DixonBrosnan
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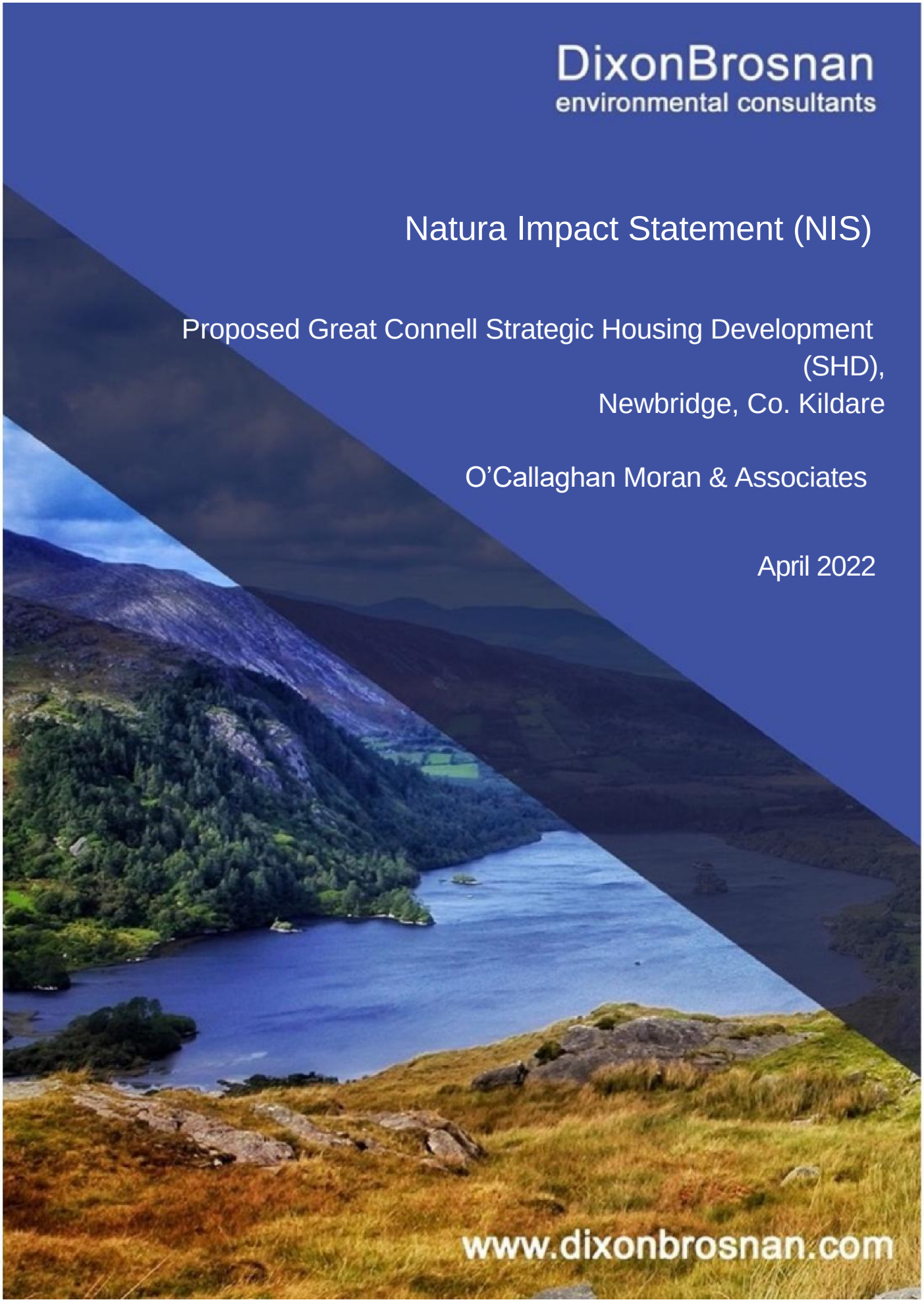
Natura Impact Statement (NIS)

Proposed Great Connell Strategic Housing Development (SHD),
Newbridge, Co. Kildare

O'Callaghan Moran & Associates

April 2022



Project	Natura Impact Statement (NIS) for Proposed Great Connell Strategic Housing Development, Newbridge, Co. Kildare	
Client	O'Callaghan, Moran and Associates	
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22/02/2022	First Draft	Sorcha Sheehy PhD
04/04/2022	Issue to Client	Carl Dixon MSc

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1. Introduction

1.1 Background

DixonBrosnan Environmental Consultants has been commissioned by O'Callaghan, Moran and Associates to prepare a Natura Impact Statement (NIS) to support the planning application for a proposed development at the Newbridge, Co. Kildare. The information in this report forms part of and should be read in conjunction with other planning application consultation documentation included an Appropriate Assessment (AA) Screening report.

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites includes Special Areas of Conservation (SACs, including candidate SACs) and Special Protection Areas (SPAs, including proposed SPAs). SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites and from these the conservation objectives of the site are derived. The Birds and Habitats Directives set out various procedures and obligations in relation to nature conservation management in Member States in general, and of the Natura 2000 sites and their habitats and species in particular. A key protection mechanism is the requirement to consider the possible nature conservation implications of any plan or project on the Natura 2000 site network before any decision is made to allow that plan or project to proceed. Not only is every new plan or project captured by this requirement but each plan or project, when being considered for approval at any stage, must take into consideration the possible effects it may have in combination with other plans and projects when going through the process known as Appropriate Assessment (AA).

The obligation to undertake Appropriate Assessment (AA) derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. As set out in Section 177U of the Planning and Development Act 2000 as amended, a screening for appropriate assessment of an application for consent for the project must be carried out by the competent authority to assess, in view of best scientific knowledge, if the project, individually or in combination with another plan or project is likely to have a significant effect on any European site. Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made.

1.2 Aim of this Report

The application site is potentially hydrologically connected to four Natura 2000 sites i.e. South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA. The application site is not directly connected with or necessary to the management of these or any other European site and hence the requirements of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, apply.

Section 177U(1) of the Planning and Development Act 2000 requires that a screening for an appropriate assessment of, inter alia, an application for consent for a project be carried out by a competent authority to assess, in light of best scientific knowledge, whether the project, individually or in combination with another plan or project is likely to have a significant effect on a European site. A report in support of Appropriate Assessment (AA) screening was completed by DixonBrosnan on behalf of O'Callaghan, Moran and Associates. This report concluded that although the likelihood of effects on the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA is low, applying the precautionary principle, potential impact pathways have been identified and a NIS should be prepared for the proposed development. No significant impacts were identified for any other Natura 2000 sites.

Accordingly, this NIS has been prepared to inform the Appropriate Assessment of the project's potential to result in likely significant effects to the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA as a result of surface water and wastewater emissions. The purpose of this report is to inform the AA process as required under the Habitats Directive (92/43/EEC) in instances where a plan or project may give rise to adverse effects on the integrity of Natura 2000 sites. This report aims to inform the Appropriate Assessment process in determining whether the development, both alone and in combination with other plans or projects, are likely to have an adverse effect on the integrity of Natura 2000 sites in the study area, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

Documentation/guidelines of relevance to this NIS include the following:

- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (European Commission (EC), 2018),
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodical Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission (EC), 2001),
- *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC* (European Commission, (EC) 2007);
- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, 2010 revision),
- *Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10* (Department of Environment, Heritage and Local Government, 2010),
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive* (International Workshop on Assessment of Plans under the Habitats Directive, 2011,
- *Practice Note PN01 Appropriate Assessment Screening for Development* Management Office of the Planning Regulator (2021),

- *Assessment of plans & projects in relation to N2K sites – Methodological Guidance* (EC 2021),
- *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive* (EC 2021) and
- *Communication from the Commission on the precautionary principle. European Commission* (2000).

1.3 Authors of the Report

This report was prepared by Carl Dixon MSc (Ecological Monitoring) and Dr. Sorcha Sheehy PhD (Ecology/ornithology).

Carl Dixon MSc (Ecology) is a senior ecologist who has over 20 years' experience in ecological and water quality assessments. He also has experience in mammal surveys, invasive species surveys and ecological supervision of large-scale projects. Projects in recent years include the Waste to Energy Facility Ringaskiddy, Shannon LNG Project, supervision of the Fermoy Flood Relief Scheme, Skibbereen Flood Relief Scheme, Upgrade of Mallow WWTP Scheme, Douglas Flood Relief Scheme, Great Island Gas Pipeline etc.

Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant with over twelve years' experience. She has worked on Screening/NIS's for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Sorcha has carried out Hen Harrier surveys for several windfarm applications. Recent projects include bird risk assessments for Dublin and Cork Airports as well as contributions to the Arklow Wind Bank Park NIS/EIAR and Mallow Town Park NIS.

2. Regulatory Context and Appropriate Assessment Procedure

2.1 Regulatory Context

The Habitats Directive (Council Directive 92/43/EEC on the *Conservation of Natural Habitats and of Wild Fauna and Flora*) aims to maintain or restore the favourable conservation status of habitats and species of community interest across Europe. The requirements of these directives are transposed into Irish law through the European Communities (Birds and Natural Habitats Regulations; S.I. No. 477 of 2011).

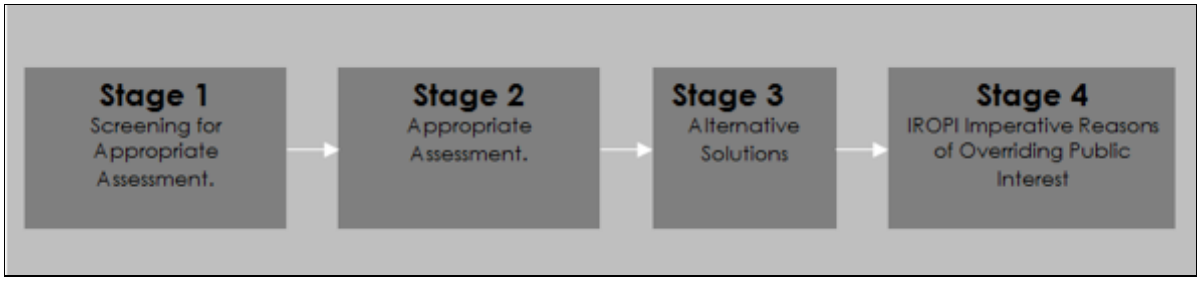
Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained or returned to favourable conservation status. In Ireland the network consists of SACs and SPAs, and also candidate sites, which form the Natura 2000 network.

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* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a designated site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. A competent authority (e.g. the EPA or Local Authority) can only agree to a plan or project after having determined that it will not adversely affect the integrity of the site concerned.

The possibility of a significant effect on a designated or "European" site has generated the need for an appropriate assessment to be carried out by the competent authority for the purposes of Article 6(3). A Stage Two Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the project, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) Stage for appropriate assessment operates merely to determine whether a (Stage Two) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

2.2 Appropriate Assessment Procedure

The assessment requirements of Article 6(3) establish a stage-by-stage approach. This assessment follows the stages outlined in the 2001 European Commission publications "Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC" (2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (Draft) Office for Official Publications of the European Communities, Luxembourg (EC, 2015);



The stages are as follows:

Stage One: Screening — the process which identifies any appreciable impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

Stage Two: Appropriate assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage Three: Assessment of alternative solutions: The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site. It is confirmed that no reliance is placed by the developer on Stage Three in the context of this application for development consent;

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest). Again, for the avoidance of doubt, it is

confirmed that no reliance is placed by the developer on Stage Four in the context of this application for development consent.

It is the responsibility of the competent authority, in this instance An Bord Pleanála, to make a decision on whether or not the project should be approved, taking into consideration any potential impact upon any Natura 2000 site within its zone of influence.

2.3 Appropriate Assessment Screening Determination

In accordance with Regulation 42(1) of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, DixonBrosnan carried out a report in support of AA screening to determine, in view of best scientific knowledge and the conservation objectives of the site, if the proposed development, individually or in combination with other plans or projects is likely to have a significant effect on European Sites. In this context, particular attention was paid to South Dublin Bay SAC (site code 000210), North Dublin Bay SAC (site code 000206), North Bull Island SPA (site code 004006) and the South Dublin Bay & River Tolka Estuary SPA (site code 004063).

The report in support of AA Screening concluded the following:

This AA screening report has been prepared to assess whether the proposed development, individually or in-combination with other plans or projects, and in view of best scientific knowledge, is likely to have a significant effect on any European site(s).

The screening exercise was completed in compliance with the relevant European Commission guidance, national guidance, and case law. The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests or special conservation interests, and their conservation objectives.

Through an assessment of the source-pathway-receptor model, which considered the ZoI of effects from the proposed development and the potential in-combination effects with other plans or projects, the following findings were reported:

Although the likelihood of effects on the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA is low, using an abundance of caution potential impact pathways have been identified and a NIS is being prepared for the proposed development.

As noted above, it is the responsibility of the competent authority, in this instance An Bord Pleanála, to make a decision on whether or not the project should be approved, taking into consideration any potential impact upon any Natura 2000 site within its zone of influence.

3. Description of Project

3.1 Existing Site

The site is to the east of Newbridge Town Centre (**Figure 1**). It is accessed from the east from the Great Connell road, which forms the eastern boundary. It is bounded to the north-east by a residential development (Wellesley Manor) and to the north-west by an open drain that was formerly a meander channel of the River Liffey. A hedgerow forms the southern boundary.

The south-western boundary is defined by a buffer zone on the western side of the River Liffey. The western boundary is not defined on the ground.

The proposed development is on the eastern outskirts of Newbridge, ca 1km from the Town Centre and main retail area. To the south and south-east are agricultural lands primarily used for tillage. To the east, across the Great Connell Road, are the Murphy Ireland Ltd offices and compound. To the north-east is Wellesley Manor, which has the closest residential dwellings to the development, with the houses in the south of the estate being approximately 10 m from the north-eastern development site boundary.

The Dr Pepper beverage manufacturing plant (formerly Lidl distribution centre) is ca 500m to the north-east. The Pfizer manufacturing complex, which is Europe's largest manufacturers of solid dose pharmaceuticals is ca 800m to the north. To the south-west, across the River Liffey, a 343 unit residential development is currently under construction. The Baroda Stud Farm is ca 500m to the south-east.

