

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 Ballyvourney/Ballymakeera agglomeration on the receiving waterbody, Sullane River (Sullane_030), and its associated designations, and also addresses the criteria as outlined in **Section D.2** of the EPA guidance document.

2. Water Environment

Ballyvourney/Ballymakeera WwTP discharges to the Sullane River (Sullane_030). Sullane_030 is within the Lee Cork Harbour and Youghal Bay Catchment (Hydrometric Area 19). This catchment includes the area drained by the River Lee and all streams entering tidal water in Cork Harbour and Youghal Bay and between Knockaverry and Templebreedy Battery, Co. Cork, draining a total area of 2,153 km². The largest urban centre in the catchment is Cork City. The other main urban centres in this catchment are Ballincollig, Macroom, Carrigaline, Crosshaven, Blarney, Glanmire, Midleton, Carrigtohill, Cobh, Passage West and Belvelly.

The draft 3rd cycle Catchment Report (2021) for this hydrometric area, determined that for river waterbodies excess nutrients remain the most prevalent issue, along with morphology, organic pollution, and hydrology. Pressures identified affecting the greatest number of waterbodies within hydrometric Area 19 include hydromorphology, followed by agriculture, urban run-off, urban wastewater, domestic waste water, forestry, mines and quarries and industry.

The Sullane_030 is High Status and Not at Risk. There are no identified significant pressures for the Sullane_030.

The Biological quality rating (Q Value, 2004 to 2020) within this stretch of the Sullane_030 (RS19S020200, SULLANE - Br d/s Douglas R confl) is also High (Q4-5).

The Sullane_030 waterbody trends (at Br d/s Douglas R confl, downstream of the operational discharges) for Ortho-P for 2013-2018 are Downwards (*i.e.*, decreasing concentrations); however, for Ammonia no trend is noted (*i.e.*, approximately maintaining concentration levels). For 2013-2018, both Ammonium and Ortho-P are noted as High under WFD status.

Recent ambient monitoring data (Jan 2019-July 2021) for Sullane_020 upstream and Sullane_030 downstream is shown in the Tables below.

Table D.2.1 - Ambient Monitoring – Upstream of the Primary Discharge Location at RS19S020170 (Data Source: EDEN Compliance Data)

Parameter	pH	BOD	Ortho-P (mg/l)	Total Ammonia (mg/l)	DO (mg/l)	DO(%sat)	Temp (°C)
Number of Samples	11	11	11	11	11	11	11
Max result	7.5	2.5	0.026	0.029	42	107.3	20.2

Parameter	pH	BOD	Ortho-P (mg/l)	Total Ammonia (mg/l)	DO (mg/l)	DO(%sat)	Temp (°C)
Min result	7.1	0.5	0.004	0.006	1.25	96.1	6.7
Average result	7.36	1.318	0.010	0.0144	7.95	101.2	12.8
Mean High EQS *		≤1.3	≤ 0.025	≤0.04			
Overall compliance with relevant EQS (High Status)		No	Yes	Yes			

*Mean High status under S.I. No. 77 of 2019

Note: Where data was reported as less than the limit of detection, LOD/2 was applied.

Table D.2.2 - Ambient Monitoring – Downstream of the Primary Discharge Location at RS19S020200

Parameter	pH	BOD	Ortho-P (mg/l)	Total Ammonia (mg/l)	DO (mg/l)	DO(%sat)	Temp (°C)
Number of Samples	11	11	11	11	11	11	11
Max result	7.6	2.7	0.019	0.055	13	103.1	19.9
Min result	6.5	0.5	0.006	0.015	1.25	92.4	6.7
Average result	7.35	1.25	0.010	0.0270	5.16	99.9	12.6
Mean High EQS *		≤1.3	≤ 0.025	≤0.04			
Overall compliance with relevant EQS (High Status)		Yes	Yes	Yes			

*Mean High status under S.I. No. 77 of 2019

Note: Where data was reported as less than the limit of detection, LOD/2 was applied.

