimes; maintain oligotrophic and calcareous water quality conditions; maintain vegetation composition: typical species.

Alluvial forests (91E0)
Habitat area stable or increasing; no decline in habitat distribution, woodland structure maintained in terms of structure and height, vegetation community diversity and extent, level of natural regeneration, number of veteran trees and dead wood; maintain the hydrological regime; no decline in tree cover, absence of negative indicator species.

Old sessile oak woods (91A0)
No decline in native tree cover; variety of native species present; negative indicator species absent, i.e. Beech *Fagus sylvatica,* Rhododendron *Rhododendron ponticum* and Cherry Laurel *Prunus laurocerasus.*

Ballyman Glen SAC (site code: 0713)
This internationally important site consists of wet fen vegetation with petrifying springs. These are rare habitats in Dublin and this site is noted for its particularly rich diversity of orchids and sedges. Its qualifying interests are shown in table 2.

Table 2 – Qualifying interests for the Ballyman Glen SAC (from NPWS)

Code	Habitats/Species	Status
7220	Petrifying springs	Inadequate
7230	Alkaline fen	Bad

- **Alkaline Fens (7230)**: Threats of 'high importance' are groundwater abstractions, land reclamation, diffuse groundwater pollution, land abandonment/under-grazing. These fen systems are often a complex mosaic of habitats, with tall sedge beds, reedbeds, wet grasslands, springs and open-water often co-occurring at a given fen site. Their integrity is reliant upon a stable, high water table; calcareous/low-nutrient water supply; and controlled mowing and/or grazing.

Site specific conservation objectives have been published (NPWS, 2019a) and are summarised as:

Petrifying springs – priority habitat (7220)
Habitat area stable or increasing subject to natural variations; no decline in habitat distribution; maintain appropriate hydrological regimes; maintain oligotrophic and calcareous water quality conditions; maintain vegetation composition: typical species.

Alkaline Fen (7230)
Habitat area stable or increasing; no decline in habitat distribution; maintain ecosystem function in terms of soil nutrient status, hydrology, water quality (nutrient status); maintain plant community diversity, maintain vegetation composition in terms of vascular plants, brown mosses, positive indicator species, and negative indicator species. Maintain physical structure in terms of area of bare ground, drainage and indicators of local distinctiveness.

The **Glenasmole Valley SAC** (code: 1209; approximately 13km from the site) is the flooded valley of the Dodder river, dammed to provide drinking water for the city of Dublin, and covering an area of nearly 150ha. Woodland has developed around its margins while species-rich grassland is to be found on some of its slopes. A number of rare plants species, including a variety of orchids, are to be found here.

The SAC is designated only for protected habitat types and these are given in table 3.

Table 3 – Qualifying interests for the Glenasmole Valley SAC (from NPWS)

Code	Habitats	Status
6210	Orchid rich grassland/Calcareous grassland	Bad
6410	Molinea meadows	Bad
7220	Petrifying springs (priority habitat)	Intermediate

- **Orchid-rich grassland (6210)** This is a species rich grassland habitat found on well drained calcareous soils. It must be important for orchids in order to fall into this category. While there is evidence that an increased occurrence of flooding on some sites may be having a detrimental effect the principle threats listed are from agricultural intensification and 'stock feeding', i.e. overgrazing.
- **Molinea meadows (6410)** *Molinea caerulea,* the Purple Moor-grass, is typically associated with upland peatland habitats but this habit type occurs on lowland sites associated with traditional agricultural practices. The main threats that it faces are associated with changes in land use, e.g. land abandonment or intensification.
- **Petrifying Springs (7220)**: These are very localised habitats that arise from the precipitation of excess calcium carbonate in supersaturated running water. They are associated with characteristic bryophytes. They are vulnerable to changes in water quality, flow regime and intensification of land use practices (NPWS, 2013). Determining if significant effects are likely to occur to any of these SACs or SPAs must be measured against their 'conservation objectives'. Specific conservation objectives have been set for all of these areas with the exception of the Poulaphouca Reservoir. Generic conservation objectives have been published by the NPWS and are stated as:

Site specific conservation objectives have been published for this SAC (NPWS, 2021b) and are summarised here.

Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia) (important orchid sites – priority habitat) (6210)
Habitat area stable or increasing subject to natural processes; no decline in habitat distribution; maintain vegetation composition in a favourable status (including non-native and negative indicator species); not more than 10% bare soil; less than 20m^2 showing signs of serious grazing or other disturbance.

Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) (6410)
Habitat area stable or increasing subject to natural processes; no decline in habitat distribution; maintain vegetation composition in a favourable status (including non-native and negative indicator species); not more than 10% bare soil; less than 20m^2 showing signs of serious grazing or other disturbance.

Petrifying springs – priority habitat (7220)
Habitat area stable or increasing subject to natural variations; no decline in habitat distribution; maintain appropriate hydrological regimes; maintain appropriate levels of tufa formation; maintain nitrate level at less than 10mg/l; restore phosphate level to less than 15µg/l; maintain variety of vegetation communities, subject to natural processes; at least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number; potentially negative indicator species should not be dominant or abundant; woody species should be absent in unwooded springs; invasive species should be absent; cover of algae less than 2%; field layer height between 10cm and 50cm (except for bryophyte-dominated ground <10cm); no decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes.

Wicklow Mountains SAC & SPA (site codes: 2122 & 4040)
Wicklow Mountains is a large area and is designated as both an SAC and SPA as well as being a National Park. It is an upland area underlain with granite and is an important amenity and recreational area, as well as being of high conservation value. Its qualifying interests are shown in table 4 while its 'features of interest' are given as Merlin *Falco columbarius* (breeding) and Peregrine *Falco peregrinus* (breeding).

Table 4 – Qualifying interests for the Wicklow Mountains SAC (site code: 4040)

Habitats	Status
Active Blanket bog	Bad
Atlantic wet heath	Bad
European dry heath	Bad
Old oak woodland	Bad
Siliceous rocky slopes	Inadequate
Calcareous rocky slopes	Inadequate
Siliceous scree	Inadequate
Alpine and Boreal heath	Bad
Natural dystrophic lakes	Inadequate
Oligotrophic lakes	Inadequate
Species rich Nardus grassland	Bad
Calaminarian Grassland	Inadequate
Otter	Favourable

- **Active Blanket Bog (7130)** This is a very widespread habitat in Ireland found on uplands and lowlands along the Atlantic seaboard. Active blanket bog is peat forming, principally indicating the presence of Sphagnum sp. mosses but also other species. Degraded bog, where there is now forestry or bare peat, are excluded as they are not considered 'active'.

- **Atlantic wet heath (4010)** This is a heather dominant habitat that is intermediate between dry heath and blanket bog, and is frequently found in association with these two. Grazing and trampling by sheep is identified as the greatest threat to the status of the habitat but non-native invasive species such as Rhododendron and the moss *Campylopus introflexus* also impact negatively upon the habitat.
- **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.
- **Alpine and Boreal Heath (4060)** This habitat occurs on exposed mountain tops with acid substrate where stunted growths of heather are found. It is also found in the Burren, Co. Clare at low altitudes.
- **Siliceous Scree (8110)** This is a mountainous habitat characterised by expanses of shattered siliceous rock from small, mobile stones to stable boulders. Vegetation is sparse and frequently dominated by moss or lichen communities.
- **Calcareous or Siliceous Rocky Slopes (8210 & 8220)** These are vertical or near vertical slopes of calcareous or siliceous rock with cracks and fissures that are home to unique communities of plants. Climate change is considered to be the greatest threat where specialist arctic-alpine plants are to be found.
- **Upland Oligotrophic lakes (3130).** These are naturally low nutrient status lakes that in Ireland are associated with expanses of blanket bog. They are threatened by eutrophication (excessive input of nutrients) and peatland drainage.
- **Dystrophic lakes (3160)** These are naturally low oxygen, nutrient poor, acid lakes that occur in association with peatland habitats. They have low species diversity but some of these species are uniquely associated with this habitat.
- **Camalinarian Grassland (6130).** This unusual grassland community is found in Ireland on the sites of previous extraction works such as old mines. Certain bryophyte and vascular plants, including some notable rarities, thrive in conditions of high heavy metal concentrations, such as copper, lead or zinc.
- **Otter (1355)** This aquatic mammal lives its entire life in and close to wet places, including rivers, lakes and coastal areas. They will feed on a wide variety of prey items. Despite local threats from severe pollution incidents and illegal fishing, its population is considered stable and healthy, and so is assessed as being of ‘good’ status.

