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17/07/2023

UÉ ref: LT0666

Dear Inspector,

Re: Ringsend Reg. No. D0034-02 – Reg. 18(3)(b) Notice

Further to Uisce Éireann response to the regulation 18(3)(b) dated 7th July 2023, please find attached a copy of the updated Impact Assessment Report.

Yours sincerely,

Sheelagh Flanagan

Sheelagh Flanagan
Wastewater Strategy

Enclosed:

Appendix 1: Impact Assessment Report

Appendix 1: Impact Assessment Report

ATTACHMENT D.2.1: IMPACT ASSESSMENT REPORT

1. Introduction

This Report provides a summary of the Impact Assessments prepared to determine the impact of the discharges from the Greater Dublin Area Agglomeration on the receiving waterbodies, and their associated designations, and also addresses the criteria as outlined in Section D.2 of the EPA guidance document.

The water quality model prepared for the 2018 planning application was updated in accordance with Uisce Éireann's (UÉ) revised technical standard for marine modelling, to account for updated decay coefficients, the latest available data, and includes additional modelling scenarios (*i.e.*, mass emissions limits).

The water quality modelling provides scientific evidence to support the proposed ELVs including the support of annual mean for TN and TP and for the proposed mass emission limits. The receiving water quality was assessed with reference to the relevant EQSs, to demonstrate that the proposed future discharge is compatible with the achievement of WFD Objectives of the receiving waters and Conservation Objectives of the Protected Areas.

Based on the modelling assessment, the proposed ELVs and mass emission limits are as per table D.2.1 below. More details on the Water Quality modelling assessment are included in Section 3 of this report.

Table D.2.1: Proposed ELVs and mass emission limits

Parameter	Proposed ELV	Proposed ELV Mass Emissions Limit (FFT x Proposed ELVs)	Compliance assessment
Biological Oxygen Demand (BOD)	25 mg/l	29,808Kg/day	95%ile
Chemical Oxygen Demand (COD)	125 mg/l	Not Applicable	95%ile
Suspended Solids	35 mg/l	Not Applicable	95%ile
Total Phosphorus (TP)	1 mg/l[1]	1,192 kg/day	Annual Averages: Proposed concentration and mass emissions limits for TP and TN are to be based on annual averages in line with UWWTD.
Total Nitrogen (TN)	10 mg/l [1]	11,923 kg/day	
Toxicity	5 TU	Not Applicable	80%ile
Escherichia coli 1[2]	100,000 MPN/100ml	Not Applicable	80%ile
pH	6.0 – 9.0	Not Applicable	As per range

Note 1: the annual mean of the samples shall not exceed the emission limit value

Note 2: ELV for E. Coli proposed to only apply during the Bathing Season (1st June to 15th September).

Condition 2

UÉ is proposing the Agency consider the inclusion of the following conditions under the Interpretation section of the revised licence.

- In accordance with the UWWTD 91/271/EEC (as amended) on Urban Waste Water Treatment and S.I. No. 254 of 2001, S.I. No. 440 of 2004 and S.I. No. 48 of 2010: for parameters Total Phosphorus and Total Nitrogen the annual mean of the samples shall not exceed the emission limit value.
- Mass flow emissions shall be calculated on the basis on the annual average concentration multiplied by the annual average Full Flow to Treatment (FFT).
- A 12°C temperature condition for the annual mean TN ELV of 10mg/l to allow for the critical dependency of temperature on nitrification. See attached a Design Note prepared by Professor Tom Casey(2015) for additional information.

2. Water Environment

There are several receiving waters hydrologically linked to the primary discharge (SW001). Details on these waterbodies are provided in **Table D.2.2** below.

