Waterside Block 9
Developments Limited

Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) for SHD Application

Waterfront South Central, City Block 9,
North Wall Quay, Dublin 1

19 November 2020

Project No.: 0524744

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Waterfront South Central, City Block 9, North Wall Quay, Dublin 1

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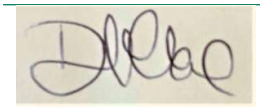

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1. INTRODUCTION

Waterside Block 9 Developments Limited has applied for a Strategic Housing Development at City Block 9, Dublin docklands.

The scheme, totalling 125,388 sq m, provides 22,499 sq m at basement levels, with 102,889 sq m from ground upwards. The development will consist of the:
1. Construction of 1,005 No. residential units (with balconies and winter gardens) arranged in 3 No. blocks ranging in height from 8 No. storeys to 45 No. storeys over a triple-level basement, the former comprising: Block A (8-14 No. storeys (with extended core to access roof level); with an apartment mix of: 116 No. 1-bed; and 92 No. 2-bed; with landscaped terraces at Level 1 (south east elevation), Level 8 (south west elevation), Level 11 (south west elevation) and Level 14 (north east elevation)); Block B (8-41 No. storeys (with extended core to access roof terrace); with an apartment mix of: 172 No. 1-bed; and 247 No. 2-bed; with landscaped terraces at Level 5 (south west elevation), Level 8 (north west elevation and south west elevation), Level 11 (north elevation), Level 12 (west elevation), Level 13 (east elevation), Level 14 (east elevation), and at Level 41 (roof level)); and Block C (11-45 No. storeys (with extended core to access roof level); with an apartment mix of: 207 No. 1-bed; 168 No. 2-bed; and 3 No. 3-bed units; with landscaped terraces at Level 11 (north elevation), Level 24 (south elevation), Level 32 (south elevation), and Level 45 (roof level), incorporating a public viewing deck at Levels 44 and 45).

2. Provision of ancillary residential amenities and support facilities including: live/work suites (321 sq m), a gym/spa reception (52 sq m), a residents' games room (91 sq m), a residents' common room (110 sq m), a residents-only social space (193 sq m), a management office (96 sq m), a security office (50 sq m), concierge spaces (GFA of c. 381 sq m) all located at ground floor level; a residents' games room (90 sq m) located at Level 1 of Block B; a residents' common room (86 sq m) located at Level 14 of Block B; a residents' wellness club and common room (408 sq m) located at Level 24 of Block C;

3. Construction of triple height basement which will comprise double basement with mezzanine plant level (total basement area 22,499 sq m), accommodating: waste storage areas (659 sq m), plant rooms (4,228 sq m), maintenance / management offices (GFA of 92 sq m), residents' courier / parcel rooms (GFA of 210 sq m), residents' laundry rooms (GFA of 138 sq m), ancillary residential storage (GFA of 291 sq m), residents' WCs (65 sq m), a residents' gym / spa (1,529 sq m) and ancillary gym storage room (100 sq m), residents' screening rooms (240 sq m), a residents' indoor plant cultivation room (356 sq m), 176 No. car parking spaces, 10 No. motorcycle parking spaces and 1,693 No. bicycle parking spaces, with vehicular access provided by ramp from North Wall Avenue.

4. Provision of "other uses" as defined by the Planning and Development (Housing) and Residential Tenancies Act 2016, comprising: a childcare facility (450 sq m), a restaurant (110 sq m), an indoor Farmer's Market/foodhall (299 sq m), an external market area, a winter garden/seating area (130 sq m), and 3 No. café units (110 sq m, 167 sq m and 261 sq m, respectively), all located at ground floor level; a restaurant (609 sq m) located at Level 32 of Block C; office use (1,894 sq m) from Floor Level 41 to 43 inclusive at Block C; and a public bar / function room (407 sq m) located at Level 44 of Block C. The total area of "other uses" provided is 4,307 sq m.

5. Provision of a pocket park and new pedestrian lanes from North Wall Quay, North Wall Avenue and Mayor Street Upper to the center of the site.

6. All enabling and site development works, landscaping (including living walls), lighting, services and connections, waste management and all other ancillary works above and below ground including the use of existing secant piling permitted under Reg. Ref. DSDZ3779/17 and DSDZ3780/17 (as amended by DSDZ3042/19).

Environmental Resources Management Ltd (ERM) has been commissioned to produce this document to inform the Appropriate Assessment (AA) process for the Proposed Development. It provides information to enable the screening of the Proposed Development with respect to its potential to have a likely significant effect (LSE) on European sites of nature conservation importance, and reports in

the Natura Impact Statement (NIS) whether these LSE are expected to have an adverse effect on the integrity of the European sites being considered.

This report has been written by a suitably qualified ecologist; Bethan Cainey GradCIEEM has 5 years of ecological experience.

2. PROJECT DESCRIPTION

2.1 Site Location

The Proposed Development (the site) is located on North Wall Quay, Dublin 1, within Dublin city centre and Dublin docklands. The site is centred at Irish Grid Reference O 17789 34507. The 1.99 ha site is currently a brownfield site. A Generic Quantitative Risk Assessment undertaken by RSK Ireland Limted on behalf of the client in July 2019 reported that the site has historically been was used as timber treatment and manufacturing prior during the 1800's. More recently the site was reported to have been used for commercial and light industrial processes. The site is currently vacant, existing structures have been demolished and removed from the site. The habitats comprise bare ground and reclaimed bare ground.

Enabling works for the Proposed Development have been granted under the Planning Consent DSDZ3042/19. This consent grants permission to take the existing land on site down to 16 m below ground level (mBGL). Though these works have been granted, it is assumed in this report that the site's baseline is a cleared brownfield site with no excavations.

The Proposed Development is bounded on all sides by roads, Mayor Street Upper to the north, North Wall Quay to the south, North Wall Avenue to the east, and Castleforbes Road to the west (Figure 1). The overall site is located within City Block 9, as identified, in the North Lotts and Grand Canal Dock Strategic Development Zone (SDZ) Planning Scheme[1].

The surrounding landscape is urban and commercial in nature, with the River Liffey and Dublin city to the south, Dublin city to the north and west, and Dublin Docks to the east. C. 30 m south of the Proposed Development, North Wall Quay defines the boundary of the Lower Liffey Estuary. The North Wall Quay at this point is a man-made, hard engineered quay wall.

The water quality status for the River Liffey at this location is classified by the Environmental Protection Agency (EPA) as "unpolluted"[2]. This section of the River Liffey connects to the Liffey Estuary and the wider Dublin Bay area; roughly 2-3 km to the east. Across the River Liffey, 250 m to the south-east of the Proposed Development, the Dodder River flows into the River Liffey from the south.

The closest protected areas to the site are the non-statutory, proposed natural heritage areas (pNHA) of the Grand Canal, located c. 330 m south, and Royal Canal located c. 600 m west of the site. There are 17 Natura 2000 sites within 15 km of the Proposed Development. These Natura 2000 sites are shown in Figures 5.1 and 5.2.

1 Dublin City Council (2014) North Lotts and Grand Canal Dock Planning Scheme.
2 http://www.epa.ie/QValue/webusers/PDFS/HA9.pdf?Submit=Get+Results

Figure 1: Site Location

2.2 Proposed Development

The scheme, totalling 125,388 sq m, provides 22,499 sq m at basement levels, with 102,889 sq m from ground upwards. The development will consist of the:

1. Construction of 1,005 No. residential units (with balconies and winter gardens) arranged in 3 No. blocks ranging in height from 8 No. storeys to 45 No. storeys over a triple-level basement, the former comprising: Block A (8-14 No. storeys (with extended core to access roof level); with an apartment mix of: 116 No. 1-bed; and 92 No. 2-bed; with landscaped terraces at Level 1 (south east elevation), Level 8 (south west elevation), Level 11 (south west elevation) and Level 14 (north east elevation)); Block B (8-41 No. storeys (with extended core to access roof terrace); with an apartment mix of: 172 No. 1-bed; and 247 No. 2-bed; with landscaped terraces at Level 5 (south west elevation), Level 8 (north west elevation and south west elevation), Level 11 (north elevation), Level 12 (west elevation), Level 13 (east elevation), Level 14 (east elevation), and at Level 41 (roof level)); and Block C (11-45 No. storeys (with extended core to access roof level); with an apartment mix of: 207 No. 1-bed; 168 No. 2-bed; and 3 No. 3-bed units; with landscaped terraces at Level 11 (north elevation), Level 24 (south elevation), Level 32 (south elevation), and Level 45 (roof level), incorporating a public viewing deck at Levels 44 and 45).

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In order to provide an informed assessment of the potential impact pathways, a number of surveys have been undertaken including a Hydrological Impact Assessment, Generic Quantitative Risk Assessment, Engineering Services Report and a Site Specific Flood Risk Assessment. The results and conclusions of the reports have been used by Ronan Group Real Estate to determine an

appropriate Construction Management Plan (CMP)[3] incorporating the latest methodologies and practices for the project.

Ground investigations show that the site is underlain by a layer of made ground overlying a silt layer, which in turn is underlain by a thick sequence of gravels and sands overlying a boulder clay layer and bedrock in excess of 16 m mBGL.

2.2.1 Hydrological Impact Assessment

A Hydrological Impact Assessment was prepared by Verdé Environmental Consultants Ltd[4] along with a proposal to carry out the Dewatering Design, Installation and Management at North Wall Quay, Dublin 1. The scope of works included:

- An initial desk-based study which included a review of the following:
  - Review of all available information pertaining to the site; and
  - Review of all available geological and hydrogeological information.
- Preparation of a hydrogeological impact assessment report, including:
  - Development of a conceptual understanding of the hydrogeological regime in the area based on available data; and
  - Identification of potential impacts of the proposed basement on groundwater.
- Preparation of the report on the above including provision of any recommendations or additional measures, if required.

The Report concluded that “The presence of the secant walls around the proposed excavation will result in a localised diversion of regular groundwater flow paths with localised groundwater mounding upgradient of the pile walls and lowering downgradient of the pile walls. It is unlikely that significant diversion of groundwater flow paths will occur. Installation of monitoring well/wells outside the pile wall will provide information on any potential groundwater mounding/lowering. The main groundwater body for this area is within the underlying limestone bedrock aquifer which will not be impacted by the building development or operational phase of works”. These results suggest that the Proposed Development is not likely to result in any groundwater pathways.

The report notes that the groundwater Generic Assessment Criteria “GACs for the protection of environmental waters were exceeded in a number of boreholes on-site. Three surface water samples were retrieved from the River Liffey to assess receptor surface waters upstream, downstream and adjacent to the site. The surface water GACs for the protection of controlled freshwaters were not exceeded in any of the three samples taken along the River Liffey. Given the results of surface water monitoring, no complete pollutant linkage has been identified between shallow groundwater contaminant concentrations on-site and the River Liffey”.

There are no anticipated direct or indirect groundwater pathways between the Proposed Development and the European sites.

2.2.2 Engineering Services Report

The drainage components of the development have been outlined in CS Consulting Engineering Services Report [5] and are noted as:

[3] PJ Hegarty & Sons (2020). *Outline Construction Management Plan for Waterfron South Central Residential Development, North Wall Quay, Dublin 1.* PJ Hegarty & Sons, Dublin.

[4] Verdé Environmental Consultants Ltd (2019) Hydrogeological Impact Assessment City Block 9, North Wall Quay, Dublin 1

[5] CS Consulting Group. (2019) Engineering Services Report Waterfront South Central North Wall Quay, Dublin 1.

Proposed Outfall

All foul effluent generated from the Proposed Development from the upper floors of all proposed block apartments shall be collected in separated foul pipes and flow by gravity into the existing 300mm diameter foul sewer on North Wall Avenue via a new connection to existing networks through to Ringsend WWTP.

Proposed Foul Drainage Arrangements

The drainage network for the development will be in accordance with Part H of the Building Regulations and to the requirements and specifications of Irish Water.

As part of the development three levels of basement are proposed. These would provide car parking, bicycle storage and bin storage. Foul waters generated in the basement will be collected and then flow by gravity to a pump sump located at the lowest level, where all foul effluent shall be pumped via a rising main to the external gravity network and on to Ringsend WWTP.

Proposed Storm Water Arrangements

The proposed new storm water drainage arrangements will be designed and carried out in accordance with:

i) The Greater Dublin Strategic Drainage Study Volume 2,

ii) The Greater Dublin Regional Code of Practice for Drainage Works,

iii) BS EN – 752:2008, Drains and Sewer Systems Outside Buildings,

iv) Part H, Building Drainage of The Building Regulation.

Proposed Attenuation Arrangements

In accordance with the requirements of the local authority all new developments are to limit their storm water discharge to 2l/s/Ha or to Q-Bar whichever is the greater. The site area is 1.15 ha of hardstanding.

The attenuation volume to be retained on site for a 1–in–100-year extreme storm event, increased by 20% for the predicated effects of climate change indicates that a volume of 1,017 m^3 will be required to be provided. An additional 570 m^3 of storage shall be provided in case of a combination high tide / extreme storm event, as noted in the SDZ North Lotts and Grand Canal Dock Planning Scheme. The total capacity of the underground attenuation tank shall be 1,587m^3.

Therefore, all storm water events will restrict flow from the development to 2.0l/s by way of using a flow control device. The attenuation volume will be provided in an attenuation tank sized to retain storm volumes predicated.

Proposed Sustainable Urban Drainage System, SuDS

A further requirement of the local authority is to adopt, where achievable elements into the design which conform to the general principles of Sustainable Urban Drainage systems. The aim is to increase the overall quality of storm water before it leaves the site and enters the public network. To achieve this a number of SuDS proposals are being implemented.

I. The use of green roofs on applicable roof space for the apartment blocks is proposed, 466m^2, minimum;

II. The use of low water usage sanitary appliances to reduce the reliance on potable water supplies;

III. Where feasible, local footpaths and hardstanding areas will be directed into tree pits or landscaped areas to allow for local infiltration;

IV. Road gullies will be trapped to allow for the removal of grit and other potentially harmful material entering the storm network.

Interception storage is to be provided via the use of the green roofs on the apartment buildings and by the use of local drainage into landscaped areas and tree pits where applicable.

2.2.3 Construction Methodology

Construction for the Proposed Development is anticipated to commence in Q4 of 2021, and be completed in one phase which is expected to last four years. The construction working hours for the Proposed Development are to be 8am – 6pm.

Sub-Structure in accordance with the Construction Management Plan (CMP)

For the purposes of explaining the construction methodology to be employed, the substructure will consist of secant piles to the basement perimeter with continuous flight auger (CFA) piles supporting the foundations pile caps and raft slabs. Stair and lift cores will be constructed in concrete with a mixture of reinforced concrete and structural steel superstructures built around these cores.

The secant piling to the basement perimeter will be installed first. Excavation will follow on with anchors being installed through the secant piles as the excavation progresses.

A dewatering system will be installed ahead of the excavation and all water will be pumped through settlement tanks before discharge to a location agreed with Dublin City Council.

A ramp will be maintained into the basement to allow the piling rigs track into the site and install foundation piles at low level. Once cured and tested, breakdown of the piles will be progressed allowing pouring of the concrete pile caps, ground beams and basement slabs to commence.

Ground investigations carried out in advance of the main works as part of the detailed foundation design will determine if any ground contamination is present. All excavated material will be disposed of to off-site licensed landfill sites. Any contaminated materials will be kept separate and removed to specialist facilities in accordance with environmental legislation.

Dust suppression and road sweeping will be undertaken as required to maintain the site, neighbouring properties and adjacent public roads in clean condition.

Super-Structure in accordance with the Construction Management Plan

As the basement level slabs are completed, stair and lift cores will be constructed. Six tower cranes will be erected as required to service the lifting requirements for the project. Beacon lights will be placed on the cranes for aviation purposes and flood lights will be placed on the crane shafts for site lighting. As the jib radius / placing boom reach will range between 30 m and 60 m, drivers will be instructed to slew loads so that materials remain over the foot print of the site although jibs will oversail properties outside of the site and potentially over the River Liffey.

For reinforced concrete structures, the suspended slabs at each floor level above will use the Peri Skydeck formwork system. The decking will be erected complete with edge handrails and access towers to each level. Steel reinforcement will then be installed on the deck. Lifting of decking and rebar will be by tower crane while a static concrete pump will be used to pour the concrete.