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

Site specific conservation objectives have been published for the SAC (NPWS, 2017a) and are summarised as:

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) (3110)
Habitat area stable or increasing, no decline in habitat distribution, typical species present and in good condition, vegetation composition correctly distributed and in good condition, Maintain appropriate natural hydrological regime necessary to support the habitat; Restore appropriate lake substratum type, extent and chemistry to support the vegetation; restore water transparency; Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species; Restore appropriate water quality to support the habitat, including high chlorophyll a status; Maintain appropriate water quality to support the habitat, including high phytoplankton composition status; Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status; Maintain high macrophyte status; Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes; Restore/maintain appropriate water colour to support the habitat;
Restore/maintain appropriate organic carbon levels to support the habitat; Restore/maintain appropriate turbidity to support the habitat; Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110.

Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea (3130)
Habitat area stable or increasing, no decline in habitat distribution, typical species present and in good condition, vegetation composition correctly distributed and in good condition, Maintain appropriate natural hydrological regime necessary to support the habitat; Restore appropriate lake substratum type, extent and chemistry to support the vegetation; restore water transparency; Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species; Restore appropriate water quality to support the habitat, including high chlorophyll a status; Maintain appropriate water quality to support the habitat, including high phytoplankton composition status; Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status; Maintain high macrophyte status; Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes; Restore/maintain appropriate water colour to support the habitat; Restore/maintain appropriate organic carbon levels to support the habitat; Restore/maintain appropriate turbidity to support the habitat; Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130.

European Wet Heaths (4010)
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.

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.

Alpine and Boreal Heaths (4060)
Habitat area stable or increasing subject to natural variations; no decline in habitat distribution; maintain vegetation composition in a favourable status (including non-native and negative indicator species); less than 10% disturbed/bare ground; indicators of local distinctiveness maintained.

Calaminarian grasslands of the Violetalia calaminariae (6130)
No decline in habitat area subject to natural processes; no decline in habitat distribution; Maintain adequate open ground; Maintain high copper (Cu) levels in soil; Maintain low and open vegetation; Maintain diversity and populations of metallophyte bryophytes.

Species-rich Nardus grasslands (6230)
No decline in habitat area subject to natural processes; no decline in habitat distribution; Maintain soil nutrient status within natural range; Maintain variety of vegetation communities, subject to natural processes; Number of positive indicator species present at each monitoring stop is at least seven; At least two high quality indicator species for base rich examples of the habitat and at least one for base-poor examples of the habitat; Species richness at each monitoring stop at least 25; Cover of non-native species less than or equal to 1%; Cover of negative indicator species individually less than or equal to 10% and collectively less than or equal to 20%; Cover of Sphagnum species less than or equal to 10%; Cover of Polytrichum species less than or equal to 25%; Cover of shrubs, bracken (Pteridium aquilinum) and heath collectively less than or equal to 5%; Forb component of forb:graminoid ratio is 20- 90%; Proportion of the sward between 5cm and 50cm tall is at least 25%; Cover of litter less than or equal to 20%; Cover of disturbed bare ground less than or equal to 10%; Area of the habitat showing signs of serious grazing or disturbance less than 20m²; No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.

***Blanket bogs* (7130)**
Area stable or increasing, subject to natural processes; No decline, subject to natural processes; Maintain soil nutrient status within natural range; At least 99% of the total Annex I blanket bog area is active; Natural hydrology unaffected by drains and erosion; Maintain variety of vegetation communities, subject to natural processes; Number of positive indicator species present at each monitoring stop is at least seven; Cover of bryophytes or lichens, excluding Sphagnum fallax, at least 10%; Cover of each of the potential dominant species less than 75%; Total cover of negative indicator species less than 1%; Cover of non-native species less than 1%; Cover of scattered native trees and shrubs less than 10%; Less than 10% of the Sphagnum cover is crushed, broken and/or pulled up; Last complete growing season's shoots of ericoids, crowberry (Empetrum nigrum) and bog-myrtle (Myrica gale) showing signs of browsing collectively less than 33%; No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning; Cover of disturbed bare ground less than 10%; Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%; Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas; No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.

