

An
Bord
Pleanála

Specialist Report

R312131_App1

Development

Greater Dublin Drainage Project

Type of Application

Strategic Infrastructure Development-

Topic

Review of the relevant information, particularly the EIAR Addendum (e.g., Marine Water Quality, Chapter 8A) and the WFD Assessment (separate report), by in-house Environmental Scientist and preparation of specific advice in relation to (i) the adequacy of the WFD Assessment and (ii) the combined approach.

Senior Planning Inspector

Alaine Clarke.

Date

3rd April 2025

Contents

1.0	Introduction.....	3
1.1	Scope of Report to the Inspector.....	3
1.2	Brief -The Water Framework Directive.....	3
1.3	Development Overview.....	5
2.0	Planning & Further Information	5
3.0	Legislative Requirements	6
3.1	Comment.....	6
3.2	Water Framework Directive.....	6
3.3	Urban Wastewater Treatment Directive.....	6
3.4	Wastewater Discharge Authorisation regulations.....	6
3.5	Shellfish Waters.....	7
3.6	Bathing Waters.....	7
3.7	Marine Strategy Framework.....	7
4.0	Protected areas.....	7
4.1	Comment.....	8
4.2	Nature Conservation Areas.....	8
4.3	Special Areas of Conservation.....	8
4.4	Special Protection Areas and Ramsar Site.....	8
4.5	Bathing Waters.....	9
4.6	Nutrient Sensitive Areas.....	9
4.7	Shellfish Areas.....	9
5.0	Combined Approach.....	9
6.0	Discharge Impact Assessment.....	10
6.1	Model Inputs.....	10
6.2	Baseline Environment.....	11
6.3	Construction Phase Modelling.....	12
6.4	Operational Phase and Modelling.....	23
7.0	Discussion- Marine Water Impact and WFD.....	23
7.1	WFD Assessment.....	27
7.2	Conclusion.....	30

1.0 Introduction

1.1. Scope of Report to Inspector.

This report to the Senior Planning Inspector and available to the Board is a written record of my review and examination of the following.

(i) Review of the relevant information with particular regard to the EIAR Addendum, chapter 8A regarding Marine Water Quality and the Water Framework Directive Assessment included as a separate report. My assessment provides specific advice in relation to the adequacy of the WFD Assessment and (ii) the combined approach. In preparing this report, I have had regard to submissions and observations received by the Board as they relate to the combined approach assessment and wastewater discharge.

(ii) The NIS will be reviewed by an external Marine Ecologist having particular regard to the North-West Irish Sea candidate SPA. This report will also supplement the Inspector's Report.

There will be cross-over of information relating to compilation of the above supplementary reports particularly having regard to WFD protected areas.

In my capacity as Inspectorate Environmental Scientist with over 25 number of years professional experience, I have the relevant expertise to provide a professional opinion as to the aforementioned.

1.2 Brief- The Water Framework Directive (referred to hereafter as WFD).

In brief the Directive 2000/60/EC of the European Parliament and of the Council was signed into law on the 23rd of October 2000 which established a framework for Community action in the field of water policy.

The primary purpose of the WFD is to achieve good status in both surface and groundwater bodies, whilst preventing any deterioration in water bodies that are already in good status or better.

Surface waters include rivers, lakes, transitional waters and coastal waters. For natural waters these environmental objectives relate to achieving or maintaining good or high

ecological status and good chemical status for surface waters and good chemical and quantitative status for groundwaters. For heavily modified or artificial water bodies which are incapable of achieving good ecological status without impairing an existing specified water use the environmental objective is to achieve good ecological potential. This Directive was transposed into Irish Legislation under the European Communities (Water Policy) Regulations of 2003, subsequently amended and given further effect by the European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended and the European Communities (Groundwater) Regulations 2010 as amended and the European Union (Water Policy) Regulations 2022.

For the purposes of this report, I will be assessing the potential impacts on marine waters whilst having regard to the 'Combined Approach' which is set out in Article 10 of the Directive and can be summarised as follows:

Member states to ensure that all discharges into surface waters are controlled by a "combined approach for point and diffuse sources" as stated under Article 10(1) of the Directive.

The WFD refers in this respect to other Directives, both those in force at the time of its adoption or subsequent ones, pertaining to water or impacted by water, and including "any other relevant community legislation" as stated under Article 10(2).

Hence the WFD provides that Member States shall ensure the establishment and/or implementation of a diversity of instruments. Firstly, for point sources, emission limit values or controls based on available techniques. Secondly for diffuse impacts, to controls "including, as appropriate, best environmental practices" provided for by those other directives, a reference which accordingly appears to act as an implementation measure, outlined under Article 10(2).

The 'combined approach' is defined in Irish statute under the Wastewater Discharge (Authorisation) Regulations 2007, S.I. 684 of 2007 and the European Union (Wastewater Discharge) Regulations 2020, (S.I. 214 of 2020) as follows.

'in relation to a waste water works, means the control of discharges and emissions to waters whereby the emission limits for the discharge are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Regulations, and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater

or protected areas for the water body into which the discharge is made.’ This will be discussed further later in this report.

In order to be compliant with the requirements of the WFD any activity that can prospectively impact on WFD waterbodies i.e., that they may cause a deterioration of the status of a waterbody and or prevent future attainment of good surface water status or good ecological potential and good groundwater status where not already achieved, must be assessed to ascertain the potential for deterioration in the identified waterbody.’