After curing of the slab, the skydeck panels will be removed for reuse on the next floor above while the skydeck supports remain in place as back propping. Back props will be removed at a later date when the building has progressed and the structure has cured sufficiently to remove the props.

Super deck platforms will be utilised to allow removal of materials off floors or loading materials into floors. These platforms are installed between completed floors and cantilever outwards from the building allowing the crane to remove and drop materials on the deck. These decks will be installed on internal elevations of the buildings so they are not located over public streets.

The Construction Management Plan outlines that ISO14001: 2015 environmental management and environmental protection measures will be put in place to prevent damage to the environment and to comply with planning conditions. Along with standard design measures and the revised Dublin City Construction protocols[6]. However in accordance with the April 2018 CJEU ruling in case C-323/17 'People Over Wind and Peter Sweetman v Coillte Teoranta'[7] these;

- are not measures that are intended to avoid or reduce the harmful effects of a particular development on a European site;
- are not intended to have that effect as they are required to be incorporated in developments for the reasons set out in the relevant policies and planning conditions; and
- are not required to be incorporated by reason of the potential effect of a development on a European site.

Further measures intended to avoid or reduce the harmful effects of the Proposed Development on European sites are outlined in the NIS section of this report.

2.3 Requirement for Appropriate Assessment

Where a development has the potential, either alone or in combination with other plans or projects, to result in likely significant effects on one or more European sites[8], it is subject to the requirements of The EC Habitats Directive 92/43/EEC (the Habitats Directive).

If a development is likely to affect a European site and / or a European marine site, a report must be provided with the application showing the site(s) that may be affected together with sufficient information to enable the competent authority to undertake an Appropriate Assessment (AA). For this Proposed Development, the competent authority is An Bord Pleanála.

Due to the distance between the Proposed Development and the Natura 2000 sites, under the Habitats Directive as part of the planning process, the developer needs to consider whether the development will give rise to any likely significant effects on them.

6 Dublin City Council (2017) Updated protocol. To alleviate / mitigate the issues currently being raised by residents in the Docklands Area. Dublin Docklands. Can be found at http://residentsalliancegroup.com/docs/Final%20Construction%20and%20Demolition%20Protocol%20for%20Docklands%20Sites%20-Area.pdf

7 http://curia.europa.eu/juris/document/document.jsf?text=92%252F43%252Feecanddocid=200970andpageIndex=0anddoclang=ENandmode=reganddir=andocc=firstandpart=1andcid=717866#ctx1

8 These are Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs). This protection is also extended to potential SPAs (pSPAs), and sites identified, or required, as compensatory measures for adverse effects on any of the above sites.

3. METHODOLOGY

The approach to the AA has followed that set out in the EC Habitats Directive 92/43/EEC (the Habitats Directive). It has also taken account of a range of other guidance material including that produced by the European Commission (EC) (2018[9]) (2011[10, 11,] 2007[12] 2002[13,] 2000[14]). And Irish legislation including Appropriate Assessment of Plans and Projects in Ireland[15] and Guidance for Planning Authorities[16].

3.1 Overview of AA Process

The AA process comprises four main stages, these are:

- **Stage 1 Screening** to identify the likely effects of a project on a European Site and consider whether the effects are likely to be significant. as of April 2018 – Court of Justice of the European Union (CJEU) judgement on People Over Wind and Sweetman v Coillte, it is not appropriate in AA screening to take account of measures intended to avoid or reduce harmful effects on European sites[17].
- **Stage 2 Appropriate Assessment** to determine whether the integrity of the European site will be adversely affected by the project. the NIS is permitted to include measures when assessing the impacts on the qualifying interests
- **Stage 3 Assessment of Alternative Solutions** to establish if there are any that will result in a lesser effect on the European site; and
- **Stage 4 Imperative Reasons of Overriding Public Interest (IROPI)** and **Compensatory Measures** to establish whether it is necessary for the project to proceed despite the effects on the European site, and to confirm that necessary compensatory measures are in place to maintain the coherence of the Natura 2000 network.

Each of the stages is discussed in more detail in the following sections.

3.2 Stage 1 - Screening

The purpose of the screening stage is to identify likely impacts upon European sites, as a result of either a project alone or in combination with other plans and projects and consider whether these impacts are likely to be significant.

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[9] European Commission (2018) Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. EC

[10] European Commission (2011) Guidelines on the Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones with Particular Attention to Port Development and Dredging. Advice Note 10 EC

[11] International Workshop on Assessment of Plans under the Habitats Directive (2011) Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive

[12] European Commission (2007) Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. EC

[13] European Commission (2002) 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. EC

[14] European Commission (2000) Communication from the Commission on the precautionary principle.

[15] Department of Environment, Heritage and Local Government (2010 revision) Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities

[16] Circular NPW 1/10 and PSSP 2/10. Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities

[17] "Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site."

In order to determine if the Project is likely to have any significant effects on the designated sites the following issues have been considered:

- could the proposals affect the qualifying interest (QI) and are they sensitive / vulnerable to the effect;
- the probability of the effect happening;
- the likely consequences for the site's conservation objectives if the effect occurred; and
- the magnitude, duration and reversibility of the effect.

The objective of the screening stage is to conclude whether;

1. no likely significant effect will occur;
2. a likely significant effect will occur; or
3. it cannot be concluded that there will be no likely significant effect

If the screening stage concludes the second or third outcome, then an Appropriate Assessment (AA) is triggered. The implications of the identified likely significant effect(s) on the European designated site, in view of its specific conservation objectives and qualifying features and the nature, scale and location of the potential impact should be assessed.

The findings of stage 1 are reported in a screening assessment.

3.3 Stage 2 - Appropriate Assessment

An AA is required to determine potential effects of a project upon the integrity of European sites. It should provide and analyse sufficient information to allow the competent authority to determine whether the project will or will not adversely affect the integrity of European sites. AA should exclusively focus on the qualifying features of the European site and it must consider any impacts on the conservation objectives of those qualifying interests. It should also be based on, and supported by evidence that is capable of standing up to scientific scrutiny. European Communities guidance states that without proper reasoning the assessment does not fulfil its purpose, and cannot be considered 'appropriate' and therefore cannot be consented.

In undertaking an AA, there are two phases;

- a scientific evaluation of all the likely significant effects of the project on the relevant qualifying interests of a Natura site; and
- a conclusion based on outcomes of the scientific evaluation whether the integrity of a Natura 2000 site will be compromised.

The emphasis for AA is to prove that no adverse impacts due to a project will occur which would undermine a Natura 2000 sites conservation integrity.

Site integrity can be defined as:

"*the coherence of its structure and function across its whole area that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was classified*[18]".

The assessment also takes into account any avoidance or additional measures which will be implemented to avoid or reduce the level of impact from the project. The competent authority may also consider the use of conditions or restrictions to help avoid adverse effects on site integrity.

If the AA concludes that there will be an adverse effect on the integrity of the European site, or that there is uncertainty and a precautionary approach is taken, then consent can only be granted if there

[18] European Communities (2000) Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE. EC

are no alternative solutions, Imperative Reasons of Overriding Public Interest (IROPI) is applicable and compensatory measures have been secured.

The findings of stage 2 will be reported in a Natura Impact Statement (NIS).

3.4 Stage 3 - Assessment of Alternative Solutions

All feasible alternatives have to be analysed to ensure that there are none which *"better respect the integrity of the site in question"* and its contribution to the overall coherence of the Natura 2000 network (EC, 2007). Alternatives could include the location of the site, its scale and design, and the way in which it is constructed and operated. The 'zero' option also has to be considered.

The comparisons of alternatives should not allow other assessment criteria (*e.g.* economics) to overrule ecological criteria (EC, 2007). However, the same guidance also refers to the opinion for the case C-239/04[19], where the opinion of the Advocate General was that *"the choice does not inevitably have to be determined by which alternative least adversely affects the site concerned. Instead, the choice requires a balance to be struck between the adverse effect on the integrity of the SPA and the relevant reasons of overriding public interest".*

3.5 Stage 4 - Imperative Reasons for Overriding Public Interest and Compensation Measures

Where a development has an adverse effect on the integrity of a European site and there are no alternative solutions, consent can only be granted if there are imperative reasons of overriding public interest, including those of social or economic nature which would require the realisation of a project. A definition of 'overriding public interest' does not occur in the directive, however examples considered are:

- human health, public safety or beneficial consequences of primary importance to the environment; or
- any other reasons which are considered by the Competent Authority to be IROPI taking account of the opinion of the EC; and
- if the site does not host a priority habitat or species then IROPI must be demonstrated, and the reasons can include those of a social or economic nature.

If the importance of the project is deemed to outweigh the effects which will result on the European site, and there are no alternatives, compensatory measures must be secured before consent is granted. Compensatory measures are independent of the project and are intended to offset the adverse effects of a project, corresponding specifically to the negative effects on habitats and species concerned.

To be acceptable, compensatory measures should:

- take account of the comparable proportions of habitats and species which are adversely effected;
- be within the same bio-geographical range within which the European site is located;
- provide functions which are comparable to those which justified the selection of the of the original site; and
- have clearly defined implementation and management objectives so the measures can achieve the aim of maintaining the overall coherence of the network.

[19] Commission of the European Communities V Portuguese Republic [2006] Case C.239/04

4. GUIDANCE AND SOURCES OF INFORMATION

The Proposed Development baseline has been informed by a range of published and publically available data including:

- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie;
- Online data available on European sites as held by the National Parks and Wildlife Services (NPWS) from www.npws.ie;
- Online data available on what qualifies as a rare or threatened species as held by the National Parks and Wildlife Services (NPWS) from www.npws.ie;
- Online data available on what qualifies as a rare or threatened species and on European sites as held by the National Biodiversity Data Centre from https://maps.biodiversityireland.ie/;
- Information on the status of EU protected habitats and species in Ireland (NPWS, 2013a and 2013b from www.npws.ie;
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government www.myplan.ie;
- Department of Housing, Planning and Local Government. River Basin Management Plan for Ireland 2018-2021;
- Information on water quality from the European Protection Agency website https://gis.epa.ie/EPAMaps/;
- Information on local watercourses from www.catchment.ie;
- Information on soils, geology and hydrogeology from Geoscience Survey Ireland (GSI) website www.gsi.ie;
- Information on birds of conservation concern from Birdwatch Ireland www.birdwatch.ie;
- Screening for Appropriate Assessment for Proposed Residential Development City Block 9. Dublin City Council planning application DSDZ3779/17;
- Dublin City Council planning application DSDZ3042/19 (2019); and
- Altemar Ltd. (2019) Appropriate Assessment Screening and Natura Impact Statement on behalf of Waterside Block 9 Developments Limited for the enabling works to take the level down to 16 mbgl consented under the planning condition DSDZ3042/19 (2019).

The following planning and policy documents were relevant with regards to the assessment of other plans and projects with potential for cumulative effects:

- Department of Culture, Heritage and Gaeltacht. 2017-2021. National Biodiversity Action Plan;
- National planning applications from www.myplan.ie;
- Dublin City Biodiversity Action Plan 2015-2020;
- Dublin City Development Plan 2016-2022;
- Strategic Environmental Assessment Statement for the Dublin City Development Plan 2016-2022;
- Appropriate Assessment for Dublin City Development Plan 2016-2022;
- Strategic Housing Development Applications http://www.pleanala.ie/shd/applications/index.htm; and
- Dublin City planning applications from http://www.dublincity.ie/swiftlg/apas/run/wchvarylogin.display.

A site visit was conducted by Altemar Ltd in August 2019[20]. The visit concluded that no flora, fauna or habitats of conservation importance were noted on site. No records of threatened or legally protected plant species are known to occur within the site.

[20] Altemar Ltd. (2019) Appropriate Assessment Screening and Natura Impact Statement on behalf of Waterside Block 9 Developments Limited

5. SCREENING OF EUROPEAN SITES AND FEATURES

5.1 Approach to Initial Screening

This stage is essentially a site-identification / selection process which effectively identifies all those designated sites and the relevant features which are at risk of likely significant effects (LSE), should those features be sensitive to the relevant effects.

The criteria used in this first stage of selection takes account of the location of the European sites in relation to the Proposed Development, the zone of influence (ZoI) of potential impacts associated with the Proposed Development and the ecology and distribution of qualifying features. These criteria are described in *Table 5-1*.

5.1.1 Potential Zone of Influence

In accordance with the Guidance for Planning Authorities (2010)[21], a distance of 15 km is currently recommended in the case of plans, and derives from UK guidance. For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects.

Table 5-1 Criteria Used for Initial Screening of Relevant European Sites

Criteria Used for Screening of Relevant European Sites	
1	European site with physical overlap with the Proposed Development.
2	European site with adjoining 'functionally linked habitat' with physical overlap with the Proposed Development.
3	European site with a qualifying feature located within the potential zone of influence (the ZoI) associated with the Proposed Development; the zone of influence is considered to be a radius of 15 km of the Project.
4	European site with qualifying mobile species whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) may interact with potential effects from the Proposed Development.

Details of European Protected sites initially screened in under one or more of the above criteria are provided in *Table 5-2* and illustrated in Figure 5.1 and Figure 5.2. The qualifying features for each site are detailed, using publically available information obtained from the NPWS[22], National Biodiversity Data Centre[23] and EPA[24] websites.

[21] Environment, Heritage and Local Government. (2010) Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.

[22] National Parks and Wildlife Services (NPWS) www.npws.ie accessed 15.11.2019.

[23] National Biodiversity Data Centre : https://maps.biodiversityireland.ie/ accessed 15.11.2019.

[24] European Protection Agency website https://gis.epa.ie/EPAMaps/ accessed 15.11.2019.

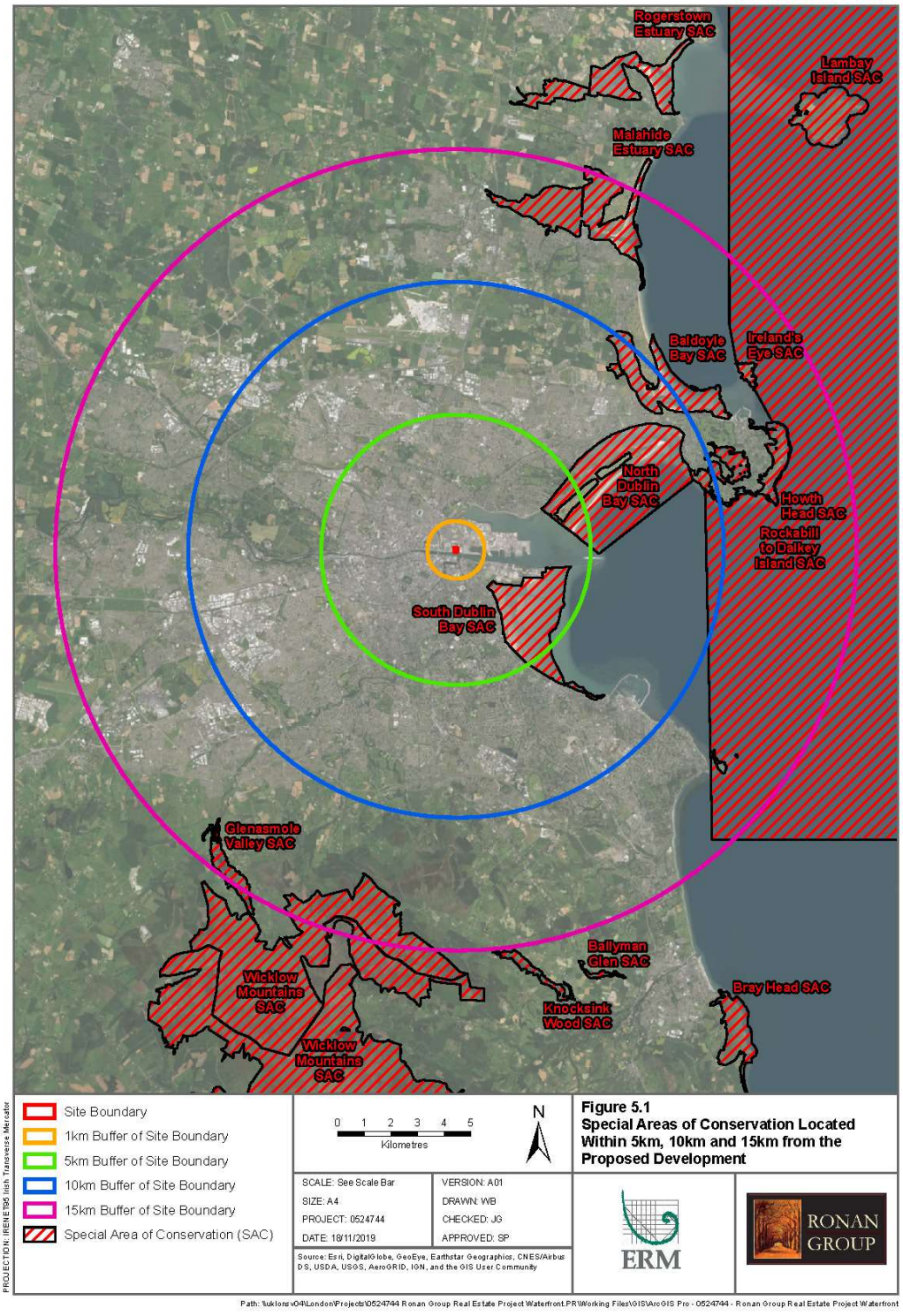

Figure 5.1 Special Areas of Conservation located within 15 km of the Proposed Development