Table D.2.2 – Waterbodies Hydrologically Linked to the Primary Discharge

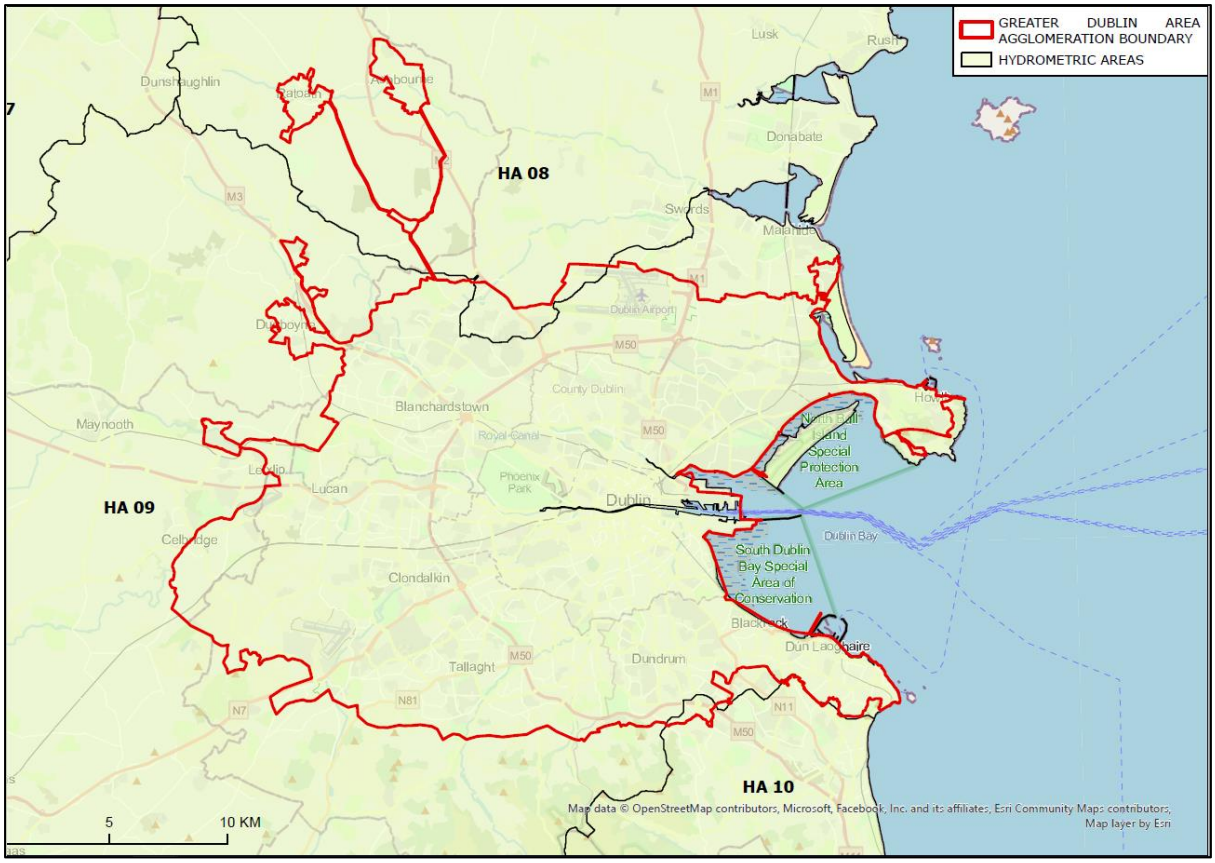
Receiving Waterbody	Type of Waterbody	WFD Status 2016 – 2021 (where applicable)	WFD Risk (3rd cycle) (where applicable)	Bathing Water Status 2021 (where applicable)	Trophic Status 2018 – 2020 (where applicable)
Liffey Estuary Lower (IE_EA_090_0300)	Transitional	Moderate	At Risk	Not applicable	Intermediate
Liffey Estuary Upper (IE_EA_090_0400)	Transitional	Good	Review	Not applicable	Potentially Eutrophic
Tolka Estuary (IE_EA_090_0200)	Transitional	Poor	At Risk	Not applicable	Eutrophic
Dublin Bay (IE_EA_090_0000)	Coastal	Good	Not at Risk	Not applicable	Unpolluted
Dollymount Strand (IEEABWC090_0000_0400)	Bathing	Not applicable	Not applicable	Good	Not applicable
Sandymount Strand (IEEABWC090_0000_0300)	Bathing	Not applicable	Not applicable	Sufficient	Not applicable

The Greater Dublin Area Agglomeration is spread across three Hydrometric Areas (HA):

- Nanny-Delvin (HA 08)
- Liffey and Dublin Bay (HA 09)
- Ovoca-Vartry (HA 10)

These HAs are displayed in Figure 1 below:

Figure 1: Greater Dublin Area Agglomeration HAs



Storm Water Overflows (SWOs) in the Greater Dublin Area agglomeration are identified as a significant pressure in fourteen (14 no.) *'At Risk'* waterbodies in the draft 3rd cycle Catchment Reports (2021) for HA 08 and HA 09. It is not identified as a significant pressure in the draft 3rd cycle Catchment Report (2021) for HA 10. Refer to **Table D.2.3** for details.

