Greater Dublin Drainage Project Addendum

Water Framework Directive Assessment Report

Uisce Éireann

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1. Water Framework Directive Assessment

1.1 Introduction

1.1.1 Competent Experts

The following competent experts authored this Water Framework Directive Assessment Report for the Greater Dublin Drainage Project (hereafter referred to the Proposed Project) Addendum:

- Mark Johnson is a Senior Water Environmental Scientist with Jacobs, with eight years of experience in Water Science and Hydromorphology and geotechnical engineering and land quality. Mark holds an honours degree in Geology from the University of Aberdeen and an Master of Science (MSc) degree in integrated Geoscience also from the University of Aberdeen. Mark is experienced in many aspects of legislation and regulation, including the Water Framework Directive (WFD), and all stages of Environmental Impact Assessment (EIA) and detailed design. Mark has originated numerous EIA's including WFD assessments in a variety of settings (fluvial, transitional and coastal) for numerous different infrastructure project types; and
- Rebecca Westlake is Head of Discipline for Water Science and Hydromorphology at Jacobs. Rebecca holds an honours degree in physical geography from Plymouth University, an MSc in coastal and marine resource management, a LLM in environmental law and practice, and a PhD in geomorphology. Rebecca is chartered with the Institute of Marine Engineering, Science and Technology, and has over 25 years' relevant experience in water science and environmental assessment. Rebecca is highly experienced in many aspects of legislation and regulation, in addition to a specific technical specialism in the WFD, and all stages of the EIA process.

1.1.2 The Water Framework Directive

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy is known as the Water Framework Directive (WFD).

The WFD established a framework for the protection of both surface and groundwaters, and provides a vehicle for establishing a system to improve and / or maintain the quality of water bodies across the European Union (EU). The WFD requires all water bodies (rivers, lakes, groundwater, transitional, coastal) to attain 'Good Water Status' (qualitative and quantitative) by 2027.

There are a number of WFD objectives in respect of which the quality of water is protected. The key objectives at EU level are the general protection of aquatic ecology, specific protection of unique and valuable habitats, the protection of drinking water resources, and the protection of bathing water (see Table 1). The objective is to achieve this through a system of river basin management planning and extensive monitoring.

Table 1: WFD Environmental Objectives

Objectives
Member States shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water.
Member States shall protect, enhance and restore all bodies of surface water, subject to the application of subparagraph (iii) for artificial and heavily modified bodies of water, with the aim of achieving good surface water status by 2015.
Member States shall protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve good status by 2021 or 2027.
Progressively reduce pollution from priority substances and cease or phase out emissions, discharges and losses of priority hazardous substances.
Prevent Deterioration in Status and prevent or limit input of pollutants to groundwater.

'Good Status' means both 'Good Ecological Status' (GES) and 'Good Chemical Status' (GCS). The WFD was initially transposed into Irish law by S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003, as amended (hereafter referred to as the **Water Policy Regulations**). The Water Policy Regulations

outline the water protection and water management measures required to maintain high status of waters where it exists, prevent any deterioration in existing water status and achieve at least 'Good' status for all waters.

Subsequently, S.I. No. 272/2009 – European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (hereafter referred to as the **Surface Waters Regulations**), and S.I. No. 9/2010 – European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended (hereafter referred to as the **Groundwater Regulations**), were promulgated to regulate WFD characterisation and the monitoring and status assessment program, in terms of assigning responsibilities for the monitoring of different water categories, determining the quality elements and undertaking the characterisation and classification assessments.

1.1.3 Article 4.7 of the Water Framework Directive

Member states must meet the conditions of the WFD unless they meet the criteria laid out in Article 4.7 of the WFD. Article 4.7 states:

> *'Member states will not be in breach of this Directive when:*
>
> - *failure to achieve good groundwater status, good ecological status or, where relevant, good ecological potential or to prevent deterioration in the status of a body of surface water or groundwater is the result of new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater, or*
> - *failure to prevent deterioration from high status to good status of a body of surface water is the result of new sustainable human development activities*
>
> *and all the following conditions are met:*
>
> *(a) all practicable steps are taken to mitigate the adverse impact on the status of the body of water;*
>
> *(b) the reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six years;*
>
> *(c) the reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development; and*
>
> *(d) the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.*'

1.1.4 Water Framework Directive Assessment

To be compliant with the requirements of the WFD, any activity potentially impacting WFD water bodies must be assessed to determine potential deterioration in the water body's ecological status or potential. It is therefore necessary to consider the possible changes associated with the Proposed Project.

This WFD Assessment Report has been prepared for the Construction and Operational Phases of the Proposed Project and is included as a standalone document in this Addendum.

The generic environmental objectives set out below (based on Article 4.1 of the WFD) are used for the assessment of the Proposed Project:

- No changes affecting high status sites;
- No changes that will cause failure to meet surface water GES or GEP or result in a deterioration of surface water ecological status or potential;
- No changes which will permanently prevent or compromise the Environmental Objectives being met in other water bodies; and
- No changes that will cause failure to meet good groundwater status or result in a deterioration of groundwater status.

The purpose of this WFD Assessment is to support the Addendum to the planning application and provide an assessment of the potential impacts of the Proposed Project on the surrounding WFD water bodies. It is intended to be read alongside, and to supplement, the main Environmental Impact Assessment Report (EIAR) for the Proposed Project which was submitted as part of the 2018 planning application, as supplemented by the Addendum to the EIAR. This Report supports, in particular, Chapter 8 (Marine Water Quality) and Chapter 17 (Hydrology and Hydrogeology) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) and Chapter 17A (Hydrology and Hydrogeology) in Volume 3A Part A of the EIAR Addendum, which collectively address the Proposed Project's potential effects on the surface water, groundwater and the marine environments.

1.2 Outline of the Proposed Project

1.2.1 Overview

The Proposed Project is illustrated in Figure 1 of this Report and will be located along the southern fringe of Fingal in North County Dublin, between Blanchardstown and Baldoyle, and in the marine environment, offshore of North County Dublin, between Baldoyle Bay and Ireland's Eye. The Proposed Project will comprise the following interlinked elements that have the potential to impact on the WFD status of water bodies:

- Proposed wastewater treatment plant (WwTP) to be located on a 29.8 hectare (ha) site in the townland of Clonshagh (Clonshaugh) in Fingal (including ultraviolet (UV) treatment);
- Proposed Sludge Hub Centre (SHC) to be co-located on the same site as the proposed WwTP;
- Proposed orbital sewer route from Blanchardstown to the proposed WwTP at Clonshagh;
- Proposed odour control unit (OCU) at the interface between the rising main and gravity sewer elements of the proposed orbital sewer route;
- Proposed North Fringe Sewer (NFS) diversion sewer to the proposed WwTP;
- Proposed Abbotstown pumping station to be located in the grounds of the National Sports Campus (NSC);
- Proposed outfall pipeline route from the proposed WwTP to the outfall point approximately 1km (kilometre) north–east of Ireland's Eye within the marine environment; and
- Regional Biosolids Storage Facility (RBSF) to be located on an 11.4ha site at Newtown, Dublin 11.

Further details on each of the listed project elements are described in Section 1.2.2. A full project description is provided in Chapter 4 (Description of the Proposed Project) in Volume 2 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum.

1.2.2 Proposed Project Elements

The project elements pertinent to this WFD assessment are briefly described under the sections below.

1.2.2.1 Proposed Wastewater Treatment Plant

The site for the proposed WwTP is located in the townland of Clonshagh, in Fingal. Construction methodologies associated with the proposed WwTP are summarised below and detailed within the Outline Construction Environmental Management Plan (CEMP) included as a standalone document in the 2018 planning application:

- Excavation for building foundations and tanks;
- Reinforced concrete works;
- Erection of structural steel / concrete building frames;
- Erection of building walls (concrete / blockwork);
- Erection of prefabricated cladding panels to walls and roofs of buildings;
- Erection of prefabricated steel tanks;
- Mechanical and electrical fit out of buildings and tanks;

- Installation of below and above ground pipework;
- Construction of screening berms;
- Construction of access / egress roads to / from site; and
- Internal circulation roads, car parks and footpaths, landscaping and final planting.

The wastewater treatment capacity to be provided under the Proposed Project is 500,000 Population Equivalent (PE). Future flow and load monitoring, in the catchments will be diverted to the proposed WwTP and will confirm the split between industrial, non-domestic and domestic flow and load. See Section 4.4 of Chapter 4 (Description of the Proposed Project) in Volume 2 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 4A (Description of the Proposed Project) in Volume 2 Part A of the EIAR Addendum, for the design basis of the proposed WwTP including typical unit loadings.

1.2.2.1.1 Proposed Wastewater Treatment Standards

The system for the licensing or certification of wastewater discharges from areas served by local authority sewer networks was brought into effect with the introduction of S.I. No. 684/2007 - Waste Water Discharge (Authorisation) Regulations 2007, as amended by S.I. No. 231/2010 - Waste Water Discharge (Authorisation) (Amendment) Regulations 2010, and further amended by S.I. No. 652/2016 - Waste Water Discharge (Authorisation) (Environmental Impact Assessment) Regulations 2016. These regulations have been updated by S.I. No. 214 of 2020 - European Union (Waste Water Discharge) Regulations 2020, and may now be collectively cited as the European Union (Waste Water Discharge) Regulations 2007 to 2020.

The proposed WwTP will require a wastewater discharge licence to be granted by the Environmental Protection Agency (EPA) under the European Union (Waste Water Discharge) Regulations 2007 to 2020, prior to commissioning. Wastewater discharges from the proposed WwTP must comply with this licence.

Treatment standards for treated wastewater from the proposed WwTP to be discharged into the marine environment of the Irish Sea off the coast of North County Dublin were examined and reported on in the Key Wastewater Treatment Standards Report which is appended as Appendix A4.1 in Volume 2 Part B of the EIAR in the 2018 planning application. This report noted, subject to the granting of a wastewater discharge licence by the EPA, that the final treated wastewater produced at the proposed WwTP will conform to the standards outlined in Table 2.

Table 2: Final Effluent Emission Limits for the Proposed WwTP

Parameter		Emission Limit
pH		6 – 9
Temperature		25ºC (max)
BOD_5 NOTE 1	95th Percentile	25mg/l O_2
	Not to be exceeded	50mg/l O_2
Chemical Oxygen Demand (COD)	95th Percentile	125mg/l O_2
	Not to be exceeded	250mg/l O_2
TSS	95th Percentile	35mg/l
	Not to be exceeded	87.5mg/l

Note 1: BOD 5-day limit.

1.2.2.2 Proposed Regional Biosolids Storage Facility

The site of the Proposed RBSF Component is located on the western side of the N2 National Road and within the townland of Newtown, Dublin. It is approximately 1.6km north of Junction 5 (Finglas) on the M50 Motorway.

The construction of the Proposed RBSF Component forms part of the overall Proposed Project. The facility will provide storage for the biosolids generated at the proposed WwTP. The storage facility will comprise two buildings each with a total area of approximately 5,250m^2 (metres squared).

The water supply to the Proposed RBSF Component will be provided by mains water. There will be no abstraction from the water courses. Rainwater will be harvested for non-potable use (wheel wash). There will

be no interaction with the local surface water environment related to water abstraction. The wastewater generated by the Proposed RBSF Component will be collected onsite and will be discharged to the public sewer. Water from the wheel wash will discharge to the foul sewer. Any drainage from within the storage buildings will be discharged to the foul sewer.

The Proposed RBSF Component will incorporate the construction of paved areas, internal roads and carparks, the runoff from which will be collected in a purpose designed drainage system. The proposed surface water drainage will be designed to incorporate sustainable drainage systems (SuDS) devices, in the form of dry swales and permeable paving, at source to limit any potential pollutants in runoff prior to discharge to the receiving water course. The system will incorporate a hydrocarbon interceptor to prevent any oil, petrol or diesel entering the receiving water. The drainage from the northern part of the site incorporating the storage building roads will discharge (following attenuation) to the drainage ditch on the western boundary at Outfall 2. The southern part of the site will continue to drain via the existing attenuation pond at Outfall 1. Both outfall 1 and 2 discharge to Huntstown Stream, which is not designated under the WFD, however does form a tributary to the Ward_030 approximately 230m downstream of the outfall location.

The proposed design for the RBSF integrates rainwater harvesting as part of a water conservation strategy for the site. It is anticipated the daily demand for recycled water will be in the region of 42m^3 (metres cubed) by the 2040 design horizon, generated by the proposed wheel wash.

The site-specific drainage system will be designed to collect the runoff from the Proposed RBSF Component including:

- Storm water attenuation storage and discharge control devices that will ensure that the peak runoff from the Proposed RBSF Component will not exceed the existing greenfield runoff. The attenuation will be designed to cater for the 1 in 100 year event (1% Annual Exceedance Probability);
- Roof runoff will be conveyed via a series of rainwater down pipes into a rainwater harvesting system;
- All runoff from paved areas will pass through a bypass petrol/oil interceptor; and
- Following attenuation, the runoff will discharge to the tributary of the Huntstown Stream on the western boundary of the site.

There will be no alterations to the existing natural drainage regime as part of the construction and operation of the Proposed RBSF Component.

1.2.2.3 Proposed Orbital Sewer Route

The proposed orbital sewer route will run from Blanchardstown to Clonshagh and will transfer flows from the existing Blanchardstown drainage catchment to the proposed WwTP at Clonshagh. The proposed orbital sewer route will commence in the grounds of Waterville Park, Blanchardstown and will pass through the grounds of Connolly Hospital and the NSC to the proposed Abbotstown pumping station, which will be located adjacent to the M50 Motorway. The total length of the proposed orbital sewer route will be approximately 13,700m. A summary of the proposed orbital sewer route activities, pertinent to the WFD assessment, are provided below (a full description of all activities is provided within Chapter 4 (Description of the Proposed Project) in Volume 2 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum):

- Establish the proposed temporary construction compounds;
- Strip topsoil and store to one side of the proposed construction corridor for later reinstatement;
- Excavate pipeline trench and store to the side of the proposed construction corridor (opposite side to topsoil storage) for later reinstatement;
- Import granular pipeline bedding material and place in the excavated trench;
- Place pipeline on bedding material in the excavated trench;
- Import granular pipeline surround material and place around the pipeline in the excavated trench;
- Test pipeline for watertightness and backfill pipeline trench with suitable excavated material;
- Remove excess excavated material off site; and

- Reinstate land drains and the proposed construction corridor to pre–construction condition in accordance with the Outline CEMP for the Proposed Project.

Open cut methodology will not be suitable for all of the proposed pipeline routes, as a number of areas will require the use of trenchless techniques, particularly, the crossing of physical, natural and manmade obstructions, such as significant watercourses.

1.2.2.4 Proposed Abbottstown Pumping Station

The proposed Abbottstown pumping station site will be located in the grounds of the NSC, Abbottstown, adjacent to the M50 Motorway. The proposed Abbottstown pumping station will consist of a single storey building over basement. The above-ground building will house the control room, welfare facilities, back–up diesel generator, surge vessels, odour control equipment, septicity control dosing equipment and storage facilities. The basement will be 17m in depth, incorporating the wet / dry wells housing the pumps, suction pipework and rising main manifold pipework.