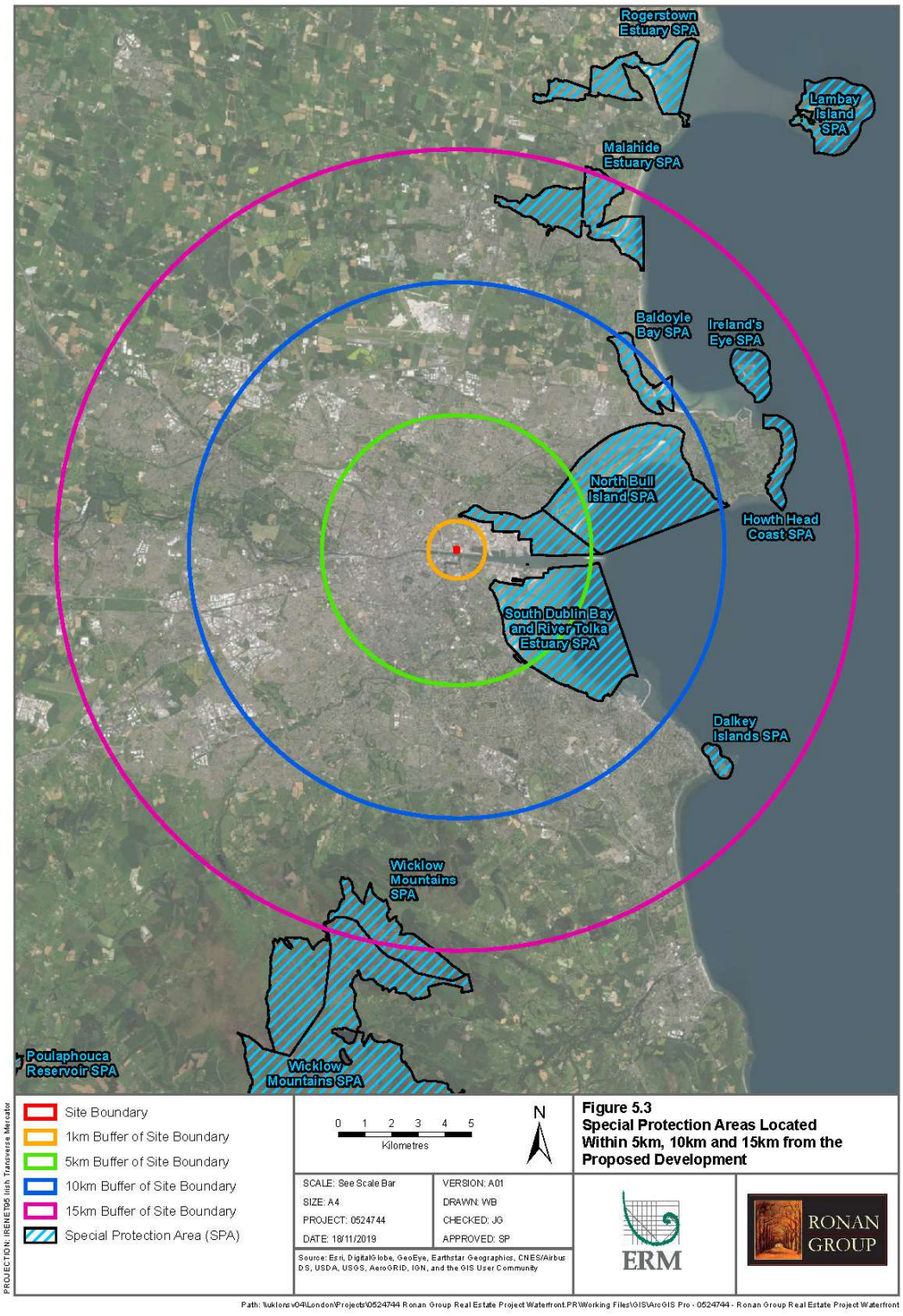

Figure 5.2 Special Protection Areas located within 15 km of the Proposed Development

Table 5-2 Initial Screening of Relevant European Sites

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
Special Area of Conservation (SAC)			
South Dublin Bay SAC (000210)	741.8	1.8 south-east	Conservation Objectives[25]: To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC, which is defined by the following list of targets: ■ The permanent habitat area is stable or increasing, subject to natural processes. ■ 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. Feature of Interest: 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 2110 Embryonic shifting dunes
North Dublin Bay SAC (000206)	1474.4	3.5 north-east	Conservation Objectives[2627]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. Features of Interest: 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)1395 Petalwort (*Petalophyllum ralfsii)*

[25] NPWS. (2013) South Dublin Bay SAC (site code: 0210) Conservation objectives supporting document - Marine Habitat

[26] NPWS. (2013) North Dublin Bay SAC (site code 206) Conservation objectives supporting document - Marine Habitat

[27] NPWS. (2013) North Dublin Bay SAC (site code 206) Conservation objectives supporting document – Coastal Habitats

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
			1410 Mediterranean salt meadows (*Juncetalia maritimi*) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with *Ammophila arenaria* 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 2190 Humid dune slacks
Baldoyle Bay SAC (000199)	538.7	8.8 north	Conservation Objectives[28]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. Features of Interest: 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (Glauco - Puccinellietalia maritimae) 1410 Mediterranean salt meadows (Juncetalia maritimi)(MSM) The following habitats were recorded during the Coastal Monitoring Project (Ryle et al., 2009)[29] but they are not listed in the qualifying interests for the site: 1210 Annual vegetation of drift lines 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with Ammophila arenaria (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation 2190 Humid dune slacks
Howth Head SAC (000202)	373.7	9.2 north-east	Conservation Objectives[30]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. Features of Interest:

[28] NPWS. (2012) Baldoyle Bay SAC (site code: 199) Conservation objectives supporting document - Marine Habitats

[29] Ryle. T, Murray. A, Connool. K and Swann. M. (2009). Coastal Monitoring Project 2004-2006. NPWS

[30] NPWS. (2013) Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document - Marine Habitat and Species

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
			1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 4030 European dry heaths
Rockabill to Dalkey Island SAC (003000)	27313.9	9.5 east	Conservation Objectives[31]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. Features of Interest: 1170 Reefs 1351 Harbour porpoise (*Phocoena phocoena)*
Malahide Estuary SAC (000205)	809.3	11.9 north	Conservation Objectives[32]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. Features of Interest and targets: 1140 Mudflats and sandflats not covered by seawater at low tide. 1310 Salicornia and other annuals colonising mud and sand 1320 Spartina swards (*Spartinion maritimae*) As outlined in NPWS (2013) it will not be necessary to assess the likely effects of plans or projects against this Annex I habitat at this site. 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1410 Mediterranean salt meadows (*Juncetalia maritimi*) 2120 Shifting dunes along the shoreline with white dunes *(Ammophila arenaria*) 2130 Fixed coastal dunes with herbaceous vegetation

[31] NPWS. (2013) Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document - Marine Habitat and Species

[32] NPWS. (2013) Malahide Estuary SAC (site code: 205) Conservation objectives supporting document - Marine Habitats

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
Ireland's Eye SAC (002193)	41.8	12.6 north-east	Conservation Objectives[33]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. Features of Interest: 1220 Perennial vegetation of stony banks 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
Wicklow Mountains SAC (002122)	32931.4	12.7 south	Conservation Objectives[34]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. 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; ■ 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. Features of Interest: 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with Erica tetralix 4030 European dry heaths 4060 Alpine and Boreal heaths 6130 Calaminarian grasslands of the *Violetalia calaminariae* 6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)* 7130 Blanket bogs (* if active bog)

[33] NPWS. (2017) Ireland's Eye SAC (site code: 002193) Conservation objectives supporting document – Coastal Habitats

[34] NPWS. (2017) Wicklow Mountains SAC (site code 002122) Conservation objectives supporting document - blanket bogs and associated habitats

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
			8110 Siliceous scree of the montane to snow levels (*An*drosacetalia alpinae and *Galeopsietalia ladani*)
Glenasmole Valley SAC (001209)	149.2	13.5 south-west	Conservation Objectives[35]: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the SAC has been selected. 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; ■ 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. Features of Interest: 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (* important orchid sites)* 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7220 Petrifying springs with tufa formation (Cratoneurion)* * denotes a priority habitat
Special Protection Area (SPA)			
South Dublin Bay and River Tolka Estuary SPA (004024)	2193.2	1.2 south-east	Conservation Objectives[36]: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Features of Interest: A046 Light-bellied Brent Goose (*Branta bernicla hrota*)

[35] NPWS (2018) Conservation objectives for Glenasmole Valley SAC [001209]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

[36] NPWS. (2014) North Bull Island Special Protection Area (Site Code 4006) and South Dublin Bay and River Tolka Estuary Special Protection Area (Site Code 4024) Conservation objectives supporting document - Marine Habitat

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
			A130 Oystercatcher (*Haematopus ostralegus*) A137 Ringed Plover (*Charadrius hiaticula*) A141 Grey Plover (*Pluvialis squatarola*) A143 Knot (*Calidris canutus*) A144 Sanderling (*Calidris alba*) A149 Dunlin (*Calidris alpina*) A157 Bar-tailed Godwit (*Limosa lapponica*) A162 Redshank (*Tringa totanus*) A179 Black-headed Gull (*Chroicocephalus ridibundus*) A192 Roseate Tern (*Sterna dougallii*) A193 Common Tern (*Sterna hirundo*) A194 Arctic Tern (*Sterna paradisaea*)
North Bull Island SPA [004006]	1943.5	3.6 North-east	Conservation Objective: The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Features of Interest: A999 Wetlands A046 Light-bellied Brent Goose (*Branta bernicla hrota*) A048 Shelduck (*Tadorna tadorna*) A052 Teal (*Anas crecca*) A054 Pintail (*Anas acuta*) A056 Shoveler (*Anas clypeata*) A130 Oystercatcher (*Haematopus ostralegus*) A140 Golden Plover (*Pluvialis apricaria*) A141 Grey Plover (*Pluvialis squatarola*) A143 Knot (*Calidris canutus*) A144 Sanderling (*Calidris alba*) A149 Dunlin (*Calidris alpina alpine*)

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
			A156 Black-tailed Godwit (*Limosa limosa*) A157 Bar-tailed Godwit (*Limosa lapponica*) A160 Curlew (*Numenius arquata*) A162 Redshank (*Tringa tetanus*) A169 Turnstone (*Arenaria interpres*) A179 Black-headed Gull (*Chroicocephalus ridibundus*)
Baldoyle Bay SPA (004016)	262.7	8.8 north-east	Conservation Objectives[37]: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Features of Interest: A999 Wetlands A046 Brent Goose (*Branta bernicla hrota*) A048 Shelduck (*Tadorna tadorna*) A137 Ringed Plover (*Charadrius hiaticula*) A140 Golden Plover (*Pluvialis apricaria*) A141 Grey Plover (*Pluvialis squatarola*) A157 Bar-tailed Godwit (*Limosa lapponica*)
Ireland's Eye SPA (004117)	214.4	11 north-east	Conservation Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Features of Interest: A017 Cormorant (*Phalacrocorax carbo*) A184 Herring Gull (*Larus argentatus*) A188 Kittiwake (*Rissa tridactyla*) A199 Guillemot (*Uria aalge*) A200 Razorbill (*Alca torda*)

[37] NPWS. (2013) Baldoyle Bay Special Protection Area (site code: 4016) Conservation objectives supporting document – Version 1

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
Howth Head Coast SPA (004113)	207.7	11.8 north-east	Conservation Objective[38]: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Features of Interest: A188 Kittiwake (*Rissa tridactyla*)
Dalkey Islands SPA (004172)	83	11.9 south-east	Conservation Objectives: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Features of Interest: A192 Roseate Tern (*Sterna dougallii*) A193 Common Tern (*Sterna hirundo*) A194 Arctic Tern (*Sterna paradisaea*)
Broadmeadow/Swords SPA (004025)	764.6	12.7 north	Conservation Objectives: The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Objective 1: To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for Broadmeadow Swords Estuary SPA. Objective 2: To maintain the favourable conservation condition of the wetland habitat at Broadmeadow Swords Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. Features of Interest: A999 Wetlands A005 Great Crested Grebe (*Podiceps cristatus*)

[38] NPWS (2018) Conservation objectives for Howth Head Coast SPA [004113]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht

European Site Name (Site Code)	Area (ha)	Approximate Distance From Proposed Development (km)	Conservation Objectives And Qualifying Features Of Interest
			A046 Brent Goose (*Branta bernicla hrota*) A048 Shelduck (*Tadorna tadorna*) A054 Pintail (*Anas acuta*) A067 Goldeneye (*Bucephala clangula*) A069 Red-breasted Merganser (*Mergus serrator*) A130 Oystercatcher (*Haematopus ostralegus*) A140 Golden Plover (*Pluvialis apricaria*) A141 Grey Plover (*Pluvialis squatarola*) A143 Knot (*Calidris canutus*) A149 Dunlin (*Calidris alpina alpine*) A156 Black-tailed Godwit (*Limosa limosa*) A157 Bar-tailed Godwit (*Limosa lapponica*) A162 Redshank (*Tringa tetanus*)
Wicklow Mountains SPA (004040)	30014.3	13.1 south	Conservation Objectives: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Features of Interest: A098 Merlin (*Falco colombarius*) A103 Peregrine (*Falco peregrinus*)

5.2 Impacts and Effects Considered in Assessment

The potential impacts and thus effects upon European site(s) as a result of the Proposed Development that have been considered within this AA screening are listed in the following sections.

Potential impacts of the Proposed Development are listed below:

- direct loss or degradation of sensitive habitat, including habitats which are the interest features of designated sites;
- indirect loss or degradation of sensitive habitats, for example due to hydrological changes due to interference with the groundwater supply to Ground Water Dependent Terrestrial Ecosystems;
- direct mortality of protected species through traffic collisions;
- habitat fragmentation and severance due to access tracks and water crossings;
- degradation to aquatic habitat due to accidental pollution and siltation, e.g. through run-off;
- disturbance to protected species due to noise, light and human presence; and
- spread of invasive non-native species.

Potential effects on ornithology are considered to comprise:

- direct loss and fragmentation of bird habitats due to ‘land take’;
- modification of bird habitats due to hydrological change;
- indirect loss of bird habitats due to the displacement of birds (disturbance and / or displacement) by construction works and operation;
- potential barrier effects as a result of the presence of infrastructure; and
- accidental mortality due to collision with project infrastructure.

All other impacts arising from the Proposed Development are considered not likely to have significant effects due to the lack of connectivity and / or distance, such that there is no pathway of effect between the Proposed Development and the European sites.

6. DETERMINATION OF LIKELY SIGNIFICANT EFFECTS

6.1 Introduction

The Zone of Influence (ZoI) of the Proposed Development is assumed to be restricted to the site outline and reach of the tower cranes beyond this, with potential for localised noise and light impacts as well as general disturbance through activity levels during construction.

There is no direct hydrological connection to the Natura 2000 sites. However, there is an indirect connection to the Dublin Bay Natura 2000 sites via the surface water network to the River Liffey and foul networks via Ringsend Waste Water Treatment Plant (WWTP). Drainage from site, both foul and surface water, during construction and human presence are considered as external outputs from the site that could potentially extend the ZoI. Therefore, only the Natura 2000 sites with qualifying interests, which are potentially linked to the Proposed Development, will be taken forward in this report. These sites are as follows:

- South Dublin Bay SAC;
- North Dublin Bay SAC;
- South Dublin Bay and River Tolka Estuary SPA; and
- North Bull Island SPA.