3.2 Proposed Development Site Description

The proposed development site covers an area of 27.64ha, most of which is used for tillage. The River Liffey flows through the southwestern corner of the site, with an area of treelines and woodland along its boundary. A drainage ditch at the centre of the site is connected to a drainage ditch on the northern boundary, which ultimately flows into the River Liffey to the west of the proposed development site.

3.3 Existing Services

3.3.1 Water Supply

There is an Irish Water 300mm watermain running along the Great Connell Road to the east of the site. This supplies the Wellesley Manor residential estate via a 100mm uPVC network.

3.3.2 Surface Water Drainage

Due to the topography it is not possible to drain the entire residential development site via one outfall. As such it is proposed to discharge via gravity to four new outlets on the existing ditch which passes through the north of the site as well as two new outlet to the River Liffey to the west.

The proposed section of Newbridge South Outer Orbital Relief Road (NSOORR) that will run through the site will have a separate drainage system. Due to level and vertical clearance constraints imposed by the existing 900mm diameter foul sewer traversing the site two outfalls are required.

Seven underground attenuation tanks with a combined capacity of 5,387m3, will serve the residential development, as shown on Drawing 192229-PUNCH-XX-XX-DR-C-0160. Two underground tanks (combined volume of 320m3) will serve the section of the NSOORR.

All of the tanks will be fitted with flow regulation devices designed to maintain the flow rates to the water courses at pre-development greenfield rates. Class 1 Bypass Hydrocarbon Separators will be located downstream of all of the attenuation tanks. The discharge points

to the ditch and the river will be fitted with non-return valves to prevent water from the river surcharging up through the surface water drainage network.

In addition to the underground attenuation tanks, the following Sustainable Urban Drainage Systems (SuDs) are incorporated into the design:

- Permeable paving
- Swales/Bioswales
- Green Roofs
- Soakaways/Soak Pits
- Rainwater Harvesting

The drainage system design takes account effects of coincidental flooding and is in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) Volume 5 Guidance for combination flood events. Futher details on surface water drainage are included in **Appendix 2** drawings.

Figure 1. Proposed development site location | Source OSI

Figure 2. Proposed site layout | Source OFM

3.3.3 Foul Water Drainage

The network was designed using Causeway Flow software in accordance with Irish Water's Code of Practice for Wastewater Infrastructure and the Department of the Environment's Recommendations for Site Development Works for Housing Areas. The foul water loading was calculated in accordance with the Code of Practice for Wastewater Infrastructure, with a 10% allowance for infiltration

The existing 450mm foul sewer that runs across the site from south to north will be diverted to connect to the Upper Liffey Valley Sewerage Scheme (ULVS) existing 900 mm diameter sewer. Due to the site topography it was not feasible to provide a gravity connection to the ULVS sewer.

All foul water will be collected by gravity and brought to a foul water pumping station in the north of the site from where it will be pumped to the ULVS sewer, as shown on Drawing 192229-PUNCH-XX-XX-DR-C-0113 **(**Appendix 2**)**. The foul pumping station will deliver a peak flow to the ULVS sewer of 19.5l/s. It will include a 254m3 capacity emergency storage tank that will retain the foul water in the event of a breakdown.

PUNCH estimate the average daily discharge to the Irish Water foul sewer will be 280,355 litres when the development is complete. To reduce the water demand on the water supplies water conservation measures will be incorporated in the sanitary facilities throughout the development, e.g. dual flush toilets.

A Pre-Connection Enquiry Form was sent to Irish Water in relation to the proposed development, and Irish Water issued a Confirmation of Feasibility (**Appendix 3**). The PUNCH proposed foul network proposals were then submitted to Irish Water for Design Vetting and Irish Water issued a Statement of Design Acceptance.

See **Appendix 2** Drawings for further detail on foul water drainage.

3.4 Description of Proposed Development

The proposed residential development provides for 569 residential dwellings and supporting commercial development in Great Connell, Newbridge. To facilitate the development it is necessary to demolish the existing structures on the site which comprise; 'Great Connell' a two-storey dwelling of 331.9 sqm with detached single storey garage and outhouses of 48 sqm; 'Valencia Lodge' a single storey dwelling of 135.6 sqm with a single storey garage of 17.8 sqm; two no. single storey sheds of 1,440 sqm and 595 sqm, and a three-sided shed of 54 sqm.

The proposed residential development comprises the construction of 569 no. new residential dwellings (325 no. houses and 244 no. apartments). There are 15 no. house types proposed, which in total provide 64 no. two-bed houses; 173 no. three-bed houses; and 88 no. four-bed houses (ranging in height from 2 to 3 storeys).

The 244 no. proposed apartments include 164 no. own-door units and 80 no. shared access apartments and comprise the following;

- Apartment Block A (Part 3 and 4 Storeys): 5 no. one-bed apartments; 14 no. two-bed apartments; and 3 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 112.4 sqm.
- Apartment Block B (Part 3 and 4 Storeys): 5 no. one-bed apartments; 14 no. two-bed apartments; and 3 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 112.4 sqm.
- Apartment Block C (Part 3 and 4 Storeys): 4 no. one-bed apartments; 19 no. two-bed apartments and 4 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 87 sqm.
- 13 no. apartments above the proposed Neighbourhood Centre comprising; 4 no. own-door two-bed apartments; 3 no. shared-access one-bed apartments; and 6 no. shared-access two-bed apartments. These proposed units have private balconies or terraces, and access to the communal roof terrace of 176 sqm.
- 160 no. own-door apartments in 2- and 3- storey buildings comprising; 16 no. one-bed apartments; 78 no. two-bed apartments, 66 no. three-bed duplex apartments. These units will have private amenity areas in the form of terraces, balconies and/or rear gardens.

The proposed Neighbourhood Centre has a total commercial floor area of 2,141 sqm and accommodates 11 no. commercial units with a variety of uses comprising:

- Convenience shop of 909 sqm (unit 1)
- 3 no. doctor/dentist/physio units of 120 sqm, 120 sqm and 90 sqm (units 6, 7, and 8, respectively)
- café of 125 sqm (unit 4)
- restaurant of 213 sqm (unit 9)
- 5 no. shop/convenience services units of 112 sqm, 49 sqm, 171 sqm, 100sqm and 100 sqm (units 2, 3, 5,10 and 11, respectively). It is envisaged that these units will be occupied by uses such as butchers, green grocers, hairdressers, pharmacies, or a local post office.

Within the Neighbourhood Centre it is proposed to provide a childcare facility (886 sqm) with capacity for in the order of 154 no. children.

A total of 1,008 no. car parking spaces are proposed to serve the proposed development. 650 no. car parking spaces are proposed to serve the 325 no. houses,

312 no. car parking spaces are proposed to serve the 244 no. apartments, and 46 no. car parking spaces are proposed to serve the neighbourhood centre, including the childcare facility.

A total of 732 no. bicycle parking spaces are proposed to serve the development comprising 536 no. long-stay residential spaces, 134 no. residential visitor spaces, and 62 no. bike spaces to serve the neighbourhood centre including the childcare facility.

4. Natura 2000 Sites

4.1 Zone of Influence (ZoI)

The Zone of Influence (ZoI) comprises the area within which the proposed project may potentially affect the conservation objectives or qualifying interests (QI) of a Natura 2000 site. There is no recommended zone of influence, and guidance from the National Parks and Wildlife Service (NPWS) recommends that the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects (cumulative).

In ecological and environmental impact assessment, for an effect to occur there must be a risk enabled by having a source (e.g. construction works at a project site), a 'receptor' (e.g. SAC or other ecologically sensitive feature), and a pathway between the source and the receptor (e.g. a watercourse which connects the project site to the SAC). A 'receptor' is defined as the Special Conservation Interest (SCI) of SPAs or Qualifying Interest (QI) of SACs for which conservation objectives have been set for the European sites being screened.

Consideration is therefore given to the source-pathway-receptor linkage and associated risks between the project and Natura 2000 sites. For a significant effect to occur there needs to be an identified risk whereby a source (e.g. contaminant or pollutant arising from construction activities) affects a particular receptor (i.e. Natura 2000 site) through a particular pathway (e.g. a watercourse which connects the project with the Natura 2000 site).

The identification of risk does not automatically mean that an effect will occur, nor that it will be significant. The identification of these risks means that there is a possibility of environmental or ecological damage occurring. The level and significance of the effect depends upon the nature of the consequence, likelihood of the risk and characteristics of the receptor.

The precautionary principle is applied for the purposes of screening to ensure that consideration and pre-emptive action is undertaken where there is a lack of scientific evidence. It is noted that mitigation measures are not taken into account in the AA screening assessment process.

4.2 Natura 2000 Sites

As outlined in **Section 2.3**, the AA screening for the proposed development determined that the potential impact pathways have been identified between the proposed development and South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin

Bay & River Tolka Estuary SPA from surface water discharges and wastewater discharges as well as potential in-combination impacts.

During construction and operation surface water runoff from the site will be diverted to the River Liffey. Wastewater discharges from the proposed development will also ultimately discharge to the River Liffey via the Upper Liffey Valley Sewerage Scheme (License ref. D0002). There are four Natura 2000 sites within Dublin Bay which are hydrologically connected to the River Liffey. These are South Dublin Bay SAC (site code 000210), South Dublin Bay and River Tolka Estuary SPA (site code 004024), North Dublin Bay SAC (site code 000206) and North Bull Island SPA (site code 004006). These are located approximately 59.2-61.8km downstream of the proposed development site (**Figure 3**). Although unlikely due to the distance involved, given the hydrological connection, surface water run-off during the construction or operational phase as well as wastewater discharges during operation could potentially impact on the South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA.

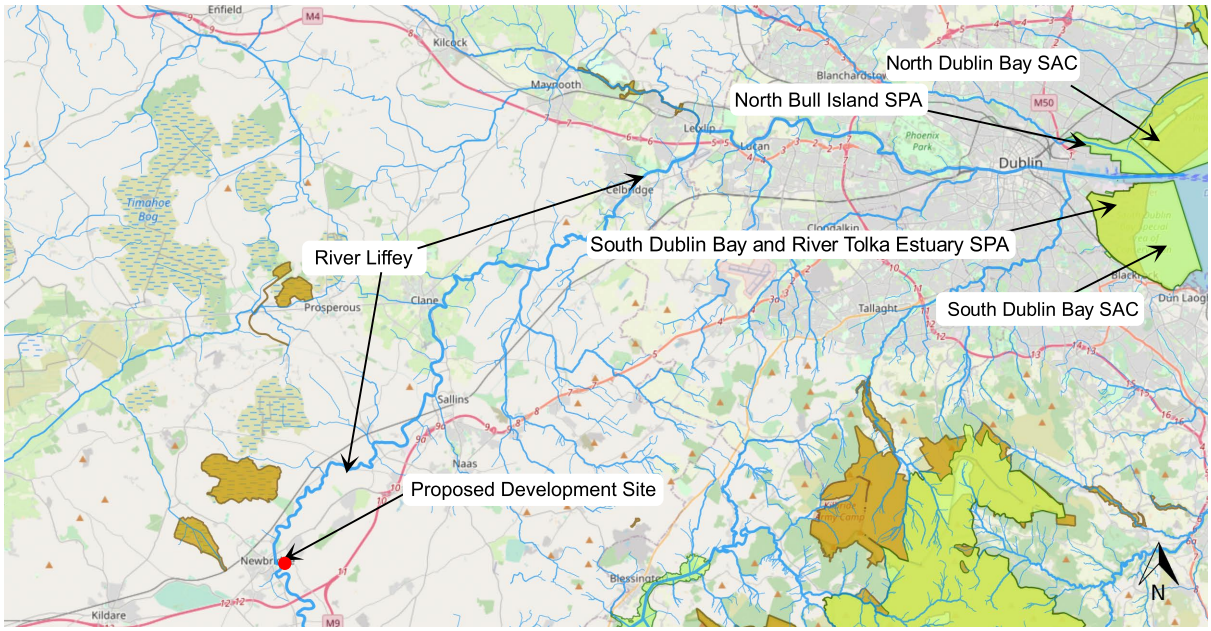


Figure 3. Location of the proposed development site and Natura 2000 sites screened into NIS | Source: EPA Envision mapping https://gis.epa.ie/EPAMaps/) | Not to scale

4.3 European Sites Descriptions

4.3.1 North Dublin Bay SAC

The North Dublin Bay SAC 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 five kilometres long and one kilometre wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. Between the island and the mainland there occurs two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. The interior of the island is excluded from the site as it has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is

also very important for educational and research purposes. Nature conservation is a main land use within the site.

The SAC possesses an excellent diversity of coastal habitats. The North Bull Island dune system is one of the most important systems on the east coast and is one of the few in Ireland that is actively accreting. It possesses extensive and mostly good quality examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Both Atlantic and Mediterranean salt marshes are well represented and a particularly good marsh zonation is shown. The salt marshes grade into mudflats and sandflats, some of which are dominated by annual Salicornia species. *Petalophyllum ralfsii* occurs at its only known station away from the western seaboard. The site has five Red Data Book vascular plant species and four Red Data Book bryophyte species. This is one of the most important sites for wintering waterfowl in Ireland, with internationally important populations of *Branta bernicla horta*, *Calidris canutus* and *Limosa lapponica*, plus nationally important numbers of a further 14 species. 20% of the national total of *Pluvialis squatarola* occurs here. Formerly it had important colony of *Sterna albifrons*. North Dublin Bay is nationally important for three insect species. The scientific interests of the site have been well documented and future prospects are good owing to the various designations assigned to site. A full site synopsis for this site is included in **Appendix 1** of this NIS.

4.3.2 South Dublin Bay SAC

The South Dublin Bay SAC extends from the South Wall at Dublin Port to the West Pier at Dun Laoghaire, a distance of approximately 5 km. At their widest, the intertidal flats extend for almost 3 km. The seaward boundary is marked by the low tide mark, while the landward boundary is now almost entirely artificially embanked. 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. A number of small streams and drains flow into the site. The proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes.