Based on ambient monitoring results upstream and downstream of the discharge for the period between January 2019 to July 2021, the mean concentration for Ammonia and Ortho-P are within the required EQSs for High status. In terms of BOD, the upstream mean concentration is slightly above mean EQS, however the downstream concentration is below the required mean EQS for High status. The proposed emission limit standards (as per D0299-01 ELVs) will ensure that the operational discharges from the agglomeration contribute towards maintaining High status of the River Sullane in accordance with the

European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019) (see **Section 3** below).

Although the Sullane River is not designated as a *Margaritifera* First Order River, Freshwater Pearl Mussel (*Margaritifera margaritifera*) have been recorded, both upstream and downstream of the discharge. ELVs of 0.8 mg/l for Ortho-P, 1.5 mg/l for Ammonia and 25 mg/l for BOD have been put in place to ensure compliance with the High status standards set in European Communities Environmental Objectives (Surface Water) Regulations, 2009, as amended (now S.I. No. 77 of 2019). These ELVs have been set by the EPA taking account the sensitivity of the receiving River with particular reference to the Freshwater Pearl Mussel (*Margaritifera margaritifera*) and came into effect on the 31st December 2015 under D0299-01. To inform this licence review, using the ELVs as per D0299-01, a WAC calculation was completed using the actual background concentration based on January 2019 to June 2021 ambient monitoring data and the EPA Flow Estimation of 0.26 m³/s (EPA Estimated 95%ile Flow at Station 19055 (Up to 2018)) and the maximum WwTP design p.e. of 2,600 (rather than the projected 10-year load of 968 p.e) (see **Section 3** below). The calculations confirmed that there would be sufficient assimilative capacity in the receiving water, the Sullane River, to receive the flows and loads associated with the new WwTP and to ensure that the discharge from the WwTP contributes towards maintaining High status of the Sullane_030 in accordance with the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019).

There are no salmonid waterbodies, nutrient sensitive waters or drinking water abstraction points within the region of or relevance to the Ballyvourney/Ballymakeera agglomeration.

There are no European sites immediately downstream of the operational discharges. The nearest European site downstream is the Cork Harbour SPA which is located ca. 68 km downstream of the agglomeration. Due to the distance of this site from the operational discharges, and the large dilution capacity of downstream waterbodies, it is considered that there is no likelihood of significant effects from the operation discharges on the Qualifying Interests of this sites (including *ex-situ* species).

St Gobnet's Wood SAC (Site Code: 000106) and Mullaghanish to Musheramore Mountains SPA (Site Code: 004162) are located ca. 1.5 km to the northwest, and ca. 1.3 km northeast of the discharge points respectively. The operational discharges have no hydrological connectivity with these two sites.

The Gearagh SAC and SPA are both approximately 9.8 km away from the operational discharges. They are located on the River Lee, but upstream of the confluence with the River Sullane.

The Blackwater River SAC and Killarney National Park, Maggilycuddy's Reeks and Caragh River Catchment SAC are approximately 11.9 km and 8.5 km north of the operational discharges, respectively. These sites are not hydrologically connected to the Ballyvourney/Ballymakeera operational discharges.

There are 9 pNHAs and 1 NHA within 15 km of the WwTP, the closest of which is St. Gobnet's Wood (ca. 1.5 km north-east of the WwTP). The St. Gobnet's Wood pNHA comprises terrestrial woodland habitat that is located on the Sullane River upstream from the discharge and as such there is no pathway for potential impacts. No potential ecological pathway exists by which any other NHA or pNHA could be affected by the operational discharges.

Based on the above it is considered that there is no environmental risk posed to the receiving water environment as a result of the discharges from the agglomeration.