1.3 Development Overview

1.3.1 The site subject of this project (the WwTP element) is located in the townland of Clonshaugh, Co. Dublin. The capacity of the wastewater treatment plant will be 500,000 population equivalent and the design remain unchanged since the original application in 2018. The following elements were added to this project. During the oral hearing process, it was agreed that ultraviolet light would be included to treat the final effluent prior to discharge to the marine waters providing for a significant reduction in the levels of *E. coli* thereby affording a greater level of protection to the designated shellfish waters.

1.3.2 In addition, there is a proposed extension of the river Mayne culvert.

2.0 Planning and further information

- 2.1. On the 26th of October 2023 Jacobs, acting on behalf of the applicant, responded to An Bord Pleanála’s invite to submit further information pursuant to section 37F(1)(a) and (c) of the Planning and Development Act, as amended, with particular reference to the combined approach.
- 2.2. In this letter the applicant addressed the issue of whether the discharge of wastewater from the proposed development in conjunction with existing discharge to the receiving waters would cause or exacerbate breaches of the combined approach; this will be addressed later in this report.

2.3 A number of third-party submissions received in 2022 and 2024 raise issues relating to the combined approach assessment and matters relating, including, the methodology of the assessment undertaken by Uisce Eireann. Other concerns relate to out-of-date data and surveys, paucity of data in identifying statutory limits in relation to the combined approach, failure to accurately model the discharge for the project, lack of data re protection of shellfish waters and razor clam, fails to cumulatively assess discharges and emissions, failure to fully comply with WFD requirements and lack of independent assessment by the EPA.

2.4 The content of the submissions in particular as they may relate to the combined approach assessment have been fully taken into consideration in the drafting of this report.

3.0 Legislative Requirements

3.1 The applicant addressed any potential changes to the legislative and regulatory framework in the period since 2018.

3.2 The Water Framework Directive: The Directive itself has not been amended within this period however there has been an amendment to the transposing regulations: the European Union Environmental Objectives (Surface Waters) Amendment Regulations 2019 (S.I. 77 of 2019) and European Union (Water Policy) Amendment Regulations 2022 (S.I. 166 of 2022). These regulations essentially update the water quality standards for the general physico-chemical conditions supporting biological elements within coastal and transitional waters.

3.3 Urban Wastewater Directive: The Recast Directive brings in changes to increase the standard of wastewater treatment required across the EU and support the transition towards 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 was adopted on the 27th of November 2024, Directive (EU) 2024/3019 refers, since receipt of this application. As part of its site selection process, Uisce Eireann sought to ensure

that the site selected for the Wastewater Treatment Plant is sized to allow for such expansion or adaptation as may be required in the future. The subject site will likely be able to accommodate any additional treatment infrastructure required to fulfil the requirements of the Recast Directive.

3.4 Wastewater Discharge (Authorisation) Regulations 2007, as amended: The legislative system for the licensing or certification of wastewater discharges from areas served by local authority sewer networks was given effect by the Wastewater Discharge (Authorisation) Regulations 2007 (S.I. 684 of 2007). There have been a series of amendments to these regulations as follows: the Wastewater Discharge (Authorisation) (Amendment) Regulations 2010 (S.I. 231 of 2010); and, the Wastewater Discharge (Authorisation) (Environmental Impact Assessment) Regulations 2016 (S.I. 652 of 2016). These regulations have been revised by the European Union (Wastewater Discharge) Regulations 2020 (S.I. 214 of 2020) and amended finally in 2024 Wastewater Discharge (Authorisation)(Amendment) Regulations by (S.I. 480 of 2024).

3.5 Shellfish Waters Directive: No amendments or changes to the Directive or the transposing regulations since the application was submitted.

3.6 Bathing Waters Directive: No amendments or changes to the Directive or the transposing regulations since the application was submitted. Portmarnock Beach Velvet Strand has currently a Blue Flag awarded.

3.7 Marine Strategy Framework Directive: No amendments or changes to the Directive or the transposing regulations since the application was submitted.

4.0 Protected areas.

4.1 The impact assessment of the discharge was considered in light of the requirements of the WFD, specifically the Environmental Objectives and standards associated with

protected areas. The applicant provided a 2km buffer zone in the assessment. The following protected areas were considered.

- Nature Conservation areas
- Bathing waters
- Nutrient Sensitive Areas
- Shellfish waters

4.2 Nature Conservation Areas.

These entail areas designated for the protection of species and habitats and the status of the waters is essential for their protection. The following areas designated as Special Areas of Conservation, Special Protection Areas and Ramsar sites are located within the 2km buffer zone applied by the applicant.

4.3 Special Areas of Conservation.

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

4.4 Special Protection Areas and Ramsar Sites.

Ireland's Eye SPA (004117) is located approximately 570m south of the proposed outfall pipeline routes marine section; **Baldoyle Bay SPA (004016)** will be crossed by the proposed outfall pipeline route for the land-based section; and **Baldoyle Bay Ramsar site (413)** will be crossed by the proposed outfall pipeline routes land-based section. A new candidate SPA, the **North-West Irish Sea SPA (004236)**, was announced in July 2023 by the National Parks and Wildlife Service. 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 routes marine section and marine diffuser will be located within this candidate SPA area.

4.5 Bathing Waters.

Bathing Waters are those designated under Council Directive 76/160/EEC of 8 December 1975 and are concerned with the quality of bathing waters. This Directive was repealed by Directive 2006/7/EC of the European Parliament and of the Council concerning the management of bathing water quality. The following transposing regulations S.I. No. 79/2008 - Bathing Water Quality Regulations 2008 gave effect to the Directive.

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).