Site possesses a fine and fairly extensive example of intertidal flats. Sediment type is predominantly sand, with muddy sands in the more sheltered areas. A typical macro-invertebrate fauna exists. Has the largest stand of Zostera on the east coast. Supports part of the important wintering waterfowl populations of Dublin Bay. Regularly has an internationally population of *Branta bernicila horta*, plus nationally important numbers of at least a further 6 species, including *Limosa lapponica*. Regular autumn roosting ground for significant numbers of *Sterna* terns, including *S. dougallii*. The scientific interests of the site have been well documented. A full site synopsis for this site is included in **Appendix 1** of this NIS.

4.3.3 North Bull Island SPA

The North Bull Island SPA 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 5km long and 1km wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. A well-developed dune system runs the length of the island, with good examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Extensive salt marshes also occur. Between the island and the mainland occur two sheltered intertidal areas which

are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. Part of the interior of the island has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main land use within the site.

The site is among the top ten sites for wintering waterfowl in the country. It supports internationally important populations of Branta bernicila hrota and Limosa lapponica and is the top site in the country for both of these species. A further 14 species have populations of national importance, with particular notable numbers of Tadorna tadorna (8.5% of national total), Anas acuta (11.6% of national total), Pluvialis squatarola (6.9% of national total), Calidris canutus (10.5% of national total). North Bull Island SPA is a regular site for passage waders such as Philomachus pugnax, Calidris ferruginea and Tringa erythropus. The site supports Asio flammeus in winter. Formerly the site had an important colony of Sterna albifrons but breeding has not occurred in recent years. The site provides both feeding and roosting areas for the waterfowl species. Habitat quality for most of the estuarine habitats is very good. The site has a population of the rare Petalophyllum ralfsii which is the only known station away from the western seaboard as well as five Red Data Book vascular plant species and four bryophyte species. It is nationally important for three insect species. Wintering bird populations have been monitored more or less continuously since the late 1960s, and the other scientific interests of the site have also been well documented. Future prospects are good owing to various designations assigned to site. A full site synopsis for this site is included in **Appendix 1** of this NIS.

4.3.4 South Dublin Bay and River Tolka Estuary SPA

This South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes virtually all of the intertidal area in the south bay, as well as much of the Tolka Estuary to the north of the River Liffey. A portion of the shallow bay waters 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. The sands support the largest stand of Zostera noltii on the East Coast. 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. 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 proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes.

The site possesses extensive intertidal flats which support wintering waterfowl which are part of the overall Dublin Bay population. It regularly has an internationally important population of Branta bernicla hrota, which feeds on Zostera noltii in the autumn. It has nationally important numbers of a further 6 species: Haematopus ostralegus, Charadrius hiaticula, Calidris canutus, Calidris alba, Calidris alpina and Limosa lapponica. It is an important site for wintering gulls, especially Larus ridibundus and Larus canus. South Dublin Bay is the premier site in Ireland for Larus melanocephalus, with up to 20 birds present at times. Is a regular autumn roosting ground for significant numbers of terns, including *Sterna dougallii, S. hirundo* and *S. paradisaea*. A full site synopsis for this site is included in **Appendix 1** of this NIS.

4.4 Natura 2000 sites – Features of interests and conservation objectives.

The EU Habitats Directive contains a list of habitats (Annex I) and species (Annex II) for which SACs must be established by Member States. Similarly, the EU Birds Directive contains lists of important bird species (Annex I) and other migratory bird species for which SPAs must be established. Those that are known to occur at a site are referred to as 'qualifying interests' and are listed in the Natura 2000 forms which are lodged with the EU Commission by each Member State. A 'qualifying interest' is one of the factors (such as the species or habitat that is present) for which the site merits designation. The National Parks and Wildlife Service (NPWS) are responsible for the designation of SACs and SPAs in Ireland.

The conservation objectives for South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA are detailed in:

NPWS (2013) *Conservation Objectives: North Dublin Bay SAC 000206. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) *Conservation Objectives: South Dublin Bay SAC 000210. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) *Conservation Objectives: North Bull Island SPA 004006. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) *Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network. European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as Special Areas of Conservation and Special Protection Areas. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

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. Favourable conservation status of a habitat is achieved when its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or 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 species and/or habitats listed as features of interests for South Dublin Bay SAC,

North Dublin Bay SAC, North Bull Island SPA and South Dublin Bay & River Tolka Estuary SPA are included in **Tables 1 to 4**.

Table 1. Qualifying Interests for North Dublin Bay SAC

Habitat/species Code	Habitat /Species	Conservation objective
1140	Mudflats and sandflats not covered by seawater at low tide	Maintain
1210	Annual vegetation of drift lines	Restore
1310	Salicornia and other annuals colonising mud and sand	Restore
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Maintain
1410	Mediterranean salt meadows (*Juncetalia maritimi*)	Maintain
2110	Embryonic shifting dunes	Restore
2120	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	Restore
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	Restore
2190	Humid dune slacks	Restore
1395	Petalwort *Petalophyllum ralfsii*	Maintain

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

Table 2. Qualifying Interests for South Dublin Bay SAC

Habitat/species Code	Habitat /Species	Conservation objective
1140	Mudflats and sandflats not covered by seawater at low tide	Maintain
1210	Annual vegetation of drift lines	Maintain/Restore
1310	Salicornia and other annuals colonising mud and sand	Maintain/Restore
2110	Embryonic shifting dunes	Maintain/Restore

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

Table 3. Special Conservation Interests for North Bull Island SPA

Species Code	Species	Scientific name	Conservation objective
A046	Brent Goose	*Branta bernicla hrota*	Maintain
A048	Shelduck	*Tadorna tadorna*	Maintain
A052	Teal	*Anas crecca*	Maintain
A054	Pintail	*Anas acuta*	Maintain
A056	Shoveler	*Anas clypeata*	Maintain
A130	Oystercatcher	*Haematopus ostralegus*	Maintain
A140	Golden Plover	*Pluvialis apricaria*	Maintain
A141	Grey Plover	*Pluvialis squatarola*	Maintain
A143	Knot	*Calidris canutus*	Maintain
A144	Sanderling	*Calidris alba*	Maintain

Species Code	Species	Scientific name	Conservation objective
A149	Dunlin	*Calidris alpina alpina*	Maintain
A156	Black-tailed Godwit	*Limosa limosa*	Maintain
A157	Bar-tailed Godwit	*Limosa lapponica*	Maintain
A160	Curlew	*Numenius arquata*	Maintain
A162	Redshank	*Tringa totanus*	Maintain
A169	Turnstone	*Arenaria interpres*	Maintain
A179	Black-headed Gull	*Chroicocephalus ridibundus*	Maintain
A999	Wetlands & waterbirds		Maintain

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

Table 4. Special Conservation Interests for South Dublin Bay & River Tolka Estuary SPA

Species Code	Species	Scientific name	Conservation objective
A046	Brent Goose	*Branta bernicla hrota*	Maintain
A130	Oystercatcher	*Haematopus ostralegus*	Maintain
A137	Ringed Plover	*Charadrius hiaticula*	Maintain
A141	Grey Plover	*Pluvialis squatarola*	Maintain
A143	Knot	*Calidris canutus*	Maintain
A144	Sanderling	*Calidris alba*	Maintain
A149	Dunlin	*Calidris alpina alpina*	Maintain
A157	Bar-tailed Godwit	*Limosa lapponica*	Maintain
A162	Redshank	*Tringa totanus*	Maintain
A179	Black-headed Gull	*Chroicocephalus ridibundus*	Maintain
A192	Roseate Tern	*Sterna dougallii*	Maintain
A193	Common Tern	*Sterna hirundo*	Maintain
A194	Arctic Tern	*Sterna paradisaea*	Maintain
A999	Wetlands & waterbirds		Maintain

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

To acknowledge the importance of Ireland's wetlands to wintering waterbirds, “Wetland and Waterbirds” may be included as a Special Conservation Interest for some SPAs that have been designated for wintering waterbirds and that contain a wetland site of significant importance to one or more of the species of Special Conservation Interest. Thus, a further objective is to maintain or restore the favourable conservation condition of the wetland habitat within the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise them.

It should be noted that some of the Natura 2000 sites overlap with each other and thus the conservation objectives for these sites should be used in conjunction with those for overlapping and adjacent sites as appropriate.

4.5 Baseline Data

4.5.1 Habitats

Survey surveys were carried out on the 3rd December 2020, 19th May 2021, 9th September 2021 and 8th March 2022 to identify the habitats, flora and fauna present at the site. Habitat mapping was carried out in line with the methodology outlined in the Heritage Council Publication, *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). The terrestrial and aquatic habitats within or adjacent to the proposed development site was classified using the classification scheme outlined in the Heritage council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and cross referenced with Annex I Habitats where required. The survey results are representative of the habitats within the application site and include the dominant and characteristic species of flora.

An overview of habitats recorded within the site is shown in **Figure 4.** The habitats recorded onsite as well as their ecological value is detailed in **Table 5**. Site photographs are also included below. No rare plant species were recorded within the works area during the site survey and given the modified nature of the habitats within the proposed development area are highly unlikely to occur.

Table 5. Habitats recorded within proposed development site boundary

Habitat	Comments
Arable Crops BC1	The primary land use is for arable crops. The most common crop is Spring Barley *Hordeum vulgare*, which has been sown as a monocrop over much of the site area. Fields cultivated for arable crops are characterised by a limited diversity of grasses and herbaceous species. Species noted including Common Poppy *Papaver rhoes* and Common Field-Speedwell *Veronica persica* which are common weed species of this type of agricultural land. This habitat does not have links to Annex I habitat.
Dry meadow and grassy verges GS2	This habitat has developed on a bank between an existing hedgerow and drain. This habitat is dominated by common species including Cocksfoot *Dactylis glomerata*, Common Vetch *Vicia sativa* and Bramble *Rubus fruiticosus*. In absence of active management scrub species are likely to become more dominant (small area not mapped). Dry meadow and grassy verge loosely corresponds to the annexed habitat, 'lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) (6510)'. The dry meadow and grassy verge habitat within the study area is not a valuable example of this habitat type.
Dry meadow and grassy verges GS2/Tall Herb Swamp FS2	The section of the site south of the river is a mosaic of formerly grazed grassland and tall herb swamp vegetation along the riverbank. Currently this habitat is not actively managed or grazed with a preponderance of coarse grasses including False Oat Grass *Arrhenatherum elatius* and Cock's Foot *Dactylus glomerata* are common. Links with Annex I: *Corresponds to the annexed habitat, 'lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) (6510)'.* Areas of this habitat closer to the riverbank have some characteristics of tall herb swamp. These areas are occasionally waterlogged. They are dominated by Fool's Watercress *Apium nodiflorum* and Hemlock Water Droplet *Oenanthe crocata.* Patches of Soft Rush *Juncus effusus* and Common Reed *Phragmites australis* are

Habitat	Comments
	present but not dominant. Occasional trees, particularly Willow *Salix sp.,* are present with a small copse of Hawthorn *Crataegus monogynus* was also noted. Links with Annex I: Tall-herb swamps can include pockets of the annexed habitat 'hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430)'. In Ireland, however, stands of the latter are usually fragmented and poorly developed. This is not a valuable example of this habitat type.
Hedgerows WL1/ Treelines WL2/	The site is generally bordered by hedgerows and treelines. These linear vegetated boundaries are not homogenous. Those along the southern and western boundaries of the site are classified as treelines, with taller trees (5m+). The dominant mature trees include Beech *Fagus sylvatica*, Sycamore *Acer pseudoplatanus* and Scots Pine *Pinus sylvestris*. Poplar *Populus sp.* also occurs. Understorey species include Bramble *Rubus fruticosus*, Elder *Sambucus nigra*, Cleavers *Galium aparine* and Common Vetch. Along the northern and eastern borders, linear vegetation is thinner and generally under 5m in height and these linear features are classified as hedgerows. The occasional, trees recorded include those mentioned above as well as Hawthorn and Sessile Oak *Quercus petraea*. Scrub vegetation is common and dominates in parts. Species noted include Rosebay Willowherb *Chamaenerion angustifolium*, Cow Parsley *Anthriscus sylvestris*, Guelder-Rose *Viburnum opulus*, Hedge Mustard *Sisymbrium officinale*, Groundsel *Senecio vulgaris*, Silverweed *Argentina anserine* and Dandelion *Taraxicum* spp. This habitat does not correspond to an Annex I habitat.
Mixed Broadleaved Woodland WD1	Some areas of wider woodland border the river in the southern section of the site. Some conifers are present, however broadleaved species predominate. The tallest and most mature specimens are Beech and Sessile Oak. Some Scots Pine and Sycamore are also present. The understory includes Sycamore, Hawthorn, Bracken *Pteridium aquilinum* and Common Vetch. There is a strong component of willow including Crack Willow *Salix fragilis* and Goat Willow *Salix caprea*. It therefore has elements of Riparian woodland but is unlikely to have significant levels of flooding. This habitat does not correspond to an Annex I habitat.
Drainage Ditch FW4	A drainage ditch runs through the site and along part of the northern site boundary. The channel is approximately 2m wide and flows are limited with isolated pools during low flow conditions. Instream vegetation includes Water Crowfoot *Ranunculus aquatalis* and Blanket Weed *Chlamydomonas* spp. Drier sections of the ditch support Soft Rush *Juncus effusus* and Meadow Grass *Poa annua.* Minnow *Phoxinus phoxinus* were noted in small pools, although this species is unlikely to persist during drier periods when the drain is essentially stagnant or dry. As this species is common in the River Liffey it can readily recolonise the drain when flows increase. Therefore, this habitat is not considered a critical resource for this species. The banks are overgrown with Bramble, Rosebay Willowherb, and Soft Rush. Small areas of riparian Given the limited size of the drain, limited prey availability and frequent dog usage this habitat is unlikely to be of significant value for Otter. No signs of Otter were recorded during site surveys. This habitat does not correspond to an Annex I habitat.