1.2.2.5 Outfall Pipeline Route (Land Based Section)

The proposed outfall pipeline route (land based section) will run from Clonshagh to Baldoyle and will commence at the proposed WwTP and be routed in an easterly direction towards the coast between Baldoyle and Portmarnock. Most of the proposed outfall pipeline route (land based section) will be open cut trenching across open fields and agricultural land.

Open cut trenching will not be suitable for all of the proposed pipeline routes, and trenchless techniques will be used instead, particularly where there will be crossing of physical, natural and manmade obstructions, and / or significant watercourses. Trenchless techniques include pipe jacking and microtunnelling methods, and will require drive shafts to be constructed at the start of each trenchless section and reception shafts at the end of each section. These shafts will be constructed within the proposed temporary construction compounds located within the proposed construction corridor. At watercourse crossings, the drive and reception shafts will be located a minimum of 20m from the watercourse.

1.2.2.6 Water Body Crossings (Culverts)

The Proposed Project will require a new 25m culvert on the River Mayne to allow for the construction of the proposed access road to the proposed WwTP at Clonshagh.

1.2.2.7 Proposed Outfall Pipeline Route (Marine Section) Microtunnelling

The proposed outfall pipeline route (marine section) will be constructed using microtunnelling and subsea pipe laying (dredging) techniques. The microtunnelled section will commence at the west side of Baldoyle Estuary and the tunnel section will progress beneath Baldoyle Estuary and terminate seaward of the Baldoyle Bay Special Area of Conservation (SAC) / Special Protection Area (SPA) below the low water level mark, a distance of approximately 2km in total.

The microtunnelled section will require two proposed temporary construction compounds onshore (no. 9 and no. 10), comprising one in the open field immediately west of the R106 Coast Road and the second in the grassed space adjacent to the public car park off the Golf Links Road, immediately north of Portmarnock Golf Club. The proposed area for the temporary construction compounds will require a plan area of approximate dimensions of 150m x 100m and will contain the following plant and facilities:

- Office area including car parking;
- Launch (Jacking) shaft with Jacking station;
- Tunnelling equipment including:
  - Tunnel Boring Machine (TBM);
  - Control and hydraulic pump units;
  - Generators, bentonite mixing plant; and
  - Water separation plant.

- Storage area for jacking pipes, fuel, bentonite, crane, and excavator.

1.2.2.8 Proposed Outfall Pipeline Route (Marine Section) – Subsea Pipe Laying

The subsea pipe section will involve the excavation of a trench from the tunnel termination point to the outfall location (approximately 4km). A 5m deep trench, of trapezoidal section in the seabed, will be excavated using a combination of backhoe dredger in the shallower areas and trailer suction hopper dredger (TSHD).

Excavated material from the backhoe dredger will be placed in a barge and subsequently deposited and stockpiled parallel to the proposed outfall pipeline route (marine section) trench, within the 250m wide proposed construction corridor. Where the TSHD is used, it will deposit and stockpile the excavated material parallel to the proposed outfall pipeline route (marine section) trench. The stockpiled material will be subsequently reused to refill the trench over and around the pipe once it is installed in the trench.

Long length large diameter (LLLD) polyethylene pipe will be utilised. These pipes will be constructed at the factory in the required diameter in continuously extruded strings up to 650m long. The pipe strings will then be towed to a pipe assembly / ballasting area in close proximity to the proposed outfall location. Pipe assembly will take place at Dublin Port (at quay wall or in sheltered waters) or in sheltered waters along the route of the proposed outfall pipeline. The assembled pipeline strings will then be towed to the proposed outfall pipeline route (marine section) and surface positioned over the dredged trench. The pipeline will then be installed in the dredged trench in a continuous operation involving:

- Surface to seabed transfer utilising the polyethylene pipe's flexible properties (the 'S– bend' installation method);
- Submersion by water filling / air evacuation; and
- Connecting the pipeline strings together, using mechanical joints, as the installation progresses. Once the pipe is confirmed to be in place at the bottom of the trench, the previously excavated material will be replaced around and over the pipe.

1.2.3 Scope of this Assessment

Section 1.2.2 outlines the project elements which are considered within this assessment. Within the project elements, there are a number of activities to consider, as they may generate potential impacts on WFD designated water bodies as a result of their construction and / or operation. These key activities are outlined below:

- Construction activities adjacent to water bodies for the various project elements listed above, including temporary construction compounds;
- Construction of below-ground sections of the proposed orbital sewer route, outfall pipeline routes and NFS diversion sewer, including the formation of tunnel drive and reception shafts;
- Construction of the new proposed WwTP;
- Construction of water body crossings related to the proposed orbital sewer and outfall pipeline routes;
- Construction of a proposed channel crossing in relation to the new proposed WwTP access road culvert;
- Construction of the outfall pipeline route (marine section) including microtunnelling and dredging works;
- Operation of the new outfall pipeline route including discharge of treated wastewater to the marine environment;
- Operation of the new below-ground sections of the proposed orbital sewer route and outfall pipeline route; and
- Operation of new channel crossings in relation to the proposed access road to the proposed WwTP.

1.3 Methodology

1.3.1 Study Area / Water Framework Directive Screening

This WFD assessment covers only those components of the Proposed Project that could affect WFD water body features. These were primarily identified as sections of the Proposed Project which are within 2km of surface, groundwater, transitional and coastal water bodies (refer to Chapter 8 (Marine Water Quality) and Chapter 17 (Hydrology and Hydrogeology) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) and Chapter 17A (Hydrology and Hydrogeology) in Volume 3A Part A of the EIAR Addendum). The 2km buffer is defined using the United Kingdom (UK) Environment Agency Water Framework Directive assessment: estuarine and coastal waters (updated 2017) (hereafter referred to as the Clearing the Waters for All Guidance) (Environment Agency 2017) (see Section 1.3.4). The 2km buffer is considered sufficient to identify potential on-site and downstream impacts to identified receptors. The assessment looks at the impacts of new modifications to the water bodies and any changes to existing modifications during both the Construction and Operational Phases of the Proposed Project.

1.3.2 Relevant Guidelines, Policy and Legislation

1.3.2.1 River Basin Management Plans

River Basin Management Plans (RBMPs) provide the mechanism for implementing and ensuring an integrated approach to the protection, improvement and sustainable management of the water environment and are published every six years.

The second cycle River Basin Management Plan for Ireland 2018 – 2021 (hereafter referred to as the RBMP 2018 – 2021) was published by the Department of Housing, Planning and Local Government (DHPLG) in April 2018 and covers Ireland as a whole (DHPLG 2018). For the second cycle, the original (2009) Eastern, South–Eastern, South–Western, Western and Shannon River Basin Districts were merged to form one national River Basin District (RBD) which covers the whole of Ireland. For those water bodies 'At Risk' of failing to meet the objectives of the WFD, the RBMP 2018 – 2021 identified the most significant pressures impacting the WFD designated water bodies.

In September 2021, the Minister for Housing, Local Government and Heritage (DHLGH), published the draft River Basin Management Plan for Ireland 2022 – 2027 (hereafter referred to as the draft RBMP) for public consultation (DHLGH 2021). The consultation period closed on 31 March 2022. The draft RBMP states, from the outset, that it is published in the context of a rapidly changing policy landscape at European and International levels and against a backdrop of '*widespread, rapid and intensifying climate change*'. In addition, Ireland is now experiencing a sustained decline in water quality following many years of improvements, and as a result, stronger measures are now required to achieve sustainable water management in order to address and adapt to the impacts of climate change and achieve the desired outcomes for biodiversity.

1.3.3 Data Collection and Collation

This WFD Assessment makes use of the EIAR in the 2018 planning application, as supplemented by the EIAR Addendum, specifically:

- Chapter 8 (Marine Water Quality), Chapter 9 (Biodiversity (Marine)), Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) and Chapter 17 (Hydrology and Hydrogeology) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplement by Chapter 8A (Marine Water Quality), Chapter 9A (Biodiversity (Marine)), Chapter 11A (Biodiversity (Terrestrial and Freshwater Aquatic)) and Chapter 17A (Hydrology and Hydrogeology) in Volume 3A Part A of the EIAR Addendum; and
- The Natura Impact Statement (NIS), Outline CEMP and Surface Water Management Plan (SWMP) which were included as standalone documents in the 2018 planning application, as supplemented by the Revised NIS, the Addendum to the Outline CEMP and the Addendum to the SWMP, included as standalone documents in the Addendum.

Additional data sources include the EPA Data Explorer (EPA 2022a), which was used to assess water bodies present within the study area of the Proposed Project, and includes their WFD identification (ID) numbers, designation and classification details. In October 2022, the EPA published the Water Quality in Ireland Report (EPA 2022b) which provides the latest assessment of the quality of Ireland's rivers, lakes, estuaries, coastal water and groundwaters. The latest updates on WFD designations are now available online as part of the EPA interactive mapper (EPA 2023). The WFD compliance mapping for groundwater risk and status assessment was also reviewed along with any other supporting data.

1.3.4 Appraisal Method

In the absence of WFD assessment guidance in Ireland, the assessment has been carried out using the Clearing the Waters for All Guidance (Environment Agency 2017). This guidance is considered appropriate to use for the assessment of the Proposed Project. In line with this guidance, a 2km buffer zone was applied for assessing protected areas. For clarity and brevity purposes, the 2km buffer and the full list of identified protected sites (including those which are considered coastal water specific) are maintained for all assessments.

There follows a baseline assessment of the main water bodies (Section 1.4.1) and a scoping assessment (Section 1.4.2) of the principal receptors that have the potential to be affected by the Proposed Project. This is followed by the impact assessment (Section 1.6), which considers the potential impacts of an activity, identifies ways to avoid or minimise impacts, and indicates if an activity may cause the deterioration of, or jeopardise, the water body achieving GEP / GES. An assessment of the Proposed Project against mitigation measures, a cumulative assessment against other proposed developments (Section 1.7 and Section 1.8) and an assessment of the Proposed Project against other EU Directives (Section 1.9) have also been undertaken.

1.4 Baseline Scoping

1.4.1 Water Body Scoping

Table 3 lists the WFD water bodies within the study area (see Chapter 8 (Marine Water Quality) and Chapter 17 (Hydrology and Hydrogeology) in Volume 3 Part A of the EIAR of the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) and Chapter 17A (Hydrology and Hydrogeology) in Volume 3A Part A of the EIAR Addendum, for more detail on these WFD surface water bodies). These are scoped into the assessment because the Proposed Project works will take place within or adjacent to them.

Table 3: Water Body Status Within the Study Area

Water Body ID	Name of Water Body in RBMP	Hydromorphological Designation	Current Status / Potential	Objective Status / Potential
Transitional				
IE_EA_080_0100	Mayne Estuary	–	Moderate	Under Review
Coastal				
IE_EA_070_0000	Irish Sea Dublin (HA 09)	–	Good	Not At Risk
Groundwater				
IE_EA_G_008	Dublin	–	Good	Not at Risk
Surface Water (Fluvial)				
IE_EA_09T011000	Tolka_040	–	Poor	At Risk
IE_EA_09S010300	Santry_010	–	Poor	At Risk
IE_EA_09M030500	Mayne_010	–	Poor	At Risk
IE_EA_09S071100	Sluice_010	–	Poor	Under Review
IE_EA_08W010300	Ward_030	-	Moderate	At Risk
Surface Water (Canal)				
IE_09_AWB_RCMLE	Royal Canal Main Line (Liffey and Dublin Bay)	–	Good	Under Review

1.4.1.1 Receptors Scoped Out of Further Assessment

Although located within the Proposed Project study area, the Royal Canal Main Line (Liffey and Dublin Bay) is scoped out of further assessment. The study area interacts with the Proposed Project immediately south of Blanchardstown within 2km of the proposed Abbottstown pumping station. However, the works will not be hydrologically connected to the Royal Canal which is isolated from the proposed works area and other fluvial receptors. Additionally, the area between the works area and the Royal Canal consists of a built-up urban environment which includes the major N3 National Road and Blanchardstown Bypass. This will limit any surface water flow from the works area to the receptor.

Although located within the Proposed Project study area, the Sluice_010 will not be crossed by the Proposed Project footprint, nor will it interact with the Proposed Project post-construction. The Sluice_010 occurs upstream of all proposed works' locations prior to discharge to the Mayne Estuary upstream of the Proposed Project. Therefore, no impacts are anticipated on this water body, and it is scoped out of further assessment.

1.4.2 Assessment Scoping

1.4.2.1 Protected Areas

The WFD requires that activities are also in compliance with other relevant legislation, as considered below. The following were looked at as part of the assessment (as mentioned above, in line with guidance, a 2km buffer zone was applied in this assessment):

- Nature conservation designations;
- Bathing waters;
- Nutrient Sensitive Areas; and
- Shellfish waters.

1.4.2.2 Nature Conservation Designations

Nature Conservation Designated areas are those areas that were previously designated for the protection of habitats or species where maintaining or improving the status of water is important for their protection. They comprise the aquatic part of Natura 2000 sites, SPAs designated under Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (as amended). Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds was amended in 2009 by Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (hereafter referred to as the Birds Directive) and SACs designated under Council Directive 92/43/EEC of 21 May 1992 on the conservation of

natural habitats and of wild fauna and flora (hereafter referred to as the Habitats Directive), plus Ramsar wetland sites of International Importance, designated under the Ramsar Convention (adopted in 1971 and came into force in 1975), providing a framework for the conservation and wise use of wetlands and their resources.

The EPA online mapping system (EPA 2023) was used to identify the additional features to be included in the Clearing the Waters for All Guidance (Environment Agency 2017) assessment within 2km of the Proposed Project. The identified nature conservation designations are listed below:

1.4.2.2.1 Special Areas of Conservation

- Baldoyle Bay SAC (will be crossed by the proposed outfall pipeline route (land based section));
- Rockabill to Dalkey Island SAC (will be crossed by the proposed outfall pipeline route (marine section), and will receive treated wastewater discharges);
- Malahide Estuary SAC (located approximately 2km north of the proposed outfall pipeline route (marine section)); and
- Ireland's Eye SAC (002193) (located approximately 700m south of the proposed outfall pipeline route (marine section) and marine diffuser).

1.4.2.2.2 Special Protection Areas and Ramsar Sites

- Ireland's Eye SPA (004117) (located approximately 570m south of the proposed outfall pipeline route (marine section));
- Baldoyle Bay SPA (004016) (will be crossed by the proposed outfall pipeline route (land based section)); and
- Baldoyle Bay Ramsar site (413) (will be crossed by the proposed outfall pipeline route (land based section)); and
- In addition to the above, a new candidate SPA, the North-West Irish Sea candidate SPA, was announced in July 2023 (National Parks and Wildlife Service 2023). The site will be Ireland's largest ever area for protected birds, extending offshore along the coasts of counties Louth, Meath and Dublin. The proposed outfall pipeline route (marine section) and marine diffuser will be located within the candidate SPA.