4.6 Nutrient Sensitive Areas.

These are areas of Nitrate vulnerable zones and polluted waters as designated under Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources. In addition to areas designated as sensitive under the Urban Wastewater Treatment Directive. There are no nutrient sensitive areas within the 2km zone around the proposed project.

4.7 Shellfish Waters.

Directive 2006/113/EC specifies the quality required of shellfish waters. The Shellfish Waters Directive requires Member States to designate waters that need protection to support shellfish life and growth. The Directive is given effect by the European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. 268 of 2006) and

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) which is located approximately 400m north of the proposed outfall pipeline route of the marine section and approximately 1km north-east of the proposed outfall pipeline route of the land-based section.

5.0 The Combined Approach.

The Waste Water Discharge Authorisation Regulations, 2007 (S.I. No. 684 of 2007) specify that a 'combined approach' in relation to licensing of waste water works must be taken, whereby the emission limits for the discharge are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Treatment Regulations (S.I. No. 254 of 2001) and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater or protected areas for the water body into which the discharge is made. The EPA will be responsible for the setting of emission limit values for the purposes of the discharge licence required for the marine water discharge.

On the 26th of October 2023 Jacobs, acting on behalf of the applicant, responded to An Bord Pleanála's invite to submit further information pursuant to section 37F(1)(a) and (c) of the Planning and Development Act, as amended. The further information also addressed the query raised as to whether the discharge of wastewater from the proposed development, in conjunction with existing discharge to the receiving waters would cause or exacerbate breaches of the combined approach as defined above.

The applicant responded that the EIAR and the EIAR addendum and the environmental assessments were completed having had full regard to all relevant statutory and non-statutory requirements including the Waste Water Discharge (Authorisation) Regulations 2007, as amended, the Urban Wastewater Treatment Regulations 2001, as amended, the Water Framework Directive, the European Union Environmental Quality Objectives (Surface Waters) Regulations 2009, as amended,

and the Bathing Water Regulations of 2008. The applicant went on to say that their assessment considered the impact of the proposed development in combination with the existing baseline on established environmental objectives as described in all pertinent legislation including discharges and emission to waters.

The applicant stated also that the compliance with the combined approach is demonstrated as follows:

Regarding the Urban Wastewater Treatment Directive, the proposed discharge is not to designated sensitive area under Article 6 of the Urban Wastewater Treatment Regulations, as amended. Concentration limits, as set out in schedule 1 of these regulations can be achieved in the discharge.

Regarding the Environmental Quality Objectives, the updated modelling shown in section 8.6 of chapter 8A has demonstrated that the limits proposed for the discharge having regard to the proposed discharge volumes and background concentrations are sufficient to ensure that the waters will meet the requirements of the European Union Environmental Quality Objectives (Surface Water) Regulations 2009 as amended. The extensive modelling undertaken as part of the EIAR has shown that the receiving waters will meet good status criteria and will meet the Environmental Quality objectives for coastal water nutrient levels. The applicant also further included assessment of environmental objectives for relevant areas under the Bathing Water Regulations and the Shellfish Water Regulations.

The proposed emission limit values proposed in the EIAR have regard to the combined approach and will contribute to the achievement of the environmental objectives and the Environmental Quality Standards for the receiving waters, in this instance, coastal waters.

The hydrodynamic modelling, as discussed above, assessed the following parameters in the marine environment, Dissolved Inorganic Nitrogen, Molybdate Reactive Phosphorus, Biochemical Oxygen Demand, E. coli and Intestinal Enterococci whilst having regard to meeting the required limits of the following statutory instruments; Waste Water Discharge (Authorisation) Regulations 2007 as amended, the Urban Wastewater Treatment Regulations 2001, as amended, the Water Framework Directive, the European Union Environmental Quality Objectives (Surface Waters)

Regulations 2009, as amended, and the Bathing Water Regulations of 2008. They have done so utilising appropriate and robust modelling for the proposed discharge which provides an accurate representation of the hydrodynamics within the area.

The water quality modelling outlined the data used for model calibration. The baseline data included ambient monitoring data. The model includes riverine inputs and other wastewater inputs which takes account of the effect of these discharges and the proposed discharge at the marine outfall.

In addition to this, the impact on the coastal waters will be further mitigated by the controls that will be put in place by the discharge authorisation issued by the EPA. Any licence issued by the EPA for such a discharge will specify controls and limits to ensure the protection of waters and will be established in accordance with the combined approach.

It is on this basis that I am satisfied that the applicant has demonstrated that the discharge from the proposed development would not, in conjunction with existing discharges to the receiving waters, cause or exacerbate breaches of the combined approach as defined above.

6.0 Discharge Impact Assessment

6.1 Model Inputs

6.1.1 The modelling carried out under the original application in 2018 for the operational phase has been updated to account for the continuous discharge of secondary treated effluent with the inclusion of Ultraviolet treatment of *E. coli* and Intestinal Enterococci into the receiving waters for average flow conditions and flow to full treatment conditions.

6.1.2 The model inputs regarding river hydraulic flows were revised for the river Dodder and the river Liffey and revised hydraulic flows pertaining to wastewater treatment plants were also revised. The water quality or pollutant loads from the rivers has been updated to reflect more recent water quality data, regarding the following parameters Dissolved Organic Nitrogen, Molybdate Reactive Phosphorus (MRP), Biochemical

Oxygen Demand and *E. coli*. Intestinal Enterococci number were estimated in the absence of water quality sampling for this.