Habitat	Comments
Depositing/Lowland Rivers FW2	A meander of the River Liffey borders the south-western corner of the site. At this location the river is approximately 23m wide and fast-flowing with low, sloping banks. Filamentous algae along the stretch of the river covers a signficiant proportion of the riverbed, greatly reducing the overall value of the sites in terms of spawning and, to a lesser extent, nursery habitat. Bankside vegetation along the site boundary is dense with Bramble forming thickets. Bankside vegetation includes Elder, Beech, Sycamore, Hawthorn and the understory includes Bramble, Bracken, Nettle *Urtica dioica* and Hogweed *Heracleum sphondylium*. Hemlock Water-Dropwort *Oenanthe crocata* is very common at the waters edge. In-stream vegetation includes Water Crowfoot *Ranunculus peltatus*. The River Liffey supports Otter and it is considered probable that otter utlise the river and riparian habitat where the site borders the river. There is dense vegetation between the site and the river with dense bramble and mature trees which limits access. No evidence of Otter including spraints, slides, couches, feeding signs or holts were recorded. However taking a worst case scenario approach it is assumted that the Liffey where it adjoins the site is used by otter for foraging. FW2 has links to the Annex I habitat Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (3260). The River Liffey has not been designated as a Natura 2000 site but is considered a high value habitat at a regional level.
Buildings and Artificial Surfaces BL3	This habitat includes a number of buildings in the easter section of the site. These include the main central barn-shaped warehouse structure, a smaller warehouse structure, a one-storey dwelling, and a two-storey dwelling. Also included within the category are the existing roundabout, paths and yards surrounding these buildings. The warehouse buildings have concrete lower sections, with upper sections and roofs of Kingspan cladding. The residential houses are stone/concrete with tiled roofs and are currently in use. All structures are relatively modern and none have openings accessible to or suitable for bats. The only openings present are ventilator shafts on the large warehouse, but these are modern and well-maintained. This habitat does not have links to Annex I habitat
Riparian Woodland WN5	The section of the drainage ditch which runs parallel to the northern boundary has narrow strips of riparian woodland where periodic flooding occurs. Willows *Salix* spp are dominant with Alder *Alnus glutinosa and Gorse* also present. Wetland species such as Common Reed *Phragmites australis* and Reed Canary Grass *Phalaris arundinacea* are present but do not dominate. Other species noted include Nettle, Hemlock Water-Dropwort and Creeping Buttercup. WN5 has Links with *Annex I. Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-padion, Alnion incanae, Salicion albae) (91E0).* This is a small isolated area of habitat which is not of significant ecological value.

Figure 4. Habitat map

Photograph 1: Field of arable crops BC1 surrounding the main buildings. Looking west.

Photograph 2. Area of Hedgerow WL1 with Treeline WL2 beyond. Souther edge of site.

Photograph 3. Mixed Broadleaved Woodland WD1 at the south of the site.

Photograph 4. Stagnant area of the central Drainage Ditch FW4.

Photograph 5. River FW2 at accessible point, looking across at western bank.

Photograph 6. Main large central warehouse structure BL3. Eastern edge of structure.

Photograph 7. Smaller warehouse structure, southern edge.

Photograph 8. Residential house at northeast of site, southern edge.

4.5.2 Birds

Bird species listed in Annex I of the Birds Directive are considered a conservation priority. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists. Red List bird species are of high conservation concern and the Amber List species are of medium conservation concern. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable (Gilbert et al. 2021).

Bird surveys were carried out in conjunction with habitat surveys on the 3rd December 2020, 19th May 2021, 9th September 2021 and 8th March 2022. During the survey, all birds seen or heard within the development site were recorded. Bird species listed in Annex I of the Birds Directive are considered a conservation priority. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists. Red List bird species are of high conservation concern and the Amber List species are of medium conservation. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable. Birds species listed in Annex I of the Birds Directive (2009/147/EC) are considered a conservation priority. Species recorded within the site are shown in **Table 6**.

Table 6. Bird species recorded within proposed development site

Species		Birds Directive Annex	BOCCI	
		I	Red List	Amber List
Blackbird	*Tardus Turdus merula*			
Blue Tit	*Cyanistes caeruleus*			
Bullfinch	*Pyrrhula pyrrhula*			
Buzzard	*Buteo buteo*			
Chaffinch	*Fringilla coelebs*			
Chiffchaff	*Phylloscopus collybita*			
Collared Dove	*Streptopelia decaocta*			
European Swallow	*Hirundo rustica*			x
Great Tit	*Parus major*			
Hooded Crow	*Corvus cornix*			

Species		Birds Directive Annex	BOCCI	
		I	Red List	Amber List
House Sparrow	*Passer domesticus*			
Jackdaw	*Corvus monedula*			
Mistle Thrush	*Turdus piscivorus*			
Pheasant	*Phasianus colchicus*			
Robin	*Erithacus rubecula.*			
Rook	*Corvus frugiligus*			
Song Thrush	*Turdus philomelos*			
Willow Warbler	*Phylloscopus trochilus*			x
Wood Pigeon	*Columba palumbus*			
Yellowhammer	*Emberiza citrinella*		x	

Overall, the proposed development site is of local value for terrestrial bird species that are relatively common in the Irish countryside. Good quality treelines, woodland and hedgerows at the site provide a range of nesting habitat for common bird species.

No Annex I species were recorded at the site. The River Liffey which runs through the southwestern corner of the site could potentially provide foraging habitat for Kingfisher *Alcedo atthis*. However, no signs of Kingfisher were recorded during site surveys and due to the low sloping river banks at the site there is no suitable nesting habitat within the site or in proximity to the site boundary. No signs of wintering waders or waterfowl were recorded during site surveys. However, Whooper Swans are known to forage on agricultural grassland and cereal stubble in autumn and winter (Robinson et al, 2004). While Whooper Swan could potentially forage at the site during the winter months, given the large areas of arable farming in the region the area within the proposed development site does not provide critical habitat for this species.

One Red List species Yellowhammer *Emberiza citronella* (one singing male) was recorded within the treeline/hedgerow on the southern end of the site. Historically, this species was widespread throughout the country but has suffered declines due to the decrease in cereal crop cultivation in Ireland. Due to this decline, the majority of the Yellowhammer population is confined to the east and south of Ireland. An adult Yellowhammer will mainly feed on the grains produced by grasses and cereals with the young being fed various insect species. In Ireland, the Yellowhammer is strongly associated with cereal cultivation and by extension, is most commonly found in farmland, in close proximity to such crops.

Two Amber List species Swallow *Hirundo rustica* and Willow Warbler *Phylloscopus trochilus* were recorded. Swallow were recorded foraging at the site but no nest sites were recorded. Nesting Willow Warbler were recorded within the woodland habitat on the southern end of the site.

The Red List species Yellowhammer and Amber List species Willow Warbler were recorded within the site boundary but overall the site supports a mixture of terrestrial bird species that are relatively common in the Irish countryside. No Annex I species, were recorded within the proposed development site. Although species more speicalised species such as Grey Heron and Dipper may utilise riverine habitats, no signs of Kingfisher were noted.

4.5.3 Invasive Species

Non-native plants are defined as those plants which have been introduced outside of their native range by humans and their activities, either purposefully or accidentally. Invasive non-native species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and, (3) resistance to standard weed control methods.

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality. The NBDC lists a number of both aquatic and terrestrial high impact invasive plant species which have been recorded within hectad N81 (**Table 7**). It should be noted that this data relates to the entire 10km^2 area and these species will not necessarily occur within the proposed development site boundary.

Table 7. NBDC records of high impact invasive species from N81

Species Group	Species name
Flatworm (Turbellaria)	Arthurdendyus triangulatus
Flowering plant	Cherry Laurel (*Prunus laurocerasus*)
Flowering plant	Indian Balsam (*Impatiens glandulifera*)
Flowering plant	Japanese Knotweed (*Fallopia japonica*)
Insect - beetle (Coleoptera)	Harlequin Ladybird (*Harmonia axyridis*)
Terrestrial mammal	American Mink (*Mustela vison*)
Terrestrial mammal	Brown Rat (*Rattus norvegicus*)
Terrestrial mammal	Eastern Grey Squirrel (*Sciurus carolinensis*)
Terrestrial mammal	Fallow Deer (*Dama dama*)
Terrestrial mammal	House Mouse (*Mus musculus*)
Terrestrial mammal	Sika Deer (*Cervus nippon*)

Source: NBDC 11/02/22

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that

'*Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic species thereof']][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'*

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed (*Fallopia japonica*), as follows: "any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence."

The third schedule invasive species Himalayan Balsam *Impatiens glandulifera* was recorded along the banks of the River Liffey the proposed development site (**Figure 5**). Himalayan Balsam is a member of the busy Lizzie family (Balsaminacea) and as its name suggests, is native to the Himalaya region of Asia. It was introduced as a garden plant in the mid-1800's (Royal Horticultural Society 2008a) and quite swiftly became established along waterways and in other damp places by means of its prolific seed production. It is an annual plant forming dense upright stands approximately 1m tall where it effectively out- competes surrounding herbs and grasses. It is tolerant of shade and does very well in the canopy of riparian woodland. In the autumn it dies back leaving the ground bare and vulnerable to erosion.

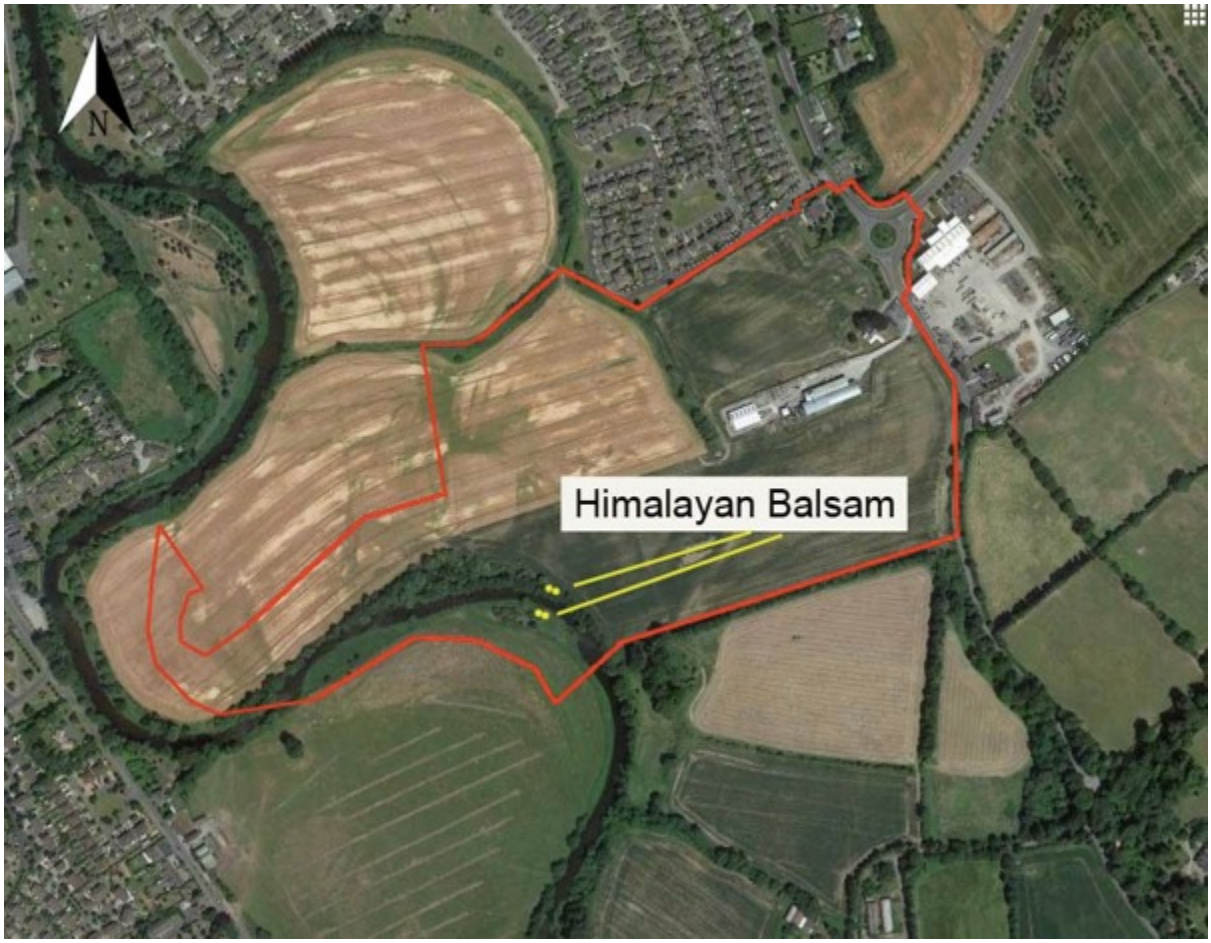


Figure 5. Himalayan Balsam location within proposed development site

4.5.4 River Basin Management Plan for Ireland 2015 – 2018 (2nd Cycle)

The Water Framework Directive (WFD) sets out the environmental objectives which are required to be met through the process of river basin planning and implementation of those plans. Specific objectives are set out for surface water, groundwater and protected areas. The challenges that must be overcome in order to achieve those objectives are very significant. Therefore, a key purpose of the River Basin Management Plan (RBMP) is to set out priorities and ensure that implementation is guided by these priorities.

The second-cycle RBMP aims to build on the progress made during the first cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). The former measure has resulted in significant progress in terms both of compliance levels and of the impact of urban waste-water on water quality. The latter provides a considerable environmental baseline which all Irish farmers must achieve and has resulted in improving trends in the level of nitrates and phosphates in rivers and groundwater. It is acknowledged, however, that sufficient progress has not been made in developing and implementing supporting measures during the first cycle.

Overall, RBMP assesses the quality of water in Ireland and presents detailed scientific characterisation of our water bodies. The characterisation process also takes into account wider water quality considerations, such as the special water-quality requirements of protected areas. The characterisation process identifies those water bodies that are *At Risk* of not meeting the objectives of the WFD, and the process also identifies the significant pressures causing this risk. Based on an assessment of risk and pressures, a programme of measures has been developed to address the identified pressures and work towards achieving the required objectives for water quality and protected areas. Data relating to the watercourses within the study area is provided in **Table 8** and the location of these shown in **Figure 6.**

Treated wastewater from the proposed development site will ultimately be discharged to the Upper River Liffey via a primary discharge point from the Upper Liffey Valley Sewerage Scheme Wastewater Treatment Plant (WWTP). Results from the 2nd cycle of the WFD for waterbodies near the proposed development site and WWTP discharge point are discussed **Table 8**.