Siliceous scree (8110)
Area stable or increasing, subject to natural processes; No decline, subject to natural processes; Maintain soil nutrient status within natural range; Cover of bryophytes and non-crustose lichen species at least 5%; Proportion of vegetation composed of negative indicator species less than 1%; Proportion of vegetation composed of non-native species less than 1%; At least one positive indicator species present in vicinity of each monitoring stop in block scree; Total cover of grass species and dwarf shrubs less than 20%; Total cover of bracken (Pteridium aquilinum), native trees and shrubs less than 25%; Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively less than 50%; Ground disturbed by human and animal paths, scree running, vehicles less than 10%; No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.

Calcareous rocky slopes with chasmophytic vegetation (8210)
Area stable or increasing, subject to natural processes; No decline, subject to natural processes; Maintain soil nutrient status within natural range; Number of ferns and Saxifraga indicators at each monitoring stop is at least one; Number of positive indicator species at each monitoring stop is at least three; Proportion of vegetation composed of non-native species less than 1%; Total cover of bracken (Pteridium aquilinum), native trees and shrubs less than 25%; Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively less than 50%; No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat

Siliceous rocky slopes with chasmophytic vegetation (8220)
Area stable or increasing, subject to natural processes; No decline, subject to natural processes; Maintain soil nutrient status within natural range; Number of ferns and Saxifraga indicators at each monitoring stop is at least one; Number of positive indicator species at each monitoring stop is at least three; Proportion of vegetation composed of non-native species less than 1%; Total cover of bracken (Pteridium aquilinum), native trees and shrubs less than 25%; Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively less than 50%; No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat

Old sessile oak woods (91A0)
No decline in native tree cover; variety of native species present; negative indicator species absent, i.e. Beech *Fagus sylvatica,* Rhododendron *Rhododendron ponticum* and Cherry Laurel *Prunus laurocerasus.*

Otter
No significant decline in distribution; no significant decline in terrestrial/estuarine/freshwater/lake habitat; no significant decline in couching sites or holts; no decline in available fish biomass;

The **South Dublin Bay and Tolka Estuary SPA** (side code: 4024) 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 form 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 available[1].

Table 6 – Annual count data for Dublin Bay from the Irish Wetland Birds Survey (IWeBS)

Year	2010/11	2011/12	2012/13	2013/14	2014/15	Mean
Count	27,931	30,725	30,021	35,878	33,486	31,608

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 bernicula hrota*; Black-tailed godwit *Limosa limosa*; Knot *Calidris canutus* and Bar-tailed godwit *L. lapponica*.

Table 7 – Features of interest 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 (*Branta bernicla hrota*) [A046]

[1] https://f1.caspio.com/dp.asp?AppKey=f4db3000060acbd80db9403f857c

Oystercatcher (*Haematopus ostralegus*) [A130]
Ringed Plover (*Charadrius hiaticula*) [A137]
Grey Plover (*Pluvialis squatarola*) [A140]
Knot (*Calidris canutus*) [A143]
Sanderling (*Calidris alba*) [A144]
Dunlin (*Calidris alpina*) [A149]
Bar-tailed Godwit (*Limosa lapponica*) [A157]
Redshank (*Tringa totanus*) [A162]
Black-headed Gull (*Croicocephalus ridibundus*) [A179]
Roseate Tern (*Sterna dougallii*) [A192]
Common Tern (*Sterna hirundo*) [A193]
Arctic Tern (*Sterna paradisaea*) [A194]
Wetlands & Waterbirds [A999]

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 SAC** (side code: 0210) is concentrated on the intertidal area of Sandymount Strand. 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. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- **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, 2013b) 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.

Whether significant effects are likely to occur to an SAC or SPA must be measured against its conservation objectives. Where site specific conservation objectives have not been set out, generic conservation objectives have been published by the NPWS and are stated as "*to maintain or restore the favourable conservation condition of the Annex I habitat or Annex II species for which the SAC has been selected*" (NPWS, 2018a-g).