The remaining sites have no hydrological connection or other pathway to the Proposed Development and have been screened out at this stage.

The European sites, listed above are screened in for assessment of likely significant effects (LSE) and documented in *Table 6-1*. These sites were selected for screening using the criteria outlined in *Table 5-1*. Therefore, there is a need to consider the potential for LSE on these sites in relation to the Proposed Development.

In addition, in Section 5.2, the likely effects that may result during construction, operation and maintenance of the Proposed Development (and are relevant to the receptors being considered here) are identified to enable these to be considered. This section combines that information for the Proposed Development alone and presents the assessment of LSE, thus providing the necessary information for Stage 1 of the Habitats Regulations Assessment process.

The assessment of LSE is based on the Proposed Development's current understanding of the baseline environment and the scope and nature of the proposed project activities, together with the relevant information available for the designated sites. Consultee and advisor responses to this document, and refinements to the Proposed Development design may change this assessment.

6.2 Assessment of Likely Significant Effects (LSE)

The assessment and conclusions with regards to LSEs on designated sites with possible hydrological connectivity and the relevant features identified has been carried out taking account of the ZoI of potential impacts, location of the European site under consideration and (where known) the distribution of qualifying features in relation to the Project. The information is presented below in *Table 6-1*.

Table 6-1 Assessment of Likely Significant Effects

Designated Site	Features Screened In	Potential Impact	Consideration of LSE	Conclusion of LSE
South Dublin Bay SAC (000210)	1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 2110 Embryonic shifting dunes	Indirect loss or degradation of sensitive habitats	South Dublin Bay SAC is located c. 1.8 km south-east of the Proposed Development, there are no likely significant effects at this distance from the Proposed Development.	No LSE
		Degradation to aquatic habitat due to accidental pollution and / or siltation	*Construction phase* There is no direct hydrological link. However, contamination has been recorded on site and there is an indirect connection to the River Liffey via surface water drainage into the Ringsend Waste Water Treatment Plant during construction. Under the precautionary principle there is potential for impact on features of interest without the use of additional measures. *Operational phase* Surface water arising on site during the operational phase will be collected and stored on site before being discharged through the existing surface water system on Castleforbes Road. The foul water on site during the operational phase will be collected and discharged to the public combined sewer located on Castleforbes Road. There are no likely significant effects during the operational phase.	LSE No LSE
North Dublin Bay SAC (000206)	1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Indirect loss or degradation of sensitive habitats	North Dublin Bay SAC is located c. 3.5 km north-east of the Proposed Development, there are no likely significant effects at this distance from the Proposed Development.	No LSE
		Degradation to aquatic habitat due to accidental pollution and / or siltation	*Construction phase* There is no direct hydrological link. However, contamination has been recorded on site and there is an indirect connection to the River Liffey via surface water drainage during construction. Under the precautionary principle there is potential for impact on features of interest without the use of additional measures. *Operational phase*	LSE

Designated Site	Features Screened In	Potential Impact	Consideration of LSE	Conclusion of LSE
	1395 Petalwort (*Petalophyllum ralfsii)* 1410 Mediterranean salt meadows (Juncetalia maritimi) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with *Ammophila arenaria* 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 2190 Humid dune slacks		Surface water arising on site during the operational phase will be collected and stored on site before being discharged through the existing surface water system on Castleforbes Road. The foul water on site during the operational phase will be collected and discharged to the public combined sewer located on Castleforbes Road. There are no likely significant effects during the operational phase.	No LSE
South Dublin Bay and River Tolka Estuary SPA (004024)	A046 Light-bellied Brent Goose (Branta bernicla hrota) A130 Oystercatcher (Haematopus ostralegus) A137 Ringed Plover (Charadrius hiaticula) A141 Grey Plover (Pluvialis squatarola) A143 Knot (Calidris canutus) A144 Sanderling (Calidris alba) A149 Dunlin (Calidris alpina)	Direct habitat loss and fragmentation	The Proposed Development does not physically overlap this SPA. Therefore there will be no loss of habitat within the SPA. The Proposed Development is located c. 1.2 km north of this SPA. The landscape between the SPA and the Proposed Development comprises urban habitat. There are no waterbodies or other suitable habitats on site for the bird species (Features of Interest) that could be affected by the Proposed Development. Therefore, there will be no likely significant effect.	No LSE
		Modification of habitats due to hydrological change	There is a no direct hydrological link. However, contamination has been recorded on site and there is an indirect connection to the River Liffey via surface water drainage during construction. Under the precautionary principle there is potential for impact on features of interest without the use of additional measures.	LSE
		Indirect loss of bird habitats due to the displacement of birds (disturbance and / or	The Proposed Development is located c. 1.2 km north of this SPA. The closest recorded QI species is that of brent geese within Alexandra Basin, within Dublin Docks, located c. 500 m east of the site. There are no suitable breeding, feeding or roosting habitats on the Proposed Development site.	No LSE

Designated Site	Features Screened In	Potential Impact	Consideration of LSE	Conclusion of LSE
	A157 Bar-tailed Godwit (Limosa lapponica) A162 Redshank (Tringa totanus) A179 Black-headed Gull (Chroicocephalus ridibundus) A192 Roseate Tern (Sterna dougallii) A193 Common Tern (Sterna hirundo) A194 Arctic Tern (Sterna paradisaea)	displacement) by construction works and operation	The River Liffey provides suitable habitat for these QI species; however the stretch of the river adjacent to the site does not support suitable feeding or roosting habitat. This section of the river bank is a vertical brick wall with a pontoon in front (refer to Figure 1) and is an active, busy section and set to get busier with the re-introduction of a water taxi from February 2020. Small numbers of QI bird species could be displaced from this stretch of the river as a result of disturbance from the 60 m jib radius / boom reach of the crane towers and the noise and light disturbance during construction. However, given this stretch is not suitable for feeding or roosting and that there are vast areas of more suitable habitat elsewhere on the river and in Dublin Bay; there will be no likely significant effects on this SPA.	No LSE
		Accidental mortality due to construction works and operation	The Proposed Development does not physically overlap this SPA and no construction activity is proposed within the boundary. Therefore, it can be concluded that there will be no likely significant effect.	No LSE
		Disturbance to protected species due to noise, light and human presence	The Proposed Development is located c. 1.2 km north of this SPA The closest recorded QI is that of Brent Geese within Alexandra Basin, within Dublin Docks, located c. 500 m east of the site. There are no suitable breeding, feeding or roosting habitats on the Proposed Development site. The River Liffey provides suitable habitat for these QI species; however the stretch of the river adjacent to the site does not support suitable feeding or roosting habitat. This section of the river bank is a vertical brick wall with a pontoon in front (refer to Figure 1) and is an active, busy section and set to get busier with the re-introduction of a water taxi from February 2020. Considering the jib radius / boom reach of the crane towers is limited to 60 m, along with the noise and light disturbance being kept, as much as possible, within the site boundary through standard construction practices, and the distance between the Proposed Development and Alexandra Basin,	No LSE

Designated Site	Features Screened In	Potential Impact	Consideration of LSE	Conclusion of LSE
			with significant urban infrastructure and Dublin port between the site and the SPA. Therefore, there will be no likely significant effects. Small numbers of QI bird species could be displaced from this stretch of the river as a result of disturbance from the noise, light and human presence. However, given this stretch is not suitable for feeding or roosting and that there are vast areas of more suitable habitat elsewhere on the river and in Dublin Bay; there will be no likely significant effects on this SPA.	
		Potential barrier effects as a result of the presence of infrastructure	As a static structure, the Proposed Development is not considered to be a significant barrier to the movement of these species. Therefore, there will be no likely significant effects.	No LSE
North Bull Island SPA (0040060)	A999 Wetlands	Indirect loss or degradation of sensitive habitats	North Bull Island SPA is located c. 3.6 km north-east of the Proposed Development. The significant distance between the outfall of surface water runoff and the European site, means that it is unlikely that sediments or pollutants from the Proposed Development are likely to result in any likely significant effects.	No LSE
		Degradation to aquatic habitat due to accidental pollution and / or siltation	*Construction phase* There is a no direct hydrological link. However, contamination has been recorded on site and there is an indirect connection to the River Liffey via surface water drainage during construction. Under the precautionary principle there is potential for impact on features of interest without the use of additional measures. *Operational phase* Surface water arising on site during the operational phase will be collected and stored on site before being discharged through the existing surface water system on Castleforbes Road.	LSE No LSE

Designated Site	Features Screened In	Potential Impact	Consideration of LSE	Conclusion of LSE
			The foul water on site during the operational phase will be collected and discharged to the public combined sewer located on Castleforbes Road. There are no likely significant effects during the operational phase.	
	A046 Light-bellied Brent Goose (*Branta bernicla hrota*) A048 Shelduck (*Tadorna tadorna*) A052 Teal (*Anas crecca*) A054 Pintail (*Anas acuta*) A056 Shoveler (*Anas clypeata*) A130 Oystercatcher (*Haematopus ostralegus*) A140 Golden Plover (*Pluvialis apricaria*) A141 Grey Plover (*Pluvialis squatarola*) A143 Knot (*Calidris canutus*) A144 Sanderling (*Calidris alba*) A149 Dunlin (*Calidris alpina alpine*) A156 Black-tailed Godwit (*Limosa limosa*) A157 Bar-tailed Godwit (*Limosa lapponica*)	Direct habitat loss and fragmentation	The Proposed Development does not physically overlap this SPA. Therefore there will be no loss of habitat within the SPA. The Proposed Development is located c. 3.6 km north-east of this SPA. The landscape between the SPA and the Proposed Development comprises urban habitat and Dublin port. There are no waterbodies or other suitable habitats on site for the bird species (Features of Interest) that could be affected by the Development. Therefore, there will be no likely significant effect.	No LSE
		Modification of habitats due to hydrological change	There is a no direct hydrological link. However, contamination has been recorded on site and there is an indirect connection to the River Liffey via surface water drainage during construction. Under the precautionary principle there is potential for impact on features of interest without the use of additional measures.	LSE
		Indirect loss of bird habitats due to the displacement of birds (disturbance and / or displacement) by construction works and operation	The Proposed Development is located c. 3.6 km south-west of this SPA. The closest recorded QI species is that of Brent Geese within Alexandra Basin, within Dublin Docks, located c. 500 m east of the site. There are no suitable breeding, feeding or roosting habitats on the Proposed Development site. The River Liffey provides suitable habitat for these QI species; however the stretch of the river adjacent to the site does not support suitable feeding or roosting habitat. This section of the river bank is a vertical brick wall with a pontoon in front (refer to Figure 1) and is an active, busy section and set to get busier with the re-introduction of a water taxi from February 2020. Small numbers of QI bird species could be displaced from this stretch of the river as a result of disturbance from the 60 m jib radius / boom reach of the crane towers and the noise and light disturbance during construction. However, given this stretch is not suitable for feeding or roosting and that	No LSE

Designated Site	Features Screened In	Potential Impact	Consideration of LSE	Conclusion of LSE
	A160 Curlew (*Numenius arquata*) A162 Redshank (*Tringa tetanus*) A169 Turnstone (*Arenaria interpres*) A179 Black-headed Gull (*Chroicocephalus ridibundus*)		there are vast areas of more suitable habitat elsewhere on the river and in Dublin Bay; there will be no likely significant effects on this SPA.	
		Accidental mortality due to construction works and operation	The Proposed Development does not physically overlap this SPA and no construction activity is proposed within the boundary. Therefore, it can be concluded that there will be no likely significant effect.	No LSE
		Disturbance to protected species due to noise, light and human presence	The closest recorded QI species is that of Brent Geese within Alexandra Basin, within Dublin Docks, located c. 500 m east of the site. There are no suitable breeding, feeding or roosting habitats on the Proposed Development site. The River Liffey provides suitable habitat for these QI species; however the stretch of the river adjacent to the site does not support suitable feeding or roosting habitat. This section of the river bank is a vertical brick wall with a pontoon in front (refer to Figure 1) and is an active, busy section and set to get busier with the re-introduction of a water taxi from February 2020. Small numbers of QI bird species could be displaced from this stretch of the river as a result of disturbance from the 60 m jib radius/ boom reach of the crane towers and the noise and light disturbance during construction. However, given this stretch is not suitable for feeding or roosting and that there are vast areas of more suitable habitat elsewhere on the river and in Dublin Bay; there will be no likely significant effects on this SPA.	No LSE
		Potential barrier effects as a result of the presence of infrastructure	As a static structure, the Proposed Development is not considered to be a significant barrier to the movement to these species. Therefore, there will be no likely significant effects.	No LSE

The stage 1 screening assessment of LSE on QI within the European sites has concluded that there is potential relevant effect due to “Degradation to aquatic habitat due to accidental pollution and / or siltation” and “Modification of habitats due to hydrological change”. It has concluded that although there is no direct hydrological link, contamination has been recorded on site and there is an indirect connection to the River Liffey via surface water drainage during construction. Under the precautionary principle there is potential for likely significant effects on features of interest without the use of mitigation measures. These sites will be taken forward for further assessment in Stage 2.

6.3 In Combination Assessment

Other projects currently within the planning system which have the potential to contribute toward in combination effects on the same Natura 2000 sites likely to be affected by the Proposed Development were considered. This area of Dublin City is currently undergoing redevelopment, where derelict brownfield sites with significant hardstanding areas are being revitalised.

Due to the number and scale of projects and plans that have been completed and approved, but uncompleted within the Dublin City area, only the projects adjacent to the Proposed Development, in Zone Z14[39] of the Dublin City Development Plan 2016-2022, have been identified within this report for in combination effects.

A preliminary list of projects with the potential to contribute towards in combination effects is provided in *Table 6-2*.

Table 6-2 Details of Developments Considered for In Combination Assessment

Development	Distance (m) and Direction	Planning Reference and Description
Strategic Housing Development	250 west	DSDZ2896/18 Construction of 325 no. residential units and apart hotel in 2. blocks; - Block 1 to the north of the site will be 7 storeys in height (max 31.5 m) and will comprise of 211 no. units in total (73 no. 1 bed and 138 no. 2 bed) all with associated private terraces/balconies to all elevations. Block 1 will also include the provision of a communal open space courtyard, reception/concierge, back of house area and internal communal space associated with the residential development at ground floor level, and communal amenity space at 6th floor level.
Strategic Housing Development	150 west	DSDZ2464/19 The construction of 6 no. residential blocks, ranging from 2 to 7 storeys over partial single level basement (gross floor area c. 36,834.2 sq. m excluding basement c. 5,369 sq. m), to accommodate 449 residential units comprising 59 1-bed studios, 166 1-bed apartments, 215 2-bed apartments, 2 3-bed apartments and 7 3-bed houses. The development provides for Tenant Amenity area (c. 766 sq. m gfa) and a cafe (c. 109 sq. m gfa).
Amendment to existing Strategic Housing Development	10 west	DSDZ4148/19 The development will consist of amendments to Block E permitted under Dublin City Council Reg. Ref. DSDZ3552/16 and DSDZ3350/15 as amended by Reg.Refs. DSDZ4064/17, DSDZ2352/18, DSDZ2489/18 and DSDZ4701/18. The proposed amendments relate to building E02 only. The development will consist of: the reconfiguration of 2 permitted mixed-use (café/deli, classes 1, 2 and 8) units (unit 03 (95sq.m.) and unit 02 (125sq.m.)) into 3

[39] European Protection Agency website https://gis.epa.ie/EPAMaps/ accessed 15.11.2019

Development	Distance (m) and Direction	Planning Reference and Description
		mixed-use units of 50sq.m. 81sq.m. and 85sq.m to become unit 2a, unit 2b and unit 3 respectively; extension to permitted mixed-use (café/deli, classes 1, 2 and 8) unit (unit 04) by 20sq.m to become 180sq.m. Modifications to entrances, glazing, signage and internal walls layout of subject units to reflect the proposed amendments; and all associated development works; all on a site of c. 3,745sq.m (c.0.37 ha).
Commercial Development	30 north-west	DSDZ4087/19 The development consists of 2 commercial blocks over 2 level basement (45,328 sq.m. gross floor area - inclusive of basement) in the following arrangement: - Building 1 (Block 3E): is a part 5 storey, part 6 storey block above ground building (with 5th floor set back) of c. 11,851 sq.m gross floor area of predominantly office floor space.