- 6.1.3** Pollutant loads for the wastewater treatment plants were updated for the following parameters Dissolved Organic Nitrogen, Molybdate Reactive Phosphorus, Biochemical Oxygen Demand, *E.coli* and intestinal Enterococci (estimated figures). The updated data was sourced from Uisce Eireann's recent AERs for the wastewater treatment plants.
- 6.1.4** The water quality standards were updated to reflect the updated legislation and the inclusion of intestinal enterococci. The applicant has noted that there is no standard for MRP for coastal waters and as such they adopted the value for transitional waters in respect of this parameter.
- 6.1.5** Decay coefficients have been updated to take account of the intestinal Enterococci and these have been derived from Uisce Eireann Technical Standard for Marine Modelling.

6.2 Baseline Environment.

6.2.1 The main changes to the baseline environment since the 2018 application are regarding the Water Framework Directive status classification, Bathing Waters & trophic status. These are summarised as follows.

6.2.2 Water Framework Directive Classification: The following WFD water bodies have been updated regarding their classification of ecological status since the submission of the 2018 application.

- Coastal water body of HA 08 (North-Western Irish Sea) changed from 'High' to 'Good'
- Coastal waters of HA 09 (Irish Sea-Dublin) changed from 'Unassigned' to 'Good'
- Transitional water body of the Rogerstown Estuary changed from 'Bad' to 'Poor'
- Transitional water body of the Broadmeadow Estuary changed from 'Poor' to 'Moderate' and
- Transitional water body of the Mayne Estuary changed from 'Unassigned' to 'Moderate'.

6.2.3 Bathing Waters: The applicant has submitted the updated bathing water status, and these are as follows.

- Claremont Beach is now classified as achieving 'Sufficient' Water Quality based on assessment of bacteriological results for the period 2018 to 2021.
- Sutton, Burrow Beach is classified as achieving 'Good' Water Quality based on the assessment of bacteriological results for the period 2018 to 2021.
- Portrane, the Brook Beach is classified as achieving 'Good' Water Quality based on the assessment of bacteriological results for the period 2018 to 2021; Rush North Beach is classified as achieving 'Excellent' Water Quality based on the assessment of bacteriological results for the period 2018 to 2021.
- Rush, South Beach is classified as achieving 'Excellent' Water Quality based on the assessment of bacteriological results for the period 2018 to 2021.

- Loughshinny Beach is classified as achieving 'Sufficient' Water Quality based on the assessment of bacteriological results for the period 2018 to 2021.
- There have been no changes to the status of Portmarnock Velvet Strand (remains as 'Excellent') or Donabate Balcarrick Beach (remains as 'Good') since the submission of the 2018 planning application.

6.2.4 Trophic Status: The applicant has revised the trophic status regarding the Mayne Estuary, Broadmeadow Estuary and Rogerstown Estuary from Eutrophic to Intermediate.

6.3 Construction Phase and modelling.

There is a potential for water quality impacts to arise in relation to both the construction of the marine outfall and the operation of the proposed scheme.

During construction the outfall pipeline route has the potential to generate increases in sediment plumes. I note that background total suspended solids concentrations analysed over a 2-year period returned values between 15mg/L and 50mg/L. In order to ascertain the residence time of suspended matters within the water column during construction of the outfall, the applicant carried out a simulated placement of dredged material.

The applicant's modelling has indicated that the suspended sediments would be predicted to dissipate within a 12.25-hour period during operations on flooding tides. The applicant asserts that this will be a brief but recurring effect during dredging operations, and importantly states that this sedimentation was not much higher than existing background concentrations of sediments. It is reasonable to state that the greatest increase in suspended sediment will be in the area of dredging and that suspended sediment concentrations will dissipate significantly over distance from the activity. The coarser fractions would be expected to settle from the water column relatively close to the activity with the finer fractions being carried further, particularly in areas of strong tidal and current movements. The model predictions are in keeping with other similar modelled dredging projects, and on the basis of the information submitted, I am

satisfied that the applicant has carried out a robust and plausible model of construction impacts in this regard. Therefore, having regard to this modelling information and the proposed mitigation measures, outlined in the EIAR, which are standard in nature and known to be effective, I am satisfied that the impact with regard to suspended matter would be transitory and restricted to the construction period.

It is important to note at this juncture that, hydrodynamic modelling, as outlined earlier in this report, was assessed for the following key wastewater parameters; Biochemical Oxygen Demand; Molybdate Reactive Phosphorus and Dissolved Inorganic Nitrogen has indicated imperceptible to slight impact potential as a result of the proposed discharge to the marine waters.

6.4 Operational Phase and modelling.

6.4.1 The water quality model used has been utilised across Ireland and the UK on various projects of significance. Preliminary modelling was carried out so as to determine the dilution and dispersion characteristics from a range of potential marine outfall locations. The study showed that two discrete areas existed within the project area where the location of a marine outfall would have the least detrimental impact. The applicant used this modelling to depict the basic behaviour of the pollutant plume at the point of discharge. This was carried out prior to the water quality dispersion modelling for individual parameters which I will address later in this report. The applicant has predicted results of the proposed discharge using average daily flow conditions and flow to full treatment conditions (flow to full treatment refers to the level of rain and wastewater, or flow, that a sewage treatment works must treat before it is permitted to discharge excess flows to storm tanks or the environment). The applicant modelled for the following parameters in the marine environment: Dissolved Inorganic Nitrogen, Molybdate Reactive Phosphorus, Biochemical Oxygen Demand, E. coli and Intestinal Enterococci. The applicant modelled for each parameter as the average concentration over the depth of the water column for each scenario at four stages of both a neap tide and spring tide,

- namely high water, mid ebb, low water and mid flood. Given the degree of information submitted and the robustness of the modelling in relation to hydrodynamics in the area, I am satisfied that the applicant has adequately modelled the potential for impact from the proposed wastewater treatment plant.