Table D.2.3: At Risk Waterbodies identified as being under significant pressure by the SWOs in the Greater Dublin Area Agglomeration (D0034) in the draft 3rd cycle Catchment Reports

Hydrometric Area	Waterbody	2016-2021 Ecological Status
Nanny-Delvin (08)	Broadmeadow_010	Poor
	Broadmeadow_020	Poor

Hydrometric Area	Waterbody	2016-2021 Ecological Status
	Ward_020	Moderate
	Ward_030	Moderate
Liffey & Dublin Bay (09)	Tolka Estuary	Poor
	Camac_040	Poor
	Dodder_050	Moderate
	Liffey_180	Poor
	Liffey_190	Poor
	Santry_010	Poor
	Santry_020	Poor
	Tolka_050	Poor
	Tolka_060	Poor
	Grand Canal Basin (Liffey and Dublin Bay)	Good

However, in the draft 3rd cycle catchment assessments for HA 08 and HA 09, it is noted that the overflows upgrades are included in Uisce Éireann's Capital Investment Programme.

There are several designations within the vicinity of the primary discharge from the Greater Dublin Area Agglomeration. These are detailed below.

The primary discharge enters directly into the Liffey Estuary which is identified as a Nutrient Sensitive Area (N and P limited) in accordance with the Urban Waste Water Treatment Directive (UWWTD) 91/271/EEC (as amended) on Urban Waste Water Treatment and S.I. No. 254 of 2001, S.I. No. 440 of 2004 and S.I. No. 48 of 2010. The Tolka Estuary Nutrient Sensitive Area (N limited in summer and P limited in winter) is located *ca*. 1km north of the primary discharge location. Based on these designations, along with the fact that the p.e of the agglomeration is greater than 100,000 p.e., there is a requirement that the discharge shall be subject to more stringent treatment. The current infrastructure project at the Ringsend WWTP shall provide both nitrogen and phosphorus removal to ensure compliance with the Annual Mean for Total Phosphorus and Total Nitrogen as laid out in Annex I of the UWWTD.

Therefore, the existing TP ELV of 1mg/l and TN ELV of 10mg/l are proposed to be maintained but proposed as annual averages for both concentration ELVs and mass emission limits.

There are two bathing waters in Dublin Bay designated under EU Directive 2006/7/EC and Bathing Water Quality Regulations, S.I. No. 79 of 2008 which are in the vicinity of the primary discharge. These are Dollymount Strand and Sandymount Strand. Dollymount Bathing Water Area is located *ca.* 1.8km north east of the primary discharge and was classified as achieving Good Water Quality in 2022 based on the assessment of bacteriological results for the period 2019 - 2022. Sandymount Bathing Water Area is located *ca*. 1.5km south west of the primary discharge and was classified as achieving Sufficient Water Quality in 2022 based on the assessment of bacteriological results for the period 2019 - 2022. A Bathing Water Profile was prepared for Dollymount Strand in 2021 which identified that during exceptional circumstances (*e.g.,* heavy rainfall / overflows from the storm tank / mechanical breakdowns), the Ringsend WwTP discharge may contain elevated levels of microbiological contaminants which could pose a "*High*" risk. Pumping station failures / malfunctions at Clontarf, Vernon Avenue and Kilbarrack were identified as posing a "*High*" risk. SWOs were also identified as posing a "*Moderate*" risk. A Bathing Water Profile was prepared for Sandymount Strand in 2023 which identified that during exceptional circumstances (*e.g*., heavy rainfall / overflows from the storm tank / mechanical breakdowns), the Ringsend WwTP discharge may contain elevated levels of microbiological contaminants which could pose a "*High*" risk. Pumping station failures / malfunctions at Ailesbury Pumping Station were also identified as posing a "*High*" risk. SWOs were identified as posing a "*High*" risk.

Uisce Éireann completed a detailed analysis of the impact of the operation of the UV disinfection system on winter bacterial concentrations at bathing sites in Dublin Bay (*Uisce Éireann, Assessment of Impact of Winter UV operation at Ringsend WWTP on bathing sites in Dublin Bay 2022)*. A four-month trial operation of winter UV was carried out in conjunction with a comprehensive water quality monitoring campaign. Over 3000 bacterial samples were collected from the Ringsend WwTP, rivers and bathing sites. Analysis of the collected data failed to demonstrate any material improvement in bathing sites in Dublin Bay as a result of the winter operation of the UV Disinfection System. These findings were consistent with the analyses carried out by UCD Acclimatize and Dublin City Council, which have identified near-shore pressures on bathing waters as the primary reason for failures in Bathing Water Quality at Designated Bathing Waters.

Refer to **Section 3** and **Section 8** below for details of the water quality modelling results in relation to bathing waters.