The developments in *Table 6-2* have undergone an AA screening and concluded that the development was not likely to have significant effects either alone or in combination with other plans at the time of submission.

Potential cumulative impacts on the River Liffey and Dublin Bay due to accumulation of pollutants entering the riverine system and cumulative effects of proposed plans and projects within the Dublin City Development Plan 2016-2022, Dún Laoghaire-Rathdown County Development Plan 2016-2022, Fingal Development Plan 2011-2017, and other county-level land use plans which can influence conditions in Dublin Bay via rivers and other surface water features. Nonetheless, no significant cumulative effects are predicted on the following basis:

- There was no proven link between WWTP discharges and nutrient enrichment of sediments in Dublin Bay based on analyses of dissolved and particulate Nitrogen signatures (Wilson and Jackson, 2011)[40];
- Enriched water entering Dublin Bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of bay water (O'Higgins and Wilson, 2005)[41];
- Marine modelling for Ringsend WWTP indicates that discharged effluent is rapidly mixed and dispersed to low levels via tidal mixing within a short distance of the outfall pipe (Dowly and Bedri 2007)[42]; and

[40] Wilson, J.G. and Jackson, A. (2011) Upgrading of Dublin Sewage Treatment Plant: N sources for the macroalga Ectocarpus. Unpublished report to Dublin City Council. Trinity College Dublin.

[41] O'Higgins T.G. and Wilson J.G. (2005) Impact of the River Liffey discharge on nutrient and chlorophyll concentrations in the Liffey Estuary and Dublin Bay (Irish Sea). Estuarine and Coastal, Shelf Science, 64, 323- 334

[42] Dowly, A. and Bedri, Z. (2007) Modelling of Ringsend Discharge. Report commissioned by EPA in association with IPPC licencing for Ringsend WwTW. [Available online at: http://www.epa.ie/licences/lic_eDMS/090151b280269ef8.pdf

- Recent modelling of water quality in Dublin Bay for the Ringsend WWTP Upgrade Project demonstrates that the effects of nutrients from Ringsend WWTP are largely confined to the area between the South Wall and the Tolka Estuary (Irish Water, 2018)[43].

[43] TJ O'Connor and Associates Consulting Engineers, Barry and Partners Consulting Engineers and Royal Haskoning DHV (2018). Ringsend Wastewater Treatment Plant Upgrade Project Environmental Impact Assessment Report. Water Quality. Irish Water. Available online at https://www.ringsendwwtpupgrade.ie/planning-sites/ringsend-planning/docs/environmental-documents/volume-3a/180601_RGD-Planning-App-EIAR-Vol-3-Part-A.pdf

7. SCREENING CONCLUSION

The Proposed Development is not connected with or is necessary to the management of any European sites.

Although there are no direct source pathways between the Proposed Development and the assessed European sites, under the precautionary principle the contamination on site may have the potential for impact on the features of interest, during the construction phase, via the indirect hydrological connection of surface water to the River Liffey, for the following Natura 2000 sites (without the use of additional measures):

- South Dublin Bay SAC;
- North Dublin Bay SAC;
- South Dublin Bay and River Tolka Estuary SPA; and
- North Bull Island SPA.

Contamination has been noted on site. Additional measures are proposed during construction to avoid impact on the European sites. A Stage 2 AA (NIS) of the Proposed Development is required as it cannot be excluded, on the basis of objective information (without the use of additional measures), that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site. The proposed additional measures are outlined in the NIS (Section 8).

8. NATURA IMPACT STATEMENT

8.1 Introduction

A Natura Impact Statement (NIS) is Stage 2 of the Appropriate Assessment process. In the case of the Proposed Development, as a result of contamination noted on site and the additional embedded construction measures proposed in the construction management plan[44] a NIS is required. Stage 1 concluded that the Proposed Development cannot be excluded, on the basis of objective information (without the use of additional measures), individually or in combination with other plans or projects, will have a significant effect on the following Natura 2000 sites:

- South Dublin Bay SAC;
- North Dublin Bay SAC;
- South Dublin Bay and River Tolka Estuary SPA; and
- North Bull Island SPA.

The NIS evaluates the potential for direct and / or indirect effects, alone or in combination with other plans and projects having taken into account the use of additional measures.

8.2 Summary of Site Related Information

South Dublin Bay SAC

South Dublin Bay is a coastal system characterised by incipient sand dunes as well as extensive sand and mud flats. This site possesses intertidal flats, extending for a distance of c. 5 km from the South Wall at Dublin Port to the West Pier at Dun Laoghaire. The maximum width that these flats can extend to is almost 3 km. The low tide mark indicates the seaward boundary as opposed to the almost completely artificially embanked landward boundary. Numerous small streams and drains flow into the area alongside several permanent channels, the largest namely being Cockle Lake[37].

The predominant sediment type in the area is sand, with the more sheltered areas consisting more of muddy sands. The changes in tide influence the activities at South Dublin Bay, with the inner parts largely being used for amenity purposes in the south bay, whereas wind-surfing and jet-surfing become common in areas at high tide. Bait-digging on the sandy flats is also a regular activity[36]. The sites relatively high level of popularity as a recreational area is mostly due to its proximity to Dublin City, in addition to having high importance for both educational and research purposes[37].

This site is of significant importance in regards to waterfowl and birds. Studies have shown a number of bird populations including oystercatcher (1,215), ringed plover (120), sanderling (344), dunlin (2,628) and redshank (356) commute regularly between both the north and south bay, although spend the majority of time in the south. The diversity of bird species can vary seasonally, for example in winter up to 100 turnstones can be found in the south bay. Autumn, in comparison, is an important period for tern roosts, such as roseate terns. This species is listed on the Annex I of the EU Birds Directive and regularly holding around 2000-3000 terns[45].

[44] PJ Hegarty & Sons (2020). *Outline Construction Management Plan for Waterfron South Central Residential Development, North Wall Quay, Dublin 1.* PJ Hegarty & Sons, Dublin.

[45] NPWS (2015) Site Synopsis: South Dublin Bay SAC 000210. Revision 15. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

A typical macro-invertebrate fauna also exists at South Dublin Bay. Notably, it has the largest stand of Zostera on the east coast, which is of vital importance in supporting the wintering waterfowl populations[46]. Full site synopsis of South Dublin Bay SAC can be located in Appendix A.

North Dublin Bay SAC

North Dublin Bay comprises an extensive diversity of coastal habitats. One such area of notable importance is the North Bull Island dune system lying on the east coast. It is one of the few systems within the Irish region that is actively accreting, possessing mostly good quality and widespread examples of embryonic, shifting marram and fixed dunes. Moreover, excellent examples of humid dune slacks in addition to both Mediterranean and Atlantic salt marshes are also well represented in this area. Good marsh zonation is exhibited, with the salt marshes grading onto mudflats and sandflats. Annual Salicornis species are known to dominate these areas with *Petalophyllum ralfsii* occurring at its only known station away from the western seaboard[39].

This site is further characterised by the relatively recent depositional feature of the North Bull Island sand spit. Its formation is the result of improvements to the Dublin Port during the 18th and 19th centuries, with a length of almost 5 km and a width of 1 km. It runs parallel between the Clontarf and Sutton coastline, with a predominantly glacial origin of the sediment and siliceous in nature. Two sheltered intertidal areas, separated by a solid causeway, are of note between the island and the mainland as well as a fine sandy beach on the seaward side. A considerable area of shallow marine water can also be found within the North Dublin Bay area[39].

North Dublin Bay is a coastal site of significant ecological importance containing examples of nine habitats listed in Annex I of the EU Habitats Directive, one of which is listed with priority status. Several populations of wintering bird species and a three insect species are of international and national importance respectively[38]. In regards to birds, the site is of notable importance for wintering waterfowl in Ireland including populations of pale-bellied brent goose, red knot and bar-tailed godwit. A further 14 species are regarded as having national importance with 20% of the national total of grey plover also occurring at this site[39]. Furthermore, the site also contains both rare and scarce species of plants, a number of which are legally protected[47]. For example, this site is known to contain five Red Data Book vascular plants species and four Red Data Book bryophyte species[48]. Full site synopsis for the North Dublin Bay SAC can be located in Appendix A of this document.

South Dublin Bay and River Tolka Estuary SPA

South Dublin Bay and River Tolka Estuary SPA is highly regarded for its ornithological importance both internationally and nationally. Its international importance stems through supporting populations of light-bellied brent goose in addition to its passage / staging site for three tern species. Nationally important species at this site include a further nine wintering species and a colony of breeding common tern. Common tern, in conjunction with the bar-tailed godwit, Arctic tern and roseate tern are listed on the Annex I of the EU Birds Directive. Two of these species are of particular note to the Proposed Development, the Artic and common tern, with both breeding on a man-made mooring structure (known as the E.S.B. dolphin), in Dublin Docks. Records of breeding pairs of the common tern have reached over 400 in 2007, a significant increase since initial records of 52 pairs in 1995, marking it one of the most important breeding sites in the country. It is also a key site for wintering

[46] NPWS (2017) Natura 2000 – Standard Data Form: South Dublin Bay SAC 000210. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[47] NPWS (2013) Site Synopsis: North Dublin Bay SAC 000206. Revision 15. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[48] [48] NPWS (2017) Natura 2000 – Standard Data Form: North Dublin Bay SAC 000206. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

gulls, specifically for both the black-headed and common gull. Moreover, up to 20 Mediterranean gulls can be present at times making it a leading site for this species in Ireland[49].

The site encompasses a significant part of Dublin Bay. This includes almost all of the intertidal area in the south bay, a substantial part of the Tolka Estuary north of the River Liffey and a portion of the shallow bay waters. The sediment in the Tolka Estuary in the inner estuary comprises both soft thixotrophic muds with a high organic content, whereas well aerated sand is prevalent off the Bull Wall. Full site synopsis for the South Dublin Bay and River Tolka Estuary SPA can be located in Appendix A.

North Bull Island SPA

The North Bull Island SPA is one of the leading sites for wintering waterfowl in Ireland and an excellent example of an estuarine complex. Near continuous records of wintering bird populations in this area date back to the 1960s, as well as the documentation of other scientific interests. The number of waterfowl in combination with individual populations of light-bellied brent goose, black-tailed godwit and bar-tailed godwit contribute to the sites international importance. The presence of a number of species including the golden plover, ruff and short-eared owl are listed on Annex I of the EU Birds Directive. As well as it being an SPA, the North Bull Island is also regarded as being a Ramsar Convention site, in addition to being partly a Statutory Nature Reserve and a Wildfowl Sanctuary[50].

The site is also recognised for its national importance, noted as being among the top ten sites for wintering waterfowl in the country. This is exhibited through the presence of 14 species including common shelduck (8.5% of national total), northern pintail (11.6% of national total), grey plover (6.9% of national total) and red knot (10.5% of national total). The site provides both feeding and roosting regions for waterfowl, and is a regular area for passage waders, notably ruff, curlew sandpiper and spotted redshank. Despite the breeding of a valuable colony of little turn no longer occurring at this site in recent years, habitat quality of most of the estuarine area is still very good[51]. Full site synopsis for North Bull Island SPA can be located in Appendix A.

8.3 Conservation Objectives

The Habitats Directive and Part XAB of the Planning and Development Act 2000 requires the NIS to focus on the implications of a proposed scheme, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the sites. In accordance with Article 6(3) of the Habitats directive, a project must be assessed in terms of its potential effect(s) on a European site's conservation objectives.

Site specific conservation objectives (SSCOs) for the QIs of South Dublin Bay SAC and North Dublin Bay SAC or the special conservation interests (SCIs) of South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA are presented in *Table 8-1*, as sourced directly from conservation objectives documents (accessed online at www.npws.ie). SSCOs aim to define the favourable conservation condition for a SCI species at that European site. The favourable conservation status of a species is achieved when:

[49] NPWS (2017) Natura 2000 – South Dublin Bay and River Tolka Estuary SPA 004024. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[50] NPWS (2015) Site Synopsis: North Bull Island SPA 004006. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

[51] NPWS (2017) Natura 2000 – North Bull Island SPA 004006. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- 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;
- 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.

The current conservation status of the qualifying interests are summarised in *Table 8-1*. The current site conservation condition of each SCI species are produced in the Conservation Objectives Supporting Document for South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA. The current national conservation status of each SCI species (i.e. “Green”, “Amber” or “Red” categories) is sourced from Birds of Conservation Concern in Ireland 2014 – 2019 (the “BoCCI” list, Colhoun and Cummins, 2013[52]). It should be noted that the conservation condition assessments for individual species within individual SPAs do not necessarily mirror the national population trends that are taken into account in the BoCCI listings.

[52] Colhoun K. and Cummins S. (2014) Birds of Conservation Concern in Ireland 2014–2019. BirdWatch Ireland.

Table 8-1 Qualifying Interests, BoCCI Status, Conservation Status

Site Name and Code	Qualifying Interests [Species code and BoCCI status]	Conservation Condition
South Dublin Bay SAC (IE000210)	*Annex I Habitats (Features of interest):*	
	Mudflats and sandflats not covered by seawater at low tide [1140]	Unfavourable / Inadequate
	Annual vegetation of drift lines [1210]	Unfavourable / Inadequate
	Salicornia and other annuals colonising mud and sand [1310]	Unfavourable / Inadequate
	Embryonic shifting dunes [2110]	Unfavourable / Inadequate
North Dublin Bay SAC (IE000206)	*Annex I Habitats (Features of interest):*	
	Mudflats and sandflats not covered by seawater at low tide [1140]	Unfavourable / Inadequate
	Annual vegetation of drift lines [1210]	Unfavourable / Inadequate
	Salicornia and other annuals colonizing mud and sand [1310]	Unfavourable / Inadequate
	Atlantic salt meadows Glauco - Puccinellietalia maritimae [1330]	Unfavourable / Inadequate
	Mediterranean salt meadows Juncetalia maritimi [1410]	Unfavourable / Inadequate
	Embryonic shifting dunes [2110]	Unfavourable / Inadequate
	Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	Unfavourable / Inadequate
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Unfavourable / Bad
	Humid dune slacks [2190]	Unfavourable / Inadequate
	Annex II species (Features of interest):	
	Petalwort Petalophyllum ralfsii [1395]	Favourable
South Dublin Bay and River Tolka Estuary SPA (IE004024)	Light-bellied Brent Goose (Branta bernicla hrota) [A046]	Amber
	Oystercatcher (Haematopus ostralegus)[A130]	Amber
	Ringed Plover (Charadrius hiaticula) [A137]	Amber
	Grey Plover (Pluvialis squatarola) [A140]	Amber
	Knot (Calidris canutus) [A143]	Red
	Sanderling (Calidris alba) [A144]	Green
	Dunlin (Calidris alpina) [A149]	Amber
	Bar-tailed Godwit (Limosa lapponica)[A157]	Amber
	Redshank (Tringa totanus) [A162]	Red
	Black-headed Gull (Larus ridibundus) [A179]	Red
	Roseate Tern (Sterna dougallii) [A192]	Amber
	Common Tern (Sterna hirundo) [A193]	Amber

Site Name and Code	Qualifying Interests [Species code and BoCCI status]	Conservation Condition
	Arctic Tern (Sterna paradisaea) [A194]	Amber
	Wetlands and Waterbirds [A999]	
North Bull Island SPA (004006)	Oystercatcher (Haematopus ostralegus) [A130]	Amber
	Light-bellied Brent Goose (Branta bernicla hrota) [A046]	Red
	Shelduck (Tadorna tadorna) [A048]	Amber
	Teal (Anas crecca) [A052]	Red
	Pintail (Anas acuta) [A054]	Green
	Shoveler (Anas clypeata) [A056]	Amber
	Golden Plover (Pluvialis apricaria) [A140]	Amber
	Grey Plover (Pluvialis squatarola) [A141]	Amber
	Knot (Calidris canutus) [A143]	Amber
	Sanderling (Calidris alba) [A144]	Amber
	Dunlin (Calidris alpina) [A149]	Red
	Black-tailed Godwit (Limosa limosa) [A156]	Amber
	Bar-tailed Godwit (Limosa lapponica) [A157]	Amber
	Curlew (Numenius arquata) [A160]	Red
	Redshank (Tringa totanus) [A162]	Red
	Turnstone (Arenaria interpres) [A169]	Green
	Black-headed Gull (Larus ridibundus) [A179]	Red
	Wetlands and Waterbirds [A999]	

8.4 Potential effect(s) on a European sites conservation objectives

Due to the identified contamination on site and the indirect pathway via the River Liffey, all Natura 2000 sites mentioned in Table 8-2 will be subject to the same potential unmitigated impacts. These include:

- clearance of contaminated materials from within in the surface layers during the construction of the basement levels and from surface water runoff from the site during clearance, that may contain mobilised contamination, pollution or silt;
- the use of plant and machinery, as well as the associated temporary storage of construction materials, oils, fuels and chemicals could lead to pollution on site or in adjacent surface water networks and the River Liffey;
- the storage of topsoil or works on onsite, in the vicinity of the River Liffey, could lead to dust, contamination, soil or silt laden runoff entering the adjacent watercourse;
- surface water runoff on site during construction or operation may lead to silt or contaminated materials from site entering the River Liffey;
- concrete, silt or pollution could enter watercourses during dewatering of foundations or drainage trenches, if required during construction;
- breaking of concrete (associated with hardstanding demolition) has the potential to emit noise and alkaline dust into the receiving environment; and
- if on-site concrete production is required or cement works are carried out in the vicinity of watercourses there is potential for contamination of watercourses.