1.4.2.3 Bathing Waters

Bathing waters are those designated under Council Directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water (hereafter referred to as the BWD), or the later Directive 2006/7/EC of the European Parliament and of the Council concerning the management of bathing water quality and repealing Directive 76/160/EEC (hereafter referred to as the revised BWD). S.I. No. 79/2008 - Bathing Water Quality Regulations 2008 was adopted in March 2008 (following a public consultation) transposing the revised BWD into Irish law.

The following bathing waters are located within 2km of the Proposed Project:

- Portmarnock, Velvet Strand Beach (ID: IEEABWC070_0000_0200);
- Sutton, Burrow Beach (ID: IEEABWC070_0000_0100); and
- Claremont Beach (ID: IEEABWC070_0000_0500).

1.4.2.4 Nutrient Sensitive Areas

Nutrient Sensitive Areas comprise Nitrate Vulnerable Zones and polluted waters designated under Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (hereafter referred to as the Nitrates Directive), in addition to areas designated as sensitive areas under Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment (hereafter referred to as the Urban Wastewater Treatment Directive (UWWTD)). The UWWTD aims to protect the environment from the adverse effects of the collection, treatment and discharge of urban wastewater. Sensitive areas under the UWWTD are water bodies affected by eutrophication associated with elevated nitrate concentrations and act as an indication that action is required to prevent further pollution caused by nutrients.

On 27 October 2022, following consultation with stakeholders and the general public, the European Commission published its proposal for a revised UWWTD (the **Recast Directive**). The Recast Directive proposes to bring in changes to increase the standard of wastewater treatment required across the EU, and support the transition forwards a circular economy and energy neutrality by 2040. The Recast Directive proposes amongst other matters, to add the objective of nutrient recovery, and tighten phosphorus removal requirements for sewage works. The Recast Directive is still in draft form and likely to be subject to further debate and revision before it is adopted and comes into force on a phased basis. Precisely what will be required and by when is therefore unknown at this point in time. Uisce Éireann has, as part of its site selection process, sought to ensure that the site selected for the proposed WwTP (at Clonshagh) is sized so as to allow for such expansion or adaptation as may be required in the future. The Proposed Project site will likely be sufficient to accommodate any additional treatment infrastructure required to meet the requirements of the Recast Directive. Once those requirements are known and in force, a separate planning application, supported by an EIAR and NIS as needed, will be made for any consequential works required to the Proposed Project including at the WwTP.

There are no Nutrient Sensitive Areas within 2km of the Proposed Project.

1.4.2.5 Shellfish Waters

Directive 2006/113/EC of the European Parliament and of the Council of 12 December 2006 on the quality required of shellfish waters (hereafter referred to as the Shellfish Waters Directive) aims to protect or improve shellfish waters in order to support shellfish life and growth. It is designed to protect the aquatic habitat of bivalve and gastropod molluscs, which include oysters, mussels, cockles, scallops and clams. The Shellfish Waters Directive requires Member States to designate waters that need protection in order to support shellfish life and growth. It is implemented in Ireland by S.I. No. 268/2006 - European Communities (Quality of Shellfish Waters) Regulations 2006. The Shellfish Waters Directive also provides for the establishment of pollution reduction programmes for the designated waters.

The following designated shellfish waters are within 2km of the Proposed Project:

- Malahide shellfish waters (ID: IE_EA_020_0000) is located approximately 400m north of the proposed outfall pipeline route (marine section) and approximately 1km north-east of the proposed outfall pipeline route (land based section).

1.4.3 Groundwater

The land-based sections of the Proposed Project will lie within the Dublin (IE_EA_G_008) groundwater body. Piling, tunnelling and excavation activities into the Dublin groundwater body have the potential to intercept groundwater and affect quantitative dynamics of the groundwater regime which is a risk during construction of the Proposed Project. This is therefore scoped in for further assessment.

1.5 Embedded Design Measures and Additional Mitigation Measures

This Section provides a brief summary of embedded design measures, which are standard design measures integrated into the Proposed Project design. Environmental input has contributed to the design process to help inform the most sustainable route options, the choice of methodologies for water body crossings of the proposed orbital sewer route and outfall pipeline route designs, and is therefore considered to be embedded mitigation by design. Embedded design measures are considered within the assessment against quality elements provided in Section 1.6 and are summarised in Table 4. A full description of construction methodologies is contained with the Outline CEMP and the SWMP appended to it, which was included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum.

Table 4: Summary of Embedded Design Measures and Additional Mitigation Measures

Topic	Proposed Project Element	Description
Surface Water Drainage Systems	New WwTP and Abbottstown pumping station	The drainage systems will be designed in accordance with the Department of the Environment, Heritage and Local Government (DEHLG) and the Office of Public Works (OPW) The Planning System and Flood Risk Management – Guidelines for Planning Authorities (hereafter referred to as the FRM Guidelines) (DEHLG and OPW 2009). Surface drainage from the proposed WwTP and the proposed Abbotstown pumping station will be attenuated to greenfield runoff rates and will make allowance for climate change.
Pollution Prevention	Pipelines, pumping stations, construction of tunnel shafts, drive and reception shafts, Construction Compounds, Abbotstown pumping station.	All pipelines, tanks, storage containers and pump sumps will be designed to be watertight. The pipeline will be designed and constructed to minimise the possibility of any leaks, and concrete sewer will not be used. Reinforced concrete structures will be designed to be water retaining, and the use of bunds around any chemicals and oil storage areas will reduce the risk of any leaks or accidental spillages.
		An Outline CEMP and SWMP which were included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum were developed for the Proposed Project.
Culverting	Water body crossings	Mitigation has been embedded into the design of the Proposed Project through the choice of methodologies for the culverting and crossing of rivers and streams. The main watercourse crossings will be completed using trenchless techniques (Locations where trenchless techniques will be employed are indicated on Planning Drawing Nos. 32102902 – 2100 to 32102902 – 2107 in the 2018 planning application). The use of trenchless technology for watercourse crossings will ensure that the proposed orbital sewer route and outfall pipeline route (land based section) will be constructed below the river, stream or ditch bed levels. The appointed contractor(s) will locate proposed temporary construction compounds and launch pits in Flood Zone C (low risk areas) for both the proposed orbital sewer route and the proposed outfall pipeline route (land based section).
Tunnelling of Pipeline	Outfall pipeline route (marine section)	Embedded design measures to ensure mitigation by avoidance approach has been adopted in the tunnel design and route to eliminate any potential impacts on the Baldoyle Estuary Bay SAC and the golf club irrigation wells on the Portmarnock Peninsula. The proposed outfall pipeline route (marine section) will be constructed in a manner that will remove the pathway between the hazard and the receptor. The proposed outfall pipeline route (marine section) will be tunnelled in bedrock beneath Baldoyle Estuary and Portmarnock Peninsula and will emerge below the low tide level on the eastern side of the Peninsula. The stiff boulder clay in the overburden will act as a barrier between the groundwater in the rock and in the shallow groundwater in the dune sands from which the irrigation wells abstract. The tunnelled section of the proposed outfall pipeline route (marine section) will have no hydraulic connection with the groundwater from the irrigation wells abstract. The tunnelled pipeline will be grouted to eliminate the possibility of a preferential flow path in the annulus outside the pipe. Strict compliance with CIRIA's Control of water pollution from linear construction projects. Technical Guidance (C648) (CIRIA 2006). Pollution Control Plan (PCP), Sediment and Erosion Control Plan (SECP), Emergency Response Plan (ERP) and Method Statement (MS) will be agreed with Inland Fisheries Ireland (IFI) and other relevant authorities and having regard to relevant pollution prevention guidelines. Puddle clay or other impermeable barriers at intervals shall be installed along the proposed orbital sewer route, particularly either side of a watercourse and launch pit.
		Microtunnelling techniques will be used for the proposed outfall pipeline route (marine section) from the open fields immediately west of the R106 Coast Road to approximately 600m offshore, terminating below the mean low water level. The microtunnelled section will be of 1.8m to 2m internal diameter, constructed at depths ranging between 15m and 20m below ground level (in the bedrock) using a microtunnelling machine, with pipe sections installed as the tunnelling machine progresses.
Water quality, sediment modelling	Dredging of marine environment for outfall pipeline route (marine section)	<u>Microtunnelling</u> To limit further impacts on feeding birds, benthos and juvenile fish, there will be:

Topic	Proposed Project Element	Description
		• No discharges to estuary under any circumstances; • Managed operations with bunded storage areas and sediment settlement areas; • CEMP including Surface Water Management Plan; and • Management of volumes and pressures of frilling fluid (bentonite) to ensure no breakout. <u>Dredging of the Marine Environment</u> Extensive water quality and sediment and hydrodynamic modelling was undertaken as part of the EIAR and associated 2018 planning application, as supplemented by the EIAR in this Addendum. A full description of water quality and sediment modelling can be found in Chapter 8 (Marine Water Quality) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) in Volume 3A Part A of the EIAR Addendum. The dredging of the proposed outfall pipeline route (marine section) and casting of the spoil within the route corridor was assessed over a 78 day period, from 1 March to 30 April. The simulated placement of dredged material from split– hull hopper barges was defined as a discrete discharge on flood tides (at intervals of approximately 12.25hrs). Model results show that there was predicted to be a brief but recurring effect during the course of the dredging operations but that this effect was not deemed to be higher than background sediment concentrations on a flood tide during construction. The only impact on water quality during operation of the Proposed Project will be due to the treated wastewater discharge, or the potential discharge of untreated wastewater for a very short duration owing to a pumping failure in the proposed WwTP. The model was used to predict results of the proposed discharge for the average daily flow conditions, flow to full treatment (FFT) conditions and pumping failure scenario. None of the scenarios examined predicted the likelihood of any significant impact on the receiving waters from the operation of the proposed outfall pipeline route (marine section). Monitoring of parameters including total suspended solids (TSS), dissolved oxygen (DO) and hydrocarbons upstream and downstream of the works areas will take place pre-construction to further understand baseline chemistry. Monitoring will continue through the Construction Phase to identify and react to changes in water quality. Post construction monitoring will take place to ensure no deterioration from baseline water quality has occurred. Further details around pre, during and post construction monitoring are provided within the Outline CEMP which was included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP, included as a standalone document in this Addendum.
Inclusion of Ultra Violet (UV) Treatment	Treatment of wastewater prior to discharge	The proposed WwTP will be designed to include a level of UV treatment to wastewater prior to discharge through the outfall pipeline. UV treatment is designed to irradiate wastewater with UV light which reduces bacteria numbers, in particular *Escherichia coli* (*E. coli*) which is appropriate to the designation of the waters (e.g. bathing / shellfish), the distance of the discharge from the designated waters, the local current and tidal system, and the flow discharged from the WwTP. Medium pressure UV treatment of the final effluent will be incorporated into the WwTP which will provide a further reduction in the *E. coli* concentrations and therefore provide further protection to the designated bathing and shellfish waters. UV treatment will also reduce and control the spikes and variability of the concentrations of *E. coli* discharged from the proposed WwTP, thus providing greater protection to the receiving waters.
Construction Methodologies and Mitigation Measures	Construction of: • WwTP; • Orbital sewer; • Outfall pipeline route (land based section); • Outfall pipeline route (marine section); • Watercourse crossings; and • Dredging of marine waters.	A number of construction methodologies have been developed to limit the environmental impact of the Proposed Project during the Construction Phase. A summary of the construction methodologies for each of the Proposed Project elements (outlined opposite) is provided within the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum. <u>General</u> An Environmental Clerk of Works (ECoW) will be appointed by Uisce Éireann or its agents to monitor and regularly inspect the implementation of all ecological mitigation contained in the EIAR, WFD and associated NIS and the Outline CEMP, and to act as a liaison between Uisce Éireann and

Topic	Proposed Project Element	Description
		An Bord Pleanála in compliance and discharge of planning conditions relating to biodiversity. For temporary construction compounds, the following mitigation will apply: • Sites for storage areas, machinery depots, site offices, construction of temporary access roads or the disposal of spoil will be located at least 50m from any watercourse; • All materials will be stored in compounds and shall be stored in a manner that is safe and in line with best industry practice and manufacturers guidelines; • All aspects of the works will be watertight, which will include the pipelines, tanks, storage containers and pump sumps; • Wheel washing facilities will be installed at the entrance to the proposed compounds and other locations deemed appropriate; • Invasive species biosecurity measures will be installed at the entrance to the proposed WwTP site, proposed Abbotstown pumping station site and all proposed temporary construction compounds. This will adhere to the Biosecurity Protocol for Field Survey Work (IFI 2010); • An emergency operating plan shall be established to deal with incidents or accidents during construction that may give rise to pollution within any watercourse. This shall include means of containment in the event of accidental spillage of hydrocarbons or other pollutants; • Throughout all stages of the Construction Phase of the Proposed Project, the appointed contractor(s) shall ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the freshwater environments and the requirement to avoid pollution of all types; • All hazardous materials on-site will be stored within secondary containment designed to retain at least 110% of the storage contents; • Temporary bunds for oil / diesel storage tanks will be used on the site during the Construction Phase of the Proposed Project, as appropriate; • Raw or uncured waste concrete will be disposed of by removal from the site; • Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the site and properly disposed of; and • There shall be no discharge of un-attenuated water to the adjacent marine or freshwater environments. <u>Suspended Solid Pollution</u> • The appointed contractor will develop the Outline Surface Water Management Plan and sediment control plan in advance of any construction works. The Surface Water Management Plan will adopt mitigation proposed in Chapter 17 (Hydrology and Hydrogeology) in Volume 3 Part A of the EIAR in the 2018 planning application; • All discharges to surface waters will be suitably treated prior to discharge. There will be no direct discharge of surface water from any element of the works without proper attenuation and treatment. The level of suspended solids in any discharges to fisheries waters (e.g. the River Tolka) or waters with fisheries potential (e.g. the River Santry, River Mayne and Cuckoo Stream), as a consequence of construction works shall not exceed 25mg/l or baseline conditions (if these exceed 25mg/l), nor result in the deposition of silts on gravels or any element of aquatic flora and fauna as per the Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016); • Pathways of preferential flow are identified within the works area in the Outline Surface Water Management Plan, and the appropriate mitigation measures will be undertaken by the appointed contractor(s), as presented, to ensure contaminated water from the site is treated before being discharged to the watercourse; and • All best practice guidelines outlined in Chapter 11 (Biodiversity Terrestrial and Freshwater Aquatic) and Chapter 17 (Hydrology and Hydrogeology) in Volume 3 Part A of the EIAR in the 2018