North Dublin Bay SAC
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 8. 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 8 – Qualifying interests for the North Dublin Bay SAC

Code	Habitat/Species	Status
1140	Mudflats and sandflats not covered by seawater at low tide	Favourable
1320	Salicornia and other annuals colonizing mud and sand	Inadequate

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 Ammophila arenaria (white dunes)	Inadequate
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	Bad
2190	Humid dune slacks	Inadequate
1395	*Petalophyllum ralfsii* Petalwort	Favourable

- **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 objective are available for this SAC (NPWS, 2013c) and are summarised as:

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.

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.*

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.

North Bull Island SPA
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 9 lists its features of interest.

Table 9 – Features of interest for the North Bull Island SPA

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

At its nearest point the **Poulaphouca Reservoir SPA** (site code: 4063) is located approximately 17.5km from the site of the proposed development. Its 'features of interest' include the Greylag Goose *Anser anser* and the Lesser Black-backed Gull *Chroicocephalus ridibundus*.

- **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.
- **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.

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

Where site specific conservation objectives have not been published, generic documents state that favourable conservation status of a habitat is achieved when:
• its natural range, and area it covers within that range, are stable or increasing, and
• the specific structure and functions which are necessary for its long - term maintenance exist and are likely to continue to exist for the foreseeable future, and
• the conservation status of its typical species is favourable;

The favourable conservation status of a species is achieved when:
• population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
• the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
• there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

7.0 Pathway Analysis

There are no Natura 2000 sites within the immediate vicinity of the site. The nearest, Wicklow Mountains SAC, can be found approximately 3.5km to the south. The Whitechurch Stream provides a direct natural hydrological connection from the development site to Dublin Bay via the River Dodder, however this is weak due to the length of the pathway (c.15km following the route of water courses). There is also an indirect pathway to Dublin Bay through the foul sewer which includes significant dilution on route to the Ringsend WWTP.

There is no direct or indirect, terrestrial or hydrological pathway to any other Natura 2000 site.

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.

Freshwater supply may originate in the Poulaphouca Reservoir SPA.

There are consequently pathways to a number of Natura 2000 sites. There are potential hydrological links to the Poulaphouca Reservoir SPA (site code: 4063), 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).

8.0 Data collected to carry out the assessment

Details from the NPWS site synopsis report and the most recent data from BirdWatch Ireland's Wetlands Bird Survey (IWeBS) indicate that Dublin Bay is of international importance for wintering birds meaning that it regularly holds a population of over 20,000 birds. Total counts from IWeBS are shown in table 6.

Surveys have shown that the development site is predominantly composed of low biodiversity value habitats with areas of hard standing, along with some mature (non-native) trees. Native hedgerows at Site 1 are of high local value to biodiversity. It is located in a suburban area of Dublin city albeit close to the Whitechurch Stream. It is connected to a number of Natura 2000 sites via wastewater and surface water run-off.

The EU's Water Framework Directive (WFD) stipulates that all water bodies were to have attained 'good ecological status' by 2015 or with certain exceptions, by 2027 at the latest. This includes estuarine waters and in 2010 the first River Basin Management Plan (RBMP) was published to address pollution issues. This included a 'programme of measures' which was to be completed. A second RBMP was published in 2018 and this includes a list of 190 'priority areas for action' where progress will be focused upon for the 2018-2021 period.

The monitoring stations along the River Dodder in Dublin City show moderate pollution. There are no recent data from the Whitechurch Stream (a sample from 1991 showed moderate pollution). The Dodder enters the River Liffey near the East Link bridge in Dublin city centre. The lower Liffey Estuary has most recently been assessed by the Environmental Protection Agency (EPA) as 'good status'. The coastal water beyond the estuary is also assessed as 'good' (from www.epa.ie). These classifications indicate that water quality downstream of the Dodder confluence with the Liffey is currently meeting the requirements of the WFD.

Of the qualifying interests of SPAs in Dublin Bay, eleven: Curlew, Dunlin, Redshank, Shoveler, Oystercatcher, Grey Plover, Knot, Golden Plover, Bar-tailed Godwit, Black-tailed Godwit and Black-headed Gull are listed as of high conservation concern, and on BirdWatch Ireland's red list (Gilbert et al., 2021).

Of relevance to this study is it noted that although declines in these species cannot always be attributed to clear causes, there is no evidence that water quality issues have been a factor.

In 2020 the NPWS published a report entitled 'The monitoring and assessment of six EU Habitats Directive Annex I Marine Habitats' (Scally & 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 Nepthys, 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 *Nepthys 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].

