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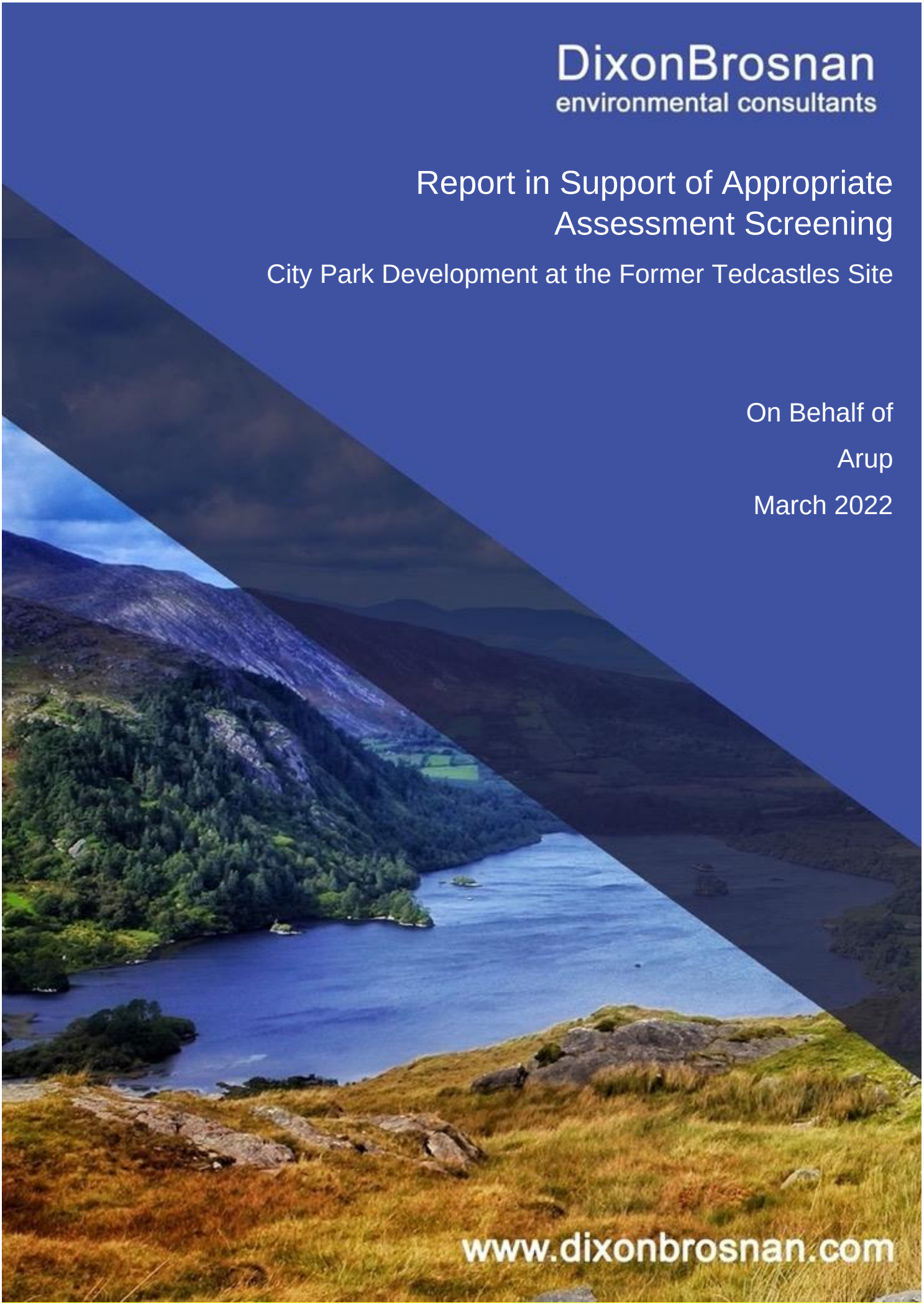
Report in Support of Appropriate Assessment Screening

City Park Development at the Former Tedcastles Site

On Behalf of

Arup

March 2022



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Project	Report in Support of Appropriate Assessment Screening for the Former Tedcastles Site, Cork	
Client	Arup	
Project Ref.	2188	
Report No.	2188	
Client Ref.	-	
Date	**Revision**	**Prepared By**
29/09/21	1st draft	Carl Dixon BSc MSc
14/10/21	2nd draft	Sorcha Sheehy BSc PhD
28/03/22	Issue to client	

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1. Introduction

1.1 Background

The information in this report has been compiled by DixonBrosnan Environmental Consultants, on behalf of the applicant. It provides information on and assesses the potential for the proposed strategic housing development (SHD) in the former Tedcastles Site in the Cork City docklands area, to impact on any Natura 2000 sites within its zone of influence. The information in this report forms part of and should be read in conjunction with other planning application documentation.

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 comprises 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 proposed development must be carried out by the competent authority 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 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 Report

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 significant impacts on a Natura 2000 site. 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 a significant impact on the 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.

This report has been prepared with regard to the following guidance documents, where relevant.

- *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);
- *Commission notice Guidance document on wind energy developments and EU nature legislation*, (EC 2020);
- *Communication from the Commission on the precautionary principle. European Commission* (2000) and
- CJEU Case C 164/17 Edel Grace Peter Sweetman v An Bord Pleanála.

1.3 Authors of Report

This report was prepared by Carl Dixon MSc. (Ecological Monitoring) and 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 with particular expertise in freshwater ecology. 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. He has carried out ecological surveys and prepared AA/NIS reports for a range of projects.

Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant with over ten 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. Recent projects include bird risk assessments for Dublin and Cork Airports, Waste to Energy Facility Ringaskiddy and Water Storage Schemes for Irish Water.

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).

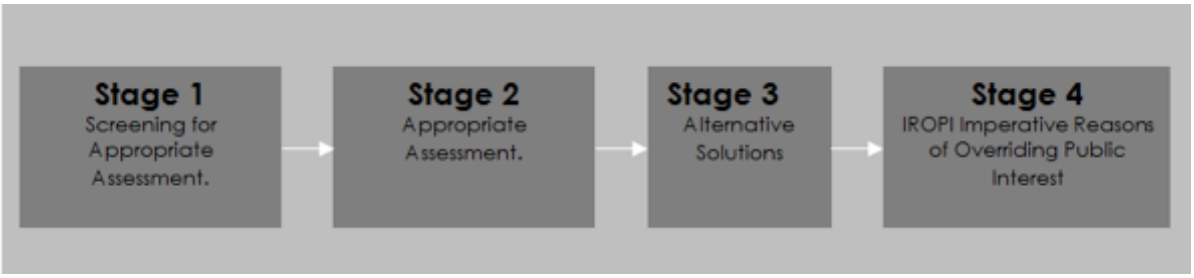
Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained or returned to favourable conservation status. In Ireland the network consists of SACs and SPAs, and also candidate 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 proposed development, 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 to make a decision on whether or not the proposed development should be approved, taking into consideration any potential impact upon any Natura 2000 site within its zone of influence.

3. Receiving Environment

3.1 Existing Site

The existing 4.86 Ha site is located at the former Tedcastles Site within the docklands area of Cork City. The site is located approximately 2km east of Cork city centre (**Figure 1**).

Figure 1. Existing Site | Not to Scale

The existing site is bounded by Centre Park Road to the southeast, by the Marina to the north and by the former ESB power station to the west. The primary access to the site at present is via Centre Road as indicated by the blue arrow on **Figure 1**.

The site is a brownfield site containing several storage containers and external storage areas. Ground levels vary across the site, with a high point along the northern boundary, varying between 5.3m at the western end and 3.6m at the eastern end. There are two open channels, one adjacent to the southeastern boundary and one adjacent to the northern boundary, which join at the eastern end of the site. The bed levels of the open channels vary between -0.46m and -3.15m across the site. The centre of the site generally falls from a high point of 2.67 to the open channels along the northern and southeastern boundaries.

Due to the previous uses of the site, there are various existing underground services present throughout the area. Most of these will be deemed redundant in the context of serving the proposed development. Surface water runoff from the site drains to the existing open channels to the north and southeast of the site. There are two existing culverts on the southeastern open channel, one at the southern corner of the site, and one at the main site entrance shown in **Figure 1**. Both of these culverts flow east before ultimately discharging to the River Lee via an outfall at the point of confluence of the two open channels.

There are also several existing services located outside of the site. There is a 525mm diameter Irish Water foul water sewer which flows east along Centre Park Road, which then increases to a 600mm diameter along Marquee Road, prior to connecting to the existing 3.2m diameter Interceptor Sewer along Monahan Road. There is also a 300mm diameter Irish Water potable

watermain located along Centre Park Road, west of the junction with Marquee Road, which then downsizes to 100mm diameter east of the junction with Marquee Road.

3.2 Proposed Development

The City Park development will comprise demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

3.3 Surface Water Drainage

Surface water generated from the impervious surfaces and from existing buildings on site, discharges to the two existing open channels located along the northern and southeastern boundaries of the site. Both open channels ultimately discharge to the River Lee via the outfall at the north-eastern corner of the site, as described in **Section 3.1** above.

The Cork South Docklands Levels Study describes proposed upgrades/amendments to the existing infrastructure in the vicinity of the site and the design of the proposed development is cognisant of those proposals.

The following design standards and guidelines have been followed in the design of the surface water drainage for the site:

- BS EN 752 – Drains and sewer system outside buildings.
- Greater Dublin Strategic Drainage Study (GDSDS) Volume 2 – New Developments.
- The network has been designed to the following criteria:
- No surcharging of pipes for up to and including the 1 in 5-year return period rainfall event
- No above ground flooding for up to and including the 1 in 30-year return period rainfall event
- Managed above ground flooding for up to and including the 1 in 100-year return period plus a 20% allowance for climate change. This means no flooding of vulnerable developments (e.g. residential units), critical infrastructure (e.g. electrical substations) and no increase of flood risk to neighbouring lands.
- Proposed minimum and maximum velocities shall be as follows:
- Carrier pipe network – 1.0m/s to 3.0m/s
- Colebrook White roughness value of 0.6mm for all pipework
- Met Eireann rainfall data for site:

- M5/60 = 18.20mm
- Ratio r = 0.25

In addition to the above, the surface water strategy is designed to be in line with the guidance set out in the Cork City Council (CCC) Cork South Docklands Levels Strategy (CSDLS).

It is proposed to collect all surface water from the proposed development within a new dedicated surface water network. A network of primary carrier pipes will be provided, located predominantly within the development roads. Proposed roads and part of the proposed buildings will discharge to this pipe network and this pipe network will ultimately discharge to existing open channels located adjacent to the site. Parts of the proposed buildings will also discharge directly to the open channels.