3. Waste Assimilative Capacity Calculations

A WAC calculation was carried out by the EPA inspector in 2015 using the mean background concentration of each parameter in the receiving water and the design capacity of 1,600 p.e. ELVs of 0.8 mg/l for Ortho-P, 1.5 mg/l for Ammonia and 25 mg/l for BOD were set to ensure compliance with the High status standards set in European Communities Environmental Objectives (Surface Water) Regulations, 2009, as amended (now S.I. No. 77 of 2019). These ELVs take of account the sensitivity of the receiving River with particular reference to the Freshwater Pearl Mussel (*Margaritifera margaritifera*). These limits came into effect from the 31/12/2015, as per D0299-01.

To inform this licence review, using the ELVs as per D0299-01, a WAC calculation was completed using the actual background concentration based on January 2019 to June 2021 ambient monitoring data and the EPA Flow Estimation of 0.26 m³/s (EPA Estimated 95%ile Flow at Station 19055 (Up to 2018)).

Based on the actual background concentration, the WAC calculations, carried out using the maximum WwTP design p.e. of 2,600 (rather than the projected 10-year load of 968 p.e), showed that there would be sufficient assimilative capacity in the receiving water, the Sullane River, to receive the flows and loads associated with the new WwTP.

Table 1.0 - WAC for 2,600 p.e (WwTP Design – Design Horizon to 2046)

Parameter	Upstream River Conc Note 1	ELV	Contribution from Primary Discharge (mg/l)	Predicted D/S Conc (mg/l)	Relevant Standard (mg/l) (High Status)
BOD	1.318	25	0.635	1.919	<2.2 Note 2
Ortho-P (MRP)	0.0144	0.8	0.020	0.030	<0.045 Note 2
Total Ammonia	0.0100	1.5	0.038	0.052	<0.09 Note 2

Note 1: Based on grab sampling carried out between 2019-2021.

Note 2: European Union Environmental Objectives (Surface Waters) (Amendment). Regulations 2019 (S.I. No. 77 of 2019)

For completeness **Table 2** below provides the WAC calculations based on the projected 10-year load of 968 p.e.

Table 2.0 - WAC for 968 p.e. (projected 10-year load)

Parameter	Upstream River Conc Note 1	ELV	Contribution from Primary Discharge (mg/l)	Predicted D/S Conc (mg/l)	Relevant Standard (mg/l) (High Status)
BOD	1.318	25	0.240	1.546	<2.2 Note 2
Ortho-P (MRP)	0.0144	0.8	0.008	0.018	<0.045 Note 2
Total Ammonia	0.0100	1.5	0.014	0.029	<0.09 Note 2

Note 1: Based on grab sampling carried out between 2019-2021.

Note 2: European Union Environmental Objectives (Surface Waters) (Amendment). Regulations 2019 (S.I. No. 77 of 2019)

In summary, achieving the ELVs as D0299-01 will ensure that the discharge from the WwTP contributes towards maintaining High status of the Sullane_030 in accordance with the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019) and will ensure that there is no environmental risk posed to the receiving water environment as a result of the discharge from the new WwTP.

Refer to **Attachment D.2.3** for the WAC calculations.

4. Appropriate Assessment

An Appropriate Assessment (AA) Screening Report of the operational discharges from the Ballyvourney/Ballymakeera agglomeration was prepared to inform this WWDL review process (see **Attachment D.2.2**). It assessed whether the discharges, alone or in combination with other plans and projects, are likely to have significant effects on a European Site(s) in view of best scientific knowledge and the conservation objectives of the site(s).

There are no European sites immediately downstream of the operational discharges. The nearest downstream European site is the Cork Harbour SPA which is ca. 68 km downstream of the operational discharges. Due to the distance of this site from the operational discharges and the large dilution capacity of downstream River Lee, it is considered that there is no likelihood of significant effects from the operation discharges on the Qualifying Interests of these sites (including ex-situ species).

St Gobnet's Wood SAC and Mullaghanish to Musheramore Mountains SPA are located ca. 1.5 km to the northwest, and ca. 1.3 km northeast of the discharge points respectively. The operational discharges have no hydrological connectivity with these two sites.