Topic	Proposed Project Element	Description
		planning application, as supplemented by Chapter 11A (Biodiversity Terrestrial and Freshwater Aquatic) and Chapter 17A (Hydrology and Hydrogeology) in Volume 3A Part A of the EIAR Addendum, will be followed. <u>Trenchless Crossing of Watercourses</u> The primary mitigation measure for the protection of the freshwater environment during the Construction Phase of the Proposed Project is the use of trenchless techniques to cross the watercourses. This approach will protect the streams and downstream marine protected areas from the significant impacts of traditional trench based methods. Nevertheless, there are some risks associated with the various trenchless methods, and mitigation for these is outlined below: • Reception and launch pits for the directional drilling process shall not be located within 20m of any watercourse; • Direct disposal of arisings from excavations and from groundwater dewatering activities to the nearby watercourses will not be allowed. Any discharge of such water, after proper treating / de-silting, will be discussed and agreed with the landowner, and if necessary, discharge consent will be acquired from the concerned authority (EPA, IFI) prior to the commencement of work; • If drilling fluids are being returned for cleaning and reuse or recirculation through a temporary fluid return line, pneumatic leak testing shall be carried out to confirm the integrity of the return line; • Spent drilling fluids including separated drill materials shall be contained in secure bunded areas within selected proposed temporary construction compounds for off site disposal at a licensed disposal facility; • To avoid reception and launch pits being open for longer than is necessary, all ducting required shall be available on-site prior to commencement of pit excavation; • Marker posts will be placed at each side of the streams / rivers identifying the location of the crossing; • Stream crossing works, including preparatory works, shall be carried out under the supervision of a suitably qualified ECoW; • Upon completion of works at each stream crossing, the site shall be cleaned and any waste disposed of to a suitably licensed facility; • Pipes, once in place, will be hydrostatic / water tested to design capacity to validate pipe integrity; and • The appointed contractor(s) will inspect and monitor the water quality of surface waters near trenchless works, paying particular attention to signs of blowout and silt plumes. In the event of a bentonite break-out, then the site will be monitored for chemicals and macroinvertebrates to ensure no residual impacts following clean-up operations. This monitoring will form part of the CEMP for the works. <u>Use of Concrete</u> The use and management of concrete, which has a deleterious effect on water chemistry and aquatic habitats and species, in or close to watercourses, shall be carefully controlled to avoid spillage. Where the use of concrete near water cannot be avoided, the following control measures will be employed: • All relevant best practice guidance outlined in the Outline CEMP in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP, in relation to working with concrete shall be followed; • Concrete pours and transport will be carefully planned in a method statement. Any concrete works adjacent to or within watercourses will require special consideration; • Placement or working with concrete adjacent to watercourses will be supervised by an ECoW; • There will be no hosing of concrete, cement, grout or similar material spills into surface water drains. Such spills shall be contained immediately, and runoff prevented from entering the watercourse; and

Topic	Proposed Project Element	Description
		• Concrete washdown and wastewater will be contained within suitable areas and treated to an appropriate level prior to being discharged to surface water or removed off site. Hydrogeology The excavation of the tunnel drive / receptor shaft at the Fingal County Council (FCC) public car park in Portmarnock will extend to about 20m in depth and will go through the shallow aquifer. This shaft will be excavated using piling techniques which will hydraulically seal off the shaft from the water bearing sands / gravels and will not involve any dewatering or pumping which could interfere with the existing groundwater flow regime and the irrigation wells' performance.

1.6 Water Body Assessment Against Quality Elements

This Section details a site-specific assessment of the Proposed Project against ecological, physico–chemical hydromorphological and groundwater quality elements for the screened-in fluvial, transitional, coastal and groundwater bodies following the Clearing the Waters for All Guidance (Environment Agency 2017). This Section should be read in conjunction with Section 1.5, which outlines the embedded design measures that have been integrated into the design. These embedded design measures have been considered during the determination of impacts to WFD receptors as a result of the Proposed Project.

1.6.1 Hydromorphology

Table 5 provides a summary of the hydromorphology risk issues for the potentially impacted water bodies identified in Section 1.4.

Table 5: Hydromorphology Scoping Summary

WFD Assessment Questions	Tolka_040	Santry_010	Mayne_010	Ward_030	Mayne Estuary	Irish Sea Dublin
Consider if your activity could impact on the hydromorphology of a water body at high status?	No – Not at High Status				Not assessed for hydromorphological quality elements.	
Consider if your activity could significantly impact the hydromorphology of any water body?	**No (Construction)** – Works would be adjacent to the Tolka_040, Santry_010 and adjacent to and within Mayne_010 fluvial water bodies. Works adjacent to the Tolka_040 and Santry_010 would be required to construct launch and reception shafts for the trenchless crossings. Works within the Mayne_010 would be required to construct the box culvert and works adjacent to the Mayne_010 required to construct the proposed WwTP. Mitigation measures detailed within the Outline CEMP and the SWMP appended to it, included as standalone documents in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum, will be in place during all construction activities adjacent to and within water bodies. This will limit the potential for a reduction in hydromorphological diversity via silty runoff entering the water bodies and smothering hydromorphological features. Culvert construction on Mayne_010 would require working in-channel and could potentially lead to bank destabilisation from construction plant, increased sediment disturbance and removal of natural bed and bank material. Given this is a culvert replacement, there is already an engineered structure in this location and therefore, natural bed and bank material will be limited. The provision of mitigation with regards to working in-channel are provided in the Outline CEMP which was included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP included as a standalone document in this Addendum. Additionally, this will be a temporary (over the construction period) and localised impact. All other watercourse crossings (for the proposed orbital sewer route and outfall pipeline route) will utilise trenchless techniques with a minimum set back distance of 20m either side of the watercourse, as detailed in the Outline CEMP which was included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP included as a standalone document in this Addendum. No further assessment is required.			**No (Construction and Operation)** The footprint of the works are not within or on the Ward_030. There is potential for indirect impacts through increased sedimentation to the Huntstown Stream which could be realised downstream on the Ward_030. However, mitigations are in place during construction to limit surface water runoff alongside pollution prevention controls. During operation, discharges from the new outfalls would be treated prior to discharge. No further assessment is required.	**No (Construction)** –This section of the proposed outfall pipeline route will be microtunnelled. The launch / reception shafts will be constructed, tunnelling equipment will be located, and the tunnel materials will be stored temporarily. Works will not take place within the footprint of the water body, but immediately adjacent to it on either side of the estuary to facilitate the construction and launch / reception shafts. The need for excavation adjacent to the water body presents an increased risk of sediment-laden runoff from the works area entering the water body. The Outline CEMP and the SWMP appended to it, included as standalone documents in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum, contain mitigation measures to prevent sediment-laden site runoff leaving the confines of the working area. Additionally, given the nature of this high energy macro-tidal environment, any sediment that reached the water body will be quickly dispersed by hydrodynamic forces (waves and tidal currents) and any impacts will be temporary and localised. Therefore, no deterioration of this water body at-scale is anticipated. No further assessment is required.	Yes – See Section 1.6.1.1.1

WFD Assessment Questions	Tolka_040	Santry_010	Mayne_010	Ward_030	Mayne Estuary	Irish Sea Dublin
	No (Operation) – The below ground pipeline will not interface with the water bodies. There is the potential for the new culvert on Mayne_010 to lead to increased propensity for erosion and alteration of baseline flow and sediment dynamics upstream and downstream of the structure if not designed correctly. Although the culvert will be extended with regards to baseline lengths, the replacement with a box culvert will allow the better regulation of flow through the structure and will likely represent an improvement on baseline conditions. No other in-channel works will be required. No further assessment is required.				**No (Operation)** – The proposed outfall pipeline route will operate below ground. Therefore, no deterioration of this water body at-scale is anticipated. No further assessment is required.	
Consider if your activity is in a water body that is heavily modified for the same use as your activity?	Heavily Modified Water Body (HMWB) status not designated.					

1.6.1.1.1 Construction

From the end of the microtunnelled section of the proposed outfall pipeline route (marine section), below the Mayne Estuary, the remaining proposed outfall pipeline route (marine section) will be constructed by excavation of an open cut trench, as described in Section 1.2.2.

Dredging of the open cut trench has the potential to impact the hydromorphology of the coastal water body through localised increases in suspended sediment concentrations and changes to seabed levels which could alter the local hydrodynamic regime. The seabed will be deepened by 5m for approximately 3.9km and this would remove approximately 300,000m^3 of material. Additionally, there will be a requirement for sheet piles to be installed to remove the tunnelling machine. This would also require the formation of a temporary jack up platform from which the piles would be driven.

Trenches dug for pipeline will result in localised flow velocity changes until the trench is backfilled. These will have a limited impact due to the water depth and overall water depth change. Additionally, the formation of sheet piles to allow caisson deployment to protect the existing fibre optic cable within the seabed, recovery of the tunnelling machine and the interface between the microtunnelled sections will inhibit sediment movement across the seabed over their footprint. These are temporary localised impacts which are unlikely to have an impact on the hydromorphology of the water body at the water body scale.

1.6.1.1.2 Operation

The proposed outfall pipeline route (marine section) will be buried approximately 5m below the seabed. However, the marine diffuser will protrude from the seabed. The diffuser will allow the treated wastewater to be released from the pipeline to mix with (or diffuse into) the surrounding sea water. The marine diffuser section will be located along the final or end section of the proposed outfall pipeline route (marine section) consisting of vertical riser pipes which are attached to the main pipeline after it is lowered into the trench. The diffuser valves will then be attached to the riser pipes. Given that the diffusers will protrude above seabed level, there is the potential for interaction with the local current regime. The use of marine diffusers which sit proud of the seabed can result in localised changes in water flow (especially at peak flow). The impact of this is expected to be localised and limited to the immediate vicinity of the diffusers and is therefore not anticipated to cause a deterioration in hydromorphology at the water body scale.

1.6.2 Biology

Table 6 presents a summary of the biology (habitat) considerations and associated risks for the Proposed Project on the water bodies identified in Section 1.4.

Table 6: Biology Scoping Summary

WFD Assessment Questions	Tolka_040	Ward_030	Santry_010	Mayne_010	Mayne Estuary	Irish Sea Dublin
Is the footprint of the activity 0.5km^2 or larger?	Yes. The footprint of the Proposed Project within the redline boundary is >0.5km^2.					
Is the footprint of the activity 1% or more of the water body's area?	Yes, in total. However, the section directly crossing the water body is not.					
Is the footprint of the activity within 500m of any higher sensitivity habitat?	No	No	No	No	Yes – Within Baldoyle Bay SAC – Mudflats and sandflats not covered by seawater at low tide. Salicornia and other annuals colonising mud and sand. Atlantic salt meadows (*Glauco–Puccinellietalia maritimae*). Mediterranean salt meadows (*Juncetalia maritimi*). See Section 1.6.2.1. for impact assessment.	Yes – Reefs within Rockabill to Dalkey Island SAC. See Section 1.6.2.1. for impact assessment.
Is the footprint of the activity 1% or more of any lower sensitivity habitat?	Yes, in total, but not at crossing locations. See below for details					

1.6.2.1 Habitats

1.6.2.1.1 Tolka_040, Santry_010 and Mayne_010

Terrestrial habitats were identified as part of ecological site surveys (described in Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 11A (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3A Part A of the EIAR Addendum). All habitats within the listed water body catchment areas are of Local Importance only. No habitats of National or International Importance were identified. Additionally, mitigation measures contained within Chapter 11 (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 11A (Biodiversity (Terrestrial and Freshwater Aquatic)) in Volume 3A Part A of the EIAR Addendum), and the Outline CEMP which was included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP included as a standalone document in this Addendum, indicate that any habitat losses will be temporary during construction.

Post-construction, and where possible, all habitat loss will be reinstated to baseline conditions. There will be minimal loss of fluvial habitat as the proposed crossing locations will be trenchless, with the exception of the new culvert crossing on Mayne_010. There is an existing culvert in this location, and therefore no habitat over the existing culvert footprint. The culvert will be 25m and this will require the removal of natural bed and bank material over the extended footprint. This will be minimal and will not cause deterioration at the water body scale. Although the existing culvert will be extended in length, it will be replaced by a box culvert which will allow for additional measures to be integrated such that potential impacts on ecology are reduced. The culvert will match the existing gradient of the river bed and will be designed such that it has a natural sediment base. This will provide additional habitat over the new culvert length compared to existing baseline conditions.

Given the above and the proposed mitigation, there is not anticipated to be an impact on the listed water bodies at the water body scale.

1.6.2.1.2 Ward_030

There will be no direct habitat loss as a result of construction or operation of the proposed RBSF on the Ward_030. However indirect habitat loss in the absence of control measures as a result of discharges to the hydrologically connected Huntstown Stream is a possibility through increases in sediment concentration and hydrocarbon pollution (from spills leaks and runoff) during the Construction Phase. Sedimentation is the deposition of fine sediment either within the gravel or directly on the substrate surface of an aquatic system. The stream which drains the western part of the site is already heavily silted and of low biodiversity value due to the presence of a quarry in its catchment. Any impact would be localised in effect and temporary during the Construction Phase. Additionally, sediment and pollution prevention controls would be in place throughout the Construction Phase to mitigate risks of increased surface water runoff and hydrocarbon pollution.

During the operation of the Proposed RBSF Component, the only emissions to surface water will be treated attenuated surface water runoff from roofs and hardstanding areas. Runoff will pass through hydrocarbon interceptors, silt traps / sedimentation and attenuation prior to discharge to Huntstown Stream. Wastewater and any runoff from inside the buildings will be collected and will be pumped off site to a public sewer. Therefore, no impacts to the biodiversity elements of the downstream Ward_030 are anticipated.

1.6.2.1.3 Mayne Estuary (Baldoyle Bay SAC) – Construction and Operation

Desk-based and field surveys have identified a number of high sensitivity habitats within Baldoyle Bay SAC and Mayne Estuary (further details can be found in Chapter 9 (Biodiversity (Marine)) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 9A (Biodiversity (Marine)) in Volume 3A Part A of the EIAR Addendum), the Revised NIS which is included as a standalone document in this Addendum. The three saltmarsh-related qualifying species within Mayne Estuary (i.e. *Salicornia* and other annuals colonising mud and sand, and Atlantic and Mediterranean salt meadows) are all located on the upper parts of the Estuary.

In addition to the saltmarsh habitats, Baldoyle Bay SAC is also designated for mudflats which are located throughout the whole of the Bay. The pathway of possible discharges described below would be directly within this habitat, but the permanent habitat area is stable or increasing, subject to natural processes.

The Baldoyle Bay SAC has qualifying interests related to mudflats and sandflats not covered by seawater at low tide, including *Salicornia* and other annuals colonizing mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), and Mediterranean salt meadows (*Juncetalia maritimi*). The drive shaft for the proposed microtunnelled section of the proposed outfall pipeline route (marine section) will be located outside Baldoyle Bay SPA / SAC. Consequently, the potential impact to marine ecology from this part of the construction works will be limited to an impact where disturbance occurs through the escape of site runoff from temporary construction compounds or tunnel shafts into the Estuary.

The Outline CEMP included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and the Revised NIS included as a standalone document in this Addendum, describe numerous mitigation measure to control site runoff including the use of bunded protection within the temporary construction compounds. This will negate the impact from terrestrial operations to the marine system, and Mayne Estuary is not a known migration route for any sensitive marine species. Additionally, the predicted dilution capacity of the water body is high, and therefore, any impacts will be diluted and dispersed, should they reach the water body. With mitigation measures in place, there is not anticipated to be a degradation at the water body scale as a result of the Construction Phase of the Proposed Project.