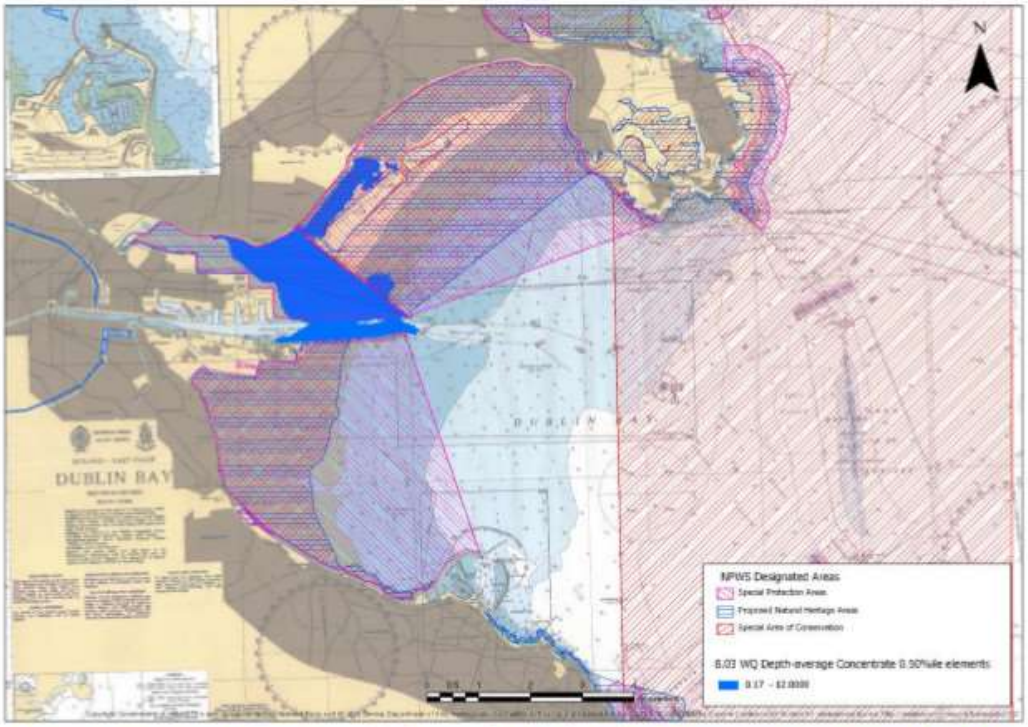

Figure 5-16: Extent of the Zone of Influence (in blue) of the effluent from the Proposed WwTP Component on the predicted modelled output for Winter depth averages 50%ile for Dissolved Inorganic Nitrogen (DIN)

Figure 4 – Extract from the EIAR prepared by Irish Water (2018) showing the zone of influence of the Ringsend WWTP outfall pipe.

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 4.

7.0 The Assessment of Significance of Effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.

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

The proposed development is not located within, or adjacent to, any SAC or SPA.

Habitat loss
At its closest point the site is approximately 7.5km away (as the crow flies) from the boundary of the Natura 2000 sites within Dublin Bay. In reality however, this distance is greater as the hydrological pathway follows the course of the drainage network to the River Dodder or Dublin Bay. Because of the distance separating the site and SPAs/SACs there is no pathway for loss or disturbance of important habitats or important species associated with the features of interest of any Natura 2000 site.

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

Habitat disturbance
This development cannot increase disturbance effects to birds in Dublin Bay given its distance from these sensitive areas. There are no sources of light or noise over and above that this is already experienced in this built-up, urbanised location.

No significant effects to Natura 2000 sites can arise from this aspect of the development.

Ex-situ impacts
Habitats on the site are not suitable for regularly occurring populations of wetland or wading birds which may be features of interest of the South Dublin Bay and River Tolka Estuary SPA. No ex-situ impacts can occur.

No significant effects to Natura 2000 sites can arise from this aspect of the development.

Hydrological pathways
There is a pathway from the site via wastewater and surface flows to Dublin Bay, via the Ringsend treatment plant and the Whitechurch Stream respectively. This project will increase the loading to the Ringsend plant.