The Mullaghanish Bog SAC is located ca. 5.5 km north of the operational discharges. There is no hydrological connectivity however between the discharges and this site.

The Gearagh SAC and SPA are both ca. 9.8 km away from the operational discharges. They are located on the River Lee, but upstream of the confluence with the River Sullane.

The Blackwater River SAC and Killarney National Park, Maggilycuddy's Reeks and Caragh River Catchment SAC are approximately 11.9 km and 8.5 km north of the operational discharges, respectively. These sites are not hydrologically connected to the Ballyvourney/Ballymakeera operational discharges.

The screening assessment undertaken demonstrates that the operational discharges are not likely to have significant effects, in terms of maintaining favourable conservation status of the qualifying interests, on any European Sites having regard to their conservation objectives, for the following reasons.

- The nearest downstream European site, is the Cork Harbour SPA which is ca. 68 km downstream of the operational discharges.
- The absence of hydrological connectivity between the discharges from the agglomeration and the St. Gobnet's Wood SAC, Mullaghanish Bog SAC, Mullaghanish to Musheramore Mountains SPA, Blackwater River SAC, Killarney National Park, Maggilycuddy's Reeks and Caragh River Catchment SAC and the Gearagh SAC and SPA.
- The High water quality status assigned to the receiving water (Sullane River).

- The Ballyvourney/Ballymakeera WwTP and its primary effluent discharge (SW001) have been designed to meet the standards to satisfy all relevant regulatory requirements including the Surface Water Regulations (S.I. No. 77 of 2019) and the Urban Wastewater Treatment Regulations (S.I. No. 254 of 2001).
- The capacity of the receiving water to assimilate the discharges from the agglomeration.
- The design of the Storm Water Overflows (SW002, SW003 and SW004) in compliance with the definition of 'Storm Water Overflow' as per Regulation 3 of the Waste Water Discharge (Authorisation) Regulations, 2007, as amended and the criteria as set out in the DoEHLG 'Procedures and Criteria in Relation to Storm Water Overflows', 1995.
- Current monitoring of the Sullane River indicates that current discharge is not impacting on the ecological status of the Sullane River.

Based on the above, it has been concluded following screening, that the operational discharges from the Ballyvourney/Ballymakeera agglomeration are not directly connected with or necessary to the management of any European Site and that it can therefore be excluded, on the basis of objective information, that the operational discharges, individually or in combination with other plans or projects, will have a significant effect on any European Site. Therefore, it is concluded that an Appropriate Assessment and the production of a Natura Impact Statement is not required.

5. Priority Substance Assessment

An assessment of the potential for impacts on receiving waters from priority substances in the primary discharge has been carried out to inform this WWDL application. Estimated data from the PRTR reporting tool was used to inform this desktop assessment. The assessment considered the primary discharge relevant to EQSs for priority substances in surface waters, as set out in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (now S.I No. 77 of 2019).

It was concluded that none of the substances listed in the Specific Pollutants, Priority and Priority Hazardous Substances are likely to be present in the effluent discharge to the Sullane River, at concentrations above the standards in S.I No. 77 of 2019, as amended.

This Report is contained in **Attachment D.2.4**: Priority Substance Assessment.

6. Shellfish Water Assessment

There are no designated shellfish waters located in the downstream in the vicinity of the discharges.

7. Bathing Waters

There are no designated bathing waters on any of the receiving waters downstream of the agglomeration.

8. River Flow Estimation

The 95%ile flow for the receiving waterbody, Sullane_030, is 0.26 m³/s. The source of this data is directly from the EPA Hydrometric & Groundwater Section calculation. Flow was calculated based on estimated flow at Station 19055 (Oct 2011 – Sept 2018).

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 effluent standards for the new WwTP are in compliance with the WWDL D0299-01 ELVs and 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 status/designations of the receiving waterbody, the Sullane River.