During operation, the proposed outfall pipeline route (marine section) will be below-ground and will not interact or discharge within Mayne Estuary, and therefore, there will be no change to baseline conditions related to surface water habitats.

1.6.2.1.4 Irish Sea (Dublin) – Construction and Operation

As summarised above for hydromorphology, from the end of the microtunnelling section below Mayne Estuary, the remaining outfall pipeline route (marine section) will be constructed by dredging from the tunnel termination point to the outfall location (approximately 4km). Dredging of the seabed has the potential to generate increases in suspended sediment, which can coalesce into sediment plumes. Plumes can travel in suspension within the water column and settle on / over marine habitats, smothering them.

Extensive modelling has been undertaken (as summarised in Section 1.5 and described within Chapter 8 (Marine Water Quality) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) in Volume 3A Part A of the EIAR Addendum) and the Revised NIS which is included as a standalone document in this Addendum, to understand the impacts related to dredging and the potential for sediment plumes to occur. Modelling indicates that the suspended sediments are predicted to dissipate to background levels within the 12.25 hour period between the dredging operations on flooding tides. The results indicate a brief, but recurring effect, related to sediment entrainment during dredging operations. However, this effect was not deemed to be significantly higher than background sediment concentrations. Therefore, no impacts on Annex I reef habitats within the Irish Sea Dublin water body, particularly within the Rockabill to Dalkey Island SAC, from dredging operations is anticipated.

Potential impacts to habitats during the operation of the Proposed Project would relate to habitat loss via a change in water quality related to treated wastewater discharge. Details of the treated wastewater discharge quality modelled during the Operational Phase are outlined in Section 1.6.3.

Hydrodynamic modelling results for all tidal scenarios for the key parameters of the wastewater discharge (Biological Oxygen Demand (BOD), Molybdate Reactive Phosphorus (MRP) and Dissolved Inorganic Nitrogen (DIN)) indicate negligible impacts on water quality as a result of the discharge of wastewater to marine waters. Therefore, no impact to habitats is anticipated during the operation of the Proposed Project.

1.6.2.2 Fish

Activities occurring within an estuary or inshore environment have the potential to impact normal fish behaviour such as movement, migration or spawning. Table 7 presents a summary of biology (fish) considerations and associated risk issues for the works.

Table 7: Biology (Fish) Scoping Summary

WFD Assessment Questions	Tolka_040	Santry_010	Mayne_010	Mayne Estuary	Irish Sea Dublin
Consider if your activity is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary?	**No (Construction)** – Not estuarine. **No (Operation)** – Not estuarine.			**No (Construction)** – works not within the water body footprint. Microtunnelling will be below seabed level. Potential for disturbance due to noise from plant operating within the water body. See Section 1.6.2.2.1 below for further assessment. **No (Operation)** – Tunnel infrastructure will be below seabed level and not interface directly with the water body. See Section 1.6.2.2.1 below for further assessment	**Yes (Construction)** – Potential for the creation of sediment plumes via open cut trenching See Section 1.6.2.2.2 below for further assessment. **Yes (Operation)** – Tunnel infrastructure will be below seabed level and not interface directly with the water body. However nutrient enriched plume from treated wastewater discharges could alter food sources and water quality. See Section 1.6.2.2.2 below for further assessment.
Consider if your activity could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)?	**Yes (Construction) –** Potential for noise from tunnel operations, Construction Compounds etc. See Section 1.6.2.2.1 for further assessment. **No (Operation) –** All new sewer and outfall sections will be below ground.	**Yes (Construction) –** Potential for noise from tunnel operations, Construction Compounds etc. See Section 1.6.2.2.1 for further assessment. **No (Operation) –** All new sewer and outfall sections will be below ground. Box culvert on Mayne_010 is designed such that it will facilitate fish pass. This will provide betterment to baseline conditions whereby the existing culvert may limit fish movement upstream.		**Yes (Construction) –** Potential for noise from tunnel operations, Construction Compounds etc. See Section 1.6.2.2.1 for further assessment. **No (Operation)** – Tunnel infrastructure will be below seabed level and not interface directly with the water body.	**Yes (Construction)** – Potential for the creation of sediment plumes via open cut trenching and dredging. See Section 1.6.2.2.2 for further assessment. **Yes (Operation)** – Tunnel infrastructure will be below seabed level and not interface directly with the water body. However nutrient enriched plume from treated wastewater discharges could alter food sources and water quality. See Section 1.6.2.2.2 for further assessment.
Consider if your activity could cause entrainment or impingement of fish?	**No (Construction and Operation)** – No in-stream works or new infrastructure within channels.	**Yes (Construction**) – Potential for fish impingement during culvert installation. **No (Operation) –** Culvert will be designed to allow fish passage.		**No (Construction) –** Tunnel construction will be below seabed level. **No (Operation)** – Tunnel infrastructure will be below seabed level and not interface directly with the water body.	**Yes (Construction**) – See Section 1.6.2.2.2 for impact assessment. **No (Operation) –** Only the marine diffuser will protrude above the seabed and fish would be able to swim above this.

1.6.2.2.1 Tolka_040, Santry_010, Mayne_010 and Mayne Estuary Construction and Operation

The potential risks to the receptors during construction will be due to noise, the release of suspended sediment concentrations and contaminated surface water runoff from temporary construction compounds. These will be located adjacent to the river channels and estuary to facilitate trenchless crossings and from works to construct the proposed WwTP and associated access roads and culvert. Chapter 15 (Noise and Vibration) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 15A (Noise and Vibration) in Volume 3A Part A of the EIAR Addendum, have determined that with the incorporation of the various mitigation measures outlined, there are no significant residual noise or vibration impacts during construction or operation.

As above, the Outline CEMP and the SWMP appended to it, which were included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum, will be adhered to, to reduce any risk of suspended solid release from construction works adjacent to the channels. Furthermore, only one surface water feature (Mayne_010) will require in-stream works to install the new box culvert. There will be a temporary requirement to over pump, flume or dam the watercourse to provide a dry working area, and this has the potential to interrupt fish passage. It is recommended that, in-channel works are undertaken outside of fish spawning seasons (during the period 1 July to 30 September), and that fish friendly pumping systems are utilised to provide a dry working area. The proposed culvert design will avoid impacting on flow regimes and river bed profiles upstream and downstream of the structure and will allow for unimpeded movement of fish by ensuring a minimum depth of water within the structure. The design will ensure that the flow regime for this crossing, which has the potential to support salmonids in the future, shall allow for the unimpeded passage of fish upstream and downstream by having the invert buried 0.5m below bed level. IFI will be consulted for all in-channel works.

Given the above, no impacts at the water body scale for the listed water bodies are anticipated as part of the construction or operation of the Proposed Project.

1.6.2.2.2 Irish Sea – Dublin Construction and Operation

The potential risks to fish will be due to the creation of sediment plumes from dredging and trenching to construct the proposed outfall pipeline route (marine section), noise from construction and temporary structures within the water body.

Potential impacts on fish will include localised impacts on the foraging behaviour of the visual hunters due to the reduced visibility near the dredging. The noise created during the dredging in the waters surrounding the dredgers is likely to induce avoidance behaviour prior to species encountering the discharge plume itself. When not feeding, the impact of the plume on migratory fish species is likely to induce an avoidance reaction. Modelling indicates that the sediment plume generated as a result of trenching and dredging is expected to dissipate to background turbidity levels within a 12.5-hour tidal cycle. As such, any impacts to fish are anticipated to be temporary and localised to the works area and 500m beyond. The size of the plume into the area surrounding the water body is not likely to be significant at any given time, and the area covered by the plume will be negligible when compared to the potential foraging range of and migratory routes which the fish can take within this large water body.

Potential impacts during the Operational Phase will relate to the presence of infrastructure in the marine environment and the potential for changes to water quality related to treated wastewater discharges. The output from the hydrodynamic model (described in Chapter 8 (Marine Water Quality) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) in Volume 3A Part A of the EIAR Addendum, and summarised in Section 1.5) indicates that the nutrient enriched plume will not affect inshore water quality as it disperses offshore. A twenty-fold dilution will occur within 50m of the proposed marine diffuser. Effluent based nutrient enrichment may lead to excessive algal growth locally, which has the potential to induce algal blooms which would subsequently alter the food availability for various organisms. This may, in turn, impact localised fish populations, positively or negatively (depending on the impacts to their food sources). Other potential impacts may include depletion of oxygen and a reduction in light penetration through the water column in the immediate vicinity of the plume. The findings of the hydrodynamic model indicate that the nutrient enrichment levels anticipated, and the modelled rate of dispersion offshore, are unlikely to impact fish at a local or regional scale. Therefore, no deterioration at the water body scale is anticipated.

1.6.3 Water Quality

Consideration is also made regarding whether phytoplankton status and harmful algae could be affected by the works, as well as identifying the potential risks of using, releasing or disturbing chemicals. Table 8 presents a summary of water quality considerations and associated risk issues of the works for the transitional water body.

Table 8: Water Quality Considerations and Associated Risk Issues of the Proposed Project

WFD Assessment Questions	Tolka_040	Santry_010	Mayne_010	Mayne Estuary	Irish Sea Dublin	Ward_030
Consider if your activity could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)?	**No (Construction and Operation**) – Not tidal			**No (Construction**) – Construction Compounds adjacent to the water body will be subject to mitigation measures to control surface water runoff, as outlined in the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum. Construction of the tunnel will be below seabed level and will not directly interface with the water body. **No (Operation)** – The tunnel in this location will be below seabed level. Treated wastewater will not be discharged to this water body.	**Yes (Construction**) – There is the potential to impact water clarity and dissolved oxygen as a result of dredging to construct the new outfall pipeline route (marine section). See Section 1.6.3.1.1 for further assessment. **Yes (Operation)** – There is the potential to impact oxygen and nutrient levels within the water body as a result of treated wastewater discharge. See Section 1.6.3.1.2 for further assessment.	**No (Construction) -** Construction Compounds adjacent to the water body to construct the RBSF will be subject to mitigation measures to control surface water runoff, as outlined in the Outline CEMP and SWMP which were included as standalone documents in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as standalone documents in this Addendum. **Yes (Operation) -** During operation there is potential for new outfall discharges to impact water quality within the Ward_030. See Section 1.6.3.1.3 for further assessment.
Consider if your activity is in a water body with a phytoplankton status of moderate, poor or bad?	N/A			Not Determined	**No** – Phytoplankton status or potential is Good	Not Determined
Consider if your activity is in a water body with a history of harmful algae?	Not Determined			Not Determined	Not Determined	Not Determined
If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if the chemicals are on the Environmental Quality Standards Directive (EQSD) list?	N/A			**No (Construction**) – During construction there is potential for an accidental release of chemicals which are on the EQSD list (hydrocarbons etc.). However, with the implementation of control and mitigation measures outlined in the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP	**No (Construction)** – The marine sediment along the dredged section of the proposed outfall pipeline route (marine section) is not currently or historically associated with heavy industry and is therefore unlikely to be contaminated with chemicals on the EQSD list. **Yes (Operation)** – During operation from the discharge of treated wastewater from the WwTP through the proposed outfall pipeline and marine diffuser to the water	**No (Construction**) – During construction there is potential for an accidental release of chemicals which are on the EQSD list (hydrocarbons etc.). However, with the implementation of control and mitigation measures outlined in the Outline CEMP and SWMP which were included as standalone documents in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as standalone documents in this Addendum, there will be no significant impacts.

WFD Assessment Questions	Tolka_040	Santry_010	Mayne_010	Mayne Estuary	Irish Sea Dublin	Ward_030
				included as a standalone document in this Addendum, there will be no significant impacts. **No (Operation)** – No substances on the EQSD list will be released to the listed water bodies during operation. No further assessment is required.	body. See Section 1.6.3.1.2 for impact assessment.	
If your activity has a mixing zone (like a discharge pipeline or outfall) consider if the chemicals released are on the Environmental Quality Standards Directive (EQSD) list?				**No (Construction) –** Any discharges from construction compounds and works locations will be subject to controls as outlined in the CEMP and SWMP. **No (Operation) –** There will be no new discharges to the listed water bodies during operation. No further assessment required		**No (Construction) -** Any discharges from construction compounds and works locations will be subject to controls as outlined in the Outline CEMP and SWMP which were included as standalone documents in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as standalone documents in this Addendum. **Yes (Operation) –** Potential for release of substance on the EQSD through discharge of surface and foul drainage. See Section 1.6.3.1.3 for impact assessment.
Consider if ancillary sources of discharge contribute to water quality status (e.g., UWwTP Storm Water Overflow (SWO), Combined Sewer Overflow (CSO) etc.)	N/A			**Yes –** The Study Area is known to contain sources of known pressures including UWwTP SWOs and CSOs and a number of Industrial Licensed Emissions. However, the Proposed Project does not include any new discharge to the listed water bodies and will not impact the flow or volume of current surface water drainage.	**Yes –** The Study Area is known to contain sources of known pressures including UWwTP SWOs and CSOs and a number of Industrial Licensed Emissions.	**Yes –** The Study Area is known to contain sources of known pressures including UWwTP SWOs and CSOs and a number of Industrial Licensed Emissions

1.6.3.1.1 Irish Sea – Dublin Construction

The construction of the proposed outfall pipeline route (marine section) will require dredging of the seabed for approximately 4km within the Irish Sea – Dublin water body. This, and the placement of spoil on the seabed, have the potential to disturb marine sediment and create sediment plumes as the disturbed sediment is entrained in the water column. Increases in suspended sediment may lead to a degradation in overall water quality through an increase in turbidity.

Sediment plume modelling was undertaken as part of the EIAR included in the 2018 planning application, as supplemented by the EIAR Addendum. Dredging of the proposed outfall pipeline route (marine section) and casting of the spoil within the route corridor was assessed over a 78–day period, from 1 March to 30 April. The simulated placement of dredged material from split–hull hopper barges was defined as a discrete discharge on flood tides (at intervals of approximately 12.25 hours). Measurements of background TSS were made between 2015 and 2017 in the receiving waters to establish baseline conditions. The baseline sample results show baseline TSS concentrations between 15mg/l (milligrams per litre) and 50mg/l for the majority of the time. A summary of the hydrodynamic modelling process including input variables and results is provided in Chapter 8 (Marine Water Quality) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented by Chapter 8A (Marine Water Quality) in Volume 3A Part A of the EIAR Addendum. Diagram 1 and Diagram 2 present the percentage of time during the dredging operation that suspended sediment concentrations in the bottom and middle layers of the water column were predicted to exceed 10mg/l in each of the modelled grid cells, with a maximum of 0.8% (14.97hrs) of the dredging operation period.

Modelling results indicate that the suspended sediments from each individual placement operation were predicted to dissipate to background levels within the 12.25 hour period between the placement operations on flooding tides. The model indicates that this will be a brief but recurring effect during the course of the dredging operations (over approximately 78 days), but that it will not be significantly higher than background sediment concentrations and more akin to the natural variability of TSS concentrations in the receiving waters. Therefore, any degradation in water quality will be temporary and localised and unlikely to impact at the water body scale.