Table 8. WFD Status

Catchment: Liffey and Dublin Bay (Code 9) – 2nd Cycle
This catchment includes the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point, Co. Dublin, draining a total area of 1,616km2. The largest urban centre in the catchment is Dublin City. The other main urban centres are Dun Laoghaire, Lucan, Clonee, Dunboyne, Leixlip, Maynooth, Kilcock, Celbridge, Newcastle, Rathcoole, Clane, Kill, Sallins, Johnstown, Naas, Newbridge, Athgarvan, Kilcullen and Blessington. The total population of the catchment is approximately 1,255,000. **The Liffey catchment contains the largest population of any catchment in Ireland and is characterised by a sparsely populated, upland south eastern area and a densely populated, flat, low lying area over the remainder of the catchment basin.** **The Liffey catchment comprises 17 sub-catchments with 77 river water bodies, six lakes, six transitional and five coastal water bodies, and 16 groundwater bodies** **The proposed development site is in the Liffey_080 River Water Body. Status Reports have been prepared this Water Body. Status means the condition of the water in a watercourse and is defined by its ecological and chemical conditions, whichever is worse. Water Bodies are ranked in one of five classes,' High', 'Good', 'Moderate', 'Poor' and 'Bad'.** **The WFD requires measures to ensure waters achieve at least 'Good Status' by 2015 and that their current status does not deteriorate. Where necessary, for example in heavily impacted or modified watercourses, extended deadlines (2021 and 2027) have been set for achieving the following objectives:** **• Prevent Deterioration** **• Restore Good Status** **• Reduce Chemical Pollution** **• Achieve Protected Areas Objectives** **The objectives for particular watercourses are based on 'Pressure and Impact Assessments' of human activity, including point and diffuse emissions, land use and morphological conditions on surface waters to identify those water bodies that are 'At Risk' of failing to meet the WFD objectives. The ecological status/potential of the LIFFEY_080 is classified as 'Good' and the river is 'Not at Risk' of meeting its RBMP objectives. The WWTP discharge point is located in the Liffey_SC_060 sub-catchment. This small sub-catchment only contains three waterbodies. Liffey_100 requires further investigative assessment to identify the source of the pressure believed to be the WWTP. Although Liffey_110 is unassigned Kildare**

Catchment: Liffey and Dublin Bay (Code 9) – 2nd Cycle			
CoCo indicated pressure from a pumping station that needs to be considered. In Liffey_120 there is elevated P and NH3. There are known issues with a historic landfill in the waterbody and also urban diffuse pressures from Naas. The status of waterbodies in the vicinity of Dublin Bay are also described below.			
Waterbodies relevant to the proposed project (2nd Cycle)			
Waterbody	WFD Status	Risk	**Pressure Category** **WFD Status**
Liffey_080	Good	Not at risk	n/a
Liffey_100	Moderate	Review	Urban wastewater
Liffey_120	Good	Not at risk	n/a
Liffey Estuary	Good	At risk	Urban wastewater
Dublin Bay	Good	Not at risk	n/a

Source: EPA envision mapping and www.catchments.ie 22/04/2021

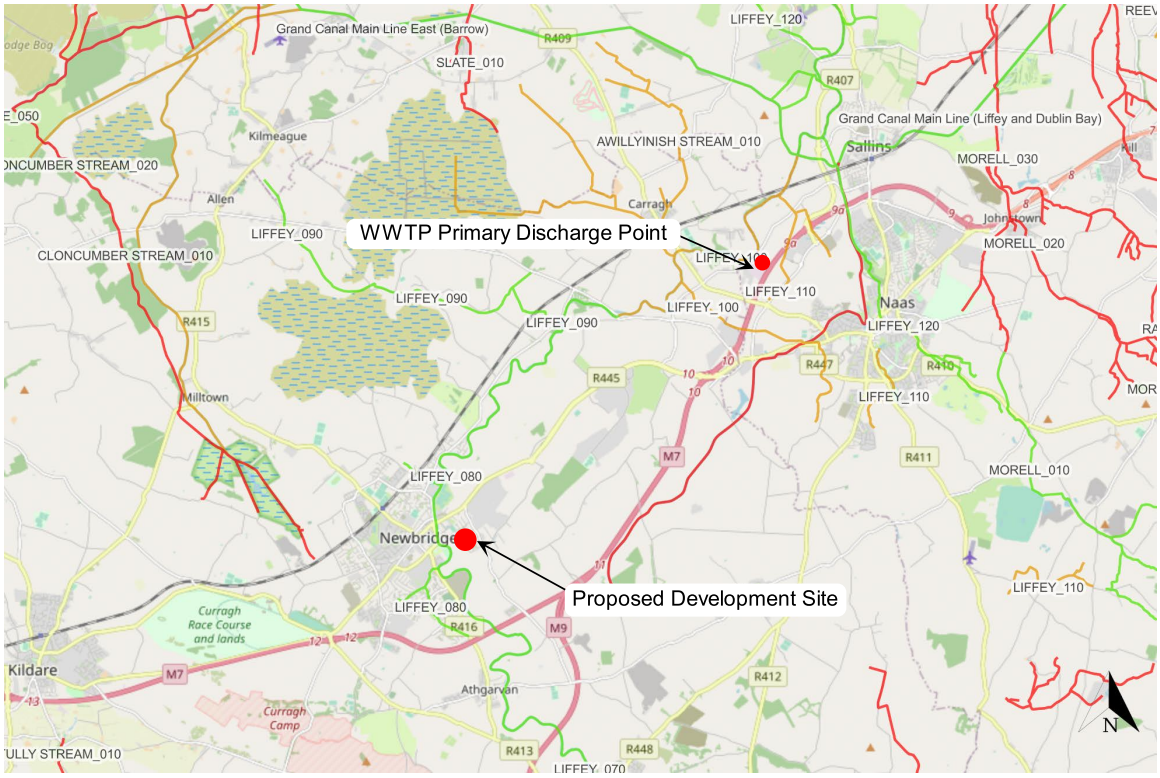


Figure 5. WFD 2nd cycle - waterbodies in the vicinity of the proposed development | Source: EPA Envision mapping | not to scale. Red lines 'At Risk'.

4.5.5 Urban Wastewater Treatment Directive

The Waste Water Discharge (Authorisation) Regulations 2007 (S.I. 684 of 2007) gives effect to the requirements of the Urban Waste Water Treatment Directive (Directive 91/271/EEC) and the Water Framework Directive (2000/60/EC) in Ireland. The Urban Waste Water Treatment Directive (UWWTD) lays down the requirements for the collection, treatment and

discharge of urban waste-water and specifies the quality standards which must be met — based on agglomeration size — before treated waste-water is released into the environment.

The priority objective for this river basin planning cycle is to secure compliance with the Urban Waste Water Treatment Directive and to contribute to the improvement and protection of waters in keeping with the water-quality objectives established by this Plan. Achieving this objective entails addressing waste-water discharges and overflows where protected areas (i.e. designated bathing waters and shellfish waters) or high-status waters are at risk from urban waste-water pressures.

As part of the proposed development wastewater discharging from the proposed development will be conveyed to the Upper Liffey Sewerage Scheme WWTP (D0002-01) for treatment prior to discharging into the River Liffey.

5. Impact Assessment

5.1 Introduction

The AA screening report, accompanying this application, identified potential significant effects on the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA. **Sections 3 and 4** of this report are relevant to informing the Natura Impact Statement (NIS) in that the proposed development and receiving environment is described in sufficient detail. This NIS now examines and analyses, in light of the best scientific knowledge, with respect to this Natura 2000 site within the zone of influence of the proposed development, the potential effect sources and pathways, how these could impact on the qualifying habitats and SCI species and whether the predicted effects would adversely affect the integrity of the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA.

Mitigation measures are set out within the NIS and ensure that any effects on the conservation objectives of South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA will be avoided during the proposed development such that there will be no risk of adverse effects on South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA.

5.2 Status of Qualifying Interests in North Dublin SAC and South Dublin Bay SAC

5.2.1 Mudflats and sandflats not covered by seawater at low tide (1140), Salicornia and other annuals colonising mud and sand (1310), salt meadows (Glauco-Puccinellietalia maritimae) (ASM) (1330) and Mediterranean salt meadows (J*uncetalia maritimi*) (MSM) (1410)

Mudflats and sandflats not covered by seawater at low tide (1140), Salicornia and other annuals colonising mud and sand (1310), salt meadows (Glauco-Puccinellietalia maritimae) (ASM) (1330) and Mediterranean salt meadows (*Juncetalia maritimi*) (MSM) (1410) are qualifying habitats for the North Dublin Bay SAC. Mudflats and sandflats not covered by seawater at low tide [1140] and Salicornia and other annuals colonising mud and sand [1310] are qualifying habitats for the South Dublin Bay SAC.

Saltmarshes are stands of vegetation that occur along sheltered coasts, mainly on mud or sand, and are flooded periodically by the sea. They are restricted to the area between mid-neap tide level and high-water spring tide level. The three qualifying habitats are listed under Annex I of the EU Habitats Directive (92/43/EEC):

Within North Dublin Bay SAC the areas of Salicornia habitat are situated in a large area on the mudflats, north of the causeway called the Salicornia bank. This area developed soon after the construction of the causeway in 1964 so this section of habitat is relatively young. This area also contains frequent clumps of common cordgrass (*Spartina anglica*) which can be quite dense in places (McCorry, 2007).

The main area of saltmarsh is dominated by ASM with several areas supporting MSM as indicated by clumps of sea rush (*Juncus maritimus*) at the back of the saltmarsh (McCorry, 2007).

Human communities and industries often discharge wastewaters into estuaries, influencing their organic and pollutant loading, benthic community and trophic structure. The deleterious effects of excessive nutrient enrichment include increases in the frequency and duration of phytoplankton blooms (in some cases of nuisance and toxin emitting species), depletion of dissolved oxygen resulting in the mortality of marine organisms, and changes to the structure and functioning of marine food webs. In addition, nutrient enriched waters may experience excessive growth and stranding's of macroalgae that typically produce very strong odours and visual impact as they degrade on beaches and shorelines (EPA, 2008).

The position of estuaries at the foot of the watershed and their open connection to the sea makes them subject to almost continuous input of nutrients (Neilson & Cronin, 1981). Although estuaries cycle large quantities of nutrients, these same nutrients if put in excessive amounts can be highly detrimental to estuarine and coastal ecosystems (Neilson & Cronin, 1981).

The overall objective for these habitats in North Dublin Bay Complex SAC is to 'restore the favourable conservation condition'. The specific conservation targets for this SAC are listed in **Table 9**.

The overall objective for these habitats in South Dublin Bay SAC is to 'restore the favourable conservation condition'. The specific conservation targets for this SAC are listed in **Table 10**.

5.2.2 Annual vegetation of drift lines [1210], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Humid dune slacks [2190]

Annual vegetation of drift lines [1210], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] and Humid dune slacks [2190] are qualifying habitats for North Dublin Bay SAC.

Annual vegetation of drift lines [1210] and Embryonic shifting dunes [2110] are qualifying habitats for South Dublin Bay SAC.

These are terrestrial habitats with no pathway for impact via surface water discharges. Given the distance from the proposed development site, and the terrestrial nature of these habitats

no potential effects on these habitats will occur. Therefore they are not addressed further in this NIS.

5.2.3 *Petalophyllum ralfsii* (Petalwort) [1395]

Petalwort is a qualyfing interest for the North Dublin Bay SAC. This species occurs on terrestrial habitat and there is no pathway for impact via surface water discharges. Therefore this species is not addressed further in this NIS.

Table 9. QI habitats in North Dublin Bay SAC for which a potential impact has been identified – specific targets

Habitats	Attribute	Measure	Target
Mudflats and sandflats not covered by seawater at low tide	Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes
	Community distribution	Hectares	Conserve the following community type in a natural condition: Mixed sediment to sandy mud with polychaetes and oligochaetes community complex
	Community structure: Mytilus edulis density	Individuals/m2	Conserve the high quality of the Mytilus edulis- dominated community, subject to natural processes
	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
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 81.84ha.
	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
	Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
	Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
	Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated

Habitats	Attribute	Measure	Target
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (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% where it is known to occur
Salicornia and other annuals colonising mud and sand	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 29.10ha
	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
	Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
	Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
	Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (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% where it is known to occur
Mediterranean salt meadows (*Juncetalia maritimi*)	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha.
	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
	Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
	Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession

Habitats	Attribute	Measure	Target
	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
	Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (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% where it is known to occur

Table 10. QI habitats in South Dublin Bay SAC for which a potential impact has been identified – specific targets

Habitats	Attribute	Measure	Target
Mudflats and sandflats not covered by seawater at low tide	Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes
	Community distribution	Hectares	Conserve the following community type in a natural condition: Mixed sediment to sandy mud with polychaetes and oligochaetes community complex
	Community structure: Mytilus edulis density	Individuals/m2	Conserve the high quality of the Mytilus edulis- dominated community, subject to natural processes
	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
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 81.84ha.
	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
	Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
	Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession

Habitats	Attribute	Measure	Target
	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
	Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (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% where it is known to occur
Salicornia and other annuals colonising mud and sand	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 29.10ha
	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
	Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
	Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
	Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (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% where it is known to occur
Mediterranean salt meadows (*Juncetalia maritimi)*	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha.
	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
	Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure:	Hectares flooded;	Maintain natural tidal

Habitats	Attribute	Measure	Target
	flooding regime	frequency	regime
	Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
	Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (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% where it is known to occur

5.3 Status of Special Conservation Interests (SCIs) for North Bull Island SPA

North Bull Island lies roughly parallel to the shore and is a low-lying sandy spit, about 4.85 km long and 0.70 km wide (McCorry & Ryle, 2009a). It is a relatively recent geomorphological feature having emerged as a result of the build-up of sediment overt the last 200 years following the construction of the South and North Bull walls during the 18 and 19 centuries. The North Bull Wall marks the southern boundary of the island and is connected to the mainland by a wooden bridge. The island is actively accreting (Ryle *et a*l. 2009). A sandy beach, Dollymount Strand, occurs on the seaward side of the island and intertidal mudflats occur on the inner (mainland side) fringed by saltmarsh. A causeway built in 1965 provides the main access to the island and divides the intertidal flats into two areas known as the North and South Bull lagoons. Both of these are covered completely by most tides and are drained by permanent channels; the southern lagoon fills and empties beneath Bull Bridge, while water in the northern lagoon is channelled in and out through Sutton Creek (Harris, 1977). These lagoons provide the main feeding grounds for the wintering waterfowl while the fringing saltmarsh provides the main roost site for wintering birds in Dublin Bay. Macroalgal mats of filamentous Ulva spp. (formerly Enteromorpha spp.)1 are prevalent.