There will be a requirement to make amendments to the existing channels where the proposed development interfaces with them. This will include re-profiling the channel located to the north and culverting sections of the channel to the southeast. The re-profiling of the northern channel will ensure the existing levels and storage volumes are maintained as per the CSDLS. Where the southeastern channel is proposed to be culverted, the culvert size will be agreed with CCC to ensure it meets the requirements set out in the CSDLS.

The proposed surface water drainage strategy for the site has been developed to meet the requirements as set out in the CSDLS. There are two key criteria which influence the sizing of on-site drainage network as follows:

- The CSDLS states that development plots in the south docklands must limit their post development peak discharge rate to a maximum of 68 l/s/ha.
- The Former Tedcastles site design team was provided with outputs from the CSDLS modelling at the nearest node to the proposed site discharge points. These outputs were applied to the site surface water drainage network as a downstream surcharge condition.

To meet the above criteria attenuation/tidal holding tanks/detention basins will be provided on site as outlined in the engineering drawings. Each catchment will discharge to the existing open channels along the northern and southern boundaries at a rate no greater than 68 l/s/ha.

A hydraulic model for the proposed surface water network was created using Microdrainage software to inform indicative network/tank sizing.

SUDS features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to the attenuation/tidal holding volume requirements. In addition to those features indicated on the engineering drawings rain gardens, permeable paving and under drained planters/tree pits will be incorporated into the design where feasible. Roof terraces will incorporate planting as described in the landscaping strategy. Runoff from these areas will be reduced as a result of rain percolating through the planted zones as well as providing a water quality benefit. At detailed design, the landscaping and drainage designs will be integrated to maximise this benefit. Additionally, at grade parking adjacent to the main street through the site will be formed in permeable paving with the adjacent road/footpaths graded to drain via the permeable paving. Similarly, soft landscaping features located within

the streetscape will be designed to enable runoff from adjacent hardstanding to infiltrate through the planted zone.

While the above-mentioned SUDS features will contribute to improved water quality it is also proposed that the surface water runoff collected from carparking areas will pass through a Class 1 By-Pass Hydrocarbon Interceptors. Sizes of units will be defined at detailed design stage. It is proposed to discharge all surface water runoff from the under-croft carparks to the foul network. Furthermore, all surface water channel drains and road gullies will include sump units where silt can be collected and removed.

The proposed surface water drainage layout is shown on drawing 267365-ARUP-ZZ-ZZ-DR-C-2000.

3.4 Foul Water Drainage

3.4.1 Existing Foul Water Drainage

Based on record drawings and information received from Cork City Council, there is an existing Irish Water wastewater sewer adjacent to the site along Centre Park Road. The pipe is 525mm in diameter and flows in an easterly direction before draining south in a 600mm diameter sewer along Marquee Road, before connecting to the existing 3.2m diameter interceptor sewer along Monahan Road. This interceptor sewer flows to the Atlantic Pond pumping station to the east of the proposed site. See **Figure 2** below which shows the approximate route of this interceptor sewer and the centre of the site marked in blue for identification.

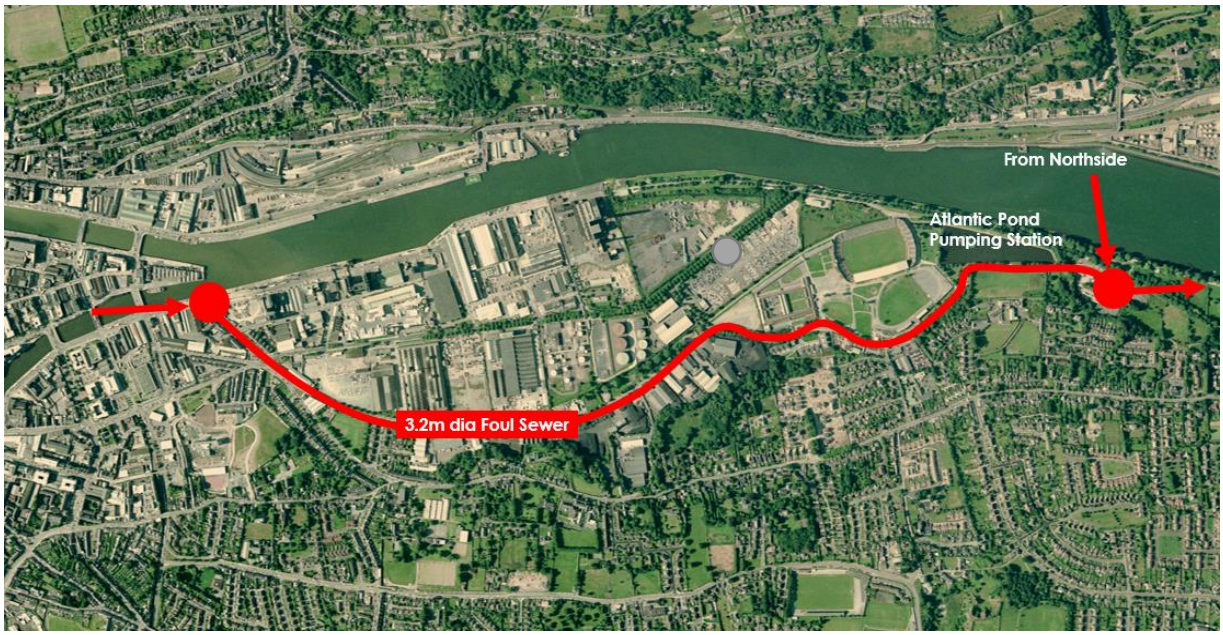


Figure 1. Existing Route of 3.2m diameter Interceptor Sewer

3.4.2 Foul Water Drainage Design Criteria

The design criteria used to develop the foul network includes the following:

- BS EN 752 – Drain and sewer systems outside buildings

- Part H Building Regulations
- Irish Water Code of Practice for Wastewater Infrastructure
- Minimum self-cleansing velocity – 0.75m/s
- Colebrook-White roughness value of 1.5mm for all pipework
- Sanitary DWF loadings are outlined below:
- Residential -165 l/person/day as per Irish Water Code of Practice
- Retail/Commercial – 300 l/100m^2/day
- Residential unit density taken as 2.7 persons per property as per Cork City 2016 Census data.
- EPA Wastewater Treatment Manuals

3.4.3 Proposed Foul Water Drainage Strategy

It is proposed to collect all foul water from the proposed development through a dedicated foul sewer network. As described above, there is an existing Irish Water sewer along Centre Park Road, east of the junction with Marquee Road. It is proposed that one connection point to this existing sewer will be made from the new foul water drainage network. It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

Although the carparks are covered by the podium deck, drainage will be provided for the carpark hardstanding in the form of linear drainage channels. Any rainfall associated with vehicles entering the carpark will be conveyed to the foul water drainage network. This will be kept separate from the surface water drainage beneath the under-croft carpark i.e. there will be no positive connection to any external stormwater drainage. Runoff from the car parks will pass through a hydrocarbon interceptor prior to discharging into the foul water network. Non-return valves will be fitted on the downstream end of this drainage connection to prevent water backing up into the carpark areas during conditions where the receiving drainage network is surcharged.

If required grease traps will be incorporated into the development at any required locations to collect fats, oils and greases (FOGs) from entering the main foul drainage network. A maintenance routine will be established on all grease traps as required based on the levels of FOGs produced. Locations and sizes of proposed grease trap units are to be confirmed at detailed design stage.

Table 1 below provides the breakdown of the sources of wastewater as part of the development and shows proposed average and peak flow rates estimated.

Table 1. Proposed Foul Water Flow Rates

Unit	People	Area	DWF Loading	Average flow (DWF)	Peak Flow (6DWF)
		(m2)	(l/h/d)	(l/100m2/d)	(l/s)	(l/s)
Residential	2222 (823 units x 2.7 persons per unit)	-	165	-	6.37	38.19
Commercial	-	3307	-	300	0.30	1.82
Total	-	-	-	-	6.67	40.01

A pre-connection enquiry form has been submitted to Irish Water outlining the details of the proposed development and anticipated wastewater flows. Irish Water have reviewed the this and provided a Confirmation of Feasibility letter (see Appendix B) confirming capacity within their network to serve the development without upgrade to their network. It should be noted that the estimated water demands within the pre-connection enquiry form are based on the overall masterplan boundary outlined in **Figure 1**.

Irish Water has reviewed the proposal and a Statement of Design Acceptance has been issued confirming that Irish Water has no objection to the proposal.

4. Screening

4.1 Introduction

This section contains the information required for the competent authority to undertake screening for AA for the proposed development.

The aims of this section are to:

- Determine whether the proposed development is directly connected with, or necessary to, the conservation management of any Natura 2000 sites;
- Provide information on, and assess the potential for the proposed development to significantly effect on Natura 2000 sites (also known as European sites); and
- Determine whether the proposed development, alone or in combination with other projects, is likely to have significant effects on Natura 2000 sites in view of their conservation objectives.

The proposed development is not directly connected with, or necessary to the conservation management of any Natura 2000 sites.

4.2 Study Area and Scope of Appraisal

Natura 2000 sites (European sites) are only at risk from significant effects where a source-pathway-receptor link exists between a proposed development and a Natura 2000 site(s). This can take the form of a direct impact (e.g. where the proposed development and/or associated construction works are located within the boundary of the Natura 2000 site(s) or an indirect impact where impacts outside of the Natura 2000 site(s) affect ecological receptors within (e.g. impacts to water quality which can affect riparian habitats at a distance from the impact source).

The Zone of Influence (ZoI) comprises the area within which the proposed development may potentially affect the conservation objectives (or qualifying interests) 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 proposed development 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 proposed development site to the SAC, *ex situ* foraging habitat for SCI birds). 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 proposed development 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 proposed development 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.

Thus, any appreciable direct, indirect or in-combination impacts which could arise from the proposed development in relation to the designated sites within this zone were considered.

4.3 Field Study

Site surveys were carried out on the 9th, 23rd and 26th of September 2021 and 11th March 2022 to identify the habitats, flora and fauna present at the site. The surveys assessed the potential

for all Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) of European sites and third schedule invasive species to occur within the proposed site.

4.4 Source-Pathway-Receptor Model

The likely effects of the proposed development on any European site has been assessed using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features and its conservation objectives.
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor.
- A 'receptor' is defined as the SCI of SPAs or QI of SACs for which conservation objectives have been set for the European sites being screened.

A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source-pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potential links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report.

4.5 Likely Significant Effect

The threshold for a Likely Significant Effect (LSE) is treated in the screening exercise as being above a de minimis level. The opinion of the Advocate General in CJEU case C-258/11 outlines:

"the requirement that the effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded.