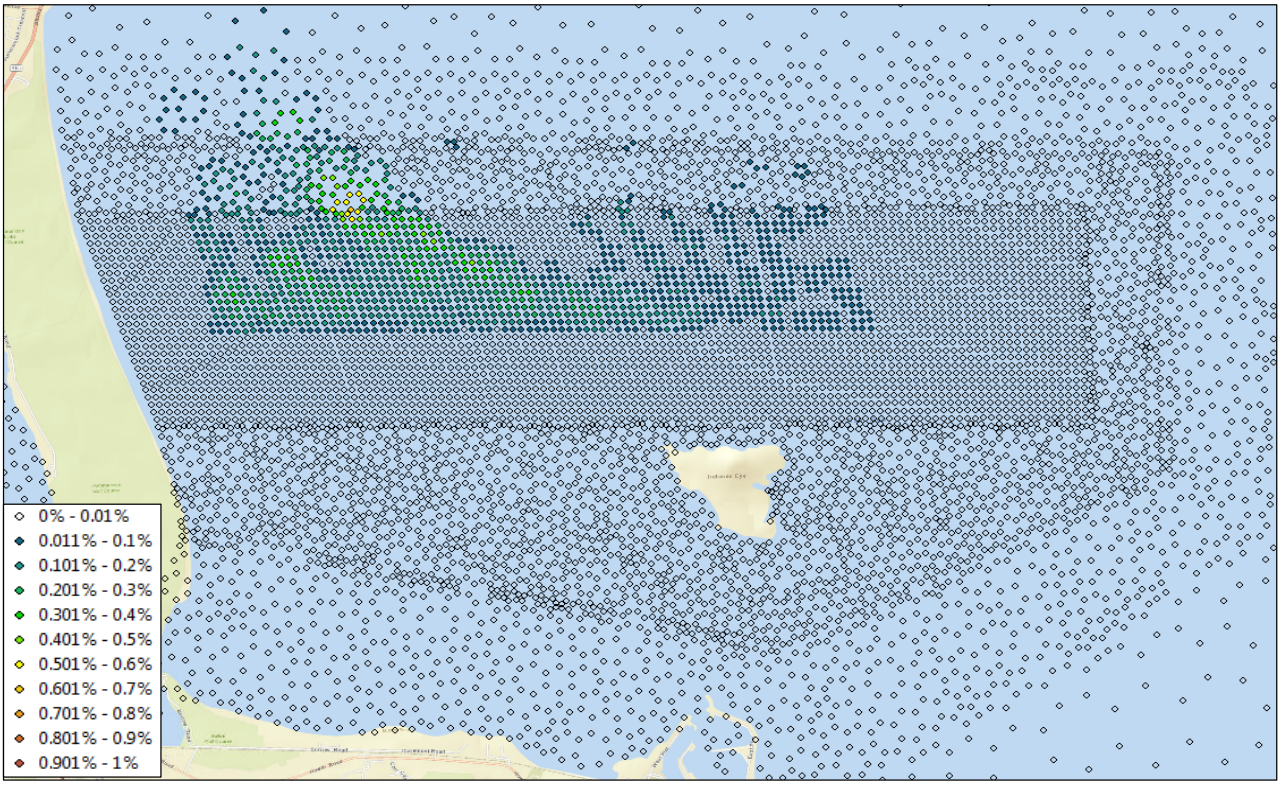


Diagram 1: Percentage of Time During Dredging Operation that Suspended Sediment Concentrations Exceed 10mg/l Near Seabed for the Proposed Outfall Pipeline Route (Marine Section).

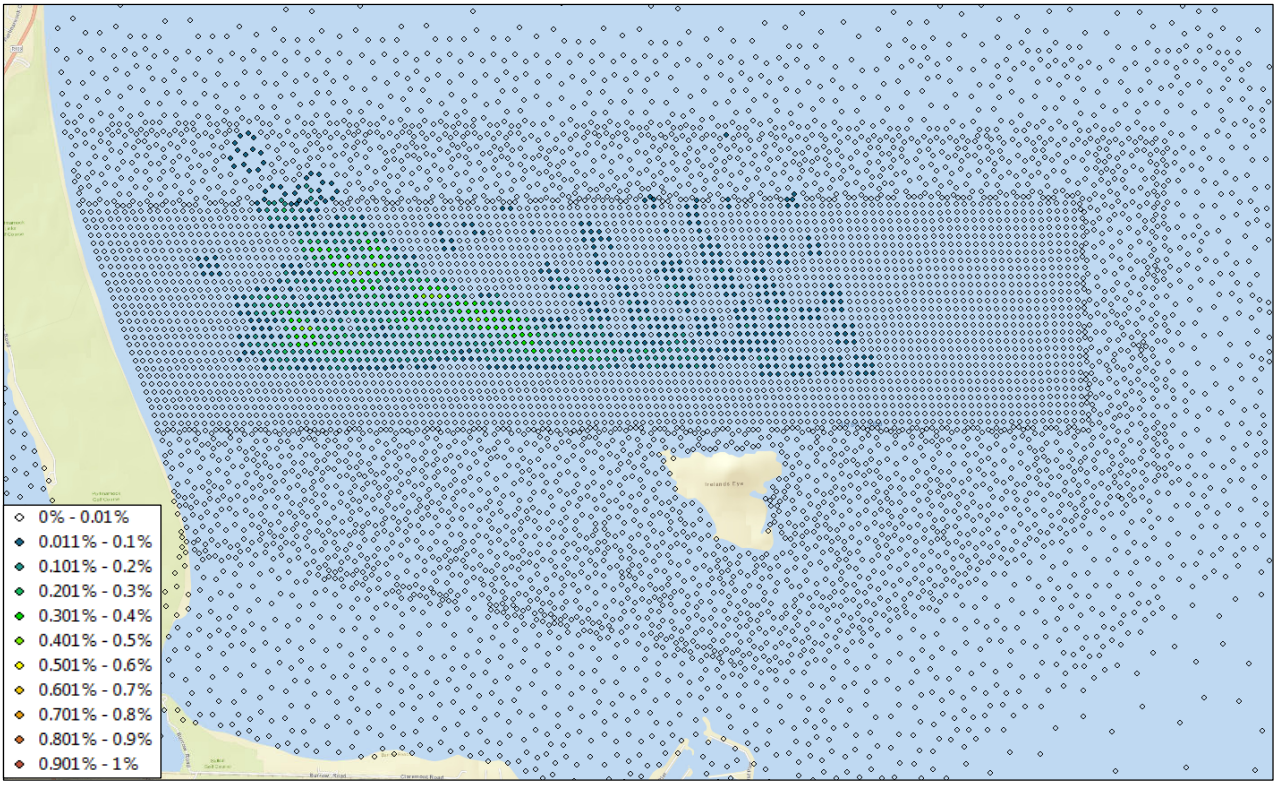


Diagram 2: Percentage of Time During Dredging Operation that Suspended Sediment Concentrations Exceed 10mg/l in Mid Water Colum for the Proposed Outfall Pipeline Route (Marine Section).

1.6.3.1.2 Irish Sea – Dublin Operation

The Mike– by– DHI 3D Flexible Mesh (Mike3– FM) hydrodynamic, solute and sediment transport model was used to predict tidal circulation patterns in the region, treated wastewater dispersion, plume trajectories and compliance with EU water quality standards in the water off Dublin.

Dissolved Inorganic Nitrogen (DIN)

The model seeks to predict the extent of the predicted DIN plume from the discharge point at high water, mid ebb, low water, mid flood on neap tides and on spring tides. Results for average daily flow conditions indicate none of the modelled scenarios result in the DIN plume from the discharge point exceeding the 0.17mg/l N (milligrams per litre of Nitrogen) limit required to achieve 'High' status, nor the 0.25mg/l N limit required to achieve 'Good' status.

Results for FFT for the same tidal scenarios show the DIN plume from the discharge point exceeding the 0.17mg/l N limit required to achieve 'High' status but does not exceed the 0.25mg/l N limit required to achieve 'Good' status. The exceedance of 'High' status DIN limits will be a temporary impact, as FFT conditions will only occur after storm events when attenuation within the new WwTP is exceeded.

Results for process failure using the same tidal scenarios indicate the DIN plume from the discharge point was predicted to exceed the 0.25mg/l N limit required to achieve 'Good' status during the high and low slack water stages of the tide with least mixing. This will be a rare occurrence as process failure will need to coincide with high and low stages of the slack water tide. Additionally, it will be temporary whilst the process systems were fixed and is therefore unlikely to impact at the water body scale.

Molybdate Reactive Phosphorus (MRP)

The Surface Waters Regulations do not set a limit for MRP in coastal waters. The transitional waters' median concentration limit of ≤0.04mg/l required to achieve 'Good' status has been applied in this assessment in the absence of a coastal waters limit.

Hydrodynamic modelling for average daily flows, FFT and process failure was undertaken to predict the MRP plume from the discharge point at high water, mid ebb, low water and mid flood on neap tides and spring tides. Modelling of FFT and process failure conditions show a marginal increase in MRP plume from the discharge point, exceeding the 0.04mg/l P (milligrams per litre of Phosphorous) limit required to achieve 'Good' status at certain stages of the tide, and very localised to the discharge point. However, the proposed WwTP will have three power supply sources (electricity on a looped supply, natural gas and biogas) and will be capable of running off any single one or a combination of sources. This would mitigate against total power failure of the WwTP and therefore mitigate against a total failure of the WwTP itself.

Biological Oxygen Demand (BOD)

The Surface Waters Regulations set a 95th percentile concentration limit for BOD at ≤4.0mg/l O_2 (milligrams per litre of Oxygen) in coastal waters to achieve 'Good' status. Hydrodynamic modelling for average daily flows, FFT and process failure was undertaken to predict the maximum extent of the BOD plume from the discharge point at high water, mid ebb, low water, mid flood on neap and spring tides.

None of the tidal scenarios for the aforementioned flow types show BOD plumes from the discharge point exceeding the 4.0mg/l O_2 limit required to achieve 'Good' status.

1.6.3.1.3 Ward_030 Operation

During the operation of the proposed RBSF, the only emissions to surface water will be treated and attenuated surface water runoff from roofs and hardstanding areas. Wastewater and any runoff from inside the buildings will be collected and will be pumped off site to a public sewer. Runoff will pass through hydrocarbon interceptors, silt traps / sedimentation and attenuation prior to discharge to Huntstown Stream on the western boundary of the Proposed RBSF site. As stated in Section 1.2.2, Huntstown Stream is not designated under the WFD. However, the stream does discharge to the WFD designated Ward_030 approximately 200m downstream of the proposed outfall locations.

The potential impacts to water quality will arise from accidental spillages of chemicals, hydrocarbons or other contaminants entering the drainage system and discharging to the stream. However, the drainage design considerations will ensure that in the event of significant accidental spills, the discharge will be contained by hydrocarbon interceptors. Additionally, there will be some additional dilution capacity via Huntstown Stream prior to reaching the Ward_030 water body. Therefore, no impacts to the WFD water quality elements are anticipated on the Ward_030.

1.6.4 Protected Areas

Table 9 presents a summary of the protected area considerations and associated risk issues of the Proposed Project.

Table 9: Protected Areas

WFD Assessment Questions	Nature Conservation Designations	Bathing Waters	Shellfish Waters
Consider if your activity is within 2km of any WFD protected area?	**Baldoyle Bay SAC, Baldoyle Bay SPA and Baldoyle Bay Ramsar site** **No (Construction) –** The listed protected areas cover almost the same geographical area, although the SAC extends coastwards to just beyond the low tide mark and also slightly westwards including the mouth of the Mayne_010. Potential impacts relate to a degradation in water quality as a result of construction runoff and direct habitat loss within the protected area. As identified for water quality, mitigation measures within the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum, will mitigate against runoff from the tunnel reception and drive shaft locations (which are outside but adjacent to the protected area footprint) entering the protected areas. No direct habitat loss will occur within the SAC, SPA or RAMSAR site, as the outfall pipeline route (marine section) will be installed in a tunnel that passes below these protected areas with temporary construction compounds located outside the protected area footprints. In relation to Baldoyle Bay SPA, a NIS was prepared as part of the 2018 planning application, updated by the Revised NIS in this Addendum. This document identifies that, with mitigation, there will be no significant impact on the SPA. **No (Operation) –** The pipeline will not interface with the protected area during operation and therefore no deterioration is anticipated. No further assessment is required.	**Portmarnock, Velvet Strand Beach (ID: IEEABWC070_0000_0200).** **No (Construction)** – There will be no release of potential contaminates which could impact bathing water status during construction of the proposed outfall pipeline route (marine section). International Convention for the Prevention of Pollution from Ships (MARPOL) guidelines (MARPOL 1983) will be followed by vessels at all times as outlined in the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum. **No (Operation) –** Water quality modelling of the nutrient plume has not identified any adverse impacts on water quality within the surrounding waters. Therefore, no impacts to bathing water during the operation of the Proposed Project are anticipated. No further assessment is required.	**Malahide Shellfish protected area.** **No (Construction)** – The protected area lies approximately 800m offshore from the Portmarnock coastline, within 1km of the proposed outfall pipeline route (marine section). The footprint of the Proposed Project will not interact with the protected area. Potential impacts include increased suspended sediment concentration related to dredging operations for the pipeline and marine diffuser. Modelling of the sediment plume (refer to Diagram 1) shows that suspended sediment concentrations will have dispersed and diluted to background concentrations prior to reaching the protected area. **No (Operation)** – Water quality modelling of the nutrient plume created via discharge of treated wastewater to the marine environment has not identified any adverse impacts on water quality within the surrounding waters. Therefore, no impacts to the shellfish protected area during the operation of the Proposed Project are anticipated. No further assessment is required.
	Rockabill to Dalkey Island SAC and North-West Irish Sea candidate SPA **No (Construction) –** The Rockabill to Dalkey Island SAC and North-West Irish Sea candidate SPA both lie within the Proposed Project footprint and will be crossed by approximately 1.3km of dredged pipeline and marine diffuser installation. There is therefore the potential for deterioration of water quality of reef habitats due to pollution events, habitat loss and / or elevated suspended solids during dredging, cable protection works and interface works. These will be temporary impacts limited to the construction period. As outlined above, there is not anticipated to be an impact on water quality above background TSS concentrations as a result of dredging with mitigation employed as outlined in the CEMP. Spoil will be excavated and stockpiled adjacent to the pipeline route upon completion of which will be restated to baseline conditions and therefore habitat loss will only be temporary. No direct habitat loss will occur within the SAC, SPA site, as the outfall pipeline route (marine section) will be installed in a tunnel that passes below these		

WFD Assessment Questions	Nature Conservation Designations	Bathing Waters	Shellfish Waters
	protected areas with temporary construction compounds located outside the protected area footprints. No further assessment is required. **No (Operation)** – During operation potential impacts to the SAC and SPA will be related to a degradation in water quality as a result of the discharge of treated wastewater from the WwTP through the marine diffuser. As identified for water quality above, modelling has shown no adverse impacts related to water quality are anticipated during the operational stage and therefore no deterioration in SAC or SPA status is anticipated. No further assessment required.		
	Ireland's Eye SPA **No (Construction) –** In relation to Ireland's Eye SPA, a separate NIS was prepared as part of the 2018 planning application, as updated by the Revised NIS in this Addendum. This document identifies that, with the identified mitigation measures in place, including a vessel management plan, any impacts during the time that auks are leaving the Ireland eye colony would be negligible. **No (Operation) –** No operational impacts are anticipated, given that no water quality issues during the discharge of treated wastewater have been identified. Therefore, there is not anticipated to be a deterioration to the protected area as part of the Proposed Project.		