There are no designated shellfish areas within Dublin Bay. The closest designated shellfish area is Malahide Shellfish Area, which is located *ca*. 10.5km north east of the primary discharge point.

There are no designated salmonid river bodies upstream or downstream of the primary discharge location. The water quality model prepared for the 2018 planning application informed the findings of the associated 2018 EIAR. The 2018 EIAR concluded that the reduction in nutrient levels is such that the resulting concentrations are too low to impact on fish species in the area outside the North and South Walls.

There are a number of European sites within the primary outfalls zone of influence or within 10km of the WwTP. All of these sites are located wholly or partially within Dublin Bay, they include:

- South Dublin Bay and River Tolka Estuary SPA (site code 004024) (*ca*. 0.2km East)
- South Dublin Bay SAC (000210) (*ca*. 0.2km East)

- North Bull Island SPA (004006) (*ca*. 1.8km North East)
- North Dublin Bay SAC (000206) (*ca*. 1.8km North East)
- Howth Head SAC (000202) (*ca.* 6.6km North East)
- Howth Head Coast SPA (004113) (*ca*. 9.1km North East)
- Dalkey Islands SPA (004172) (*ca*. 9km South East)
- Rockabill to Dalkey Island SAC (003000) (*ca*. 6.2km East)

Refer to **Section 4** below for details on Appropriate Assessment.

The pNHAs and NHAs within the surrounding environment include:

- South Dublin Bay pNHA (000210) (*ca*. 0.2km East)
- Dolphins, Dublin Docks pNHA (000201) (*ca*. 0.6km West)
- North Dublin Bay pNHA (000206) (*ca*. 1.1km North East)
- Howth Head pNHA (000202) (*ca*. 6.6km North East)
- Grand Canal pNHA (002104) (*ca*. 3.2km West)
- Royal Canal pNHA (002103) (*ca*. 3.8km West)

Ramsar sites within the surrounding environment include:

- North Bull Island (*ca.* 4km North East)
- Sandymount Strand/Tolka Estuary (*ca.* 1.2km South)
- Baldoyle Bay (*ca.* 8.4km North East)
- Broadmeadow Estuary (Malahide) (*ca.* 13.6km North)

Refer to **Attachment B.5** for a copy of the Environmental Impact Assessment Report (2018) and **Attachment D.2.2** for a copy of the Natura Impact Statement (2018) for further details on the receiving environment.

3. Water Quality Modelling

The water quality model prepared for the 2018 planning application was updated in accordance with Uisce Éireann's revised technical standard for marine modelling, including updates to take account for:

- the latest available ambient monitoring data,
- updated Mike 3D flexible mesh (FM) hydrodynamic model with improved overall model performance against the field data
- additional modelling scenarios (i.e., typical operating conditions, Future – notionally clean, Future – mass emissions and Future – storm tank scenarios as stated below)

A baseline case was also run for the period 2019-2021, to inform a validation exercise, comparing modelled output to monitoring data for the updated baseline period.
The supporting modelling report details the data collation process, model setup and model validation, and presents the outputs of each scenario.

The water quality modelling provides scientific evidence to support the proposed ELVs and the updated modelling provides further evidence for annual mean ELVs for TN and for TP and for Mass Emission Limits

The water quality parameters concentrations used in the Mike 3D model, i.e., BOD, MRP and DIN concentrations for the WwTP discharge were based on ELVs for BOD, TP and TN as follows:

- the proposed ELV for BOD (25mg/l) and
- for nutrients (Total Nitrogen, Total Phosphorus) the following determinations was made:
    - An MRP:TP ratio of 1:1.3 was used to determine modelled effluent MRP concentrations (rounding results down).
    - A DIN:TN ratio of 1:1.2 was used to determine modelled DIN concentrations.
    - UiA is determined from the simulation of TA and values for TA
- EC/IE applied for the Ringsend WwTP discharge in the modelling are shown in the table D.2.4

The Mike 3D Model has been used to evaluate four scenarios. See Table D.2.4 below showing the Future scenarios, mass emission storm tank scenarios.