If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill."

In this report, therefore, 'relevant' European sites are those within the potential ZoI of activities associated with the construction and operation of the proposed development, where LSE pathways to European sites were identified through the source-pathway-receptor model.

4.6 Screening Process

The Screening for Appropriate Assessment will incorporate the following steps:

Definition of the zone of influence for the proposed works;

- Identification of the European sites that are situated (in their entirety or partially or downstream) within the zone of influence of the proposed works;
- Identification of the most up-to-date QIs and SCIs for each European site within the zone of influence;

- Identification of the environmental conditions that maintain the QIs/SCIs at the desired target of Favourable Conservation Status;
- Identification of the threats/impacts – actual or potential that could negatively impact the environmental conditions of the QIs/SCIs within the European sites;
- Highlighting the activities of the proposed works that could give rise to significant negative impacts; and
- Identification of other plans or projects, for which in-combination impacts would likely have significant effects.

4.7 Desktop Review

A desktop review facilitates the identification of the baseline ecological conditions and key ecological issues relating to Natura 2000 sites and facilitates an evaluation assessment of potential in-combination impacts. Sources of information used for this report include reports prepared for the Cork City area and information from statutory and non-statutory bodies. The following sources of information and relevant documentation were utilised:

- National Parks & Wildlife Service (NPWS) – www.npws.ie
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre (NBDC) – www.biodiversityireland.ie
- Cork City Biodiversity Action Plan 2009-2014;
- *Cork City Development Plan 2015-2021* (Cork City Council, 2015);
- Birdwatch Ireland – http://www.birdwatchireland.ie/
- British Trust for Ornithology (BTO)-www.BTO.ie
- Invasive Species Ireland – http://www.invasivespeciesireland.com/
- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009).
- *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)* European Union, 2017 and
- Cork City D0033-01 Wastewater Treatment Plant (WWTP) Annual Environmental Report 2019 (Irish Water 2020).

5. Natura 2000 Sites

5.1 Designated sites within Zone of Influence

In accordance with the European Commission Methodological Guidance (EC 2018), a list of Natura 2000 sites that can be potentially affected by the proposed development has been compiled. All candidate SACs (cSAC) and SPAs sites within the zone of influence of the proposed development have been identified in **Table 2** and shown in **Figure 3**.

The River Lee estuary is located approximately 30m north of the proposed development site. Surface water generated from the impervious surfaces and existing buildings onsite discharges to the two existing open channels located along the northern and southeastern boundaries of the site. Both open channels ultimately discharge to the River Lee, which ultimately flows into the Cork Harbour SPA 2.8km downstream of the proposed development site. Therefore, the proposed development site is hydrologically connected to Cork Harbour

SPA. Surface water run-off during the construction or operational phase of the proposed development could potentially flow into Cork Harbour SPA via existing drainage channels. Wastewater from the site will ultimately discharge into Cork Harbour via the Cork City Wastewater Treatment Plant (WWTP). Habitats within or near the proposed development site could potentially provide *ex-situ* foraging grounds for SCI species outside the Cork Harbour SPA. During operation, buildings at the site could potentially create a collision risk for SCI birds.

Therefore, a source-pathway-receptor link has been identified between the source (proposed strategic housing development) and the receptor (Cork Harbour SPA) via a potential pathway (surface water runoff, the spread of invasive species and disturbance during construction/operational phase and wastewater discharge and collision during the operational phase). Cork Harbour SPA is of conservation significance for the occurrence of good examples of species that are listed on Annex I of the Birds Directive. Further information on the Cork Harbour SPA is provided below and a full site synopsis included **Appendix 1**.

While the proposed development is potentially hydrologically connected to the Great Island Channel SAC via Cork Harbour, given the nature of the proposed development, the dilution capacity available within Cork Harbour and the robust nature of the estuarine qualifying habitats for the Great Island Channel SAC, no pathway for impact has been identified.

Table 2. Natura 2000 sites and their location relative to the proposed development site

Natura 2000 Sites	Site Code	Distance at closest point and potential source-pathway-receptor link	Qualifying Interests (* denotes a priority habitat)
Special Area of Conservation (SAC)			
Great Island Channel SAC	001058	6.6km. No significant pathway exists.	**Habitats** 1140 Mudflats and sandflats not covered by seawater at low tide 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
Special Protection Area (SPA)			
Cork Harbour SPA	004030	1.9km (at its closest point). A source-pathway-receptor link has been identified between the source (proposed development site) and the receptor (Cork Harbour SPA) via a potential pathway (impacts on water quality, disturbance or	**Birds** A056 Shoveler *(Anas clypeata)* A149 Dunlin *(Calidris alpina)* A140 Golden Plover *(Pluvialis apricaria)* A050 Wigeon *(Anas penelope)* A028 Grey Heron *(Ardea cinerea)* A069 Red-breasted Merganser *(Mergus serrator)* A142 Lapwing *(Vanellus vanellus)* A130 Oystercatcher *(Haematopus ostralegus)* A141 Grey Plover *(Pluvialis squatarola)* A052 Teal *(Anas crecca)* A054 Pintail *(Anas acuta)* A157 Bar-tailed Godwit *(Limosa lapponica)* A162 Redshank *(Tringa totanus)* A183 Lesser Black-backed Gull *(Larus fuscus)*

Natura 2000 Sites	Site Code	Distance at closest point and potential source-pathway-receptor link	Qualifying Interests (* denotes a priority habitat)
		spread of invasive species during construction or operational phase and wastewater discharges and collision during operation).	A179 Black-headed Gull *(Chroicocephalus ridibundus)* A004 Little Grebe *(Tachybaptus ruficollis)* A160 Curlew *(Numenius arquata)* A182 Common Gull *(Larus canus)* A048 Shelduck *(Tadorna tadorna)* A017 Cormorant *(Phalacrocorax carbo)* A193 Common Tern *(Sterna hirundo)* A005 Great Crested Grebe *(Podiceps cristatus)* A156 Black-tailed Godwit *(Limosa limosa)* **Habitats** Wetlands

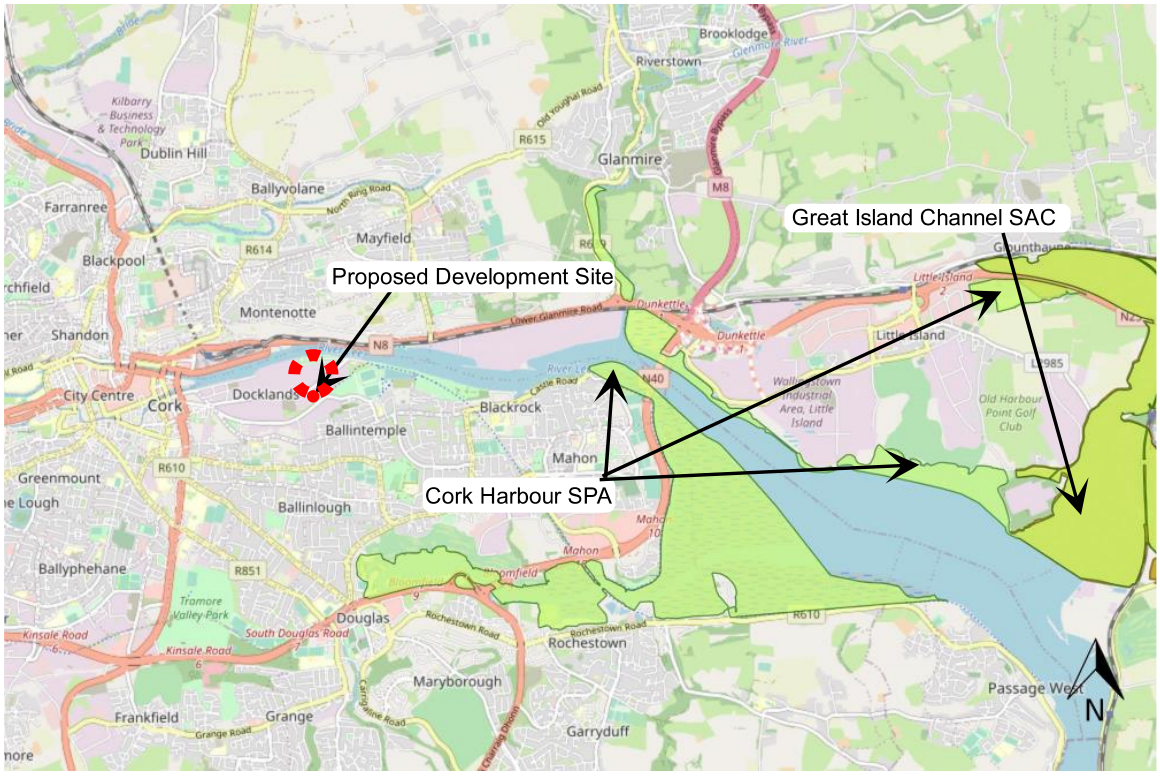


Figure 3. Natura 2000 sites within zone of influence of the proposed development site | Source EPA Envision Mapping | Not to scale

5.2 Cork Harbour SPA (site code 004030) Site Synopses

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poulnabibe inlets.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica, Scrobicularia plana, Hydrobia ulvae, Nepthys hombergi, Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva* sp. Cordgrass (*Spartina* sp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Some shallow bay water is included in the site. Rostellan Lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Grey Heron, Shelduck, Wigeon, Teal, Mallard, Pintail, Shoveler, Redbreasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank, Blackheaded Gull, Common Gull, Lesser Black-backed Gull and Common Tern. 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.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl. Of particular note is that the site supports internationally important populations of Black-tailed Godwit (1,896) and Redshank (2,149) - all figures given are five-year mean peaks for the period 1995/96 to 1999/2000. Nationally important populations of the following 19 species occur: Little Grebe (57), Great Crested Grebe (253), Cormorant (521), Grey Heron (80), Shelduck (2,009), Wigeon (1,791), Teal (1,065), Mallard (513), Pintail (57), Shoveler (103), Red-breasted Merganser (121), Oystercatcher (1,809), Golden Plover (3,342), Grey Plover (95), Lapwing (7,569), Dunlin (9,621), Bartailed Godwit (233), Curlew (2,237) and Greenshank (46). The Shelduck population is the largest in the country (over 10% of national total). Other species using the site include Mute Swan (38), Whooper Swan (5), Pochard (72), Gadwall (6), Tufted Duck (64), Goldeneye (21), Coot (53), Ringed Plover (73), Knot (26) and Turnstone (113). Cork Harbour is an important site for gulls in winter and autumn, especially Black-headed Gull (3,640), Common Gull (1,562) and Lesser Black-backed Gull (783), all of which occur in numbers of national importance. Little Egret and Mediterranean Gull, two species which have recently colonised Ireland, also occur at this site.