North Bull Island is one of the finest sand dune systems in Ireland and is internationally important in terms of conservation value (McCorry & Ryle, 2009a). It has several high quality examples of rare and threatened coastal habitats and a wealth of biodiversity, which includes several habitats and species listed in Annexes I and II of the EU Habitats Directive. As a consequence, North Bull Island is afforded several other nature conservation designations alongside its status as a Special Protection Area. It was designated as an official bird sanctuary under the Wild Bird Protection Act, 1931, the first bird sanctuary in Ireland (McCorry & Ryle, 2009a), and was established as a National Nature Reserve in 1988 (two parts covered by S.I. 231 and S. I. 232 of 1988). The site has been designated as part of a Special Area of Conservation (North Dublin Bay SAC - NPWS site code 000206). North Bull Island is also a Biogenetic Reserve (Council of Europe) and a UNESCO World Biosphere Reserve.

The specific conservation objectives for species listed as conservation interests for the North Bull Island SPA (**Table 11**) are to maintain a favourable conservation condition of the non-breeding waterbirds and to maintain the favourable conservation condition of the wetland habitat at the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

These species are listed as SCIs for the North Bull Island SPA for the following reasons:

During winter the site regularly supports 1% or more of the biogeographic population of Light-bellied Brent Geese.

During winter the site regularly supports 1% or more of the all-Ireland population of each of the following species: Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank and Turnstone.

During winter the mean peak number of wintering Black-headed Gull within the site during the baseline period exceeds the selection threshold set for this species.

The wetland habitats contained within North Bull Island SPA are identified of conservation importance for non-breeding (wintering) migratory waterbirds. Therefore, the wetland habitats are considered to be an additional Special Conservation Interest.

The conservation targets for these species with North Bull Island SPA are listed in **Table 11**.

Table 11. SCI species of North Bull Island SPA for which a potential impact has been identified – specific targets

Species/Habitats	Attribute	Measure	Target
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] **Shelduck (*Tadorna tadorna)* [A048]**	Population trend	Percentage change	Long term population trend stable or increasing
Teal (*Anas crecca)* [A052] **Pintail (*Anas acuta*) [A054]** **Shoveler (*Anas clypeata*) [A056]**	Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by each species, other than that occurring from natural patterns of variation

Oystercatcher (*Haematopus ostralegus*) [A130] **Golden Plover (*Pluvialis apricaria*) [A140]** **Grey Plover (*Pluvialis squatarola*) [A141]** **Knot (*Calidris canutus*) [A143]** **Sanderling (*Calidris alba*) [A144]** **Dunlin (*Calidris 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]**			
Wetlands	Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation

5.4 Status of Special Conservation Interests (SCIs) for South Dublin Bay and River Tolka SPA

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the expanse of intertidal habitat between the River Liffey and Dún Laoghaire plus the estuary of the River Tolka to the north of the River Liffey. A portion of the shallow marine waters of the bay is also included. The site also includes a small (c.4ha) brackish marsh called Booterstown Marsh.

In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands with Sandymount Strand dominating the narrower Merrion Strand further south. Sediments in the Tolka Estuary vary from soft muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. Some bedrock shore occurs near Dún Laoghaire. The landward boundary is now almost entirely artificially embanked and bordered by road or railway.

A bed of Dwarf Eelgrass (Zostera noltii) occurs near Merrion Gates and is the largest known stand on the east coast. Green macroalgal mats occur at low densities. A sand bar has developed between Merrion Gates and Booterstown Railway Station. Sand bars are used as roosts by waders, gulls and terns as the tide floods and ebbs in the south bay. Embryonic dune, strandline vegetation and some marram dune also occur.

Booterstown Marsh lies approximately 3 miles south of Dublin City. The marsh is brackish in nature and developed during the 19th century after being separated from Merrion Strand by the building of an embankment which carries the Dublin/Wexford railway line. It is bounded to the west by the Dublin to Blackrock road. The marsh drains by a series of sluices and one main outflow (Williamstown Creek) to the south-east of the railway (DART) station. Primarily a brackish marsh, some fragmented saltmarsh occurs along its fringes. This is the only remaining area of saltmarsh in South Dublin Bay although this habitat would have fringed a large section of this area in the past (Dún Laoghaire-Rathdown County Council, 2009). Large parts of the marsh are unvegetated with bare intertidal mudflats. Salinity levels fluctuate on a regular basis due to the combination of freshwater inputs from two streams and tidal influence.

These species are listed as SCIs for the South Dublin Bay and River Tolka SPA for the following reasons:

- During winter the site regularly supports 1% or more of the biogeographic population of Light-bellied Brent Geese.
- During winter the site regularly supports 1% or more of the all-Ireland population of each of the following species: Oystercatcher, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank and Ringed Plover

The winter mean peak number of Black-headed Gull within the site during the baseline period exceeds the selection threshold set for this species.

During the breeding season this site supports a colony of Common Tern which exceeds the All-Ireland 1% threshold for this Annex I species.

This site is selected as an important passage area for three migratory waterbird species based on significant concentrations recorded, as follows: Common Tern, Arctic Tern and Roseate Tern.

The conservation targets for these species with South Dublin Bay and River Tolka Estuary SPA are listed in **Table 12**.

Table 12. SCI species of South Dublin Bay and River Tolka SPA for which a potential impact has been identified – specific targets

Species/Habitats	Attribute	Measure	Target
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] **Oystercatcher (*Haematopus ostralegus*) [A130]**	Population trend	Percentage change	Long term population trend stable or increasing
Ringed Plover (*Charadrius hiaticula)* [A137] **Knot (*Calidris canutus*) [A143]** **Sanderling (*Calidris alba*) [A144]** **Dunlin (*Calidris alpina*) [A149]**	Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by each species, other than that occurring from natural patterns of variation

Bar-tailed Godwit (*Limosa lapponica*) [A157] **Redshank (*Tringa totanus)* [A162]** **Black-headed Gull (*Chroicocephalus ridibundus*) [A179]**			
Common Tern (*Sterna hirundo*) [A193]	Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline
	Productivity rate: fledged young per breeding pair	Mean number	No significant decline
	Passage population individuals	Number	No significant decline
	Distribution: breeding colonies	Number; location; area (hectares)	No significant decline
	Prey biomass available	Kilogrammes	No significant decline
	Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
	Disturbance at the breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding common tern population
	Disturbance at roosting sites	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

Roseate Tern (*Sterna dougallii*) [A192] **Arctic Tern (*Sterna paradisaea)* [A194]**	Passage population individuals	Number	No significant decline
	Prey biomass available	Kilogrammes	No significant decline
	Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
	Distribution of roosting site	Number; location; shape; area (hectares)	No significant increase
	Disturbance at roosting sites	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
Wetlands	Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation

5.5 Assessment of Potential Impacts

All potential impacts would relate to direct and indirect impacts to relevant habitats and fauna of South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA. The assessment of impacts is based on the EC (2018) *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC*, professional judgement and criteria or standards where available.

The potential impacts associated with the development are discussed in the following section with respect to their likelihood to have had or to have significant impacts on Natura 2000 sites. As part of the assessment direct, indirect and cumulative impacts were considered. Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development. Indirect and secondary impacts do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect impacts of the project/plan – in combination with other plans and projects have been established.

As part of the assessment the potential for impacts associated with the proposed development were reviewed as outlined below:

- Impacts from surface water runoff during construction
- Impacts from surface water runoff during operation
- Impacts from wastewater discharges during construction
- In-combination impacts

5.5.1 Impacts on surface water quality during construction

Potential impacts on aquatic habitats which can arise from surface water emissions associated with the construction phase of the proposed development include increased silt levels in surface water run-off and inadvertent spillages of hydrocarbons from fuel and hydraulic fluid.

High levels of silt can impact on fish species, in particular salmonids. If of sufficient severity, adult fish could theoretically be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels. If of sufficient severity, aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Cement can also affect fish, plant life and macroinvertebrates by altering pH levels of the water. Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced. Such run-off if severe could potentially impact on water quality and thus could impact on aquatic species.

Inadvertent spillages of hydrocarbon and/or other chemical substances could introduce toxic chemicals into the aquatic environment via direct means, surface water run-off or groundwater contamination. Some hydrocarbons exhibit an affinity for sediments and thus become entrapped in deposits from which they are only released by vigorous erosion or turbulence. Oil products may contain various highly toxic substances, such as benzene, toluene, naphthenic acids and xylene which are to some extent soluble in water; these penetrate into the fish and can have a direct toxic effect. The lighter oil fractions (including kerosene, petrol, benzene, toluene and xylene) are much more toxic to fish than the heavy fractions (heavy paraffins and tars). In the case of turbulent waters, the oil becomes dispersed as droplets into the water. In such cases, the gills of fish can become mechanically contaminated and their respiratory capacity reduced (Svobodova *et al.* 1993). Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced. Significant impacts on fish stocks or invertebrate prey could potentially impact on piscivorous species including Common Tern, Roseate Tern and Arctic Tern or wading birds such as Golden Plover and Black-tailed Godwit due to a reduction in prey availability.

During the construction phase, the scale of the works will be small and there is no potential for significant hydrocarbon spills. Therefore, in the unlikely event of a minor hydrocarbon spill and in the context of the available dilution in the River Liffey, impacts are highly unlikely to occur. However, given the hydrological connection of the proposed development to Dublin Bay, the precautionary principle has been applied and mitigation measures to prevent hydrocarbon (and other chemical) runoff during the construction phase have been outlined in **Section 6** of this report. These measures include a 80m riparian strip along the River Liffey where no constructing works will take place.

Although unlikely given the distance from South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA and the dilution available with the River Liffey, there is potential for contamination arising during construction works. Therefore, in order to prevent any risk of impacts from siltation a range of standard water protection measures have been included in **Section 6** of this report, to ensure there is no impact on the South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA from surface water runoff during the construction phase. Therefore, the proposed development will have no impact on the integrity of these Natura 2000 sites due to surface water runoff during the construction phase.

5.5.2 Impacts from Surface Water During Operation

A new surface water sewer network shall be provided for the proposed development. The proposed surface water drainage network will serve the developed section of the site. Due to the topography across the site, it is not possible to drain the entire site via one outfall. As such it is proposed to discharge via four outlets to the existing ditch which passes through the mid-northern portion of the site and two outlets to the River Liffey to the west.

All surface water drainage within the site will fall via gravity to the various surface water outfalls. Flows from the development will be limited to greenfield runoff rates and appropriate attenuation will be provided. Therefore, total discharge will be limited to the greenfield runoff rate of 76.31 l/s.

The proposed link road which will traverse the site is to be drained separately to the development drainage. A dedicated surface water drainage line will be provided for the road which will discharge to a dedicated attenuation system. As an additional treatment measure, the surface water will be routed through petrol interceptors prior to discharge to the River Liffey.

The flow from the road will also be limited to greenfield rates and will connect to the proposed development drainage downstream of the hydrobrake. It is proposed that all surface water run-off from trafficked areas will outfall via Class 1 Bypass Separator located downstream of the proposed attenuation tanks. These devices will remove hydrocarbons and fine sediment particles from the site runoff and lower the risk of downstream contamination following an oil spillage on site. In addition to the underground attenuation tanks, the following Sustainable Urban Drainage Systems (SuDs) are incorporated into the design including permeable paving, swales/bioswales, green roofs, soakaways/soak pits and rainwater harvesting.

Updated baseline modelling carried out by JBA Consulting as part of the Flood Risk Assessment (RFA) confirms that the site is partially within Flood Zone A and B from overland flow routes of the River Liffey. The proposed development provides compensatory storage compensate for the loss of Flood Zone A. Overall the proposed development will be at low risk of flooding and will not increase the flood risk to the surrounding areas. It is noted that an independent peer review was complete on the flood strategy for the proposed development was carried out by Arup and the results of this confirms the proposed flood risk assessment.

Given the operational design measures and the lack of changes in flows/flood risk to surrounding area, the proposed development will have no impact on the integrity of these Natura 2000 sites due to surface water runoff during the operational phase.

5.5.3 Impact from Wastewater Discharges During Operation

Wastewater from the proposed development will be conveyed for treatment to the Upper Liffey Valley Sewerage Scheme WWTP. Treated effluent from the proposed development will ultimately discharge into the waters of the River Liffey 47km-50km upstream of Dublin Bay.

Although highly unlikely given the distance upstream and dilution available, the proposed development could potentially impact on South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA. The proposed development could potentially result in an increase in nutrients discharging to Dublin Bay via

the River Liffey discharge for the Upper Liffey Valley Sewerage Scheme WWTP. Increased nutrients can potentially impact on estuarine habitats by changing baseline ecological conditions and increasing algal growth, which in turn could impact on qualifying habitats for South Dublin Bay SAC and North Dublin Bay SAC as well as on and feeding success for birds listed as SCIs South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA.

This area of County Kildare is served by the Upper Liffey Valley Sewerage Scheme WWTP wastewater treatment plant with a Plant Capacity Population Equivalent (P.E.) of 130,000. The WWTP has one primary discharge point which discharges to the River Liffey approximately 12km downstream of the proposed development site. The WWTP obtained a discharge licence (Reg: D0002-01) from the Environmental Protection Agency and has assigned emission limit values (ELVs) for a range of parameters to ensure a high degree of protection to the River Liffey and connecting waters. The discharge licence assigns ELVs for biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), Total Nitrogen (Total N), Total Oxidised Nitrogen, Total Ammonia, Total Phosphorous, Orthophosphate, pH and total coliforms. The ELVs are set based on the full design capacity (P.E 130,000) and are aimed at providing a high degree of protection to the receiving water body and to ensure the receiving waterbody is capable of accommodating the proposed discharge without causing or exacerbating a breach in the relevant standards.