6.4.2 Dissolved Inorganic Nitrogen (DIN).

The European Union Environmental Objectives (Surface Waters) Amendment Regulations 2019 (S.I. 77 of 2019) set out a median concentration limit for DIN at $\leq 0.17\text{mg/L N}$ in order for coastal waters to attain high status and a median concentration limit for DIN of $\leq 0.25\text{mg/L N}$ for the attainment of good status.

6.4.3 Using Average Daily Flow data the applicant has used tidal plots showing the predicted extent of the DIN plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the limit for high status or good status.

6.4.4 In essence the model attributes no impact during the operational phase of the proposed project using average daily discharge conditions.

6.4.5 Using Flow to Full Treatment again the applicant has used tidal plots showing the predicted extent of the DIN plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. Modelling indicates the DIN plume exceeding the 0.17mg/L limit to attain high status but not the 0.25mg/L to attain good status. Modelling has predicted slight impact on the receiving waters local to the discharge point during high and low water conditions.

Comment: Overall having regard to Dissolved Inorganic Nitrogen, the Environmental Quality Objectives (Surface Waters) Amendment Regulations set a 0.25mg/L for the maintenance of 'good' status in coastal waters. DIN would be considered as the primary nutrient of concern regarding marine discharges as it is a limiting nutrient in coastal waters and breaching of the nutrient concentrations as listed in the aforementioned regulations can lead to eutrophic conditions.

The Urban Wastewater Treatment Regulations stipulates the level and the types of treatment required depending on the size of the agglomeration, the type of receiving waters and the sensitivity of the receiving waters. Given that there are no nutrient sensitive waters within 2km of the site there is no requirement for nutrient reduction. The requirements of the Urban Wastewater Treatment Regulations which requires a concentration of 10mg/L for Total Nitrogen in Wastewater Treatment Plants above 100,000P.E. for discharges to sensitive areas which these Coastal waters are not.

Irrespective of this, the receiving waters were modelled for the DIN at average flow and full flow to treatment.

I am satisfied that the applicant has used the appropriate hydrodynamic modelling approach and that the scale of the model is also appropriate for this project. The applicant utilised state of the art tools and best practice for the assessment of marine dynamics and currents in the assessment of the movements of waters at the outfall. The modelling used has shown an accurate level in the prediction of currents within the outfall area, but there was some underestimation in the speeds of the currents outlined. It is reasonable in this instance then to assume that there is some underestimation in plume dispersion predictions at the site of the outfall. However, in real terms and given the constant changing of currents throughout each tidal cycle, a greater degree of dilution would likely be expected over space and time and overall provides an accurate representation of the hydrodynamics within the area.

The model has shown elevated DIN levels within the transitional waters which the applicant attributes to other wastewater treatment plants and rivers discharging to the effected waters. These pollutant loadings have been considered in the modelling and the cumulative impact assessed along with the discharge from the proposed discharge.

The systems and technology being proposed for the treatment of wastewater in this instance are widely utilised across the country for the treatment of wastewater effluent and would be considered the most up to date technologies available within the industry.

- In this regard I am satisfied that the applicant has adequately demonstrated that the subject development will not impede the ability of the waters to achieve at least 'good' status set out under S.I. 77 of 2019 and will not result in a deterioration in class for the Coastal waterbody HA09. In addition to this, it should be noted that the discharge will be subject to licensing consent from the EPA and monitored in accordance with specific conditions pertaining to the marine outfall which will ensure that the potential effects on the receiving water bodies are limited and controlled with the aim of achieving good surface water status by at the latest 2027.

6.4.6 Molybdate Reactive Phosphorus (MRP).

The European Union Environmental Objectives (Surface Waters) Amendment Regulations 2019 (S.I. 77 of 2019) do not set a threshold for MRP in coastal waters. However, there is a limit in transitional waters of $\leq 0.04\text{mg/L}$; the applicant has used this limit for the purposes of modelling the MRP plume.

6.4.7 Using Average Daily Flow data the applicant has used tidal plots showing the predicted extent of the MRP plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 0.04mg/L value.

6.4.8 The model attributes no impact during the operational phase on the receiving waters of the proposed project using average daily discharge conditions.

6.4.9 Using Flow to Full Treatment the applicant has also used tidal plots showing the predicted extent of the MRP plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. The model indicates the MRP from the proposed outfall pipe does not exceed the 0.04mg/L MRP with the discharge predicted to have no impact on the receiving waters.

Comment: Overall having regard to Molybdate Reactive Phosphorus the Environmental Quality Objectives (Surface Waters) Amendment Regulations set a 0.4mg/L for the maintenance of 'good' status in transitional waters only and not coastal waters.

The Urban Wastewater Treatment Regulations stipulates the level and the types of treatment required depending on the size of the agglomeration, the type of receiving waters and the sensitivity of the receiving waters. Given that the receiving waters are not designated as sensitive waters there is no requirement for nutrient reduction. The requirements of the Urban Wastewater Treatment Regulations requires a concentration of 1mg/L for Molybdate Reactive Phosphorus in Wastewater Treatment Plants above 100,000 P.E. for discharges to sensitive areas. The receiving waters are not deemed to be sensitive waters. Irrespective of this the receiving waters were modelled for the MRP at average daily flow and full flow to treatment.

I am satisfied that the applicant has used the appropriate hydrodynamic modelling approach and that the scale of the model is also appropriate for this project, please refer to my comments under section 6.4.5 in this regard.