A range of passage waders occurs regularly in autumn, including such species as Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

Cork Harbour has a nationally important breeding colony of Common Tern (102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its populations of Black-tailed Godwit and Redshank. In addition, it supports nationally important wintering populations of 22 species, as well as a nationally important breeding colony of Common Tern. Several of the

species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Little Egret, Golden Plover, Bar-tailed Godwit, Ruff, Mediterranean Gull and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it. Cork Harbour is also a Ramsar Convention site and part of Cork Harbour SPA is a Wildfowl Sanctuary.

A full site synopsis for the Cork Harbour SPA is included as **Appendix 1** of this report.

5.3 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 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 conservation objectives for Cork Harbour SPA are included in *Cork Harbour Special Protection Area (Site Code 4030) Conservation Objectives* (NPWS 2014a). The species listed as Special Conservation Interests (SCIs) for the Cork Harbour SPA are listed in **Table 3**.

Table 3. Special Conservation Interests (SCIs) for the Cork Harbour SPA

Species code	Species	Scientific name	Conservation objective
A004	Little Grebe	*Tachybaptus ruficollis*	Maintain
A005	Great Crested Grebe	*Podiceps cristatus*	Maintain
A017	Cormorant	*Phalacrocorax carbo*	Maintain
A028	Grey Heron	*Ardea cinereal*	Maintain
A048	Shelduck	*Tadorna tadorna*	Maintain
A050	Wigeon	*Anas Penelope*	Maintain
A052	Teal	*Anas crecca*	Maintain
A054	Pintail	*Anas acuta*	Maintain
A056	Shoveler	*Anas clypeata*	Maintain
A069	Red-breasted Merganser	*Mergus serrator*	Maintain
A130	Oystercatcher	*Haematopus ostralegus*	Maintain
A140	Golden Plover	*Pluvialis apricaria*	Maintain
A141	Grey Plover	*Pluvialis squatarola*	Maintain
A142	Lapwing	*Vanellus vanellus*	Maintain
A149	Dunlin	*Calidris 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
A179	Black-headed Gull	*Chroicocephalus ridibundus*	Maintain
A182	Common Gull	*Larus canus*	Maintain
A183	Lesser Black-backed Gull	*Larus fuscus*	Maintain
A193	Common Tern	*Sterna hirundo*	Maintain
A999	Wetland and Waterbirds		Maintain

Restore = Restore favourable conservation condition, Maintain = Restore 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 Cork Harbour SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

5.4 Status of qualifying interests for the Cork Harbour SPA

Cork Harbour SPA is a large, sheltered bay system that is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top ten sites in the country. Owing to the sheltered conditions, the intertidal flats are often muddy in character but described principally as 'mixed sediment to sandy mud with polychaetes and oligochaetes'. These muds support a range of macro-invertebrates, notably *Macoma balthica, Scrobicularia plana, Peringia (Hydrobia) ulvae, Nepthys hombergi, Nereis diversicolor* and *Corophium volutator*, all of which provide a food source for many wintering waterbird species. Salt marshes are scattered through the site and these provide high tide roosts for waterbirds (NPWS 2014b).

The specific conservation objectives for the species listed as conservation interests for the Cork Harbour SPA (**Table 4**) are to maintain a favourable conservation condition of the non-breeding/breeding waterbirds and to maintain the favourable conservation condition of the wetland habitat at Cork Harbour SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Table 4. SCI species for which a potential impact has been identified – specific targets

Species/Habitats	Attribute	Measure	Target
Little Grebe Great Crested Grebe Cormorant Grey Heron Shelduck	Population trend	Percentage change	Long term population trend stable or increasing
Wigeon Teal Pintail Shoveler Red-breasted Merganser Oystercatcher Golden Plover Grey Plover Lapwing	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

Species/Habitats	Attribute	Measure	Target
Dunlin Black-tailed Godwit Bar-tailed Godwit Curlew Redshank Black-headed Gull Common Gull Lesser Black-backed Gull			
Common Tern	Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline
	Productivity rate: fledged young per breeding pair	Mean 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
Wetlands	Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,587 hectares, other than that occurring from natural patterns of variation

6. Water Quality data

6.1 River Basin Management Plan for Ireland 2018 – 2021 (2nd/3rd 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 5** and the location of these shown in **Figure 4**. Limited data on the 3rd cycle of the WFD has been released through the EPA envision map viewer. These results are also report below.

Table 5. WFD Status

Catchment: Lee, Cork Harbour and Youghal Bay (Code 19) – 2nd Cycle (& 3rd cycle)
This catchment includes the area drained by the River Lee and all streams entering tidal water in Cork Harbour and Youghal Bay and between Knockaverry and Templebreedy Battery, Co. Cork, draining a total area of 2,153km². The largest urban centre in the catchment is Cork City. The other main urban centres in this catchment are Ballincollig, Macroom, Carrigaline, Crosshaven, Blarney, Glanmire, Midleton, Carrigtohill, Cobh, Passage West and Belvelly. The total population of the catchment is approximately 328,854 with a population density of 153 people per km². Several small coastal rivers drain the area to the southeast of Cork Harbour and the area at the eastern extreme of the catchment is drained by the Womanagh River which flows into the sea on the western side of Youghal Bay.

The Lee-Cork Harbour catchment comprises 18 sub-catchments with 92 river water bodies, three lakes, 13 transitional, six coastal water bodies and 16 groundwater bodies. There are five heavily modified and no artificial water bodies in the catchment.

The proposed development site is located within the Sub catchment Glasheen[Corkcity]_SC_010. All four water bodies in this sub catchment are unassigned but AT RISK due to elevated phosphate concentrations. Further investigation is required to determine what is impacting nutrient conditions.

Wastewater discharges from the proposed development will discharge into Cork Harbour at Lough Mahon.

Waterbodies relevant to the proposed project

Waterbody	WFD Risk	Significant Pressure	Pressure Category
Lee (Estuary) Lower	At risk	Yes	Urban wastewater/urban runoff
Lee (Estuary) Upper	At risk	Yes	Urban wastewater/urban runoff
Lough Mahon	At risk	Yes	Urban wastewater

Source: EPA envision mapping and www.catchments.ie

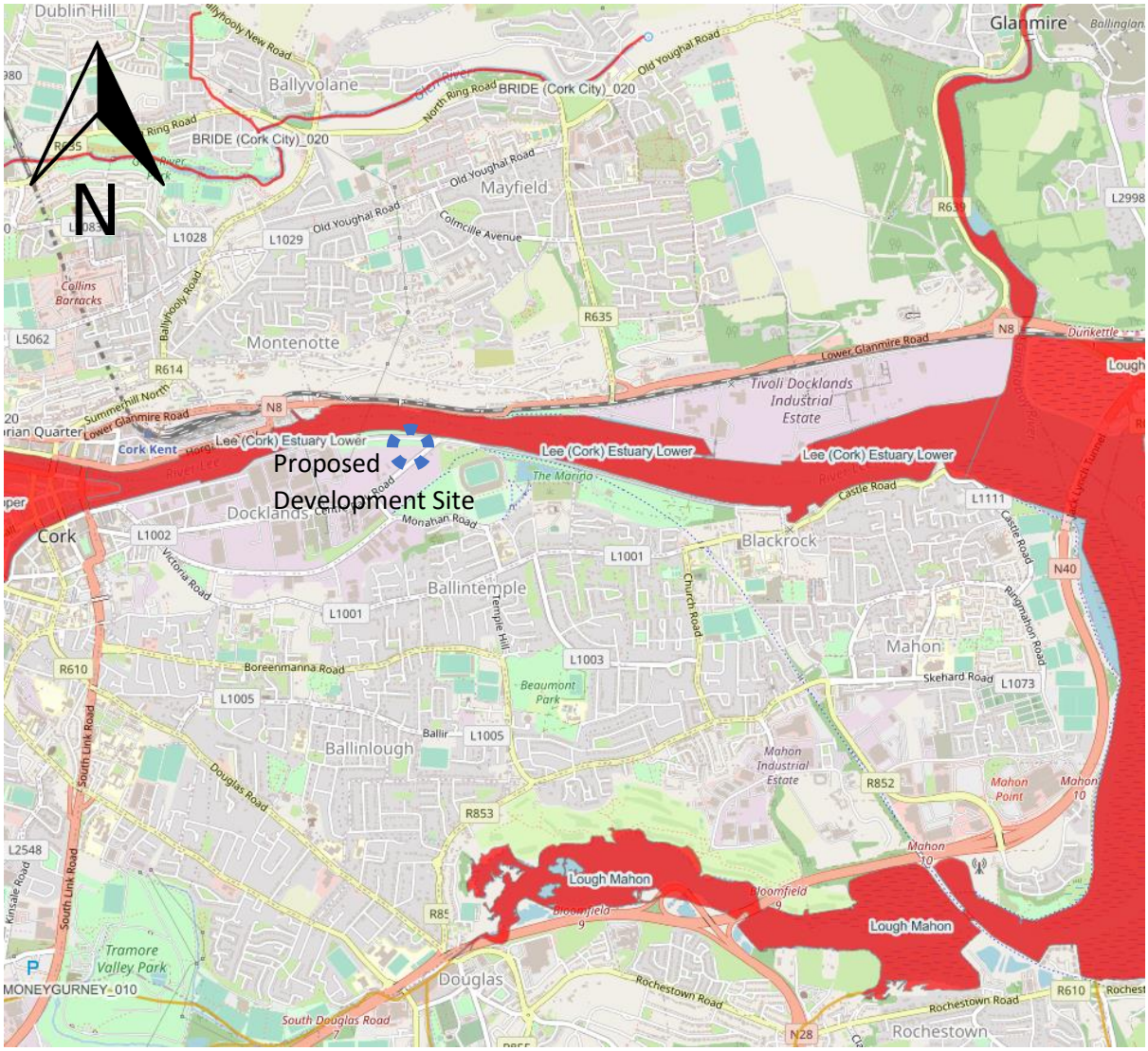


Figure 4. WFD waterbodies in the vicinity of the proposed development | Source: EPA Envision mapping) | not to scale

6.2 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, shellfish waters and Freshwater Pearl-Mussel sites) 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 Cork City WWTP (D0033-01) for treatment prior to discharging into the Cork Harbour at Lough Mahon. Cork Harbour is a Nutrient Sensitive Area listed in accordance with the Urban Wastewater Treatment (UWWT) Directive 91/271/EEC on Urban Wastewater Treatment Regulations 2001 (S.I. 48 of 2010).