Table D.2.4; The modelled Inputs

Scenario	**WQ Parameter (mg/l unless indicated)**	**Summer**	**Winter**
	Flow m^3/s	6.05	8.15
Future Scenario	BOD	25	25
	DIN	6.3	15
	MRP	0.7	1.2
	TA	1	1
	EC (cfu/100ml)	100,000	106,739
	IE (cfu/100ml)	25,000	35,500
Notionally Clean	DIN	6.3	15
	MRP	0.7	1.2
Mass Emission (Time Series) Flow Rate – 13.8	BOD	25	25
	DIN	6.3	9
	MRP	0.7	0.7
	TA	1	1

- Future Mass Emissions Scenario: summer & winter conditions: future FFT (13.8m3/s) flow for a 24-hour period, ELV (BOD) and MRP/DIN discharge concentrations determined from TN/TP ELVs. The determined winter/summer nutrient concentrations for DIN 9/6.3 and MRP 0.7/0.7 were based on annual average ELV concentration of TN 10 mg/l and TP 1 mg/l. Furthermore, UÉ has reviewed the 2022 influent flows to the Ringsend WwTP and there was no day where the flows were above the design FFT of 13.8m3/s for a whole 24-hour period, hence the modelling is of a worst-case MEL impact.

- Future Storm Tank Scenario: - Summer conditions: future FFT flow in combination with a 100,000m³ storm tank discharge for a 5-hour period. The inclusion of this scenario to demonstrate the impact of a major discharge event (100,000m^3) from the storm tank at Ringsend WwTP on local designated Bathing Water sites

The boundary data was extracted for the year 2021, and winter and summer runs (for the future and notionally clean scenario) where conducted in January and July respectively. Model runs are set up to simulate an initial 14-day period for spin up (1 spring / neap cycle), and then assessed on a subsequent 14-day period that is chosen to be representative of mean spring and neap conditions.

An additional 7 days is modelled for the 'event based' 'Mass Emissions' and 'Storm Tank' scenarios to ensure antecedent background concentrations are reached during the simulation.

River discharge loads are constant for all runs; current observed loads are used except for 'notionally clean' scenarios where a constant concentration based on 20% of the High/Good Class threshold concentration was adopted

For each of the above scenarios the size of the mixing zone/plume for each modelled parameter is presented in the Marine Modelling Study Report . In the interest of clarity, the mixing zone is defined as the immediate area at a discharge point, within which the EQS is not met. When an EQS is not applicable, the term 'mixing plume' is be used to describe the extent of the impact, noting that there would be no environmental standard to compare with in this case.

As there are no Environmental Quality Standards (EQSs) for TN or TP concentrations in the receiving waters, molybdate reactive phosphorus (MRP) and dissolved inorganic nitrogen (DIN) are the appropriate parameters to represent TP and TN respectively, as these are the relevant nutrient parameters set out in the Surface Water Regulations, for assessing impacts on WFD objectives. The corresponding relationships used in the marine modelling assessment are detailed below in table D.2.5

Table D.2.5 – Relationship between modelled values for relevant EQS parameters and corresponding UWWTD values (Winter conditions)

Parameter	Modelled Value	Corresponding Parameter concentration	Ratio
Total nitrogen(Winter)	15mg DIN/l	18mgTN/l	1.2
Total Phosphorous (winter)	1.2mg MRP/l	1.5mgTP/l	1.3

UWWTD 91/271/EEC:

Table D.2.1 in Section 1 above presents the proposed annual mean ELV for TP of 1mg/l and TN of 10mg/l which are required under Article 5 of the UWWTD 91/271/EEC (as amended) due to the fact that the primary discharge enters directly into the Liffey Estuary which is identified as a Nutrient Sensitive Area (N and P limited) and that the Tolka Estuary Nutrient Sensitive Area (N limited in summer and P limited in winter) is located ca. 1km north of the primary discharge location.

Furthermore, as referred to in Section 1, UÉ are proposing the Agency to include for a 12°C temperature condition for the annual mean TN ELV of 10mg/l as a result of the critical dependency of temperature on nitrification. See attached a Design Note prepared by Professor Tom Casey(2015).

The proposed temperature condition is in accordance with Footnote 3 of Part 2 of the Second Schedule of S.I. No. 440 of 2004 which states:

"These values for concentration[TN] are annual means as referred to in paragraph 4 (c) of the Fifth Schedule. However, the requirements for nitrogen may be checked using daily averages when it is proven, in accordance with paragraph 1 of that Schedule, that the same level of protection is obtained. In this case, the daily average must not exceed 20 mg/l of total nitrogen for all the samples when the temperature of the effluent in the biological reactor is superior or equal to 12°C. The conditions concerning temperature can be replaced by a limitation on the time of operation to take account of regional climatic conditions."

Water Framework Directive

The marine model impacts are assessed against Environmental Quality Standards (EQS) as prescribed by the Surface Water Regulations for Ireland (Amended) (IG, 2019) and the Bathing Water Regulations (IG, 2008). These regulations do not contain an EQS for Un-ionised Ammonia (UA), an annual average was adopted for this study, to provide an indication of potential for impacts on aquatic life.