As referenced earlier in my report, the applicant attributes the elevated MRP in the transitional waters to other wastewater treatment plants and rivers discharging to the effected waters. I am satisfied that these pollutant loadings have been considered in the modelling and the cumulative impact assessed along with the proposed discharge.

In this regard I am satisfied that the applicant has adequately demonstrated that the subject development will not impede the ability of the waters to achieve at least 'good' status set out under S.I. 77 of 2019 and will not result in a deterioration in class for the coastal waterbody HA09. In addition to this, the discharge will be subject to licensing consent from the EPA and monitored in accordance with specific conditions pertaining to the marine outfall which will ensure the mitigation of the potential effects on the receiving water bodies are limited and controlled with the aim of achieving good surface water status by at the latest 2027.

6.4.10 Biochemical Oxygen Demand (BOD)

The European Union Environmental Objectives (Surface Waters) Amendment Regulations 2019 (S.I. 77 of 2019) set a 95-percentile limit for BOD at $\leq 4.0\text{mg/L O}_2$ in coastal waters so as to achieve good status.

6.4.11 Using Average Daily Flow data the applicant has used tidal plots showing the predicted extent of the BOD plume in the receiving waters at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 4.0mg/L value required to achieve good status with the discharge predicted to have no impact on the receiving waters.

6.4.12 Using Flow to Full Treatment the applicant has used tidal plots showing the predicted extent of the BOD plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 4.0mg/L value required to achieve good status with the discharge predicted to have no impact on the receiving waters.

Comment: Overall, having regard to Biochemical Oxygen Demand, the Environmental Quality Objectives (Surface Waters) Amendment Regulations set a $\leq 4.0\text{mg/L}$ (95 percentile) for the maintenance of 'good' status in transitional waters only and not coastal waters.

The Urban Wastewater Treatment Regulations stipulates the level and the types of treatment required depending on the size of the agglomeration, the type of receiving waters and the sensitivity of the receiving waters. Regarding this parameter the proposed wastewater treatment plant shall achieve 25mg/L at the final effluent or a 70-90% BOD reduction. The receiving waters were modelled for the BOD at average flow and full flow to treatment and no breach of the 4.0mg/L was predicted at the discharge point.

I am satisfied that the applicant has used the appropriate hydrodynamic modelling approach and that the scale of the model is also appropriate for this project. Please refer to my comments under section 6.4.5 in this regard.

As referenced earlier in my report, the applicant attributes the elevated BOD in the transitional waters to other wastewater treatment plants and rivers

discharging to the effected waters. I am satisfied that these pollutant loadings have been considered in the modelling and the cumulative impact assessed along with the proposed discharge.

Given the information submitted and the robustness of the modelling in relation to hydrodynamics in the area, I am satisfied that the applicant has adequately demonstrated that the subject development will not impede the ability of the waters to achieve at least 'good' status set out under S.I. 77 of 2019. As above this factor will also be subject to licence by the EPA.

6.4.13 Escherichia coli (EC)

The applicant puts forward that in the absence of any changes to the Bathing Waters (S.I. 79 of 2008) at the time of Addendum EIAR submission the maximum values should not exceed the mandatory value of 500 cfu/100ml in 95% or more of the samples taken in the season to achieve a 'good' classification of bathing water, and it should not exceed the mandatory value of 250 cfu/100ml in 95% or more of the samples taken in the season so as to achieve an 'excellent' classification of bathing water.

6.4.14 Using Average Daily Flow the applicant has used tidal plots showing the predicted extent of the EC plume in the receiving waters at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 250cfu/100ml value required to achieve excellent status with the discharge predicted to have no impact on the receiving waters.

6.4.15 Using Flow to Full Treatment the applicant has used tidal plots showing the predicted extent of the EC plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 250cfu/100ml value required to achieve excellent status with the discharge predicted to have no impact on the receiving waters.

6.4.16 • The applicant looked at the potential impact from the proposed outfall on the bathing waters of Claremont Beach, Sutton beach and Velvet strand which are nearest to the proposed outfall, in addition the potential for impact on the shellfish waters of Malahide was also examined. The model has predicted EC concentrations over time at the aforementioned bathing waters which are shown as Baseline, Average Daily Flow, and FFT scenarios. All tidal plots have shown that there would be no compliance failures predicted at any of the designated bathing water beaches, Blue Flag beaches, nor shellfish waters arising from the proposed discharge from the Proposed Project.

Comment: Having regard to *Escherichia coli* the Bathing Water Quality Amendment Regulations set a mandatory value of 500 cfu/100ml in 95% or more of the samples taken in the season to achieve at least 'good' classification of bathing water for the maintenance of 'good' status in bathing waters.

The receiving waters were modelled for the *E.coli* at average flow and full flow to treatment and no breach of the 500cfu/100ml was predicted at the discharge point.

Similar to earlier references to the elevated levels of *E.coli* in the transitional waters which the applicant attributes to other wastewater treatment plants and rivers discharging to the effected waters. I am satisfied that these pollutant loadings have been considered in the modelling and the cumulative impact assessed along with the discharge from the proposed development.

I am satisfied that the applicant has used the appropriate hydrodynamic modelling approach and that the scale of the model is also appropriate for this project, please refer to my comments under section 6.4.5 in this regard.