1.6.5 Invasive Species

Non-native (or alien) invasive species are scheduled to S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) and Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species (hereafter referred to as the Invasive Alien Species Regulations). Consideration should be made regarding whether there is a risk that the activity could introduce or spread invasive species. Potential risks of introducing or spreading invasive species include materials or equipment that have come from, had use in, or travelled through other water bodies, as well as activities that help spread existing invasive species, either within the immediate water body or other water bodies. Table 10 presents a summary of invasive species' considerations and associated risk issues of the works.

Table 10: Invasive Species Considerations

	Tolka_040	Santry_010	Mayne_010	Ward_030	Mayne Estuary	Irish Sea Dublin
Introduction or spread of Invasive Non Native Species (INNS)	**No (Construction) –** During the surveys that informed the EIAR in the 2018 planning application, Giant rhubarb (*Gunnera tinctoria M.*) was recorded along the River Tolka, downstream of the proposed orbital sewer route and the proposed Abbotstown pumping station site during aquatic surveys. The location of Giant rhubarb was at a sufficient distance from the proposed construction corridor that it will not be impacted or disturbed by construction of the Proposed Project. **No (Operation) –** The majority of the Proposed Project will be below-ground.	**No (Construction) –** During the 2019 – 2023 surveys that informed the EIAR Addendum, Giant Hogweed (*Heracleum mantegazzianum)* was identified on derelict land approximately 140m from the watercourse, online with the proposed pipeline route. There is not anticipated to be a reduction in the quality elements as a result of Non-native (or alien species) should mitigations outlined in Chapter 11 of the EIAR submitted as part of the 2018 planning application be implemented. **No (Operation) –** The majority of the Proposed Project will be below-ground.	**No (Construction and Operation) –** During the 2019 surveys that informed the EIAR Addendum, Japanese Knotweed *(Reynoutria japonica)* was identified on the seaward side of R106 Road. This was undergoing treatment at the time of identification and upon return surveys in 2023 was no longer present. During the 2023 surveys a second stand of Japanese knotweed was discovered on the banks of the River Mayne_010 at: Easting: 0719736 Northing: 0741220 (ITM). This has the potential to be disturbed during the construction of the new culvert and associated access road to the WwTP on the River Mayne. However, with mitigations in place as outlined in the EIAR submitted as part of the 2018 planning application, no reduction in quality elements is anticipated. Additionally, all plant used during construction will be subject to biological controls, as outlined within the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum. **No (Operation) –** No change to baseline conditions, culvert would be extended and access track used for access to WwTP but this is out with the footprint of the invasive species and therefore would not interact with the species.	No invasive species recorded. All plant used during construction will be subject to biological controls, as outlined within the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum.		

1.6.6 Groundwater

The Proposed Project will lie within the Dublin (IE_EA_G_008) groundwater body. Activities such as deep excavations and piling activities into the Dublin groundwater body have the potential to intercept groundwater and affect quantitative dynamics of the groundwater through dewatering and interruption of groundwater flows and levels. During operation, the permanent presence of piles have the potential to influence groundwater flow and therefore remains a risk. In addition to this piling, dewatering and general construction works may also create pathways for contaminants at the surface to reach the subsurface and affect the chemical status of the groundwater.

Table 11: Groundwater Considerations

Water Body ID	Quality Elements	Potential Impacts
Dublin Groundwater body	**Groundwater Chemical**	**No (Construction) – All elements** – In the event of an accidental spillage, emergency procedures will be put in place, as identified within the Outline CEMP and the SWMP appended to it, included as a standalone document in the 2018 planning application, as supplemented by the Addendum to the Outline CEMP and SWMP included as a standalone document in this Addendum, to mitigate against potential contaminates entering the groundwater body. Reinforced concrete structures will be designed to be water retaining and the use of bunds around any chemicals and oil storage areas will reduce the risk of any leaks or accidental spillages. Additionally, any impacts that arise will be temporary and localised and unlikely to impact the groundwater body at the water body scale. **No (Construction) – Orbital sewer route, outfall pipeline route (land based section) –** The proposed orbital sewer route is designed to be watertight. It will be designed and constructed to minimise the risk of leakage. However, in the extremely unlikely event of a rupture or leak, the impact on groundwater quality will be temporary and localised until the pipeline is repaired. During tunnelling activities, the tunnel will be grouted to eliminate the possibility of a preferential flow path in the annulus outside the pipe. This will create a seal between the tunnel and the surrounding groundwater body. **No (Operation) – All elements** – The proposed orbital sewer and outfall pipeline will be sealed from groundwater ingress and from pipeline contents leaking out into the surrounding aquifer. Therefore, no impacts are anticipated.
	Groundwater Quantitative	**No (Construction) – Proposed WwTP and Abbottstown pumping station** – The proposed WwTP and Abbottstown pumping station (which will be founded in rock) may require excavations below the water table. Any impacts related to dewatering will be localised and temporary and unlikely to impact the groundwater body at the water body scale. **No (Construction) – Tunnel drive and reception shafts** – A drive shaft for the tunnel boring machine will be located in the public car park area on the Portmarnock Peninsula. This shaft will be excavated to a depth of approximately 20m. The embedded mitigation incorporated into the microtunnelling methodology and design and mitigation measures related to the construction of the tunnel shaft (shaft will be excavated using piling techniques and will not involve any dewatering or pumping which could interfere with nearby receptors (golf course irrigation wells)). The shaft will be hydraulically sealed from the water bearing sands / gravels. The remaining tunnel drive and reception shafts will be shallow in comparison, and any impacts from dewatering will be temporary and localised (during excavation of the shaft). Once excavated, the shafts will be sealed from groundwater ingresses. As such, no impacts at the water body scale are anticipated. **No (Construction) – Outfall pipeline** – The proposed outfall pipeline route (marine section) will be bored beneath the Portmarnock Peninsula in bedrock below the boulder clay. This will ensure that there is no hydraulic connection or impacts on the shallow groundwater regime of the Portmarnock Peninsula. The tunnelled pipeline will be grouted to eliminate the possibility of a preferential flow path in the annulus outside the pipe. **No (Operation)** – The proposed orbital sewer route and outfall pipeline route (land based section) will have a localised impact on groundwater flows but is not anticipated to impact at the water body scale. The tunnelled section of the proposed outfall pipeline route (marine section) has the potential to provide a preferential flow path in the vicinity of Portmarnock. If this is in hydraulic continuity with the groundwater in the dune sands and gravels, a preferential pathway to the sea could alter the flow regime and affect the groundwater body. Embedded mitigation has been adopted in the tunnel design and route selection to eliminate any potential impacts on the Baldoyle Bay SAC. Beneath Baldoyle Estuary and Portmarnock Peninsula, the proposed outfall pipeline route (marine section) will be drilled entirely through the Malahide limestone bedrock. The pipe in the limestones will lie under the stiff boulder clays. There will therefore be a disconnect between the proposed outfall pipeline route (marine section) and the overlying gravel aquifer. The barrier of clay and grout will disconnect the pipe from the overlying shallow

Water Body ID	Quality Elements	Potential Impacts
		gravel aquifer. There will be no operational discharges to groundwater as part of the Proposed Project.

1.6.7 Assessment Summary

The site-specific impacts of the Proposed Project on the biological, physico-chemical and hydromorphological and groundwater quality elements of the water bodies are shown in the assessment above and summarised in Table 12.

Table 12: Assessment Summary

Receptor	Potential Risk to Receptor?	Note the Risk Issue(s) for Impact Assessment
Hydromorphology	No	No risk to receptor with mitigation applied as detailed in Section 1.6.1.
Biology: habitats	No	No risk to receptor with mitigation applied as detailed in Section 1.6.2.
Biology: fish	No	No risk to receptor with mitigation applied. See Section 1.6.2 for further details.
Water quality	No	No risk to receptor with mitigation applied. See Section 1.6.3 for further details.
Protected areas	No	No risk to receptor with mitigation applied. See Section 1.6.4 for further details.
Invasive non-native species	No	No risk to receptor with mitigation applied. See Section 1.6.5 for further details.
Groundwater (chemical)	No	No risk to receptor with mitigation applied. See Section 1.6.6 for further details.
Groundwater (quantitative)	No	No risk to receptor with mitigation applied. See Section 1.6.6 for further details.

1.7 Assessment of the Proposed Project Against the Programme of Measures

There is a list of measures, or environmental improvements, which have been identified by the draft RBMP (DHLGH 2021) (known as the Programme of Measures (PoMs)), which need to be implemented in order to improve the ecology of water bodies by a specified date in order for Ireland to meet the target date set by the WFD. Part of the WFD compliance assessment is to consider these PoMs and assess whether the Proposed Project can contribute to them or prevent any of them from being delivered.

Table 13 provides a list of all PoMs applicable to the water bodies within the study area, and an explanation of why the Proposed Project may / may not be able to achieve or contribute to mitigation measures.

Table 13: Mitigation Measures and Assessment of Whether the Proposed Project Will Help to Contribute to These (Management Plan)

Mitigation Measure	Will the Proposed Project Help to Achieve or Contribute to the Mitigation Measure?
Santry_010 WBP0001282 - Urban Run-off - Diffuse Sources Runoff	No. The Proposed Project will not significantly reduce volumes of surface water runoff in to the Santry_010. Currently, issues related to increased phosphates, ammonia BOD and microbial pollution as a result of misconnections, which will not be changed as a result of the Proposed Project. No change anticipated.
Santry_010 WBP0003136 Urban Waste Water - CSOs	No. The Proposed Project will not create any new CSO to the Santry_010 water body. However, it will not remove any CSO currently discharging to the watercourse. No change anticipated.

The nature of the works is unlikely to impede achievement of the PoMs, nor is it considered to impede any water body reaching GES or GEP.

1.8 Cumulative Assessment

The Proposed Project has been assessed for the potential for cumulative impacts with other proposed developments within 20km of the Proposed Project boundary (refer to Chapter 23 (Cumulative Impacts and Environmental Interactions) in Volume 3 Part A of the EIAR in the 2018 planning application, as supplemented

by Chapter 23A (Cumulative Impacts and Environmental Interactions) in Volume 3A Part A of the EIAR Addendum).

This concludes that the Proposed Project will not compromise the achievement of the objectives of the WFD for any water body, in-combination with other proposed developments, following the implementation of mitigation measures outlined within the EIAR in the 2018 planning application, as supplemented by the EIAR Addendum.

1.9 Assessment of the Proposed Project Against Water Framework Directive Objectives and Other European Union Directives

Taking into consideration the anticipated impacts of the Proposed Project on the biological, physico-chemical hydromorphological and groundwater quality elements, following the implementation of design and mitigation measures, it is concluded that the Proposed Project will not compromise progress towards achieving GES or GEP, or cause a deterioration of the overall status of any of the water bodies that are in scope.

The WFD also requires consideration of how a new project might impact on other EU legislation. This is covered in Article 4.8 and Article 4.9 of the WFD.

Article 4.8 states:

> '*a Member State shall ensure that the application does not permanently exclude or compromise the achievement of the objectives of this Directive in other bodies of water within the same river basin district and is consistent with the implementation of other Community environmental legislation*'.

All water bodies within the study area have been assessed for direct impacts. The assessment concludes that the Proposed Project will not compromise the achievement of the objectives of the WFD for any water body. In addition, the Proposed Project has been assessed for the potential for cumulative impacts with other proposed developments within 20km of the Proposed Project boundary. This concludes that, in-combination with other proposed developments, the Proposed Project will not compromise the achievement of the objectives of the WFD for any water body. Therefore, the Proposed Project complies with Article 4.8.

The Habitats Directive promotes the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Habitats Directive at a favourable conservation status, introducing robust protection for those habitats and species of European Importance. There are European designated sites in the vicinity of the Proposed Project which have been assessed and are presented in the Appropriate Assessment Screening Report and Natura Impact Statement submitted with the 2018 planning application, as updated by the Revised NIS in the Addendum.

The Nitrates Directive aims to protect water quality by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. The Proposed Project will not influence or moderate existing agricultural land use or land management. Any interaction between the Proposed Project and agricultural land use will be mitigated and managed in line with Irish law.

The revised BWD was adopted in 2006, updating the microbiological and physico-chemical standards set by the original BWD and the process used to measure / monitor water quality at identified bathing waters. The revised BWD focuses on fewer microbiological indicators, whilst setting higher standards, compared to those of the BWD. Bathing waters under the revised BWD are classified as excellent, good, sufficient or poor according to the levels of certain types of bacteria (intestinal enterococci and *E. coli*) in samples obtained during the bathing season (May to September). The Proposed Project will not impact any designated bathing waters, as identified in Section 1.6.4.

1.10 Conclusion

Taking into consideration the impacts of the Proposed Project on the biological, physico-chemical, hydromorphological and groundwater quality elements, it is concluded that following the implementation of

design and mitigation measures, it will not compromise progress towards achieving GES or GEP or cause a deterioration of the overall status of the water bodies that are in scope. It will also not compromise the qualifying features of protected areas and is compliant with other relevant Directives. It can therefore be concluded that the Proposed Project is fully complaint with the WFD, and therefore, does not require assessment under Article 4.7 of the WFD.

1.11 References

CIRIA (2006). Control of water pollution from linear construction projects. Technical Guidance (C648)

DEHLG and OPW (2009). The Planning System and Flood Risk Management – Guidelines for Planning Authorities

DHLGH (2021). Draft River Basin Management Plan for Ireland 2022– 2027

DHPLG (2018). River Basin Management Plan for Ireland 2018 – 2021

Environment Agency (2017). Water Framework Directive assessment: estuarine and coastal waters. Updated 2017

EPA (2022a). Data Explorer

EPA (2022b). Water Quality in Ireland Report

EPA (2023). EPA Interactive Mapper

IFI (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters

MARPOL (1983). International Convention for the Prevention of Pollution from Ships (MARPOL 73/78 2015) Practical Guide

National Parks and Wildlife Service (2023). North-West Irish Sea candidate SPA

Directives and Legislation

Council Directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water

Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (as amended).

Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment

Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy

Directive 2006/7/EC of the European Parliament and of the Council concerning the management of bathing water quality and repealing Directive 76/160/EEC

Directive 2006/113/EC of the European Parliament and of the Council of 12 December 2006 on the quality required of shellfish waters

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds

Ramsar Convention

Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species

S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003, as amended

S.I. No. 268/2006 - European Communities (Quality of Shellfish Waters) Regulations 2006

S.I. No. 684/2007 - Waste Water Discharge (Authorisation) Regulations 2007

S.I. No. 79/2008 - Bathing Water Quality Regulations 2008

S.I. No. 272/2009 – European Communities Environmental Objectives (Surface Waters) Regulations 2009

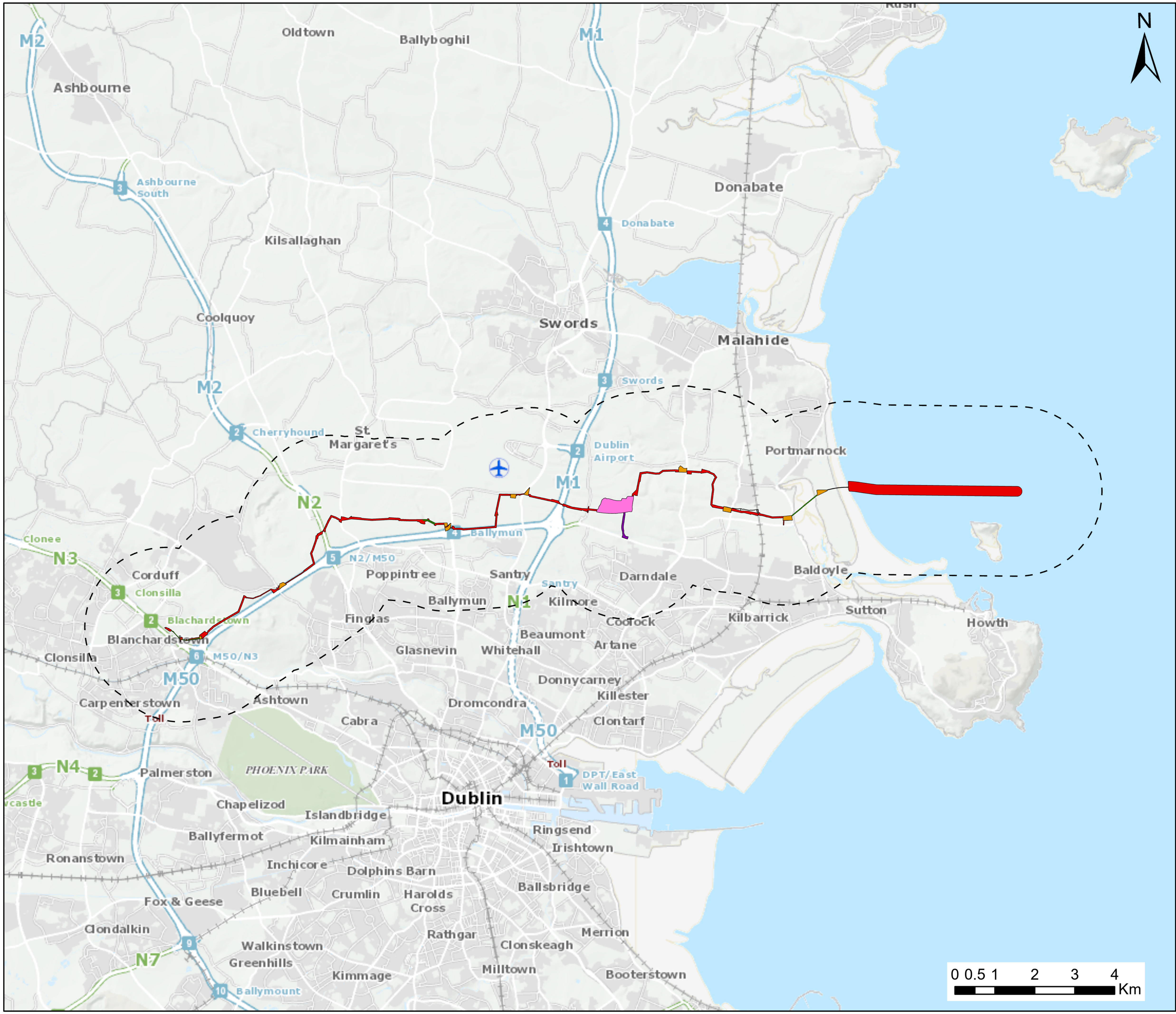
S.I. No. 9/2010 – European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended

S.I. No. 231/2010 - Waste Water Discharge (Authorisation) (Amendment) Regulations 2010

S.I. No. 477/2011 -European Communities (Birds and Natural Habitats) Regulations 2011 (as amended)

S.I. No. 652/2016 - Waste Water Discharge (Authorisation) (Environmental Impact Assessment) Regulations 2016

S.I. No. 214 of 2020 - European Union (Waste Water Discharge) Regulations 2020



Legend

- Proposed Project Design
- Proposed Project Area 2km Buffer
- Trenchless Crossing Locations
- Compound Locations
- Proposed Waste Water Treatment Plant
- Access Culvert to WWtP

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Greater Dublin Drainage

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
0	19/10/2023	Final	LB	SMG	MJ	JB

Jacobs

Client: Uisce Éireann Irish Water

Project: Greater Dublin Drainage Project

Drawing Title: Figure 1 - Water Framework Directive Assessment

Drawing Status: **Final**

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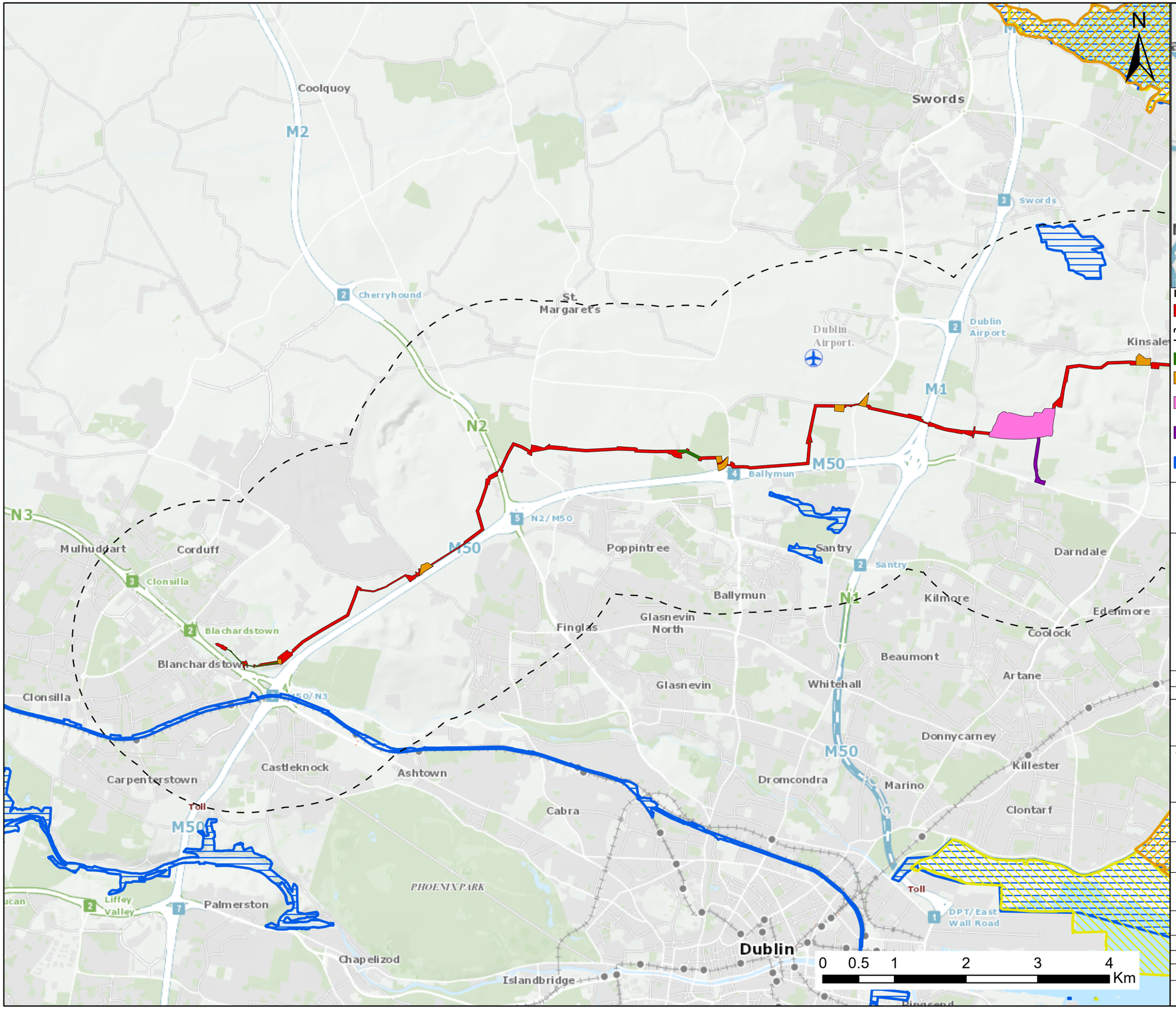

Legend

- Proposed Project Design
- Proposed Project Area 2km Buffer
- Trenchless Crossing Locations
- Compound Locations
- Proposed Waste Water Treatment Plant
- Access Culvert to WWtP
- Proposed Natural Heritage Areas (pNHA)
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)

Lake, River & Coastal Waterbody WFD Status 2016-2021

- High
- Good
- Moderate
- Poor
- Bad
- Unassigned

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Greater Dublin Drainage

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
0	19/10/2023	Final	LB	SMG	MJ	JB

Jacobs

Client: Uisce Éireann Irish Water

Project: Greater Dublin Drainage Project

Drawing Title: Figure 2a - Water Framework Directive Assessment (West)

Drawing Status: **Final**

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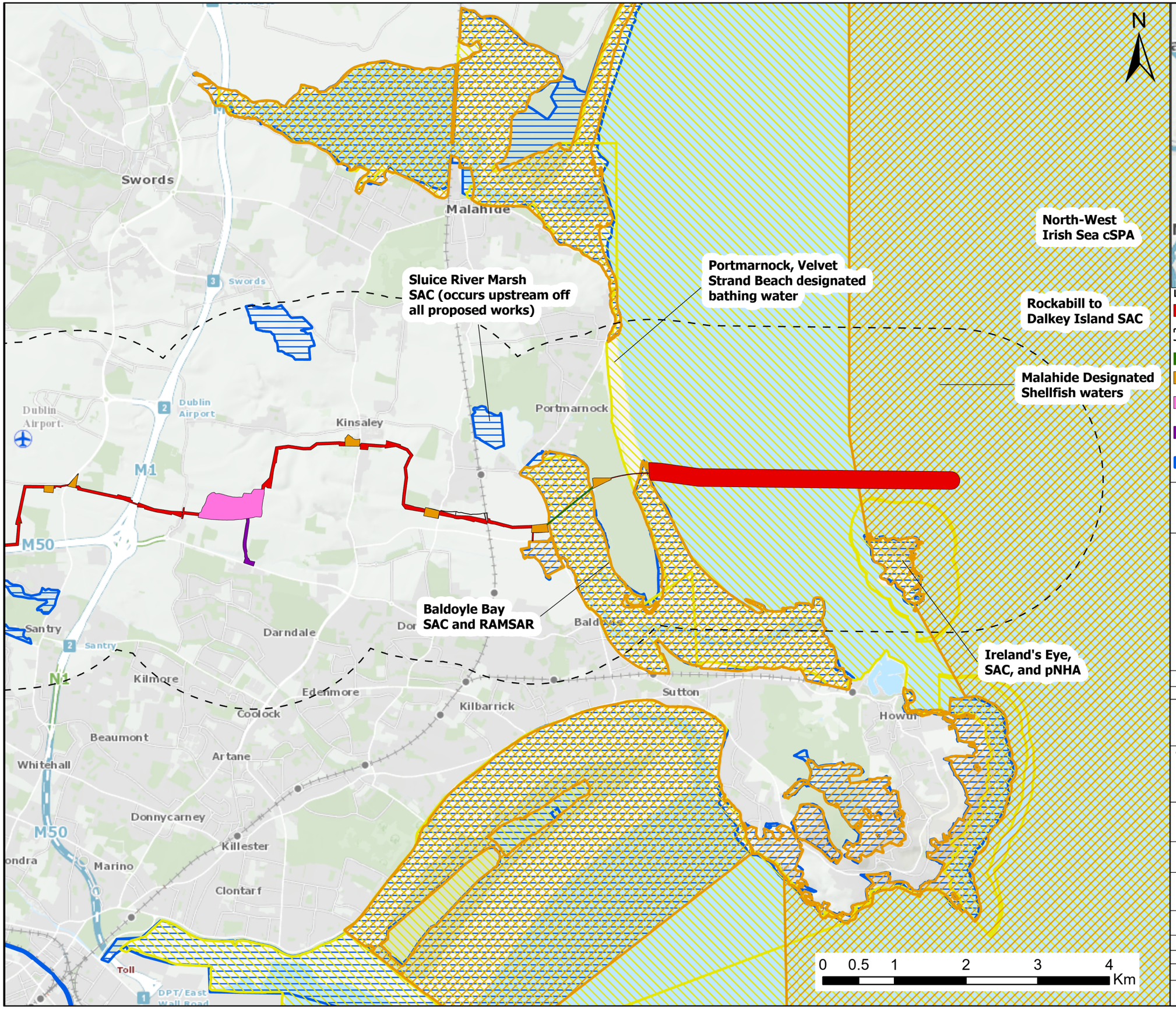

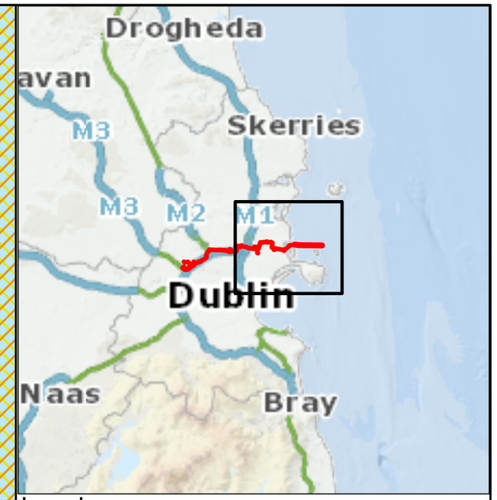

Legend

- Proposed Project Design
- Proposed Project Area 2km Buffer
- Trenchless Crossing Locations
- Compound Locations
- Proposed Waste Water Treatment Plant
- Access Culvert to WWtP
- Proposed Natural Heritage Areas (pNHA)
- Special Area of Conservation (SAC)
- Special Protection Areas (SPA)

Lake, River & Coastal Waterbody WFD Status 2016-2021

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- Good
- Moderate
- Poor
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Greater Dublin Drainage

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
0	24/10/2023	Final	LB	SMG	MJ	JB

Jacobs

Client: Uisce Éireann Irish Water

Project: Greater Dublin Drainage Project

Drawing Title: Figure 2b - Water Framework Directive Assessment (East)

Drawing Status: **Final**

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