The Future Scenario assessed all WFD objectives are met, with the exception of MRP. Under the 'notionally clean' scenario WFD objectives are met for MRP, with Ringsend WwTP utilising between 13% and 66% of the assimilative capacity against the 'Good' threshold at the EPA monitoring locations.

Results from the modelling of BOD (see Figure 4-1 of the 2023 modelling report) for both summer and winter are similar.
A localised mixing zone is observed around the outfall structures of the WwTP.
WFD objectives of maintaining 'Good' status are met for all areas outside of the mixing zone.
For the 'Mass Emissions Scenario' (see Appendix B1 & B2 of the 2023 modelling report), the plume is seen to disperse quickly (within 24 hours) after the mass emissions event ends, and concentrations that are above the 'Good' threshold are not seen to extend into Dublin Bay or across the channel into the Tolka Estuary.

Results from the modelling of DIN (see Figure 4-2 & 4-3 of the 2023 modelling report) shows seasonal variability between the summer and winter scenarios, with lower impacts in summer, consistent with the lower load from the WwTP.
Modelled winter and summer concentrations are compatible with WFD objectives, which are met for coastal waterbodies where the DIN EQS applies
In relation to the transitional waterbodies, under the summer scenario a mixing plume is observed around the WWTP outfall, while under the winter scenario this plume extends across the estuary to the Tolka Estuary waterbody which can be attributed to fluvial inputs as indicated by the notionally clean plots (see Figure 4-11 & 4-12 of the 2023 modelling report).
For the 'Mass Emissions Scenario' (see Appendix B3 & B4 of the 2023 modelling report), a defined mixing plume is located next to the Ringsend outfall, which is elongated along the Great South Wall, which is larger in the winter. Under the winter scenario the concentrations return to ambient ('High') conditions after the fourth day.

Results from the modelling of MRP (see Figure 4-4 & 4-5 of the 2023 modelling report) shows seasonal variability between the summer and winter scenarios.
A mixing zone is observed around the Ringsend outfall, which is reduced in the summer scenario. Under the notionally clean scenario, modelled summer concentrations are compatible with WFD objectives, which are met for transitional waterbodies where the MRP EQS applies. Under the notionally clean modelled winter scenario WFD objectives are met, with the Ringsend WwTP discharge utilising up to 66% of the assimilative capacity, relative to the 'Good' threshold.
For the 'Mass Emissions Scenario' (refer Appendix B5 & B6 of the 2023 modelling report), the footprint of the mixing zone for MRP is similar to the mixing plume of DIN.

Results from modelling of bacteria (see Figure 4-7, Figure 4-8, Figure 4-9 & Figure 4-10 of the 2023 modelling report), seasonal impacts are demonstrated by a larger footprint in the winter scenarios, which is consistent with the higher overall total load (concentration and discharge) from all sources, as well as reduced natural decay conditions. The extent of the bacterial plume is not seen to reach or interact with local designated bathing water sites at Dollymount Strand and Sandymount Strand. The modelling demonstrates that the proposed discharge from Ringsend is compatible with the achievement of Bathing Water quality standards at designated Bathing Waters. The findings of the modelling survey support UÉ position that the operation of the UV should only apply during the Bathing Season (1st June to 15th September).

For the 'Storm Tank Scenario' (see Appendix C1 & C2 of the 2023 modelling report)
The bacteria plume for EC is seen to develop after the cessation of the storm tank discharge (panels EC4 and EC5) and start to disperse on the third low Water after the discharge event (panels EC6 and EC7). Ambient conditions are achieved by the third low Water approx. 39 hours after the event starts.(Panel EC8 and EC9). The plots show that the plumes do not interact with the local designated BWs.

The bacterial plume for IE is seen to develop, disperse and return to background concentrations in a similar manner to that of the EC plume. Furthermore, the IE plume does not interact with the local designated BWs.

Based on the modelling undertaken, the future discharge (at the proposed ELVs and proposed condition 2 requirements) is likely to be compatible with the achievement of WFD objectives for the receiving transitional and coastal waterbodies, on the basis of the contributing impact from Ringsend WwTP.

4. Based on the 2023 modelling undertaken for **Appropriate Assessment**

As listed in **Section 2** above, there are a number of European sites within the primary outfalls zone of influence or within 10km of the WwTP.

A combined Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) Report supported the 2018 planning application for the Ringsend WwTP upgrade. Based on the 2023 water quality modelling carried out using the latest available data, an addendum to the 2018 NIS is currently being completed and will be forwarded to the Agency. These documents will enable the EPA as competent authority to conduct an AA Screening Determination and Stage 2 AA in respect of the Greater Dublin Area Agglomeration operational discharges, for the purposes of the European Union (Waste Water Discharge) Regulations 2007 to 2020.