10. Compliance with Relevant National or EU Legislation

As per **Attachment B.6**, the Ballyvourney/Ballymakeera 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.

The operation of the new WwTP is expected to have a positive impact in terms of reduction in the levels of nutrients being discharged into the Sullane River. 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 objectives and EQSs established for the European sites (e.g., Cork Harbour SPA, St Gobnet's Wood SAC, Mullaghanish Bog SAC, The Gearagh SAC, Blackwater River SAC, Killarney National Park, Maggilycuddy's Reeks and Caragh River Catchment SAC, Mullaghanish to Musheramore Mountains SPA and The Gearagh SPA), 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, NIEA and Irish Water:
 - www.npws.ie
 - epawebapp.epa.ie
 - gis.epa.ie/EPAMaps
 - <https://gis.daera-ni.gov.uk/arcgis/apps/webappviewer/>
 - catchments.ie
- GIS data for European site boundaries obtained in digital format online from European Environmental Agency
- Irish Water/Cork County Council Monitoring & Sampling Data

12. Cumulative and In Combination Effects

The Appropriate Assessment Screening Report addresses in combination effects. Refer to **Attachments D.2.2**.

13. Mixing zone or transitional areas of exceedance

Based on the 95%ile River flow (0.26 m³/s), and the Ballyvourney/Ballymakeera WwTP DWF (design as constructed of 585 m³/d), there are 38 dilutions estimated immediately in the proximity of the discharge point.

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

The Ballyvourney/Ballymakeera WwTP discharges to the Sullane River Sullane_030. The Sullane_030 is classified as High status WFD Waterbody. The downstream Sullane_050, is also classified as High WFD status (2013-2018). The new WwTP provides tertiary treatment including nutrient removal. The operation of the WwTP will result in an improved wastewater discharge to the receiving waterbody. The effluent discharge standards have been set to ensure that the operational discharges from the agglomeration contribute towards maintaining the High status of the River Sullane in accordance with the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019).

18. Fresh Water Pearl Mussels

Freshwater Pearl Mussel (*Margaritifera margaritifera*) have been noted upstream and downstream of the WwTP discharge point (Moorkens, 2007). The Pearl Mussel is listed under Annex II and V of the Habitats Directive (92:43: EEC). It is legally protected in Ireland under Schedule 1 of the Wildlife Act (1976 (Protection of Wild Animals) (Statutory Instrument No. 112, 1990) and the European Communities (Natural Habitats) Regulations (Statutory Instrument No. 94, 1997). This part of the Sullane River is not a designated Freshwater Pearl Mussel habitat under the Environmental Objectives (Freshwater Pearl Mussel) Regulations, S.I. No. 296 of 2009. There is no Freshwater Pearl Mussel Sub Basin Management Plan for the Sullane River catchment, however, NPWS have indicated that it is an important population. Accordingly, the ELVs set for the WwTP primary discharge (*i.e.*, 0.8 mg/l for Ortho-P, 1.5 mg/l for Ammonia and 25 mg/l for BOD) are based on the High status standards as laid down in the European Union Environmental Objectives (Surface Waters) (Amendment). Regulations 2019 (S.I. No. 77 of 2019) and have been put in place by the EPA in D0299-01 taking account of the sensitivity of the receiving River with particular reference to the Freshwater Pearl Mussel (*Margaritifera margaritifera*).

19. 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. Discharge is not to coastal water.