In this regard I am satisfied that the applicant has adequately demonstrated that the subject development will not impede on the utilisation of bathing waters during the bathing water season nor breach the mandatory value of 500cfu/100ml for 'good' status. In addition to this the discharge will be subject to licensing consent from the EPA and monitored in accordance with specific conditions pertaining to the marine outfall which will ensure the mitigation of the

potential effects on the receiving water bodies are limited and controlled with the aim of achieving good surface water status by at the latest 2027. The Bathing Water Regulations ensure that monitoring of the Bathing Waters is carried out by the Local Authority during the bathing season. Notwithstanding this, I am satisfied that the development as proposed will not cause a deterioration in the bathing waters having particular regard to Escherichia coli.

6.4.17 Intestinal Enterococci (IE)

The applicant has included IE for the modelling scenarios to be consistent with the assessments for the Bathing Water Regulations. The applicant puts forward that in the absence of any changes to the Regulations (S.I. 79 of 2008) at the time of submission the maximum values should not exceed the mandatory value of 200 cfu/100ml in 95% or more of the samples taken during the bathing season to ensure a 'Good' classification of bathing water beaches, or should not exceed the mandatory value of 100 cfu/100ml in 95% or more of the samples taken during the bathing season to ensure an 'Excellent' classification of bathing water beaches.

6.4.18 Using Average Daily Flow the applicant has used tidal plots showing the predicted extent of the IE plume in the receiving waters at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 100cfu/100ml value required to achieve excellent status with the discharge predicted to have no impact on the receiving waters.

6.4.19 Using Flow to Full Treatment the applicant has used tidal plots showing the predicted extent of the IE plume from the proposed outfall at high water level, mid ebb and mid flood on neap tides and spring tides. The modelling does not indicate any breach of the 100cfu/100ml value required to achieve excellent status with the discharge predicted to have no impact on the receiving waters.

6.4.20 The applicant looked at the potential impact from the proposed outfall on the bathing waters of Claremont Beach, Sutton beach and Velvet Strand which are

nearest to the proposed outfall, in addition the potential for impact on the shellfish waters of Malahide was also examined. The model has predicted IE concentrations over time at the aforementioned bathing waters which are shown as Baseline, Average Daily Flow, and FFT scenarios. All tidal plots and concentration over time plots have shown that there would be no compliance failures predicted at any of the designated bathing water beaches, Blue Flag beaches, nor shellfish waters arising from the discharge from the proposed project.

Comment: Having regard to Intestinal Enterococci the Bathing Water Quality Amendment Regulations set a mandatory value of 200 cfu/100ml in 95% or more of the samples taken in the season to achieve a 'good' classification of bathing waters for the maintenance of 'good' status in bathing waters.

The receiving waters were modelled for the Intestinal Enterococci at average flow and full flow to treatment and no breach of the 200cfu/100ml was predicted at the discharge point.

In my opinion I am satisfied that the applicant has used the appropriate hydrodynamic modelling approach and that the scale of the model is also appropriate for this project, please refer to my comments under section 6.4.5 in this regard.

In this regard I am satisfied that the applicant has adequately demonstrated that the subject development will not impede on the utilisation of bathing waters during the bathing water season nor breach the mandatory value of 200cfu/100ml for 'good' status. In addition to this the discharge will be subject to licensing consent from the EPA and monitored in accordance with specific conditions pertaining to the marine outfall which will ensure the mitigation of the potential effects on the receiving water bodies are limited and controlled with the aim of achieving good surface water status by at the latest 2027. Further monitoring of the Bathing Waters will serve as an additional level of control is carried out by the Local Authority during the bathing season.

7.0 Discussion regarding the marine water impact, and the WFD assessment

The updated modelling has categorically demonstrated that that under The European Union Environmental Objectives (Surface Waters) Amendment Regulations 2019 (S.I. 77 of 2019) the receiving waters will be able to attain 'good status' and meet the environmental quality objectives for nutrients in transitional and coastal waters. Based on the modelling carried out the applicant states that the proposed project will have an imperceptible residual impact on coastal water quality. Regarding the WFD, the modelling has predicted an imperceptible residual impact on coastal water quality and will not impede our ability to achieve our objectives under the WFD, namely achieving good status in all waterbodies. Having regard to the Bathing Water Regulations the updated modelling has shown imperceptible residual impact on the water quality of the coastal waters and further attested that the updated modelling has shown that the discharge from the proposed project will not influence any designated bathing water beaches nor Blue Flag beaches. Regarding shellfish waters, updated modelling has shown imperceptible residual impact on the water quality of the coastal waters and further attested that the updated modelling has shown that the discharge from the proposed project will not influence any of the designated shellfish waters.

The assessment of the circulation and tidal patterns in both flood tide and ebb tide in and around the discharge point further corroborates the predictions of the model with particular reference to the behaviour of the pollutant plume. Local maps of the tidal movements and circulatory patterns in and around the outfall point have been largely replicated in the modelling, with one discrepancy highlighted in the application that pertained to the local maps showing effluent plumes directed towards Portmarnock and Baldoyle and it is argued by the applicant that these maps were not cognisant of dispersion and dilution effects of the tidal movements. The water quality dispersion modelling would appear to corroborate the applicant's contention in this regard.

- The applicant, in their conclusion, states that the proposed project will have an imperceptible to slight impact on coastal water quality. I am satisfied that the applicant has adequately shown that, with the level of treatment to be provided at the proposed development, the risk to the marine waters is imperceptible to slight. In addition, I am satisfied that the modelling carried out is representative of the conditions within the marine environment.

Based on the foregoing assessment of the discharge to coastal waters, it is concluded that the discharge from the proposed development whilst serving a 0.5 million p.e., will not cause a deterioration of the status, will not compromise the achievement of 'good' ecological status, or compromise the maintenance of 'good' chemical status. The proposed development, with nutrient removal and UV disinfection, is compatible with the achievement of bathing water quality standards and the revised modelling submitted supports this. The discharge to the marine waters will be managed, operated and controlled in accordance with a discharge licence to be issued by the EPA. Having regard to the above, I am satisfied that the applicant has demonstrated that the marine discharge will not have an adverse effect on the quality of the receiving waters.