The Proposed Development has therefore been assessed in context of the conservation objectives' attributes "population trend" and "distribution" and their specific targets (listed below in *Table 8-12)* for each QI and SCI of the relevant European sites. The SCI of Wetlands [999] relates specifically to wetland habitat located within each SPA as a resource for the waterbirds that utilise it.

Table 8-2 Assessment of effects on the Integrity of the European sites

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
South Dublin Bay SAC			
Mudflats and sandflats not covered by water at low tide [1140] (Maintain the favourable conservation condition)			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	The Proposed Development is c. 1.8 km north-west of the SAC. Considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment as outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019[53]. These factors combined would result in there being no likely significant effects on the integrity of the sites conservation status for this habitat of concern at this distance from the Proposed Development.
Community extent	Hectares	Maintain the extent of the Zostera dominated community, subject to natural processes	The Proposed Development is c. 7 km north and west from the closest point of Zostera dominated community. As outlined in Article 17 of the NPWS 2019 report[54], pollution from residential structures are a potential threat to this species. However, any small pollution effect would be greatly diluted and dispersed within Dublin Bay and no effects on the conservation status are expected from the Proposed Development.
Community Structure: Zostera density	Shoots/m2	Conserve the high quality of the Zostera dominated community, subject to natural processes	The Proposed Development is c. 7 km north and west from the closest point of Zostera dominated community. Considering the potential impacts expected from nutrients, sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011,

[53] RPS (2019). DPC Maintenance Dredging 2020-2021 Coastal Processes Risk Assessment. On behalf of Dublin Port Co.

[54] NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019. These factors combined would result in there being no likely significant effects on the conservation status for this community of concern at this distance from the Proposed Development.
Community distribution	Hectares	Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex	The Proposed Development is c. 5 km west from the closest point of Fine sands with *Angulus tenuis* community complex. Considering the potential impacts expected from nutrients, sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019. These factors combined would result in there being no likely significant effects on the conservation status for this community of concern at this distance from the Proposed Development.
Annual vegetation of drift lines [1210] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 1.8 km north-west of the SAC. Infrastructure which can modify the coastline is a potential threat to this habitat, as discussed in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for this habitat of concern.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 1.8 km north-west of the SAC. Considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS,

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			2019, along with the processes on site having no potential to impact natural processes. These factors combined would result in there being no likely significant effects on the conservation status of habitat distribution.
Physical structure: functionality and sediment supply	Presence / absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	The Proposed Development is not within the SAC, located c. 1.8 km north-west. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or to produce barriers to natural circulation of sediment and organic matter. These factors combined would result in there being no likely significant effects on the conservation status of the physical structure.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	The Proposed Development is c. 1.8 km north-west of the SAC. Infrastructure which can modify the coastline is a potential threat to this habitat, as discussed in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status of the vegetation structure.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*), prickly saltwort (*Salsola kali*) and oraches (*Atriplex* spp.)	Pollution risks potentially result in composition changes of these species as outlined in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from pollution from site being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the resilience and quick recovery rate of

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			the target species (Lucas and Freedman, 1989[55] and Shiri, Rabhi, El Amrani andChedly Abdelly 2015[56]). These factors combined would result in there being no likely significant effects on the conservation status of the vegetation composition.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	The only non-native species found on site is the Butterfly Bush. Removal of the species will be through control, management and biosecurity measures according to NRA guideline. Therefore there should be no likely significant effects to the percentage cover of negative indicator species.
Salicornia and other annuals colonising mud and sand [1310] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 1.8 km north-west of the SAC. Although this habitat is highly susceptible to erosion as outlined in Article 17 if the 2019 NPWS report. Considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status of the habitats.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 1.8 km north-west of the SAC. Considering processes on site have no potential to impact natural processes, including erosion and succession, there would be no effects on the habitat distribution.

[55] Lucas, Z. and Freedman, B. (1989) The effects of experimental spills of natural gas condensate on three plant communities on Sable Island, Nova Scotia, Canada

[56] Shiri, M. Rabhi, M. El Amrani, A and Abdelly, C. (2015) The Halophyte Cakile *maritima* Reduces Phenanthrene Phytotoxicity

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Physical structure: sediment supply	Presence / absence of physical barriers	Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions	The Proposed Development is not within the SAC, located c. 1.8 km north-west. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter, there would be no likely significant effects on the conservation status of the physical structure.
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	The Proposed Development is c. 1.8 km north-west of the SAC. Infrastructure which can modify the coastline is a potential threat to this habitat, as discussed in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status of the physical structure of creeks and pans.
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	The Proposed Development is c. 1.8 km north-west of the SAC. Considering processes on site have no potential to impact natural processes, including erosion and succession. Along with substantial amounts of sediment needed to alter the natural tidal regime as outlined in RPS, 2019, there would be no likely significant effects on the flooding regime.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Although this habitat is susceptible to natural processes (NPWS, 2019), the range of coastal habitats would not be impacted due the processes on site having no potential to impact natural processes,

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			including erosion and succession and the distance from the Proposed Development.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Considering the potential impacts expected from pollution and nutrients entering the riverine system, being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019. There would be no likely significant effects on the conservation status of the vegetation structure.
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Considering the potential impacts expected from pollution and nutrients entering the riverine system, being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status on the vegetation structure.
Vegetation composition: typical species and sub communities	Percentage cover	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009[57])	Pollution risks potentially result in composition changes of these species as outlined in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from pollution from site being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019. These factors combined would result in there being no likely significant effects on the conservation status of the vegetation composition.

[57] McCorry, M. and Ryle, T. (2009). Saltmarsh Monitoring Project 2007-2008. A Report for Research Branch, National Parks and Wildlife Service

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation structure: negative indicator species- Spartina anglica	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	The Proposed Development is c. 1.8 km north-west of the SAC. Infrastructure which can modify the coastline is a potential threat to this habitat, as discussed in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from pollution being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, there would be no likely significant effects on the conservation status of the vegetation structure.
Embryonic shifting dunes [2110] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	The Proposed Development is c. 1.8 km north-west of the SAC. As outlined in Article 17 of the 2019 NPWS report, this habitat is susceptible to natural processes. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for this habitat of concern.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	The Proposed Development is c. 1.8 km north-west of the SAC. As outlined in Article 17 of the 2019 NPWS report, this habitat is susceptible to natural processes. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			result in there being no likely significant effects on the conservation status for this habitat of concern.
Physical structure: functionality sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	The Proposed Development is not within the SAC, located c. 1.8 km north-west. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no likely significant effects on the conservation status of the physical structure.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	The Proposed Development is not within the SAC, located c. 1.8 km north-west. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no likely significant effects to the coastal habitats including transitional zones at this distance from the Proposed Development.
Vegetation composition: plant health of fore dune grasses	Percentage cover	More than 95% of sand couch (*Elytrigia juncea*) and / or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Pollution can negatively influence fore dune grasses including sand couch and lyme-grass (NPWS 2019). The Proposed Development is c. 1.8 km north-west of the SAC. According to Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, any small pollution effect is will be dispersed and diluted within the highly mixed estuarine environment. Therefore, there would be no significant effects to the plant health of dune grasses.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and / or lyme-grass (*Leymus arenarius*)	Considering the highly mixed estuarine environment, there are no likely significant effects to typical species such as sand couch and lyme-grass composition at this distance from the Proposed Development.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	The only non-native species found on site is the butterfly-bush. Removal of the species will be through control, management and biosecurity measures according to NRA guideline. Therefore there would be no effect on the percentage cover of negative indicator species.
North Dublin Bay SAC			
Mudflats and sandflats not covered by water at low tide [1140] (Maintain the favourable conservation condition)			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	The Proposed Development is c. 3.5 km south-west of the SAC. Considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019[58]. Therefore, there would be no likely significant effects on the conservation status for this habitat of concern at this distance from the Proposed Development.
Community extent	Hectares	Maintain the extent of the *Mytilus edulis*-dominated community, subject to natural processes	The Proposed Development is c. 11 km south and west from the closest point of Mytilus edulis-dominated community, refer to figure 2 of NPWS, 2013[59]. Any small pollution effect would be greatly diluted and dispersed within Dublin Bay, considering the distance between the Proposed Development and community of concern, there would be no likely significant effects.
Community structure: Mytilus edulis density	Individuals/m2	Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes	The Proposed Development is c. 11 km south and west from the closest point of *Mytilus edulis*-dominated community. Any small pollution effect would be greatly diluted and dispersed within Dublin Bay, considering the distance between the Proposed

[58] RPS (2019). DPC Maintenance Dredging 2020-2021 Coastal Processes Risk Assessment. On behalf of Dublin Port Co.

[59] NPWS, (2013). North Dublin Bay SAC (site code: 0206). Conservation objectives supporting document - marine habitats

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			Development and community of concern, there would be no likely significant effects expected.
Community distribution	Hectares	Conserve the following community types in a natural condition: Fine sand to sandy mud with *Pygospio elegans* and *Crangon crangon* community complex; Fine sand with *Spio martinensis* community complex	The Proposed Development is c. 5 km west from the closest point community complexes. Any small pollution effect would be greatly diluted and dispersed within Dublin Bay, considering the distance between the Proposed Development and community of concern, there would be no likely significant effects expected.
Annual Vegetation of drift lines [1210] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point from the habitat area. Considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for this habitat.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 5 km west from the closest point to this habitat area. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for this habitat.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Physical structure: functionality and sediment supply	Presence / absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	The Proposed Development is c. 5 km west from the closest point community complexes. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no likely significant effects on the conservation status of the physical structure.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	The Proposed Development is c. 5 km west from the closest point community complexes. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for this habitat.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*), prickly saltwort (*Salsola kali*) and oraches (*Atriplex* spp.)	The Proposed Development is c. 5 km west from the closest point community complexes. Considering the potential impacts expected from pollution are of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for the vegetative composition of typical species at this distance from the Proposed Development.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	The Proposed Development is c. 5 km west from the closest point community complexes. Considering the potential impacts expected from pollution are of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession, there would be no likely significant effects on the population cover of negative indicator species at this distance from the Proposed Development.
Salicornia and other annuals colonising mud and sand [1310] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point from the habitat area. Considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession. These factors combined would result in there being no likely significant effects on the conservation status for this habitat.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 5 km west from the closest point to this habitat area. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession, there would be no likely significant effects on the conservation status for this habitat.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Physical structure: sediment supply	Presence / absence of physical barriers	Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions	The Proposed Development is c. 5 km west from the closest point community complexes. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no likely significant effects on the conservation status of the physical structure.
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and habitat of concern, there would be no effects on creek and pan structure at this distance.
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Processes on site have no potential to impact natural processes, including erosion and succession. Along with substantial amounts of sediment needed to alter the natural tidal regime as outlined in RPS, 2019, therefore there would be no effects.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. The potential impacts expected from sediment and dust are of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes, including erosion and succession, there would be no effects on the conservation status for this habitat.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to vegetation structure at this distance.
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to vegetation structure at this distance.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation composition: typical species and sub communities	Percentage cover	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)	Pollution risks potentially result in composition changes of these species as outlined in Article 17 of the NPWS 2019 report. However, considering the potential impacts expected from pollution from site being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, there would be no effects on the conservation status on the vegetation composition.
Vegetation structure: negative indicator species - Spartina anglica	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Considering the potential impacts expected from pollution being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, therefore any small pollution effect would be greatly dispersed. Significant expansion of common cordgrass in this area is therefore unlikely.
Atlantic salt meadows (Glauco‐Puccinellietalia maritimae [1330] (Maintain the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. Although residential development can pose a threat to this habitat (NPWS, 2019), considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 5 km west from the closest point to this habitat area. However, considering the potential impacts expected from sediment and dust being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, along with the processes on site having no potential to impact

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			natural processes, there would be no effects on the conservation status for this habitat distribution.
Physical structure: sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	The Proposed Development is c. 5 km west from the closest point community complexes. Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no effects on the conservation status of the physical structure.
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	The highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no effects on the conservation status of the physical structure.
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Considering processes on site have no potential to impact natural processes, including erosion and succession. Along with substantial amounts of sediment needed to alter the natural tidal regime as outlined in RPS, 2019, there would be no effects on the flooding regime.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. Any small pollution effect would be greatly diluted and dispersed within Dublin Bay. Considering the distance between the Proposed Development and habitat of concern, there would be no effects to the range of coastal habitats.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to vegetation height at this distance.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to vegetation cover at this distance.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)	The potential impacts expected from pollution from site are of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water 2018 and RPS, 2019, there would be no effects on the communities' outlines in McCorry and Ryle, 2009.
Vegetation structure: negative indicator species - Spartina anglica	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Considering the potential impacts expected from pollution being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, therefore any small pollution effect would be greatly dispersed. Significant expansion of common cordgrass in this area is therefore unlikely.
Mediterranean salt meadows (Juncetalia maritimi) [1410] (Maintain the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 11 km south and west from the closest point of the habitat. Considering the distance between the Proposed Development and community of concern, there would be no effects at this distance.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 11 km south and west from the closest point of the habitat. Considering the distance between the Proposed Development and community of concern, there would be no effects at this distance.
Physical structure: sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			circulation of sediment and organic matter there would be no effects on the conservation status of sediment supply.
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	The highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no effects on the conservation status of the physical structure.
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Considering processes on site have no potential to impact natural processes, including erosion and succession. Along with substantial amounts of sediment needed to alter the natural tidal regime as outlined in RPS, 2019, there would be no effects.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Considering the distance between the Proposed Development and community of concern, there would be no effects to the range of coastal habitats at this distance.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Considering the distance between the Proposed Development and community of concern, there would be no effects to vegetation structure at this distance.
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Considering the distance between the Proposed Development and community of concern, there would be no effects to vegetation cover at this distance.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)	The potential impacts expected from pollution from site are of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water 2018 and RPS, 2019, there would be no effects on the conservation status.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation structure: negative indicator species - Spartina anglica	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Considering the potential impacts expected from pollution being of low amounts due to implementation of the CMP and the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007, Irish Water, 2018 and RPS, 2019, therefore any small pollution effect would be greatly dispersed. Significant expansion of common cordgrass in this area is therefore unlikely.
Embryonic shifting dunes [2110] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	The Proposed Development is c. 5 km west from the closest point of the habitat. Modification of coastline through residential development can potentially increase the risk of natural processes within this habitat, as mentioned in Article 17 of the 2019 NPWS report. However, considering the distance between the Proposed Development and community of concern, there would be no effects at this distance.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and community of concern, there would be no effects at this distance.
Physical structure: functionality sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Considering the distance between the Proposed Development and community of concern, there would be no effects on the natural circulation of sediments and organic matter at this distance from the Proposed Development.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Considering the distance between the Proposed Development and community of concern, there would be no effects on the vegetation structure at this distance from the Proposed Development.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation composition: plant health of for dune grasses	Percentage cover	More than 95% of sand couch (*Elytrigia juncea*) and / or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Considering the distance between the Proposed Development and community of concern, there are no effects on the health of dune grasses including sand couch and lyme-grass.
Vegetation composition: typical species and sub communities (Leymus arenarius)	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and / or lyme-grass (*Leymus arenarius*)	Considering the distance between the Proposed Development and community of concern, there would be no effects to the vegetation composition at this distance from the Proposed Development.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Considering the distance between the Proposed Development and community of concern, there would be no effects that would change the percentage cover of negative indicator species.
Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and habitat, there would be no likely pathways from the Proposed Development.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and habitat, there would be no likely pathways from the Proposed Development.
Physical structure: functionality sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Considering the highly mixed estuarine environment outlined in Wilson and Jackson, 2011, O'Higgins and Wilson, 2005, Dowly and Bedri 2007 and RPS, 2019, along with the processes on site having no potential to impact natural processes or produce barriers to natural circulation of sediment and organic matter there would be no effects on the conservation status of sediment supply.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Considering the distance between the Proposed Development and habitat, there would be no pathways that may alter the occurrence of coastal habitats.
Vegetation composition: plant health of dune grasses	Percentage cover	95% of marram grass (*Ammophila arenaria*) and / or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Pollution can negatively influence the plant health of dune grasses as outlined in Article 17 of the NPSW 2019 report. Considering the distance between the Proposed Development and habitat of concern, there would be no pathways and therefore no effects, from the Proposed Development.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of Monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (*Ammophila arenaria*) and / or lyme-grass (*Leymus arenarius*)	Considering the distance between the Proposed Development and community of concern, there would be no effects to the vegetation composition, including species-poor communities including marram grass and lyme-grass, at this distance from the Proposed Development.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Considering the distance between the Proposed Development and habitat, there would be no pathways that may influence the percentage cover of negative indicator species.
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] (Restore the favourable conservation condition)			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. Although pollution from residential developments are a threat to this habitat (NPSW, 2019), any small pollution effect will become diluted. Considering the distance between the Proposed Development and community of concern, there would be no effects at this distance from the Proposed Development.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and community of concern, there would be no effects at this distance from the Proposed Development.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Physical structure: functionality sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Considering the distance between the Proposed Development and community of concern, there would be no effects to the natural circulation of sediments and organic matter.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development. Although this habitat is susceptible to erosion and succession (NPSW, 2019), vegetation structure is unlikely to be impacted.
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes	Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development. Percentage cover of bare ground is therefore unlikely to be altered by natural processes.
Vegetation structure: sward height	Centimetres	Maintain structural variation in the sward	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to sward height at this distance from the Proposed Development.
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney *et al.* (2013)	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to the vegetation composition of typical species and sub communities at this distance from the Proposed Development.
Vegetation composition: negative indicator species (including *Hippophae rhamnoides*)	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development. Percentage cover of negative indicator species such as *Hippophae rhamnoides* are unlikely to increase.
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Considering the distance between the Proposed Development and habitat of concern, there would be no effect at this distance from the Proposed Development. The vegetation composition of scrub / trees is unlikely to increase or become out of control.
Humid dune slacks [2190] (Restore the favourable conservation condition)			