7. Site Surveys

7.1 Habitats

Site surveys were carried out on the 20th July, 9th, 23rd and 26th of September 2021 and 11th March, 2022. 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 habitats recorded on site are described below in **Table 6** and illustrated in **Figure 5**. No Annex I habitats were recorded within the proposed development site.

Table 6. Habitat present within proposed development site

Habitats	Comments
Dry meadows and grassy verges GS2/Scrub WS1	Where there are deeper soils, on the margins of hard surfaces and where areas have been left unmanaged for longer periods, a mixture of Dry meadows and grassy verges GS2/Scrub WS1 has become established. Patches of this habitat occurs as a mosaic with a scattered distribution throughout the site on the margins of yards and along boundaries. As such it generally does not form a distinct area of habitat within the site boundary. The exception is the eastern section of the site which was not as actively utilised by the previous owners. This area is now dominated by this habitat type, whereas elsewhere within the site it occurs in a patchwork with other habitat types. Common species noted include False Oat Grass *Arrhenatherum elatius*, Yorkshire Fog *Holcus lanatus*, Meadow grass *Poa pratensis*, Wild Carrot *Daucus carota*, Smooth Sow Thistle *Sonchus oleraceus*, Bramble *Rubus* spp., Dandelion *Taraxacum* spp, Ribwort Plantain *Plantago lanceolata,* Meadow Vetchling *Lathyrus pratensis*, Spear Thistle *Cirsium vulgare*, Ragweed *Ambrosia* spp., Willow *Salix* spp., Ivy *Hedera helix* and Red Fescue *Festuca rubra*. Scrub is also becoming established with willow and buddleia the most common species. Silver and Downey Birch *Betula* spp. are also present. GS2 has links to the Annex I habitat Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) (6510). However, the habitat mosaic within the proposed development site is not an example of this Annex I habitat.
Treelines WL2/ Scrub WS1	Running along the northern and southern boundaries of the site and forming the external boundary is a mixture of poor-quality hedgerow and treeline. Species noted include Hawthorn *Crataegus monogyna*, non-native Grisilinea and Sycamore with Ivy, Nettle *Urtica dioica*, Bramble and Bindweed also common. Some dead elm trees *Ulmus* spp. are also prominent along the northern boundary. Within the site boundary, along the southern boundary, there is an existing treeline which includes Lime *Tilia* spp. and Monteray Cypress *Cupressus macrocarpa*. It is considered of low ecological value.

Habitats	Comments
	This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.
Scrub WS1	A drainage ditch runs along the full extent of the northern boundary of the site. Along its southern boundary there is a broad band of vegetation formed primarily by dense stands of Buddleia with climbing species such as Traveller's Joy *Clematis virginiana* and Bindweed *Convolvulus spp*. forming dense thickets. Trees are limited in extent with occasional Sycamore *Acer pseudoplatanus* and Willow the dominant species. Japanese Knotweed *Fallopia japonica* has become established at a number of locations and forms dense thickets. Elsewhere within the site there are pockets of scrub. In general the boundaries between habitats within this site are indistinct. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.
Drainage ditch FW4	There are existing drainage ditches running along the northern and southern boundary of the site. Surface water runoff from the existing site currently drains to these existing open channels. The southern channel is understood to be interconnected with existing channels to the west and south of the site which form part of the south docklands drainage network that ultimately discharges to the River Lee via the Atlantic Pond. Both open channels ultimately discharge to an estuarine section of the River Lee. Both drains have a deep substrate of mud are largely devoid of aquatic vegetation. Some signs of surface water pollution/eutrophication were noted, and water quality is generally poor with sluggish flows. Both drainage ditches are of negligible value for fish. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.
Buildings and artificial surfaces BL3/Recolonising Bare ground ED3/Scrub WS1	The existing complex of industrial buildings within the overall land ownership area are largely intact but in a poor state of repair. All of the windows within the office block are broken. Other buildings within this complex include a disused garage and open shed with corrugated roofs. These buildings are of low potential as bat roosts Large areas of the site have either a gravel of tarmac surface. Overtime disused areas of the site have been colonised by a range of early successional species which are able colonise areas with gravel or a thin layer of subsoil. Species noted include Buddleia which forms dense thickets, Bindweed, Herb Robert *Geranium robertianum*, Ribbed Melliot *Melilotus officinalis*, and Red Centaury *Centaurium erythraea*. The introduced species Narrow Leaved Ragwort *Senecio inaequidens* and Canadian Fleabane *Erigeron canadensis* are also common. The invasive species Giant Knotweed *Fallopia sachalinensis* was recorded within this habitat. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.

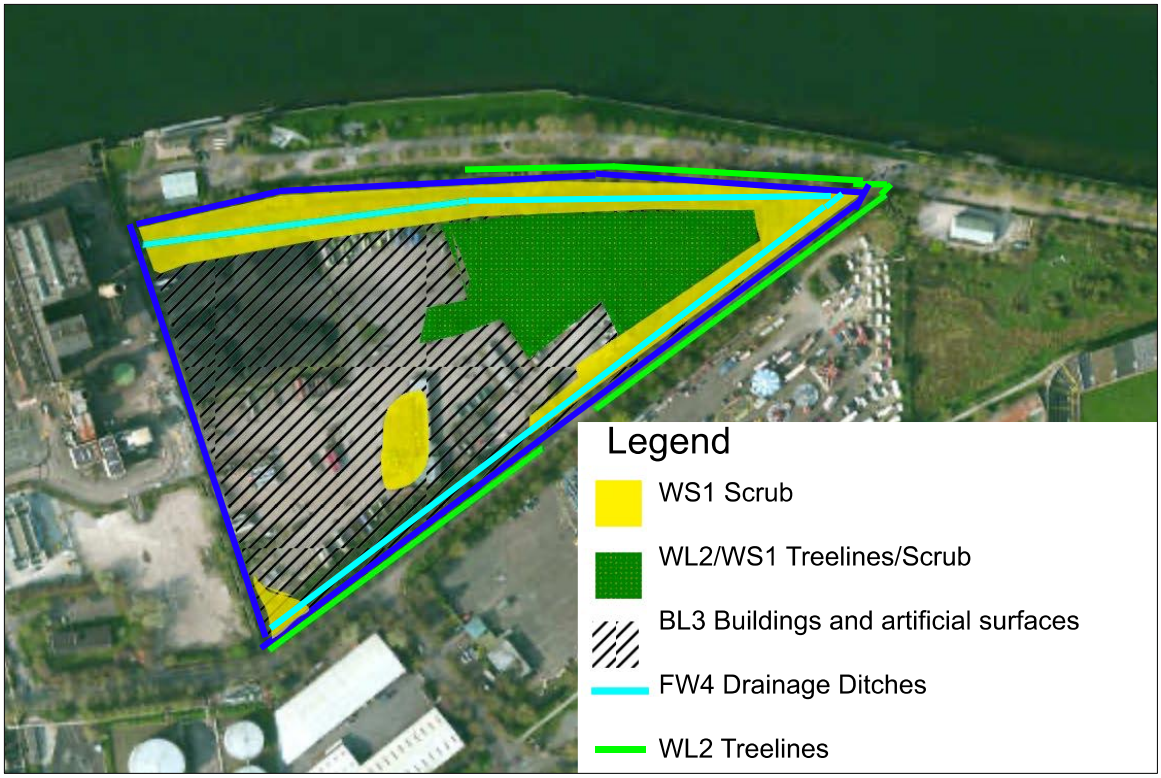


Figure 5. Habitats recorded within and in the vicinity of the development site boundary

7.2 Birds

A bird survey was carried out in conjunction with habitat surveys in 20th July 2021 and 11th March, 2022. Species recorded within the site are shown in **Table 7**.

During the survey, all birds seen or heard within the development site were recorded. The majority of birds utilising the proposed works areas were common in the local landscape. Bird species listed in Annex I of the Birds Directive (2009/147/EC) 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 (Gilbert *et al.* 2021). 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.

In general, the species recorded at the site were common bird species typical of an urban landscape. The scrub and treeline habitat does provide some foraging and potential nesting habitat for birds in the context of an industrialised area. Early successional plant species within recolonising bare ground habitat provides foraging opportunities for seed feeding birds such as Goldfinch, however overall, the high modified habitats at the site provide limited foraging opportunities for birds.

Table 7. Bird Species recorded during site visits

Species		Birds Directive Annex	BOCCI	
		I	Red List	Amber List
Black Headed Gull (OF)	*Chroicocephalus ridibundus*			x
Blackbird	*Turdus merula*			
Blue Tit	*Parus Caeruleus*			
Cormorant	*Phalacrocorax carbo*			x
Dunnock	*Prunella modularis*			
Goldfinch	*Carduelis carduelis*			
Grey Heron	*Ardea cinerea*			
Grey Wagtail	*Motacilla cinerea*		x	
House Sparrow	*Passer domesticus*			x
Jackdaw	*Corvus monedula*			
Long Tailed Tit	*Aegithalos caudatus*			
Mallard	*Anas platyrhynchos*			x
Moorhen	*Gallinula chloropus*			
Peregrine Falcon	*Falco peregrinus*	x		
Pigeon	*Columba livia domestica*			
Raven	*Corvus corax*			
Robin	*Erithacus rubecula*			
Rook	*Corvus frugiligus*			
Snipe	*Gallinago gallinago*		x	
Song Thrush	*Turdus philomelos*			

The Annex I species Peregrine Falcon Falco peregrinus, was recorded perching on buildings to the west of the site. While this species is known to nest in this area, there is no suitable nesting habitat for this species in the proposed development site. The Red List species Grey Wagtail *Motacilla cinerea* and Snipe *Gallinago gallinago* were recorded at the site. Grey Wagtail are breeding within the site's drainage channel. Four Snipe were recorded within dry meadows/scrub habitat. Grey Heron *Ardea cinerea*, which is a SCI species for Cork Harbour SPA, Mallard *Anas platyrhynchos* and Moorhen *Gallinula chloropus* were recorded within the site's drainage ditches. Cormorant utilise dead trees in the drainage ditch at the northeastern boundary of the site as perches. Occasional Black Headed Gull Chroicocephalus ridibundus, also a SCI species were also recorded overflying the site.

Overall, the proposed development site is of a local importance (lower value) for terrestrial bird species that are relatively common in the Irish countryside. The site itself has negligible value for SCI species, although they may occasionally overfly the site.

7.3 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 high impact invasive species which have been recorded within grid square W67 (**Table 8**).

Table 8. NBDC list of high impact invasive species.