7.1 Water Framework Directive Assessment

In the WFD assessment, the applicant has assessed how the proposed development may impact on other Directives also, as required by Article 4.8 of the WFD. It states that 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 the other Community Environmental legislation.

This assessment was carried out by the applicant to assess the proposal and assess how it may impact on WFD waterbodies. The assessment takes account of both the construction phase and the operational phase which I will address below. In the absence of any Irish guidance for Water Framework Directive

Assessment, the applicant used the 2017 UK Environment Guidance Water Framework Directive Assessment: Estuarine & Coastal Waters which is acceptable.

The receiving waters in the context of the proposed development is a coastal water body, Irish Sea Dublin (HA09), which is of Good status and not deemed to be 'at risk'. Regarding the nutrient trends, based on sampling over the period 2016-21, both during winter and summer, DIN is deemed to be of high indicative quality, and the same regarding MRP.

The Construction Phase: The primary issue of concern in this water body during this phase is the excavation for the marine section laying of the pipe and the deposition of dredge material within the work corridor. The impact here will primarily be from the increased sedimentation within the water column during the deposition of the dredge material. As discussed within section 5.3 of this report and on this basis, I am satisfied that the impact from the construction phase will be temporary and transitory in nature. In addition to this the proposed mitigation measures as follows will further negate the impact during this phase.

- The disposal of dredged material will only take place on local flooding tides to ensure suspended sediments are not transported to sensitive receptors around Ireland's Eye. The timing of the flood tide will be confirmed with reference to Howth Harbour tide gauge.
- Turbidity and suspended sediment concentrations of the marine waters will be monitored during the course of the dredging operations.
- Suspended sediment concentrations will be monitored during the course of dredging. The dredging activity will be carried out in line with a prior approved consent.
- The dredging operation will be modified to reduce water column dispersion and/or spread of material along the bottom of the sea bed. In addition to these, operational modifications can be affected during this phase.

- The Operational Phase: The primary issue of concern in this water body during this phase is the discharge of the treated effluent to the marine waters and the potential impact from the following pollutant parameters, BOD, DIN, MRP, Escherichia Coli and Intestinal Enterococci. As discussed within section 5.4 of this report and on this basis, I am satisfied that the impact from the operational phase can be sufficiently assimilated within the water body given the tidal trends and currents within the area of the proposed marine outfall. In addition to this the control measures as follows will further negate and control the impact on marine waters during this phase. The discharge will be subject to licensing consent from the EPA and monitored in accordance with specific conditions pertaining to the marine outfall which will ensure that the potential effects on the receiving water bodies are limited and controlled with the aim of achieving good surface water status by at the latest 2027.

The applicant also sets out that having considered the potential impacts of the development on the biological, physico-chemical, hydro morphological and groundwater quality that the development will not compromise achievement of Good Ecological Status or Good Ecological Potential or any deterioration of the overall status of any of the assessed waterbodies.

The revised modelling addressed earlier in sections 5.3 and 5.4 of this report has predicted that there will be imperceptible to slight impact on the marine waters from receiving the discharge and supports the contention that the proposed development will not have an impact on the achievement of WFD objectives.

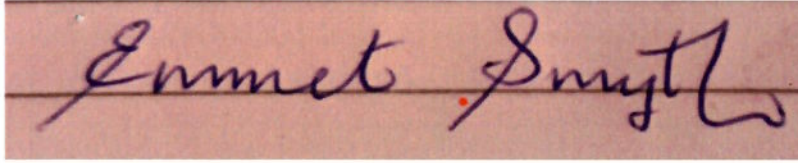
I am satisfied, having regard to assessment of the applicant, that the conclusions reached are accurate and reasonable and I conclude that the proposed discharge within the study area will not compromise the achievement of the objectives of the WFD for any waterbody. I am satisfied that the revised modelling submitted supports this contention. The Bathing Water Directive and the transposing regulations essentially revised the microbiological and the

physio-chemical standards and the methods to measure and monitor waters at designated bathing waters. The modelling discussed earlier supports the applicant's position that the proposed project will not impact on any designated bathing waters.

7.2 Conclusion

I have considered the increase, of the waste water discharges on foot of the proposed development, and the impact that that may have (in particular cumulatively with already existing discharges) on the environment and water quality. I conclude, from the information provided, that the proposed development will not result in a risk of deterioration of any water body, in this instance coastal waters, either on a temporary or permanent basis. Regarding the combined approach and having assessed the information submitted the discharge of wastewater from the proposed development, I am satisfied that in conjunction with existing discharge to the receiving waters would not cause or exacerbate breaches of the combined approach. In coming to this conclusion, I have considered the content of third-party submissions and concerns raised with respect to the combined approach assessment and the general impact on the receiving environment of the proposed waste water discharge.

In addition, given the evidence submitted and the mitigation measures proposed I am satisfied that the applicant has submitted sufficient evidence regarding the potential for environmental impact to support the development as proposed. I am satisfied that, in my opinion, no reasonable scientific doubt remains regarding the proposal.

A handwritten signature in dark ink on a light-colored background. The signature reads "Emmet Smyth" in a cursive style. The name "Emmet" is written in a standard cursive, while "Smyth" has a more stylized, flowing script. The signature is positioned above a horizontal line.

Inspectorate Scientist

Date: 3rd April 2025