The 2020 Annual Environmental Report for the Upper Liffey Sewerage Scheme WWTP (D0002-01) was reviewed. **Table 13** provides a summary of the current operating conditions for the WWTP from the main effluent discharge obtained from the most recent Environmental Protection Agency Annual Environment Report 2020 (EPA 2021).

The AER notes that the final effluent from the Primary Discharge Point was compliant with the Emission Limit Values in 2020 and noted there were no exceedances during the monitoring period.

Overall, the discharge from the WWTP does not have an observable negative impact on receiving water quality nor a negative impact on the Water Framework Directive Status. However ambient monitoring results do not meet the required EQS upstream or downstream of the WWTP for ammonia. The AER concluded the following:

- The WWTP discharge was compliant with the ELV’s set in the wastewater discharge licence .
- The ambient monitoring results do not meet the required EQS upstream or downstream of the WWTPs for ammonia. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.
- Based on ambient monitoring results a deterioration in Ortho-P (RS09L011200 & RS09L011300) and Ammonia (RS09L011200) concentrations downstream of the effluent discharge is noted.
- A minor deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

- Other causes of deterioration in water quality in the area are unknown. The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

The Upper Liffey WWTP, with a design capacity of 130,000 currently operates an agglomeration PE of 97,150 PE (based on EPA 2020 data). Given the residual capacity at the WWPT, there will be sufficient capacity within to cater for the additional loading and no impact on local water quality is predicted to occur.

The addition of the effluent discharge from the proposed development to the Upper Liffey Sewerage Scheme WWTP is well within its design capacity and will not comprise the operational capability of the WWTP to treat effluent to comply with emission limit values. Therefore, the impacts from the proposed development will be negligible given the current operating conditions at the WWTP. The proposed development will not have a significant impact on the conservation objectives of listed as qualifying interests or the conservation objectives of South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA. Similarly, there will be no impact on estuarine habitats within these Natura 2000 sites.

Table 13. Effluent Monitoring

Effluent Monitoring Summary	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Orthophosphate (mg/l)	Total P (mg/l)	Ammonia Total (as N) (mg/l)	Total Oxidised Nitrogen (mg/l)	Fats Oils and Greases (mg/l)	pH
WWDL ELV (Schedule A)	19	100	35.0	0.5	0.9	0.9	20	15	6-9
ELV with Condition 2 Interpretation included	20	200	87.5	0.6	1.08	1.08	24	18	6-9
No. of Sample results	50	50	50	50	50	50	50	9	50
Number of exceedances	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Number of sample results above ELV with condition 2 interpretation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual Mean (parameters where a mean ELV applies are shaded)	1.36	22.12	2.65	0.09	0.23	0.11	8.45	3.45	7.5
Overall Compliance (Pass/Fail)	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

5.5.4 In combination Impacts

In-combination impacts refer to a series of individually modest impacts that may in combination produce a significant impact. The underlying intention of this in combination provision is to take account of in-combination impacts from existing or proposed plans and projects and these will often only occur over time. Other developments near site and potential in-combination impacts are identified in **Table 14**. In the absence of any significant impacts on qualifying interests or conservation objectives associated with this project no significant in-combination impacts have been identified.

Table 14. Other developments near site and potential cumulative impacts

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
River Basin Management Plan 2018-2021	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2021. • Ensure full compliance with relevant EU legislation • Prevent deterioration • Meeting the objectives for designated protected areas • Protect high status waters • Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination or cumulative impacts with the proposed development.
Inland Fisheries Ireland Corporate Plan 2016 - 2020	To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and that pristine aquatic habitats are also enjoyed for other recreational uses. To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a sustainable conservation focused manner. EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed works.

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
Irish Water Capital Investment Plan 2014-2016	Proposals to upgrade and secure water services and water treatment services countrywide.	Likely net positive impact due to water conservation and more effective treatment of water.
Water Services Strategic Plan (WSSP, 2015)	Irish Water has prepared a Water Services Strategic Plan (WSSP, 2015), under Section 33 of the Water Service No. 2 Act of 2013 to address the delivery of strategic objectives which will contribute towards improved water quality and biodiversity requirements through reducing: • Habitat loss and disturbance from new / upgraded infrastructure; • Species disturbance; • Changes to water quality or quantity; and Nutrient enrichment /eutrophication.	The WSSP forms the highest tier of asset management plans (Tier 1) which Irish Water prepare and it sets the overarching framework for subsequent detailed implementation plans (Tier 2) and water services projects (Tier 3). The WSSP also sets out the strategic objectives against which the Irish Water Capital Investment Programme is developed. The current version of the CAP outlines the proposals for capital expenditure in terms of upgrades and new builds within the Irish Water owned assets. Therefore, no adverse significant in-combination effects are envisaged.
NPWS Conservation Management Plans	Conservation Management Plans have not been fully prepared for the European sites being assessed. However, conservation objectives along with supporting documents for the South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA	The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
		status of those habitats and species at a national level. The resultant effects of conservation objectives are a net positive and there is no potential for in combination effects on European sites.
WWTP discharges	Ringsend WWTP, Lower Liffey Valley Sewerage Scheme WWTP, Balllymore Eustace WWTP	Discharges from municipal WWTPs are required to meet water quality standards. Irish Water Capital Investment Plan proposes to upgrade water treatment services countrywide (see above). The long-term cumulative impact is predicted to be negligible.
Other developments	In November 2021 planning permission (Planning Ref No 211248) was granted to Barola Capital DAC for a Distribution Warehouse, Ancillary Office Accommodation and Ancillary Buildings on a 15.42 ha site to the north-east of the proposed development. The site enabling works for the main contract due to start in May 2022. The works to the Ballyfarm Road including upgraded bus stops and resurfacing of footpaths are scheduled for completion in June 2022. Given the progress to date, the Distribution Centre will be operational before the construction of Phase 1 of the proposed development begins. In December 2021, Murphy Ireland International Ltd. lodged an application (Ref No 21780) for two manufacturing buildings at their compound to the east of the proposed development. The pipe repair and testing operation in the centre of the development area will be relocated to these buildings. If the construction of the buildings overlaps with Phase I of the proposed development there is the potential for cumulative effects on air quality.	A worst-case scenario would occur if the construction of these projects were to run concurrently with proposed developments. In the event of this there is potential for in-combination disturbance effects, as the sites are located in proximity to each other. Should this situation arise, construction activities will be planned and phased, in consultation with construction management teams. A worst-case scenario is of construction for both projects running concurrently. Given the dilution provided in the River Liffey and implementation mitigation measures, no significant effect on water quality or in-combination effects will occur in the

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
		event that the projects run concurrently. No cumulative impacts are predicted to occur within the Natura 2000 sites as a result of these proposed and permitted projects.
Other plans	The completion of the section of the NSORR between Great Connell Roundabout and the Athgarvan Road requires the extension of the roadway and the construction of a bridge over the Liffey to tie into the section of the NSORR being delivered as part of the residential development currently under construction to the south west of the propose development site. This will be the subject of a separate planning application and will be subject of EIA. At the time of the preparation of this EIAR the alignment and design of the bridge are indicative only.	A worst-case scenario would occur if the construction of these projects were to run concurrently with proposed developments. In the event of this there is potential for in-combination disturbance effects, as the sites are located in proximity to each other. Should this situation arise, construction activities will be planned and phased, in consultation with construction management teams. A worst-case scenario is of construction for both projects running concurrently. Given the dilution provided in the River Liffey and implementation mitigation measures, no significant effect on water quality or in-combination effects will occur in the event that the projects run concurrently. No cumulative impacts are predicted to occur within the Natura 2000 sites as a result of these proposed and permitted projects.

The area surrounding the proposed development is also heavily populated with a mixture light industrial, commercial and residential developments. Wastewater is also discharged from other settlements along the River Liffey and Dublin Bay (e.g. Lower Liffey and Dublin City)

and local industry. However, in the absence of any significant impact associated with this project no cumulative impacts on water quality have been identified. Similarly, no significant cumulative impacts in relation to noise and disturbance have been identified.

6. Mitigation

6.1 General Mitigation Measures

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage and mitigation measures will function effectively in preventing significant ecological impacts. A Preliminary Construction Environmental Management Plan (CEMP) has been prepared. The CEMP contains the construction mitigation measures, which are set out in this report.

Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- *Control of water pollution from construction sites. Guidance for consultants and contractors (*C532). CIRIA. H. Masters-Williams et al (2001)
- *Control of water pollution from linear construction projects. Technical guidance (C648).* CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

All personnel involved with the proposed development will receive an on-site induction relating to construction and operations, and the environmentally sensitive nature of the River Liffey and to re-emphasise the precautions that are required as well as the control measures to be implemented. Site managers, foremen and workforce, including all subcontractors, will be suitably trained in risks and preventative measures.

The construction works have the potential to impact on the environment through the generation of noise and dust and impacts on air quality, surface water, groundwater and ecology. The Main Contractor shall appoint an experienced Ecological Clerk of Works (ECoW) who will be responsible for ensuring the mitigation measures specified in this Plan are effectively implemented throughout the Construction Stage. This includes the provision of staff induction training and regular ‘tool box’ talks.

6.2 Land & Soil

The following management practices will be implemented to minimise the risk of soil contamination:

- Excavation and the stripping of topsoil etc. will only be undertaken when absolutely necessary as this can lead to sediment run off and leaching of nutrients from soils into the groundwater.
- Excavated soils not immediately reused will be stockpiled to minimise the effects of weathering.

- Good housekeeping (daily site clean-ups, use of disposal bins, etc.) on site during construction, and the proper use, storage and disposal of substances and their containers will Regular plant maintenance to minimise oil leaks.

- Refuelling of the diesel fuelled plant will only be undertaken by trained personnel in areas where appropriate spill control materials are to hand (spill mats, oil dry). Any spillages should be immediately contained and the contaminated soil excavated and sent to an appropriately licensed waste management facility.

6.3 Water

The mitigation measures described in **Section 6.2** are equally relevant to the protection of surface waters. The following additional measures will be implemented:

- A 10m buffer will be maintained between the existing ditch that will be retained and the construction area.

- The only works carried out inside the 80 m riparian strip along the Liffey will be the provision of bound gravel bitmac paths. A minimum 10 m buffer will be maintained between the river bank and the operational area when the paths are being laid.

- Pouring of cementitious materials will be carried out where possible in the dry and pumped concrete will be monitored to ensure no accidental discharge

- Excess concrete will be removed from the site and concrete washout will not be permitted on the site

- There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials

- A 5 meter buffer will be maintained along the banks for the drains in the north of the site.

A stretch of the drainage ditch in the north of the site will be infilled. A storm water attenuation system will be installed comprising a range of SuDs measures including underground attenuation. The attenuation system will discharge to the drainage ditch in the north of the site and to the River Liffey via silt traps and oil interceptors. The outfalls will be constructed in accordance with Inland Fisheries Ireland “Guidelines on the Protection of Fisheries during Construction Works In and Adjacent to Waters 2016”

6.4 Oils and Chemical Storage

All oils, fuels, paints and other chemicals will be stored in a secure, bunded, hardstand area. The bund capacity of the bulk oil storage tanks will at a minimum be 110% of the tank. For drum storage, a bund capacity of 25% of the maximum volume of material stored is required. The refuelling and servicing of mobile plant and equipment will only be carried out in a designated hardstand area which is at least 50m from any drains.

7. NIS conclusion and statement

The AA screening concluded, on the basis of objective information and in view of best scientific knowledge, the possibility of significant effects from the proposed project on European sites could not be ruled out and therefore an Appropriate Assessment was required. The AA screening concluded that there was potential for the proposed development to significantly impact South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA via surface water runoff during construction and operation and the wastewater discharges during operation.

The NIS has been prepared to inform and assist An Bord Pleanála to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European sites, South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA.

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA within the potential zone of influence of the proposed development, the potential effect pathways, how these could impact on SCI species and habitats and whether the predicted effects would adversely affect the integrity of South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA.

Mitigation measures are set out in **Section 6** of the NIS and they ensure that any effects on the conservation objectives of South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC and North Bull Island SPA will be avoided during the proposed development such that there will be no risk of adverse effects on the integrity of these European sites.

It has been objectively concluded following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted effects from the proposed development and with the implementation of the mitigation measures proposed, that the construction and operation of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects. There is no reasonable scientific doubt in relation to this conclusion. The competent authority will make the final determination in this regard.

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Appendices

Appendix 1. Natura 2000 Site Synopses

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.

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. Baitdigging is a regular activity on the sandy flats. At high tide some areas have windsurfing 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.

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 macroinvertebrate 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.

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.

SITE NAME: POULAPHOUCA RESERVOIR SPA SITE CODE: 004063

Poulaphouca Reservoir SPA, located in the western foothills of the Wicklow Mountains, was created in 1944 by damming of the River Liffey for the purpose of generating electricity from hydropower. The reservoir covers an area of approximately 20 square kilometres and is the largest inland water body in the mid- east and south-east regions. The reservoir receives water from two main sources, the River Liffey at the northern end, and the Kings River at the southern end. The exit is into the River Liffey gorge at the western end. Underlying the reservoir are sands and gravels deposited during the last glaciation. The shores of the lake are mostly sandy. When water levels are low the exposed lake muds are colonised by an ephemeral flora of annual plant species. Wet grassland areas occur in sheltered bays around the lake but especially in the northern part. Reed Canary-grass (Phalaris arundinacea) is the main grass species present, but other plant species characteristic of wet grasslands occur, including Creeping Bent (Agrostis stolonifera), Meadowsweet (Filipendula ulmaria), Yellow Iris (Iris pseudacorus) and Water Mint (Mentha aquatica). Sedges (Carex spp.) are locally common, while Rusty Willow (Salix cinerea subsp. oleifolia) scrub is often found associated with the wet grassland. In some places the water washes against grassy banks which are generally less than a metre high, and in a few places there are steep sand and clay cliffs, up to 15 m high - these are remnants of the old River Liffey channel. In many places the banks are actively eroding, and a strip of conifers has been planted around much of the perimeter of the reservoir in an attempt to stabilize the banks.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Greylag Goose and Lesser Black- backed Gull.