Common Name	Latin Name
Canada Goose	*Branta canadensis*
Canadian Waterweed	*Elodea canadensis*
Cherry Laurel	*Prunus laurocerasus*
Curly Waterweed	*Lagarosiphon major*
Bohemian Knotweed	Fallopia japonica x sachalinensis = F. x bohemica
Giant Hogweed	*Heracleum mantegazzianum*
Giant-rhubarb	*Gunnera tinctoria*
Indian Balsam	*Impatiens glandulifera*
Japanese Knotweed	*Fallopia japonica*
Nuttall's Waterweed	*Elodea nuttallii*
Rhododendron	*Rhododendron ponticum*
Harlequin Ladybird	*Harmonia axyridis*
American Mink	*Mustela vison*
Brown Rat	*Rattus norvegicus*
Coypu	*Myocastor coypus*
Feral Ferret	*Mustela furo*
House Mouse	*Mus musculus*
Sika Deer	*Cervus nippon*

Source NBDC 09/03/22

Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 make it an offence to plant, disperse, allow dispersal or cause the spread of certain species e.g. Japanese knotweed and Himalayan Balsam, keep the plant in possession for purpose of sale, breeding, reproduction, propagation, distribution, introduction or release,

keep anything from which the plant can be reproduced or propagated from, without a granted licence and keep any vector material for the purposes of breeding, distribution, introduction or release. The Wildlife (Amendment) Act 2000 states that anyone who plants or otherwise causes to grow in a wild state in any place in the State any species of (exotic) flora, or the flowers, roots, seeds or spores of (exotic) flora shall be guilty of an offence.

Japanese Knotweed dominates an area of scrub has become established at multiple locations within the site including dense thickets along the drain that runs along the northern boundary and along the western and southern boundary (**Figure 6**). Japanese knotweed is a highly invasive, non-native species which was originally introduced as an ornamental plant but has since spread along transport routes and rivers to become a serious problem. From an ecological viewpoint it out-competes native species by forming dense stands which suppresses growth of other species. It grows extremely vigorously and can penetrate through small faults in tarmac and concrete and thus can damage footpaths, roads and flood defence structures. As it can survive in poor quality soils, including spoil, it often thrives in brownfield sites and in urban areas.

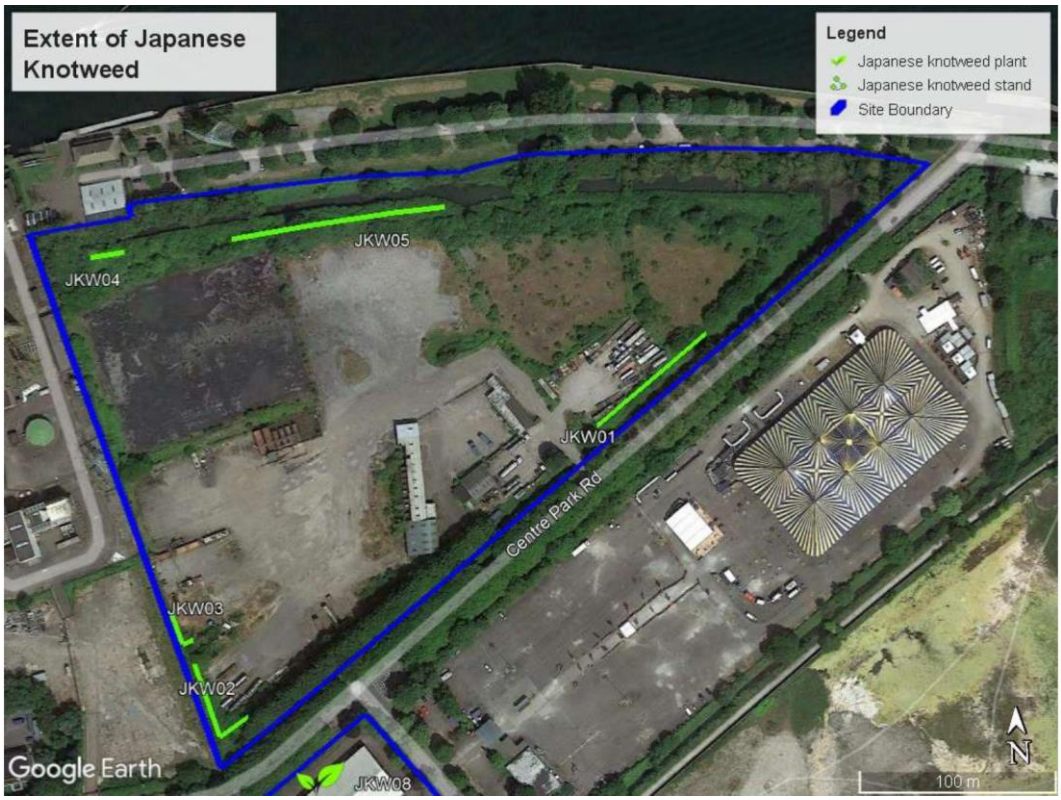


Figure 6. Extent of Japanese Knotweed within proposed development site

Three medium impact non-native invasive species were recorded at the site i.e., Buddleia *Buddleja davidii*, Traveller's Joy *Clematis virginiana* and Pampas grass *Cortaderia selloana* have a scattered distribution within the site and in some places are the dominant species. Other invasive species recorded including *Cotoneaster* spp., Montbretia *Crocosmia x crocosmiiflora a*nd Winter heliotrope *Petasites fragrans* were recorded at the site.

Buddleia, Traveller's Joy and Pampas Grass are considered medium impact invasive species by the NBDC. Japanese knotweed, Traveller's Joy, Montbretia, Winter heliotrope and Buddleia are included in the NRA Guidelines on the Management of Noxious Weeds and Non-

native Species on National Roads (NRA, 2010) as these species have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure. While Montbretia, Winter heliotrope and Cotoneaster spp., have not been classified as 'high' and or 'medium' impact species, or have yet to be risk assessed, they are recognised as having invasive qualities and under certain environmental conditions are known to spread locally.

With the exception of Japanese Knotweed, the invasive species described above are not included in the Third Schedule and therefore, their presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011). However, the NBDC notes that under the right ecological conditions this species may have an impact on the conservation goals of a European site or impact on a water body achieving good/high ecological status under the Water Framework Directive (Directive 2000/60/EC).

8. Potential Impacts

Potential impacts could arise from the following:

- Potential impacts from loss of habitat.
- Potential impacts from noise and disturbance
- Potential impacts on water quality during construction
- Potential impacts on water quality during operation
- Potential impacts from spread of invasive species
- Potential impacts from collision with buildings during operation
- In-combination impacts

8.1 Potential impacts from loss of habitat

The proposed development site is located 1.9km west of the Cork Harbour SPA at its closest point. An ecological appraisal of the proposed development site indicates that it supports common habitats which are not of high value in the context of the Natura 2000 designation. The habitats recorded within the proposed development boundary do not correspond to habitats listed on Annex I of the Habitats Directive. The highly modified habitats within the proposed development site are of negligible value for SCI birds for Cork Harbour SPA and no SCI birds were recorded within the site boundary.

The proposed development will not result in any significant deterioration in habitat quality or loss of habitat within the Cork Harbour SPA. Therefore, it is concluded that the proposed development will not result in any loss or deterioration of habitat within Natura 2000 sites.

8.2 Potential impacts from noise and disturbance

Potentially increased noise and disturbance associated with the site works could cause disturbance/displacement of fauna. If of sufficient severity, there could be impacts on reproductive success. Disturbance can cause sensitive species, such as birds, to deviate from their normal, preferred behaviour, resulting in stress, increased energy expenditure and, in some cases, species mortality.

The potential effects and impacts of disturbance have been widely recognised in wildlife conservation legislation, as has the need to develop conservation measures for birds whilst

taking human activities into account. Article 4.4 of the Bird's Directive (79/409/EEC) requires member states to "*take appropriate steps to avoid… any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article*". This specifically relates to conservation measures concerning Annex I species.

The wintering birds listed as qualifying interests for the Cork Harbour SPA are strongly associated with estuarine shoreline areas or wetlands - habitat types absent from the proposed development site.

Theoretically disturbance of important qualifying bird species could potentially occur during the construction phase of the project. However, predicting potential impacts on birds from disturbance can be problematic. Although there are many instances where waterfowl and people appear to co-exist on estuaries, there are widespread examples where effects and impacts of varying severity have been described.

It is noted that the proposed development site is located 1.9 km from the SPA boundary. This area is subject to noise disturbance and light pollution. During the construction stage, there may be short-term increases in disturbance, but it will not be significant in the context of existing noise levels.

Cork Harbour SPA is located a considerable distance from the proposed development site. No suitable habitat for SCI species was recorded within or adjacent to the proposed development site. The construction phase of the project will increase noise and disturbance, however given the distance from the SPA and the lack of suitable habitat for SCI species on or near the proposed development site no impact on birds listed as qualifying interests for the Cork Harbour SPA is predicted to occur.

8.3 Potential impacts on water quality during construction

Potential impacts on aquatic habitats which can arise from surface water emissions during the construction phase or operation of the proposed development include increased silt levels in surface water run-off, inadvertent spillages of hydrocarbons from fuel and hydraulic fluid. Potential impacts on surface water or ground water could also arise from contaminated land within this industrial site.

Inadvertent spillages of hydrocarbon and/or other chemical substances during construction 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).

High levels of silt can also impact on fish species. 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. Significant impacts on fish stocks could impact on piscivorous birds i.e., Little Grebe, Great Crested Grebe, Cormorant, Grey Heron and Common Tern due to a reduction in prey availability. Such run-off if severe could potentially result in changes in the ecology of the estuary.

Inadvertent spillages of hydrocarbons, silt or other chemicals during construction and operation could introduce toxic chemicals into the aquatic environment via surface water run-off and have a direct toxicological impact on habitats and fauna. However, the distance from estuarine/marine environment, the robust nature of qualifying habitats and the dilution provided in the estuarine/marine environment impacts of Natura 2000 sites downstream are highly unlikely.

However, given the hydrological connection to the Cork Harbour SPA, applying the precautionary principle, potential impacts from surface water discharges and possible contamination by hydrocarbons and other chemicals during construction and operation have been screened in for further investigation.

8.4 Potential impacts on water quality during operation

The proposed housing development could potentially result in an increase in nutrients discharging to Cork Harbour via the Lough Mahon discharge for the Cork City Wastewater Treatment Plant (WWTP). Increased nutrients can potentially impact on estuarine habitats by changing baseline ecological conditions and increasing algal growth, which in turn could impact on feeding success for birds listed as qualifying interests for the Cork Harbour SPA.

Wastewater from the proposed development will be conveyed for treatment to Cork City (Carrigrenan) Wastewater Treatment Plant (WWTP). Treated effluent from the proposed development will ultimately discharge into the waters of the Lough Mahon which sections overlap with that of the Cork Harbour SPA.