Please refer to **Attachment D.2.2** for a copy of the Natura Impact Statement. Also refer to **Attachment B.3.8** for a copy of the 2019 An Bord Pleanála Inspector's Report.

5. Environmental Impact Assessment

This WWDA application review is for a WwTP with a capacity of greater than 10,000 p.e as defined in Article 2, point (6), of the Urban Waste Water Treatment Directive (*i.e.*, Ringsend 2.4 million p.e). Therefore, a mandatory EIA, and the preparation of an Environmental Impact Assessment Report (EIAR) is required to inform the WWDA process.

The EIAR prepared in 2018 for the WwTP upgrade includes an assessment of the operational discharges from the WwTP to the receiving waters as detailed in **Section 2** above.

The approach adopted in this impact assessment, and the overall preparation of the EIAR, was based on the EIA Directive 2014/52/EU, and took account of all relevant guidance documents published at the time of preparing the EIAR. Due regard was also taken of the scoping responses received during the EIA Scoping Process.

The EIAR concluded that the primary discharge from the Ringsend WwTP would not be likely to have significant effects on the environment.

The water quality model prepared for the 2018 planning application was updated in 2023 in accordance with UÉ's revised technical standard for marine modelling, including updated bacterial decay coefficients, and to account for the latest available data and to include additional modelling scenarios (*i.e.,* mass emissions limits). An addendum to the 2018 EIAR is currently being completed to take regard of the findings of the above model and will be forwarded to the Agency.

These documents will enable the EPA, as the Competent Authority, to conduct an EIA in respect of the Greater Dublin Area Agglomeration operational discharges, for the purposes of the European Union (Waste Water Discharge) Regulations 2007 to 2020.

Refer to **Attachment B.5.1** for a copy of the EIAR (2018).

6. Priority Substance Assessment Report

Monitoring of priority substances in the primary discharge is carried out annually in accordance with the existing WWDL (D0034-01) and this is proposed to be continued under the revised licence. The assessment considers the primary discharge relevant to Environmental Quality Standards (EQS) for priority substances in surface waters, as set out in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended. Based on the 2022 monitoring results, priority substances detected in effluent should have no negative impacts outside the near field of the discharge due to dilution.

This Report is contained in **Attachment D.2.4**: Ringsend Influent and Effluent Priority Substances Screening 2022.

7. Shellfish Waters

There are no designated shellfish areas within Dublin Bay. The closest designated shellfish area is Malahide Shellfish Area, which is located *ca*. 10.5km north east of the primary discharge point. The water quality model prepared for the 2018 planning application predicts that the plume will disperse away from the discharge point and dilution will occur within short distances of the outfall. The water quality model informed the findings of the

associated 2018 EIAR. The 2018 EIAR concluded that the resulting concentrations are too low to impact on shellfish species in the area outside the North and South Walls.

Refer to **Attachment B.5** for a copy of the EIAR (2018).

8. Bathing Waters

As noted in **Section 2**, there are two (2 no.) bathing water areas in the vicinity of the primary discharge. These are Dollymount Strand and Sandymount Strand. Dollymount Bathing Water Area is located *ca.* 1.8km north east of the primary discharge and was classified as achieving Good Water Quality in 2021 based on the assessment of bacteriological results for the period 2018 - 2021. Sandymount Bathing Water Area is located *ca*. 1.5km south west of the primary discharge and was classified as achieving Sufficient Water Quality in 2021 based on the assessment of bacteriological results for the period 2018 - 2021.

The modelling reports clearly demonstrates that the proposed discharge from the WwTP (UV in operation during the bathing season) is compatible with the achievement of Bathing Water quality standards at designated bathing waters (see **Figure 4-7** to **4-10** of the 2023 modelling report). The '*Storm Tank Scenario*' (see **Appendix C1** & **C2** of the 2023 modelling report), shows that the IE/EC plumes are not observed to interact with the local designated bathing waters. As outlined in **Section 2** above, Uisce Éireann completed a detailed analysis of the impact of the operation of the UV disinfection system on winter bacterial concentrations at bathing sites in Dublin Bay (Uisce Éireann, 2022). Analysis of the collected data failed to demonstrate any material improvement in bathing sites in Dublin Bay as a result of the winter operation of the UV Disinfection System.