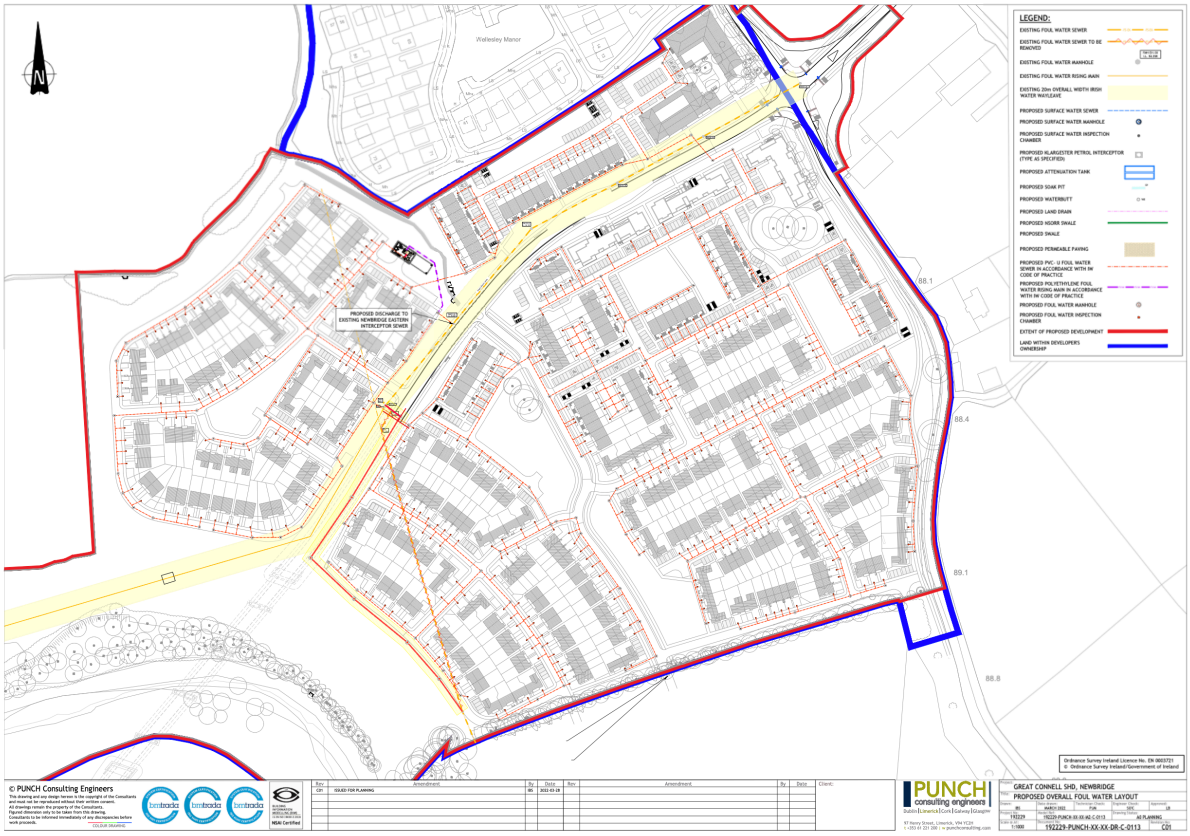
Poulaphouca Reservoir is of national importance for its Greylag Goose population, which is one of the largest in the country. The site provides the main roost for the birds, with feeding occurring mostly on improved grassland outside of the site. A mean peak of 701 individuals occurred during the five seasons 1995/96 to 1999/2000. Other waterfowl species occur in relatively low numbers, including Whooper Swan (22), Wigeon (180), Teal (107), Mallard (186), Goldeneye (22), Cormorant (11), Great Crested Grebe (8), Curlew (86) and Mute Swan (11). The site is also used by Grey Heron (6).

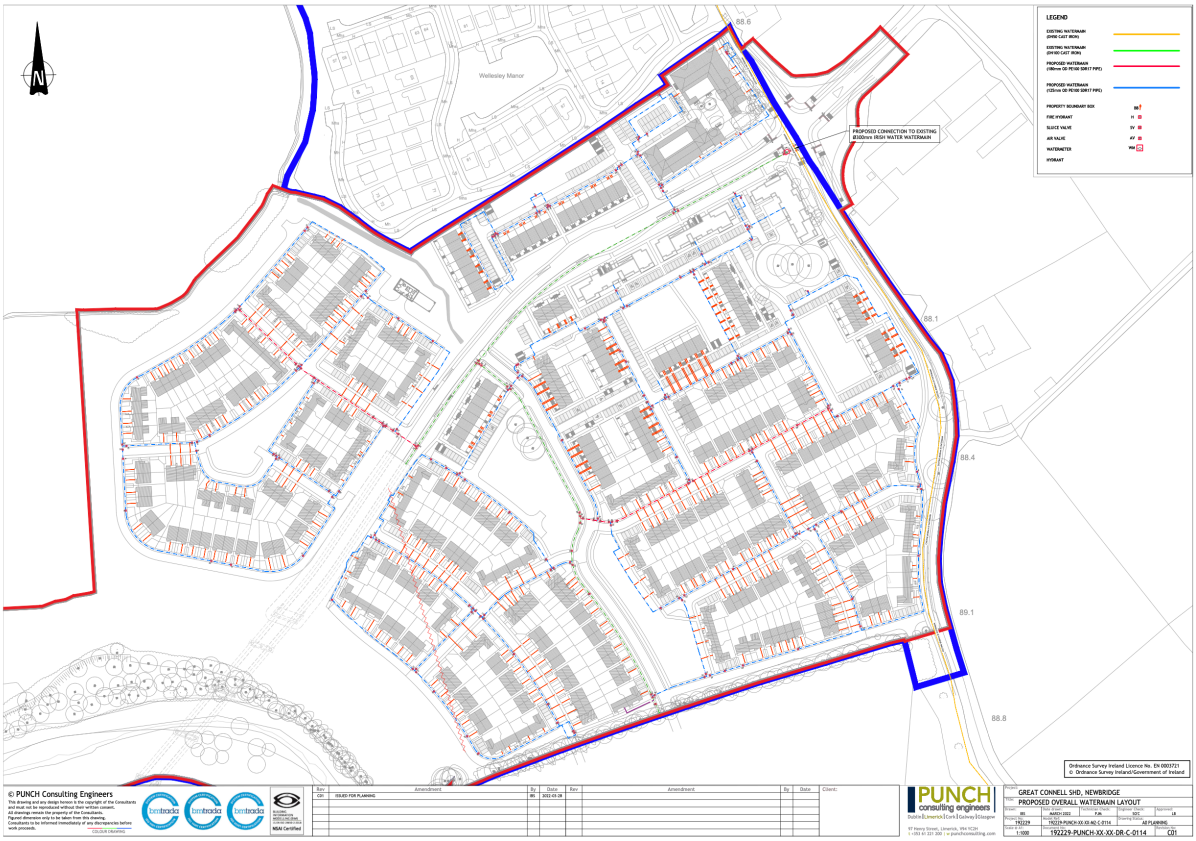
The reservoir attracts roosting gulls during winter, most notably a large population of Lesser Black-backed Gull (651), which in Ireland is rare in winter away from the south coast. Black-headed Gull (915) and Common Gull (183) also occur.

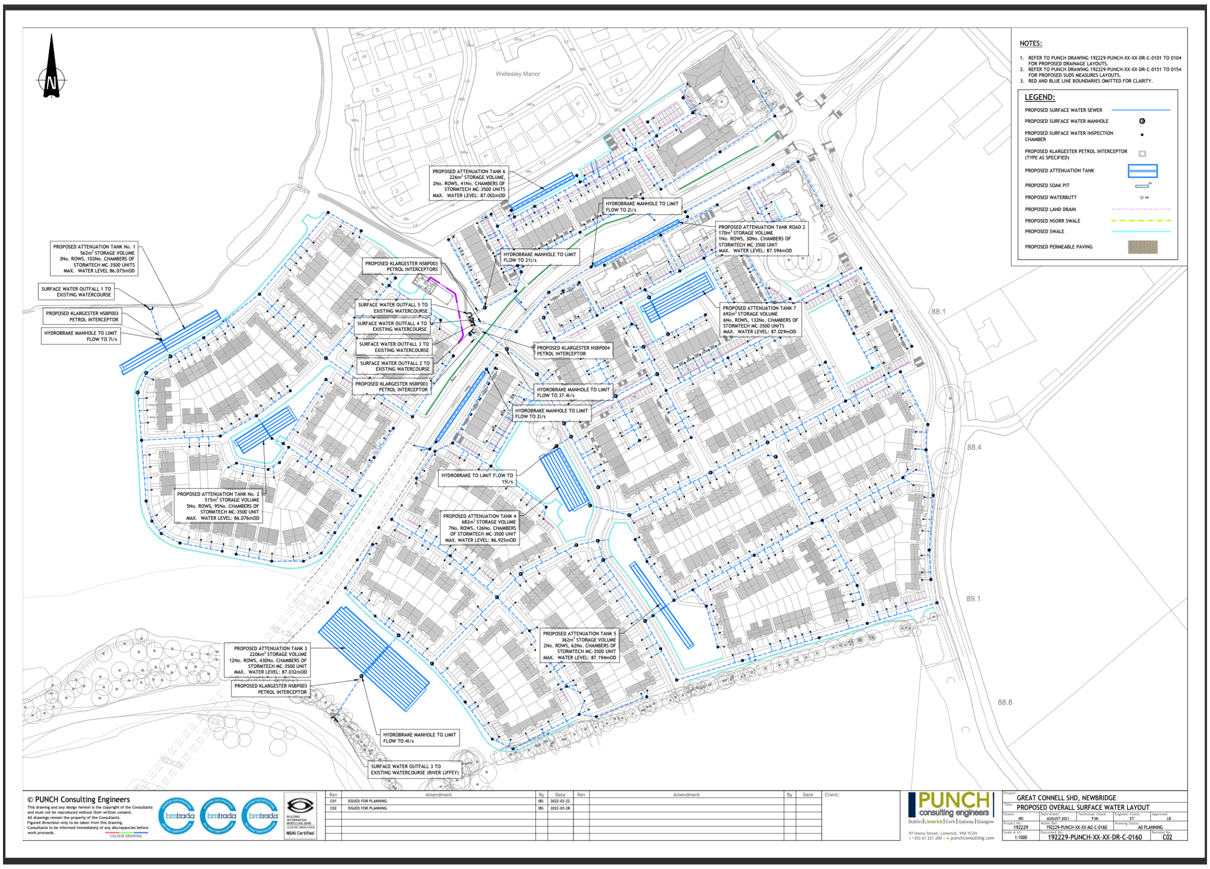
Breeding birds at the site include Great Crested Grebe (several pairs), which is localised in its distribution in eastern Ireland, as well as Snipe and Lapwing.

The principal interest of the site is the Greylag Goose population, which is of national importance. A range of other wildfowl species also occurs, including Whooper Swan, a species that is listed on Annex I of the E.U. Birds Directive. The site is also notable as a winter roost for gulls, especially Lesser Black-backed Gull. Part of Poulaphouca Reservoir SPA is a Wildfowl Sanctuary.

Appendix 2. Drawings






NOTES:
1. REFER TO PUNCH DRAWING 192229-PUNCH-XX-XX-DR-C-0101 TO 0104 FOR PROPOSED DRAINAGE LAYOUTS.
2. REFER TO PUNCH DRAWING 192229-PUNCH-XX-XX-DR-C-0151 TO 0154 FOR PROPOSED SUDS MEASURES LAYOUTS.
3. RED AND BLUE LINE BOUNDARIES OMITTED FOR CLARITY.
LEGEND:
PROPOSED SURFACE WATER SEWER
PROPOSED SURFACE WATER MANHOLE
PROPOSED SURFACE WATER INSPECTION CHAMBER
PROPOSED KLARGESTER PETROL INTERCEPTOR (TYPE AS SPECIFIED)
PROPOSED ATTENUATION TANK
PROPOSED SOAK PIT
PROPOSED WATERBUTT
PROPOSED LAND DRAIN
PROPOSED NSORR SWALE
PROPOSED SWALE
PROPOSED PERMEABLE PAVING
Wellesley Manor
88.1
88.4
89.1
88.8
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Project: GREAT CONNELL SHD, NEWBRIDGE
Title: PROPOSED OVERALL SURFACE WATER LAYOUT
Drawn: IBS
Date drawn: AUGUST 2021
Technician Check: PJM
Engineer Check: ET
Approved: LB
Project No: 192229
Model Ref: 192229-PUNCH-XX-XX-M2-C-0160
Drawing Status: A0 PLANNING
Scale @ A1: 1:1000
Document No: 192229-PUNCH-XX-XX-DR-C-0160
Revision No: C02

Appendix 3. Correspondence with Irish Water

Damien Egan

Punch Consulting Engineers
97 Henry Street
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V94YC2H
Ireland

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

28 January 2021

Re: CDS20007443 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 620 unit(s) at Greatconnell, Newbridge, Co. Kildare

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Greatconnell, Newbridge, Co. Kildare (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	Connection is feasible to the existing 300 mm DI main. New connection main has to be a 200mm ID pipe. Bulk meter to be installed on the connection main, meter to be connected to telemetry online. On site storage for the average day peak week demand rate of the commercial section for 24-hour period. This separate storage is required to supply this demand and will have a re-fill time of 12 hours. This Confirmation of Feasibility to connect to the Irish Water infrastructure also does not extend to your fire flow requirements. Please note that Irish Water can not guarantee a flow rate to meet fire flow requirements and in order to guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development.

Wastewater Connection	Connection must be made to the new 900 mm traversing the proposed site (not shown on GIS map bellow).
Strategic Housing Development	Irish Water notes that the scale of this development dictates that it is subject to the Strategic Housing Development planning process. In advance of submitting your full application to An Bord Pleanala for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services.
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:

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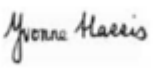
Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marko Komso from the design team on 022 54611 or email mkomso@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,



Yvonne Harris

Head of Customer Operations