The Cork City agglomeration is served by a wastewater treatment plant with a Plant Capacity Population Equivalent (P.E.) of 413,200. The agglomeration consists of one primary discharge point which discharges to the Lough Mahon. The WWTP obtained a discharge licence (Reg: D0033-01) from the Environmental Protection Agency and has assigned emission limit values (ELV's) for a range of parameters to ensure a high degree of protection to the Lough Mahon and surrounding waters.

Treated effluent from the proposed development will discharge from the Cork City WWTP via the main treated effluent line. The discharge licence assigns ELV's for biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), Total Nitrogen (Total N), Total Phosphorous (Total P), Ammonia Total (as N), orthophosphate (As P) and pH. The ELVs are set based on the full design capacity (P.E 413,200) 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.

Based on the planned occupancy, the P.E. for the proposed development has been conservatively calculated at 2,776. This would increase the current WWTP load from 241,480 (based on 2020 EPA data (source EPA envision mapping)) to 244,576 which is well within the 413,200 P.E. design capacity. Therefore, with the addition of emissions from the proposed housing development to the WWTP it would increase its operational load to 59.2% of its design capacity with a residual capacity of 40.8%. Thus, given the limited scale of the proposed development and the ability of the WWTP to cater for the additional loading, no impact is expected.

The 2019 Annual Environmental Report for Cork City WWTP (D0033-01) was reviewed. **Table 9** 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 (2019).

Table 9. Effluent Monitoring

	Total N (mg/l)	Total Oxidised Nitrogen (mg/l)	Total Ammonia (mg/l)	Total P (mg/l)	Orthophosphate (mg/l)
WWDL ELV (Schedule A1)	10	n/a	n/a	2.5	n/a
ELV with Condition 2 Interpretation	12	n/a	n/a	3	n/a
No. of Samples	24	n/a	n/a	24	24
No. sample results above WWDL ELV	24	24	24	6	n/a
No Samples above ELV with condition 2 interpretation	24	n/a	n/a	2	n/a
Overall Compliance	Fail			Fail	

The AER notes that the final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2019. The non-compliances with the ELVs were in relation to Total P (mg/l) and Total N (mg/l). This non-compliance was because nutrient removal does not form part of the WWTP process. In relation to ongoing monitoring of water quality, the 2019 AER concluded the following:

The WWTP discharge was not compliant with the ELVs set in the wastewater discharge licence.

- The ambient monitoring results does not meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.
- The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

- The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

Overall, the discharge from the Wastewater Treatment Plant does not have an observable negative impact on receiving water quality nor a negative impact on the Water Framework Directive Status.

The addition of the effluent discharge from the proposed housing development to the Cork City 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. Likewise, minor increases in nutrient levels potentially discharged by the WWTP will not have a significant impact on feeding conditions for birds listed as qualifying interests for the Cork Harbour SPA. No impact on these bird species is predicted to occur.

8.5 Spread of Invasive Species

Giant Knotweed and Japanese Knotweed were recorded within the development site boundary. The habitats within the Cork Harbour SPA are largely estuarine in nature and do not include shoreline habitat. However, given the proximity to stand of Japanese Knotweed to a surface water pathway, the spread of Japanese Knotweed has been screened in for further investigation.

8.6 Cumulative Impacts

Cumulative 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 cumulative impacts from existing or proposed plans and projects and these will often only occur over time. The area surrounding the proposed development is also heavily populated with a mixture of residential estates and one-off dwellings and roads. Wastewater and surface water is also discharged from other settlements (e.g. Blarney, Douglas, Ringaskiddy) and local industry. Applying the precautionary principle further investigation is required to determine if surface water discharges will have an in-combination impact on the Cork Harbour SPA.

8.7 Potential impacts from collision with buildings during operation

Buildings are an obstacle to bird flight and collisions with buildings, especially their glass windows, are thought to be a major anthropogenic global threat to birds (Klem 1990, 2009, Machtans *et al.* 2013). While the estimates of collision mortality are stark (between 100 million and 1 billion in the US annually (Klem 1990, Dunn 1993)), a number of factors, such as total population size, natural mortality levels, and other human related influences, need to be considered in order to put the collision mortality rates into perspective. Modelling by some authors has found that vulnerability to collision with buildings and towers varied over more than four orders of magnitude among species (Arnold and Zink 2011). Species that migrated long distances or at night, were much more likely to be affected by collisions than year-round residents or diurnal migrants. However, no correlation has been established between relative collision mortality and long-term population trends for these same species.

Species which appear to be most vulnerable to collision are passerine species (Loss *et al.* 2013) and birds of prey (Thaxter *et al.* 2017). Birds which are less manoeuvrable, for example grebes, geese or swans, which are at a greater risk of collision with turbines or powerlines for example, are less likely to fly close to manmade structures due to their lack of manoeuvrability. Therefore, these species rarely collide with buildings. Loss *et al.* (2013), is the most comprehensive examination of species vulnerability to building collision. This study found several species exhibit disproportionately high vulnerability to collisions regardless of building type. All vulnerable species in this case were passerine species.

While building height appears to be a significant factor in collision risk, even on lower height buildings (i.e. below 11 storeys) bird mortality rates have been found to increase with the percentage and surface area of buildings covered by glass (Collins and Horn 2008, Hager *et al.* 2008, 2013, Klem *et al*. 2009, Borden *et al.* 2010) and the amount of light emitted from windows (Evans Ogden 2002, Zink and Eckles 2010). Large amounts of uninterrupted glazing on a building can produce a mirroring or transparent effect, causing glass to be completely invisible to birds. The amount of glazing combined with the artificial lighting at night can significantly increase bird collision risk. While it is noted that the majority of collisions with buildings actually take place by day, at night the amount of light emitted by a building is a strong predictor of the number of collisions it will cause, more so than building height. Patterns of light intensity across a nocturnal landscape may influence the pattern of birds landing in that landscape at the end of migration stages. Thus, reducing light trespass from all levels of buildings and their surroundings is an important part of a strategy to reduce collisions with glass.

Species which appear to be most vulnerable to collision are passerine species (Loss *et al.* 2014) and birds of prey (Thaxter *et al.* 2017). Birds which are less manoeuvrable, for example Grebes, Geese or Swans, and therefore more at risk of collision with turbines and powerlines, will be less likely to fly close to buildings due to their lack of manoeuvrability. Loss *et al.* (2014), is the most comprehensive examination of species vulnerability to building collision. This study found several species exhibit disproportionately high vulnerability to collisions regardless of building type. All vulnerable species for all types of buildings (with the exception of one species of Grebe) were passerine species. Loss *et al*. (2014) also examined vulnerability based on taxonomic groups. Results found that grebes, shorebirds, gulls and terns were at a potential risk of building collision. However, the study noted that all these taxonomic groups were represented in the dataset by only one or two species and therefore the average risk values for these groups may not represent the entire taxonomic family. Taxonomic groups with particularly low collision risk include ducks and geese, swallows, herons, upland game birds, blackbirds, meadowlarks, and orioles. The Loss *et al.* (2014) study highlights the paucity of data in this area and the difficultly in generalising across taxonomic groups. Furthermore, this study examined buildings ranging in height from single storey dwellings to high-rise (<12 storeys). This presents further difficulties in assessing species collision vulnerability across a large range of building heights. What is clear from an extensive review of the available literature is that there are no studies which show that the SCI species for Cork Harbour are vulnerable to building collision risk. While SCI birds for the Cork Harbour SPA will occasionally overfly inland habitats, the majority of commuting flights for Cormorants, ducks, waders and gulls are likely to take place within the estuarine habitats (i.e., the open water or mudflats) and not over the built-up environment in the vicinity of the proposed development site.

It is noted that birds use linear features such as rivers as a commuting route. Given the proximity of the site to the Atlantic Pond and the River Lee, there is potential for some SCI birds to be attracted inland thus overflying the proposed development site. SCI species which are known to occur in the vicinity of the site include Cormorant, Grey Heron, Black-headed Gull, Common Gull and Lesser Black-backed Gull. . Whilst other SCI species may occasionally overfly the site, the closest foraging areas for waders/ducks are at the Douglas River Estuary (1.9km southeast) and Dunkettle (approximately 2.5km east). Common Tern do not nest in the vicinity of the proposed development site and grebes generally forage in deeper waters significantly distant from the proposed development site.

The most significant potential risk associated with the proposed development is the glazing and lighting elements of the development. Glazed areas are present on all blocks, including Block A which will be 35 storeys in height, but glazing is broken up with vertical and horizontal areas of concrete. The absence of large areas of glass will limit the light emitted from windows at night and will reduce the risk of nocturnal collisions. It is noted that tall buildings in the South Docks area have been a feature of the landscape for decades. In some cases, birds have used these to their advantage, such as Peregrine Falcon using tall buildings here as perching and nesting sites. Existing pylons adjacent to the site also create a risk of collision. In this context, birds which use this area are likely to regularly traverse and avoid collision in this cluttered urban setting. The proposed development does not include large expanses or uninterrupted glazing which could be potentially hazardous to birds. During construction and operation, lighting within outdoor shared areas (i.e. carpark, paths, roads etc), will be positioned and directed as not to unnecessarily intrude on adjacent areas. With the exception of aircraft safety lighting on the roof of the buildings and occasional balcony lighting, there will be no lighting on the façade of the buildings. The lack of larger areas of glass on the buildings also means that light emitted from the building at night will be minimised and unlikely to attract nocturnally migrating birds, which are the main source of documented nocturnal bird collisions. While no specific bird collision mitigation has been included in the design, there is no evidence that either the location of the site or the proposed building design will create a significant risk of collision for SCI birds.

Therefore, given the location of the proposed development (>1.9km from the SPA), the absence of large areas of glass, the proposed lighting design and its location within an existing urban setting, no significant risk of collision for SCI species has been identified. Therefore, the collision risk posed by the proposed development is not significant and it will not impact on the conservation objectives for the Cork Harbour SPA.

9. Screening conclusion and statement

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 Cork Harbour SPA is low, applying the precautionary principle, potential impact pathways have been identified and a NIS is being prepared for the proposed development.