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Habitat area	Hectares	Area increasing, subject to natural processes, including erosion and succession	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	The Proposed Development is c. 5 km west from the closest point of the habitat. Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development.
Physical structure: functionality sediment supply	Presence / absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development. The natural circulation of sediments and organic matter are unlikely to be impacted.
Physical structure: hydrological and flooding regime	Water table levels; groundwater fluctuations (metres)	Maintain natural hydrological regime	Considering the distance between the Proposed Development and habitat of concern, there would be no effects on the hydrological regime at this distance from the Proposed Development.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development. Although this habitat is susceptible to erosion and succession (NSPW, 2019), the range of coastal habitats such as transitional zones are unlikely to be impacted.
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground	Considering the distance between the Proposed Development and habitat of concern, there would be no effects on the percentage cover of bare ground at this distance from the Proposed Development.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within the sward	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to vegetation height at this distance from the Proposed Development.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Vegetation composition: typical species and sub communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney et al. (2013)	Considering the distance between the Proposed Development and habitat of concern, there would be no effects to the vegetation composition of typical species and sub communities.
Vegetation composition: cover of Salix repens	Percentage cover; centimetres	Maintain less than 40% cover of creeping willow (*Salix repens*)	Considering the distance between the Proposed Development and habitat of concern, there would be no effects at this distance from the Proposed Development. The percentage cover of creeping willow is therefore unlikely to increase.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Considering the distance between the Proposed Development and habitat of concern, there would be no effects on the percentage cover of negative indicator species at this distance from the Proposed Development.
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Considering the distance between the Proposed Development and habitat of concern, there would be no effects of scrub / tree composition at this distance from the Proposed Development.
Petalwort Petalophyllum ralfsii [1395] (Maintain the favourable conservation condition)			
Distribution of populations	Number and geographical spread of populations	No decline	Considering the distance between the Proposed Development and the SAC, there would be no effects on the number and geographical spread of this species at this distance from the Proposed Development.
Population size	Number of individuals	No decline	Considering the distance between the Proposed Development and the SAC, there would be no effect on the number of individuals of this species at this distance from the Proposed Development.
Area of suitable habitat	Hectares	No decline	Considering the distance between the Proposed Development and the SAC, there would be no effects on the suitable habitat area at this distance from the Proposed Development.
Hydrological conditions: soil moisture	Occurrence	Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to	Considering the distance between the Proposed Development and the SAC, there would be no effects on hydrological conditions at this distance from the Proposed Development.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
		prolonged inundation by flooding in winter	
Vegetation structure: height and cover	Centimetres and percentage	Maintain open, low vegetation with a high percentage of bryophytes (small acrocarps and liverwort turf) and bare ground	Considering the distance between the Proposed Development and the SAC, there would be no effect on the height and cover of bryophytes at this distance from the Proposed Development.
South Dublin Bay and River Tolka Estuary SPA			
Light - bellied Brent Goose (*Branta bernicla hrota*) [A046], Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144]			
Population trend	Percentage change	Long term population trend stable or increasing	The Proposed Development is located c. 1.2 km north of this SPA and construction work is over 500 m away from Sandymount Strand where the majority of the above named bird populations have been recorded. This includes records of nationally important populations of Ringed Plover in August-October[60]. The level of effect on these bird populations is not deemed significant due to the distance between the Proposed Development and recorded bird populations and nature of the work. The long term trend should therefore remain stable.
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than that occurring from natural patterns of variation	Pollution can pose a threat to bird populations as outlined in Article 12 of the EU Birds Directive[61]. However, considering the distance from the and nature of the Proposed Development, any small pollution risk will likely be diluted and dispersed resulting in no significant effect to bird species range, timing and intensity of areas.
Dunlin (*Calidris alpina alpina*) [A149], Bar - tailed Godwit (*Limosa lapponica*) [A157], Redshank (*Tringa totanus*) [A162], Black - headed Gull (*Chroicocephalus ridibundus*) [A179] (Maintain the favourable conservation condition)			

[60] Tierney, N., Whelan, R., Boland, H. and Crowe, O. (2017). The Dublin Bay Birds Project Synthesis 2013-2016. BirdsWatch Ireland, Kilcoole, Co. Wicklow

[61] NPWS Birds Directive Article 12, Ireland's Summary Report for the period 2008 - 2012

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Note: Grey Plover (*Pluvialis squatarola*) [A141] is proposed for removal from the list of SCI's for the site so no site specific conservation objective is included for the species			
Population trend	Percentage change	Long term population trend stable or increasing	The Proposed Development is located c. 1.2 km north of this SPA. Construction work is over 500 m away from Sandymount Strand and Booterstown Marsh where the majority of the bird populations have been recorded. This includes nationally important populations of bar-tailed godwit recorded during non-breeding season between August and March. 60% of the records of black-headed gull population were found in Tolka Estuary / Liffey Channel / Dublin Port between July-March 2019. The level of effect on these bird populations is not deemed significant due to the distance between the Proposed Development and recorded bird populations and nature of the work. The long term trend should therefore remain stable.
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than that occurring from natural patterns of variation	Pollution can pose a threat to bird populations as outlined in Article 12 of the EU Birds Directive. However, considering the distance from the and nature of the Proposed Development, any small pollution risk will likely be diluted and dispersed resulting in no significant effect to bird species range, timing and intensity of areas.
Roseate Tern *Sterna dougallii* [A192]			
Passage population: individuals	Number	No significant decline	The Proposed Development is located c. 1.2 km north of this SPA therefore the number of individuals in regards to Roseate tern should not be significantly affected at this distance or from the nature of the work.
Distribution: roosting areas	Number; location; area (ha)	No significant decline	Post-breeding site found on Sandymount Strand sandflats, from late July[45]. Considering the distance from this site and the Proposed Development this should not result in any significant decline in roosting areas for this species.
Prey biomass available	Kilogrammes	No significant decline	Roseate terns feed almost exclusively on small fish and rarely small crustaceans. Due to the nature of the Proposed Development the

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
			foraging range of this species is unlikely to be affected, therefore no significant decline in prey biomass.
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	As a static structure, the Proposed Development is unlikely to increase barriers to connectivity. Therefore, there will be no effect.
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of roseate tern among the post-breeding aggregation of terns	The Proposed Development is 1.8 km away with the surrounding landscape urban and commercial. The level of impact from human activities is therefore unlikely to change resulting in roost disturbance.
Common Tern Sterna hirundo [A193]			
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Known to breed almost exclusively on ESB dolphin on south side of port. Post-breeding site found on Sandymount Strand sandflats, from late July. With the Proposed Development over 500 m away from breeding sites, there should be no significant decline to the abundance of the common tern breeding population.
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Considering the nature of the work proposed and the distance from the Proposed Development and known breeding sites, there should be no significant decline in the mean productivity rate.
Passage population: individuals	Number	No significant decline	Considering the nature of the work proposed and the distance from the Proposed Development and known breeding sites, there should be no significant decline to the number in the passage population.
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	Considering the distance from the Proposed Development and the nature of the work, known breeding colonies of this species are unlikely to significantly decline in numbers or have any changes to location / area.
Distribution: roosting areas	Number; location; area (hectares)	No significant decline	Considering the distance from the Proposed Development and the nature of the work, known breeding colonies of this species are unlikely to significantly decline in numbers or have any changes to location / area.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Prey biomass available	Kilogrammes	No significant decline	Common terns feed mostly on small fish, crustaceans, insects and occasionally squid. The nature of the Proposed Development is unlikely to result in a significant decline in these populations. Therefore the availability of prey biomass should not be significantly affected.
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	As a static structure, the Proposed Development is unlikely to increase barriers to connectivity. Therefore, there will be no effect.
Disturbance at breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding common tern population	Considering the distance between the Proposed Development and breeding sites, the level of impact from human activities is unlikely to change resulting in any adverse change to the breeding population.
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of common tern among the post-breeding aggregation of terns	Considering the distance between the Proposed Development and known post-breeding sites, the level of impact from human activities is unlikely to directly result in adverse changes to these breeding populations.
Arctic Tern Sterna paradisaea [A194]			
Passage population: individuals	Number	No significant decline	Considering the nature of the work for the Proposed Development, the population number of Arctic tern species is unlikely to result in any significant decline.
Distribution: roosting areas	Number; location; area (hectares)	No significant decline	Known to breed almost exclusively on CDL / Pontoon 1+2 dolphin on south side of port with post-breeding site found on Sandymount Strand sandflats, from late July. However, due to the distance between these breeding sites and the Proposed Development in addition to the nature of the work, there should be no significant decline in roosting areas.
Prey biomass available	Kilogrammes	No significant decline	Arctic terns feed almost exclusively on small fish, crustaceans and other invertebrates. The nature of the Proposed Development is unlikely to cause a decline to these species population. Therefore the availability of prey biomass should not be significantly affected.

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	As a static structure, the Proposed Development is unlikely to increase barriers to connectivity. Therefore, there would be no effect.
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of Arctic tern among the post-breeding aggregation of terns	The Sandymount Strand sandflats are over 500 m from the Proposed Development. The nature of the project is unlikely to result in an in human activities significantly affecting the roosting sites of Arctic terns.
Wetlands [A999] (Maintain the favourable conservation condition)			
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192ha, other than that occurring from natural patterns of variation	Considering the nature of the work and the distance from the Proposed Development and wetland habitats, this area is unlikely to be significantly affected.
North Bull Island SPA			
Light - bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Teal (*Anas crecca*) [A052], Pintail (*Anas acuta*) [A054], Shoveler (*Anas clypeata*) [A056], Oystercatcher (*Haematopus ostralegus*) [A130], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144],			
Population trend	Percentage change	Long term population trend stable or increasing	Internationally important numbers of light-bellied brent goose are present in October to April (excluding January) where they often feed on golf courses on Bull Island. Nationally important numbers of shelduck, teal, pintail and shoveler have also been recorded on Bull Island. Dollymount Strand is a key habitat for Sanderling with 70% average population found at Bull Island[45]. The Proposed Development is c. 3.6 km away from the SPA. Considering the nature of the work proposed and the distance, significant effects to the population trend of the above named species is unlikely.
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than	Pollution can pose a threat to bird populations as outlined in Article 12 of the EU Birds Directive. However, considering the distance and nature of the Proposed Development, any small pollution risk will

Attribute	Measure	Target	Potential for the Proposed Development to affect the conservation objectives (without additional measures)
		that occurring from natural patterns of variation	likely be diluted and dispersed resulting in no significant effect to bird species range, timing and intensity of areas.
Dunlin (*Calidris alpina alpina*) [A149], Black - tailed Godwit (*Limosa limosa*) [A156], Bar - tailed Godwit (*Limosa lapponica*) [A157], Curlew (*Numenius arquata*) [A160], Redshank (*Tringa totanus*) [A162], Turnstone (*Arenaria interpres*) [A169], Black - headed Gull (*Chroicocephalus ridibundus*) [A179] (Maintain the favourable conservation condition)			
Population trend	Percentage change	Long term population trend stable or increasing	International important numbers of black-tailed godwit and bar-tailed godwit have been recorded in this SPA. 73% of the redshank population reside on Bull Island during high tide and 54% at low tide when birds moved to terrestrial areas / Tolka Estuary. Bull Island supports the majority of turnstone populations during winter[45]. The Proposed Development is c. 3.6 km away from the SPA. Considering the nature of the work proposed and the distance, significant effects to the population trend of the above named species is unlikely.
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than that occurring from natural patterns of variation	Pollution can pose a threat to bird populations as outlined in Article 12 of the EU Birds Directive. However, considering the distance and nature of the Proposed Development, any small pollution risk will likely be diluted and dispersed resulting in no significant effect to bird species range, timing and intensity of areas.
Wetlands [A999] (Maintain the favourable conservation condition)			
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 ha, other than that occurring from natural patterns of variation	Considering the nature of the proposed work and the distance between the wetland areas of this SPA and the Proposed Development, this habitat area is unlikely to be significantly affected.

8.5 Additional Measures to Ensure no Adverse Effects on the Integrity of European Sites

Construction of the proposed basement has the potential to cause negative short to long term impacts to the hydrogeology of the site and its surrounds. A number of planned additional measures details below will reduce the impacts significantly.

A suitable dewatering design for the site based on several criteria, namely site hydrogeology, average rainfall, construction details, discharge licence limits, available space on site, groundwater storage volumes, groundwater inflow calculations, etc., will be produced and implemented.

The sand and gravel present across the site is expected to have high permeability which will allow groundwater to flow towards installed wells from all areas of site. Initially the stored shallow groundwater will be removed from the sand and gravels underlying the site through dewatering wells that will be drilled in suitable locations on-site.

In order to limit the risk of spreading identified metals and creosote related groundwater contamination across the site, pumping will be limited to the northern side of the site thus keeping any groundwater contamination present localised.

Any impacted groundwater encountered during enabling works, will be pumped from the excavations and undergo treatment on-site to be disposed to sewer under agreed discharge licence.

Groundwater on-site will need to be continually pumped during the construction phase, to allow site construction to proceed to install base structures (floor slab and deep structures) in dry conditions and to avoid the risk of hydrostatic uplift.

The on-site water treatment plant will be designed to cater for the known contaminants of concern that are known to be on-site within the shallow groundwater. Although the detection of free phase product was not reported to be present on-site the water treatment system proposed will cater for LNAPL and DNAPL if present. Treatment design well cater for all COC which will be verified by further baseline groundwater monitoring on-site prior to dewatering works.

Silt fences or other suitable barrier measures will be installed where the working area encroaches within 10 m of a watercourse and / or drain that leads directly to the River Liffey.