Pollution during operation – surface water
A new drainage network is to be installed that complies with SUDS principles and this will ensure that run-off is maintained at a 'greenfield' rate. These are standard measures which are included in all development projects and are not proposed here to avoid or reduce an effect to a Natura 2000 site. SUDS are not mitigation measures in an AA context.

No significant effects to Natura 2000 sites can arise from this aspect of the development.

Pollution during operation - wastewater
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). Additional loading to this plant arising from the operation of this project are not significant as there is no evidence that pollution through nutrient input is affecting the conservation objectives of any of the Natura 2000 sites in Dublin Bay.

No significant effects to Natura 2000 sites can arise from this aspect of the development.

Pollution during construction
During the construction phase there will be earth movement as well as works to widen the bridge and lay a new surface water outfall pipe. The Whitechurch Stream provides a direct pathway to the River Dodder. While sediment can be detrimental to the ecological quality of freshwater bodies, the same is not the case for estuaries and tidally influenced habitats, which rely on vast quantities of sediment for their functioning. The distance to Natura 2000 sites is nearly 15km and this is too far for likely negative effects to occur.

As a result, discharges of surface water from this project cannot result in significant effects to SACs or SPAs in Dublin Bay. No negative effect to Natura 2000 sites can occur from this source.

Are there other projects or plans that together with the project or plan being assessed could affect the site?

Potential in combination effects were identified based on projects which are permitted or planned in the immediate vicinity of the development site as well as through the catchment of the Ringsend wastewater treatment plant. While not considered necessary to list these individually, these include new development on brown-field sites, infrastructure projects such as roads and drainage, as well as new developments on green-field sites. Development in the city is based upon forward planning by the four local authorities in Co. Dublin and their associated development plans. Each of these plans has been subject to Screening for Appropriate Assessment and, where relevant, a full Appropriate Assessment has been carried out to ensure adverse effects to Natura 2000 sites do not occur.

The impacts from built development in this area include loss of habitat, additions to drainage infrastructure, particularly wastewater and surface water, and the in combination effects of pollution arising from multiple construction projects happening at the same time.

Implementation of the WFD will ensure that improvements to water quality in Dublin Bay and the River Liffey are maintained. Environmental water quality can be impacted by the effects of surface water run-off from areas of hard standing. These impacts are particularly pronounced in urban areas and can include pollution from particulate matter and hydrocarbon residues, and downstream erosion from accelerated flows during flood events. In this case the design of the new surface water drainage system will ensure that no negative impacts to surface water quality/quantity will occur.

In March 2005 the Greater Dublin Strategic Drainage Study (GDDS) was published as a policy document designed to provide for future drainage infrastructure. The implementation of this policy will see broad compliance with environmental and planning requirements in an integrated manner. This is likely to result in a long-term improvement to the quality and quantity of storm water run-off in the capital. This project is fully compliant with SUDS principles.

This development will add to the loading at the Ringsend wastewater treatment plant. This plant is not compliant with its emission limit standards however work is underway to increase treatment capacity. According to the 2018 Annual Environmental Report for the plant, “the discharge from the wastewater treatment plant does have an observable negative impact on the water quality in the near field of the discharge and in the Liffey and Tolka Estuaries”. This report highlights that other sources of pollution also present from riverine inputs, sewerage overflows, misconnections and unsewered properties. The AER does not comment on whether, or how, these issues are affecting Natura 2000 sites in Dublin Bay and there is currently no evidence to suggest that such effects are occurring. The status of ‘Mudflats and sandflats not covered by seawater at low tide’ in the South Dublin Bay SAC and the North Dublin Bay SAC was assessed as ‘favourable’ by the NPWS in 2020. It is therefore not considered that ‘in combination’ effects may arise from this source.

This project is not associated with any loss of semi-natural habitat or pollution which could act in a cumulative manner to result in significant negative effects to any SAC or SPA. There are no projects which can act in combination with this development which can give rise to significant effect to Natura areas within the zone of influence.

8.0 Conclusion and Finding of No Significant Effects

In carrying out this AA screening, mitigation measures have not been taken into account. Standard best practice construction measures have not been taken into account where these are to be implemented for the purposes of mitigating any effects on the environment which could have a potential impact on any European Sites.

On the basis of the screening exercise carried out above, it can be concluded that the possibility of any significant impacts on any European Sites, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available.

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