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Appendices

Appendix 1 Site synopses

Cork Harbour Special Protection Area (Site Code 004030)

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay and the Rostellan and Poulnabibe inlets.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably Macoma balthica, Scrobicularia plana, Hydrobia ulvae, Nepthys hombergi, Nereis diversicolor and Corophium volutator. Green algae species occur on the flats, especially Ulva lactua and Enteromorpha spp. Cordgrass (Spartina spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (Halimione portulacoides), Sea Aster (Aster tripolium), Thrift (Armeria maritima), Common Saltmarsh-grass (Puccinellia maritima), Sea Plantain (Plantago maritima), Laxflowered Sea-lavender (Limonium humile) and Sea Arrowgrass (Triglochin maritima). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Rostellan Lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Grey Heron, Shelduck, Wigeon, Teal, Pintail, Shoveler, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Blacktailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Common Gull, Lesser Black-backed Gull and Common Tern. 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.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The two-year mean of summed annual peaks for the entire harbour complex was 55,401 for the period 1995/96 and 1996/97. Of particular note is that the site supports internationally important populations of Black-tailed Godwit (905) and Redshank (1,782) - all figures given are average winter means for the two winters 1995/96 and 1996/97. At least 18 other species have populations of national importance, as follows: Little Grebe (51), Great Crested Grebe (204), Cormorant (705), Grey Heron (63), Shelduck (2,093), Wigeon (1,852), Teal (922), Pintail (66), Shoveler (57), Red-breasted Merganser (88), Oystercatcher (1,404), Golden Plover (3,653), Grey Plover (84), Lapwing (7,688), Dunlin (10,373), Bartailed Godwit (417), Curlew (1,325) and Greenshank (26). The Shelduck population is the largest in the country (over 10% of national total). The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145) and Turnstone (79). Other species using the site include Gadwall (13), Mallard (456), Tufted Duck (113), Goldeneye (31), Coot (53), Mute Swan (38), Ringed Plover (34) and Knot (38). Cork Harbour is a nationally important site for gulls in winter and autumn, especially Black-headed Gull (4,704), Common Gull (3,180) and Lesser Black-backed Gull (1,440).

A range of passage waders occurs regularly in autumn, including such species as Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

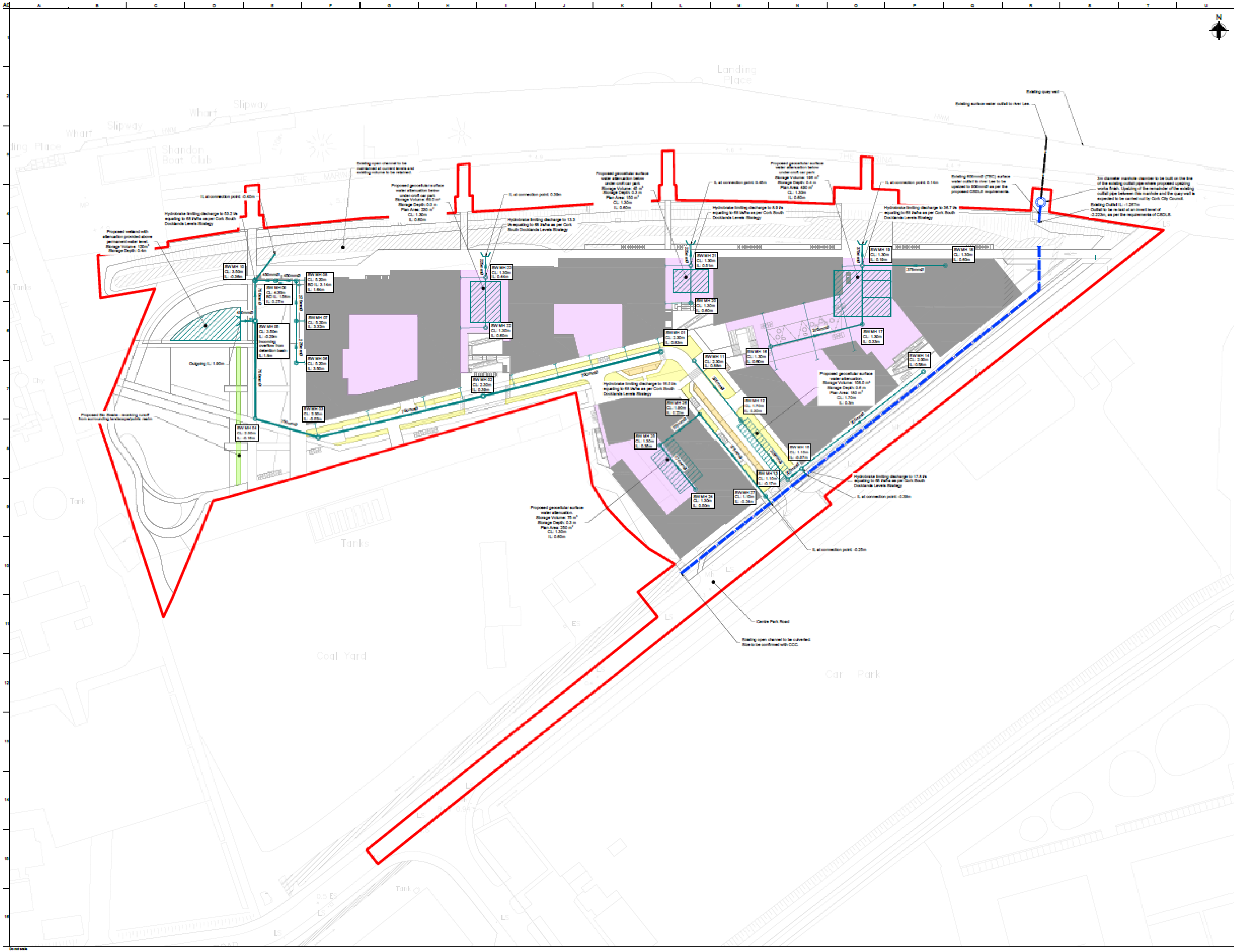
The wintering birds in Cork Harbour have been monitored since the 1970s and are counted annually as part of the I-WeBS scheme.

Cork Harbour has a nationally important breeding colony of Common Tern (3-year mean of 69 pairs for the period 1998-2000, with a maximum of 102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Extensive areas of estuarine habitat have been reclaimed since about the 1950s for industrial, port-related and road projects, and further reclamation remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is a general threat. Recreational activities are high in some areas of the harbour, including jet skiing which causes disturbance to roosting birds.

Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its populations of Black-tailed Godwit and Redshank. In addition, there are at least 18 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.

Appendix 2. Drawings



Notes:

1) All levels relate to OD Malin Head and are in metres.
2) Do not scale from this drawing. If in doubt, ask.
3) This drawing should be read in conjunction with all relevant and available documentation.
4) Ordnance Survey Ireland Licence No. EN 0002822 © Ordnance Survey Ireland/Government of Ireland.
5) All pipework shall be Polypipe Ridgidrain pipework and fittings, or similar approved.
6) Proposed linear drainage channels to be Aco MultiDrain channels with D400 Brickslot covers to suit the architects proposed finished surface.
7) Proposed road gullies shall be Polypipe Ridgigully with D400 Buffalo 100 ductile iron grating.
8) All runoff from under croft car park areas to be treated by a Class 1 Hydrocarbon separator and discharged to the foul water network.
9) All pipes to have a minimum cover of 900mm in non-trafficable areas and 1.2m in trafficable areas.
10) All gully and linear drainage sump outlets to be 150mm dia.
11) All chamber covers to be rated D400 where located in trafficable areas and C250 elsewhere.

Rev	Date	By	Chkd	Appd
P06	23/03/22	RCD	RM	JMacC
Issued for Information (Status S2)				
P05	11/03/22	RCD	RM	JMacC
Issued for Information (Status S2)				
P04	08/03/22	RCD	RM	JMacC
Issued for Information (Status S2)				
P03	23/11/21	RCD	RM	JMacC
Issued for Information (Status S2)				
P02	13/10/21	RCD	RM	JMacC
Issued for Information (Status S2)				
P01	04/10/21	RCD	RM	JMacC
Issued for Information (Status S2)				

ARUP

Client
Tionow Property Company Limited (Comer Group Limited)

Project title
City Park Development at the Former Tedcastles Site

Drawing title
Proposed Surface Water Layout

Scale at A0: 1:500
Role: Site Infrastructure
Suitability: S2 - Suitable for Information
Arup Job No: 287388-00
Rev: P06
Name: 287388-ARUP-ZZ-ZZ-DR-C-2000

Notes:

1) All levels relate to OD Malin Head and are in metres.
2) Do not scale from this drawing. If in doubt, ask.
3) This drawing should be read in conjunction with all relevant and available documentation.
4) Ordnance Survey Ireland Licence No. EN0039220 © Ordnance Survey Ireland/Government of Ireland.
5) Existing foul water infrastructure based on record drawings received from Cork City Council (as agents for Irish Water) May 2018.
6) All foul water drainage to be designed and constructed in accordance with Irish Water Code of Practice and Standard Details.
7) All pipework shall be Polypipe Polysewer and fittings, or similar approved.
8) All pipes to have a minimum cover of 900mm in non-trafficable areas and 1.2m in trafficable areas.
9) All chamber covers to be rated D400 where located in trafficable areas and C250 elsewhere.
10) Non-return valves expected to be fitted on all foul drainage building connections immediately prior to discharge from the building.
11) Manhole covers located in soft landscaped/grass areas are to be surrounded by a concrete plinth, 200mm all round and 150mm deep formed with C25/30 concrete, 20mm aggregate size, tanked in Classe 804 material.
12) All runoff from the undercroft car park shall be discharged to the foul water sewer.
13) All foul water infrastructure will achieve horizontal and vertical clearances as set out in Irish Water Code of Practice and Standard Details, unless agreed with Irish Water in advance.

Legend:

- Existing Foul Water Sewer & Manhole
- Proposed Foul Water Drain & Manhole
- Proposed Backdrop Manhole
- Proposed Foul Water Building Connection & Inspection Chamber
- Indicative Site Boundary
- Proposed Building Outline
- Extent of Podium
- Existing Xpd Level
- Proposed Xpd Level

P07	23/03/22	ROD	RM	JMacC
Issued for Information (Status S2)				
P06	11/03/22	ROD	RM	JMacC
Issued for Information (Status S2)				
P05	08/03/22	ROD	RM	JMacC
Issued for Information (Status S2)				
P04	10/01/22	ROD	RM	JMacC
Issued for Information (Status S2)				
P03	22/12/21	ROD	RM	JMacC
Issued for Information (Status S2)				
P02	13/12/21	ROD	RM	JMacC
Issued for Information (Status S2)				
P01	04/12/21	ROD	RM	JMacC
Issued for Information (Status S2)				
Rev	Date	By	Chkd	Appd

ARUP

Client: Tarrow Property Company Limited (Corner Group Ireland)

Project Title: City Park Development at the Former Tedcastles Site

Drawing Title: Proposed Foul Water Layout

Scale at A1: 1:500
Role: Site Infrastructure
Status: S2 - Suitable for Information
Job number: 267366-00
File: 267366-ARUP-ZZ-ZZ-DR-C-3000
Rev: P07