9. Combined Approach

The Waste Water Discharge Authorisation under the European Union (Waste Water Discharge) Regulations 2007 to 2020, 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, 2001, as amended, 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 ELVs as set out in this licence review for the upgraded WwTP give effect to the principle of the Combined Approach as defined in Waste Water Discharge (Authorisation) Regulations, 2007 to 2020 in that they accommodate the Urban Waste Water Regulations and the relevant designations / status of the receiving waterbodies. Based on the 2023 modelling, the proposed discharge is expected to be compatible with the achievement of WFD objectives for the receiving transitional and coastal waterbodies, on the basis of the contributing impact from Ringsend WwTP. In summary, based on the modelling, the proposed discharge does not preclude the achievement of 'Good' water quality in the receiving waterbodies.

10. Compliance with Relevant National or EU Legislation

As per **Attachment B.6**, the Ringsend WwTP has been designed to ensure that the emissions from the agglomeration will comply with, and will not result in the contravention of, EU Legislation and National Regulations.

Based on the modelling undertaken the future discharge (at the proposed ELVs and proposed condition 2 requirements) is expected to be compatible with the achievement of WFD objectives for the receiving transitional and coastal waterbodies, on the basis of the contributing impact from Ringsend WwTP.

The discharge activities will not cause a deterioration in the chemical status in the relevant receiving waterbody and will not compromise the achievement of the required objectives and EQSs established for any European sites water dependant species and natural habitats, or any other designations.

11. Data Sources

The following data sources were used to complete this application.

- Online data available on held by the NPWS, the EPA and Uisce Éireann:
    - www.npws.ie
    - epawebapp.epa.ie
    - gis.epa.ie/EPA Maps
    - catchments.ie
- GIS data for European site boundaries obtained in digital format online from European Environmental Agency
- Uisce Éireann / Dublin City Council Authority Monitoring & Sampling Data

12. Cumulative and In Combination Effects

The combined AA Screening and NIS Report (May 2018), and the EIAR (June 2018) address cumulative and in-combination effects. Refer to **Attachment B.5** for a copy of the EIAR (2018). Refer to **Attachment D.2.2** for a copy of the NIS.

13. Mixing Zone or Transitional Areas of Exceedance

For each of the modelled scenarios the size of the mixing zone/plume for each modelled parameter is presented in the Marine Modelling Study Report. The mixing zone is defined as the immediate area at a discharge point, within which the EQS is not met. When an EQS is not applicable, the term 'mixing plume' is used to describe the extent of the impact, noting that there would be no environmental standard to compare with in this case.

More details and discussion of water quality modelling assessment are covered in section 3 of this report. To summarise;

For BOD A localised mixing zone is observed around the outfall structures of the WwTP. And WFD objectives of maintaining 'Good' status are met for all areas outside of the mixing zone.

For DIN under the summer scenario a mixing plume is observed around the WWTP outfall, under the winter scenario this area extends across the estuary to the Tolka Estuary waterbody which can be attributed to fluvial inputs as indicated by the notionally clean plots (see **Figure 4-11 & 4-12** of the 2023 modelling report).

For MRP A mixing zone is observed around the Ringsend outfall, which is reduced in the summer scenario. Under the notionally clean scenario for modelled summer concentrations are compatible with WFD objectives, which are met for transitional waterbodies where the MRP EQS applies. Under the modelled winter scenario WFD objectives are met, with the Ringsend WwTP discharge utilising up to 66% of the assimilative capacity, relative to the 'Good' threshold. Under the *'Mass Emissions Scenario'* (see **Appendix B5** & **B6** of the 2023 modelling report), where the Ringsend discharge is modelled in isolation, the footprint is primarily associated with the immediate vicinity of WwTP.

14. Dilutions and Retention Times for Lakes

Not applicable. No discharges to lakes.

15. The impact of the discharges on any environmental media other than those into which the emissions are to be made

Not applicable. No other relevant media into which the emissions are to be made.

16. Groundwater Details

Not applicable. No discharge to ground waters.

17. High Status Waterbodies

Not applicable. No High-status waterbodies within the region of the Ringsend WwTP and/or the operational discharges.

18. Fresh Water Pearl Mussels

Not applicable. No Fresh Water Pearl Mussels within the region of the Greater Dublin Area Agglomeration WwTW.

19. Impacts on Transboundary / Territory of other States

The operational discharges to which this application relates will not result in transboundary impacts or impacts on the territory of other states.

20. For waste water treatment plants with coastal discharges, provide evidence that the end of the discharge pipe is below the mean spring tide low water line

Not applicable. The primary discharge point (SW001) discharges to the Liffey Estuary Lower which is a transitional waterbody.