Breaking of concrete (associated with hardstanding demolition) has the potential to emit alkaline dust into the receiving environment. A barrier between the dust source and the River Liffey will be erected, where necessary and possible, to limit the possibility of dust contacting the receptor.

Fuel, oil and chemical storage must be sited on an impervious base within a bund and secured. The base and bund walls must be impermeable to the material stored and of adequate capacity. Sufficient oil spill cleaning materials will be held on site in a clearly marked area. These will contain sufficient absorbent to clean 150% of the largest potential oil spill. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

Overall the removal of contaminated fill material, subsoils and treatment of the contaminated groundwater during the dewatering construction works will improve the environmental quality of the area. There is not anticipated to be a direct negative environmental impact of the construction works on the soil / geological or groundwater on-site or on surrounding off-site environmental receptors (including designated sites) as long at the detailed dewatering plan and associated additional measures are implemented.

It is not anticipated that there will not be any significant noise or vibration impacts during the construction phase of Proposed Development that could impact on the conservation objectives of Natura 2000 sites, due to the location of the development being within a busy urban environment more than 1 km from the nearest Natura 2000 site. On this basis, there are no specific additional measures that are deemed to be necessary for the Proposed Development.

8.6 Adverse Effects on the Conservation Objectives of Natura 2000 Sites Likely to Occur from the Proposed Development (Post Additional measures)

With the presence of contaminated material on site additional measures are proposed to protect the water quality of the River Liffey and prevent downstream water quality deterioration in Natura 2000 sites.

As outlined in the RSK Generic Quantitative Risk Assessment Report[62] "Given the results of surface water monitoring, no complete pollutant linkage has been identified between shallow groundwater contaminant concentrations on-site and the River Liffey. In addition, the boulder clay encountered at depth on-site is considered an aquitard[63] to any downward movement of dissolved contaminants to the locally important aquifer below."

Following the implementation of the additional measures outlined above, no significant impact on the conservation objectives or qualifying interests of Natura 2000 sites are likely.

8.7 Monitoring

Treated water during enabling works and construction will require continual monitoring to check that water quality standards are in compliance with the requirements of the discharge licence.

As outlined in the Verde report[64] "The presence of the proposed secant walls around the proposed excavation will result in a localised diversion of regular groundwater flow paths with localised groundwater mounding up gradient of the pile walls and lowering down gradient of the pile walls. It is unlikely that significant diversion of groundwater flow paths will occur. Installation of monitoring well/wells outside the pile wall will provide information on any potential groundwater mounding/lowering. The main groundwater body for this area is within the underlying limestone bedrock aquifer which will not be impacted by the building development or operational phase of works."

Regular monitoring of the on-site treatment plant will be undertaken to ensure the discharge water is being adequately treated prior to discharge.

Pumping from the southern side of site will be monitored during the dewatering stage to determine if the contamination risk has been reduced based on laboratory results from raw water entering the proposed on-site water treatment system.

Other additional measures during the operational dewatering phase of works will allow for continuous monitoring of the pumping operation flows and water quality (pH) via a telemetry system with alarms to allow for efficient and continuous dewatering operations to proceed during the construction phase of works.

8.8 In combination Effects

As outlined in the AA screening section of this report the Proposed Development site is on a brownfield site, located in a busy urban environment beside a working port and after review of Myplan.ie, it was determined that this area of Dublin City is currently undergoing redevelopment, where derelict brownfield sites with significant hardstanding areas are being revitalised.

[62] RSK. (2019). *Generic Quantitative Risk Assessment: Project Waterfront, Dublin 1.* RSK (Ireland) Ltd.

[63] An aquitard is a zone within the Earth that restricts the flow of groundwater from one aquifer to another. Aquitards comprise layers of either clay or non-porous rock with low hydraulic conductivity.

[64] Verdè Environmental Consultants Ltd. (2019). *Hydrogeological Impact Assessment: City Block 9, North Wall Quay, Dublin.* Verdè Environmental Consultants Ltd, Kilcoole.

The Proposed Development is considered in line with the objectives of The Dublin City Development Plan 2016–2022 and all projects identified for in combination effects have undergone an AA screening and / or NIS and concluded that the development was not likely to have significant effects either alone or in combination with other plans at the time of submission.

On the basis of the developments in proximity of the Proposed Development their location, existing pollution control (including Ringsend Waste Water Treatment Plant) and distance to the nearest Natura 2000 sites, there will be no significant in combination effects.

8.9 Conclusion

In order for the AA to comply with the requirements of Article 6(3) the Habitats Directive and Part XAB of the Planning and Development Act 2000, a Stage 2 AA undertaken by the competent authority must include an examination, analysis, evaluation, findings, conclusions and a final determination. The information in this report will, along with all other submissions and observations, will enable the statutory body to perform its statutory function in this regard.

In the case of the relevant European sites, potentially significant risks to those European sites (in the absence of additional measures) arise from potential construction-related impacts to QIs and SCI species through changes in water quality, through indirect hydrological pathway, resulting from Proposed Development. However, with the full implementation of the additional measures outlined in this report these risks will be avoided. Consequently, there will be no risk of adverse effects on QI habitats or species, or SCI species, or the attainment of specific site-wide conservation objectives, either alone or in combination with other plans or projects, for the relevant European sites.

Accordingly, in the professional opinion of the authors of this report, whilst it has been acknowledged that there is the potential, in the absence of additional measures, for the Proposed Development to have likely significant effects on European sites, with the implementation of the detailed additional measures identified in this NIS, the integrity of those European sites will not be adversely affected.

APPENDIX A SITE SYNOPSIS

South Dublin Bay SAC

An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht

SITE SYNOPSIS

Site Name: South Dublin Bay SAC

Site Code: 000210

This site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. The main channel which drains the area is Cockle Lake.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1140] Tidal Mudflats and Sandflats
[1210] Annual vegetation of drift lines
[1310] Salicornia and other annuals colonising mud and sand
[2110] Embryonic shifting dunes

The bed of Dward Eelgrass (*Zostera noltii*) found below Merrion Gates is the largest stand on the east coast. Green algae (*Enteromorpha* spp. and *Ulva lactuca*) are distributed throughout the area at a low density. Fucoid algae occur on the rocky shore in the Maretimo to Dún Laoghaire area. Species include *Fucus spiralis, F. vesiculosus, F. serratus, Ascophyllum nodosum* and *Pelvetia canaliculata.*

Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/ Booterstown. The formation at Booterstown is very recent. Drift line vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide, though at Booterstown this zone is wider in places. The habitat occurs just above the High Water Mark and below the area of embryonic dune. Species present are Sea Rocket (*Cakile maritima*), Frosted Orache (*Atriplex laciniata*), Spear-leaved Orache (*A. prostrata*), Prickly Saltwort (*Salsola kali*) and Fat Hen (*Chenopodium album*). Also occurring is Sea Sandwort (*Honkenya peploides*), Sea Beet (*Beta vulgaris* subsp. *maritima*) and Annual Sea-blite (*Suaeda maritima*). A small area of pioneer saltmarsh now occurs in the lee of an embryonic sand dune just north of Booterstown Station. This early stage of saltmarsh development is here characterised by the presence of pioneer stands of glassworts (*Salicornia* spp.) occurring below an area of drift line vegetation. As this is of very recent origin, it covers a small area but ample areas of substrate and shelter are available for the further development of this habitat.

Lugworm (*Arenicola marina*), Cockles (*Cerastoderma edule*) and annelids and other bivalves are frequent throughout the site. The small gastropod *Hydrobia ulvae* occurs on the muddy sands off Merrion Gates.

South Dublin Bay is an important site for waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. The principal species are Oystercatcher (1215), Ringed Plover (120), Sanderling (344), Dunlin (2628) and Redshank (356) (average winter peaks 1996/97 and 1997/98). Up to 100 Turnstones are usual in the south bay during winter. Brent Goose regularly occur in numbers of international importance (average peak 299). Bar-tailed Godwit (565), a species listed on Annex I of the E.U. Birds Directive, also occur.

Large numbers of gulls roost in South Dublin Bay, e.g. 4,500 Black-headed Gulls in February 1990; 500 Common Gulls in February 1991. It is also an important tern roost in the autumn, regularly holding 2000-3000 terns including Roseate Terns, a species listed on Annex I of the E.U. Birds Directive. South Dublin Bay is largely protected as a Special Protection Area.

At low tide the inner parts of the south bay are used for amenity purposes. Bait-digging is a regular activity on the sandy flats. At high tide some areas have wind-surfing and jet-skiing.

This site is a fine example of a coastal system, with extensive sand and mudflats, and incipient dune formations. South Dublin Bay is also an internationally important bird site.

North Dublin Bay SAC

An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht

SITE SYNOPSIS

Site Name: North Dublin Bay SAC

Site Code: 000206

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1140] Tidal Mudflats and Sandflats
[1210] Annual Vegetation of Drift Lines
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[2110] Embryonic Shifting Dunes
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*
[2190] Humid Dune Slacks
[1395] Petalwort (*Petalophyllum ralfsii*)

North Bull Island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (*Ammophila arenaria*) is dominant on the outer dune ridges, with Lyme-grass (*Leymus arenarius*) and Sand Couch (*Elymus farctus*) on the foredunes. Behind the first dune ridge, plant diversity increases with the appearance of such species as Wild Pansy (*Viola tricolor*), Kidney Vetch (*Anthyllis vulneraria*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Restharrow (*Ononis repens*), Yellow-rattle (*Rhinanthus minor*) and Pyramidal Orchid (*Anacamptis pyramidalis*). In these grassy areas and slacks, the scarce Bee Orchid (*Ophrys apifera*) occurs.

About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (*Alnus glutinosa*). The water table is very near the surface and is only slightly brackish. Saltmarsh Rush (*Juncus maritimus*) is the dominant species, with Meadowsweet (*Filipendula ulmaria*) and Devil's-bit Scabious (*Succisa pratensis*) being frequent. The orchid flora is notable and includes Marsh Helleborine (*Epipactis palustris*), Common

Twayblade (*Listera ovata*), Autumn Lady's-tresses (*Spiranthes spiralis*) and Marsh Orchids (*Dactylorhiza* spp.).

Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. On the lower marsh, Glasswort (*Salicornia europaea*), Common Saltmarsh-grass (*Puccinellia maritima*), Annual Sea-blite (*Suaeda maritima*) and Greater Sea-spurrey (*Spergularia media*) are the main species. Higher up in the middle marsh Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*) and Thrift (*Armeria maritima*) appear. Above the mark of the normal high tide, species such as Common Scurvygrass (*Cochlearia officinalis*) and Sea Milkwort (*Glaux maritima*) are found, while on the extreme upper marsh, the rushes *Juncus maritimus* and *J. gerardi* are dominant. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation.

The habitat 'annual vegetation of drift lines' is found in places, along the length of Dollymount Strand, with species such as Sea Rocket (*Cakile maritima*), Oraches (*Atriplex* spp.) and Prickly Saltwort (*Salsola kali*).

The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "*Salicornia* flat", which is dominated by *Salicornia dolichostachya*, a pioneer glasswort species, and covers about 25 ha. Beaked Tasselweed (*Ruppia maritima*) occurs in this area, along with some Narrow-leaved Eelgrass (*Zostera angustifolia*). Dwarf Eelgrass (*Z. noltii*) also occurs in Sutton Creek. Common Cordgrass (*Spartina anglica*) occurs in places but its growth is controlled by management. Green algal mats (*Enteromorpha* spp., *Ulva lactuca*) cover large areas of the flats during summer. These sediments have a rich macrofauna, with high densities of Lugworms (*Arenicola marina*) in parts of the north lagoon. Mussels (*Mytilus edulis*) occur in places, along with bivalves such as *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*. The small gastropod *Hydrobia ulvae* occurs in high densities in places, while the crustaceans *Corophium volutator* and *Carcinus maenas* are common. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three rare plant species which are legally protected under the Flora (Protection) Order, 1999 have been recorded on the North Bull Island. These are Lesser Centaury (*Centaurium pulchellum*), Red Hemp-nettle (*Galeopsis angustifolia*) and Meadow Saxifrage (*Saxifraga granulata*). Two further species listed as threatened in the Red Data Book, Wild Clary/Sage (*Salvia verbenaca*) and Spring Vetch (*Vicia lathyroides*), have also been recorded. A rare liverwort, *Petalophyllum ralfsii*, was first recorded from the North Bull Island in 1874 and has recently been confirmed as still present. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl. During the 1994/95 to 1996/97 period the following species occurred in internationally important numbers (figures are average maxima): Brent Goose 2,333; Knot 4,423; Bar-tailed Godwit 1,586. A further 14 species occurred in nationally important concentrations - Shelduck 1505; Wigeon 1,166; Teal 1,512; Pintail 334; Shoveler 239; Oystercatcher 2,190; Ringed Plover 346; Grey Plover 816; Sanderling 357; Dunlin 6,238; Black-tailed Godwit 156; Curlew 1,193; Turnstone 197 and Redshank 1,175. Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling and Dunlin).

The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. Ringed Plover, Shelduck, Mallard, Skylark, Meadow Pipit and Stonechat also nest. A well-known population of Irish Hare is resident on the island

The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland (from the Orders Diptera, Hymenoptera and Hemiptera).

The main land uses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site.

This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

South Dublin Bay and River Tolka Estuary SPA

SITE SYNOPSIS

SITE NAME: SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPA

SITE CODE: 004024

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

In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (*Zostera noltii*) below Merrion Gates which is the largest stand on the east coast. Green algae (*Ulva* spp.) are distributed throughout the area at a low density. The macro-invertebrate fauna is well-developed, and is characterised by annelids such as Lugworm (*Arenicola marina*), *Nephthys* spp. and Sand Mason (*Lanice conchilega*), and bivalves, especially Cockle (*Cerastoderma edule*) and Baltic Tellin (*Macoma balthica*). The small gastropod Spire Shell (*Hydrobia ulvae*) occurs on the muddy sands off Merrion Gates, along with the crustacean *Corophium volutator*. Sediments in the Tolka Estuary vary from soft thixotrophic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are five year mean peaks for the period 1995/96 to 1999/2000. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at

Merrion. At the time of designation the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45), Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

The South Dublin Bay and River Tolka Estuary SPA is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. It is of note that four of the species that regularly occur at this site are listed on Annex I of the E.U. Birds Directive, i.e. Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Sandymount Strand/Tolka Estuary is also a Ramsar Convention site.

North Bull Island SPA

SITE SYNOPSIS

SITE NAME: NORTH BULL ISLAND SPA

SITE CODE: 004006

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses.

Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. Green algal mats (*Ulva* spp.) are a feature of the flats during summer. These sediments have a rich macro-invertebrate fauna, with high densities of Lugworm (*Arenicola marina*) and Ragworm (*Hediste diversicolor*).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone and Black-headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. The site supports internationally important populations of three species, Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529) - all figures are mean peaks for the five winters between 1995/96 and 1999/2000. The site is one of the most important in the country for Light-bellied Brent Goose. A further 14 species have populations of national importance – Shelduck (1,259), Teal (953), Pintail (233), Shoveler (141), Oystercatcher (1,784), Grey Plover (517), Golden Plover (2,033), Knot (2,837), Sanderling (141), Dunlin (4,146), Curlew (937), Redshank (1,431), Turnstone (157) and Black-headed Gull (2,196). The populations of Pintail and Knot are of particular note as they comprise 14% and 10% respectively of the all-Ireland population totals. Other species that occur regularly in winter include Grey Heron, Little Egret, Cormorant, Wigeon, Goldeneye, Red-breasted Merganser, Ringed Plover and Greenshank. Gulls are a feature of the site during winter and, along with the nationally important population of Black-headed Gull (2,196), other species that occur include Common Gull (332) and Herring Gull (331). While some of the birds

also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter. The wintering bird populations have been monitored more or less continuously since the late 1960s and the site is now surveyed each winter as part of the larger Dublin Bay complex.

The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank. These are mostly observed in single figures in autumn but occasionally in spring or winter.

The site formerly had an important colony of Little Tern but breeding has not occurred in recent years. Several pairs of Ringed Plover breed, along with Shelduck in some years. Breeding passerines include Skylark, Meadow Pipit, Stonechat and Reed Bunting. The island is a regular wintering site for Short-eared Owl, with up to 5 present in some winters.

The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary.

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