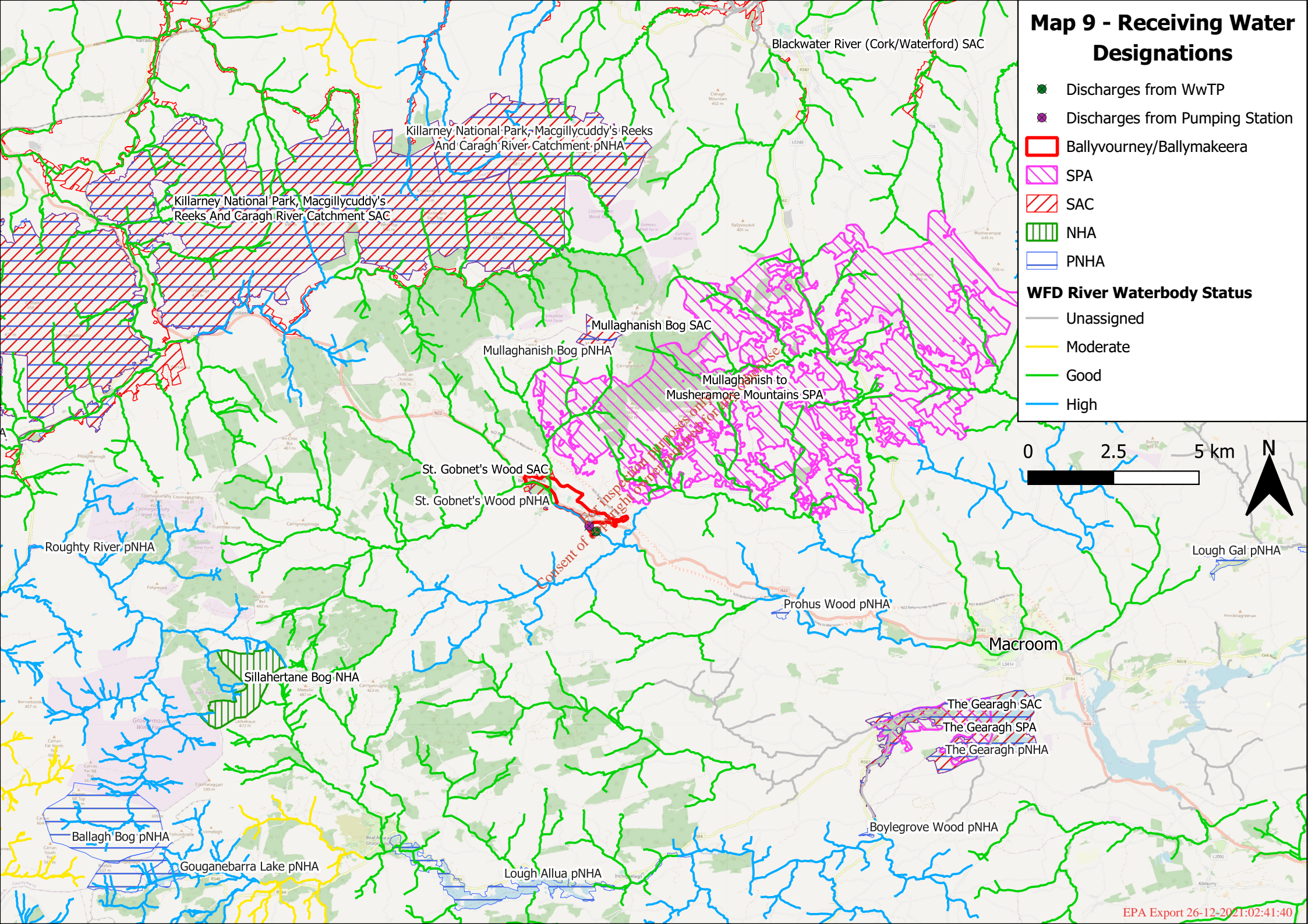
ATTACHMENT D.1:

MAP 10 - RECEIVING WATERS DESIGNATIONS

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Map 9 - Receiving Water Designations

- Discharges from WwTP
 - Discharges from Pumping Station
 - ▭ Ballyvourney/Ballymakeera
 - ▨ SPA
 - ▨ SAC
 - ▨ NHA
 - ▨ PNHA
- WFD River Waterbody Status**
- Unassigned
 - Moderate
 - Good
 - High





ATTACHMENT D.2.3: WASTE ASSIMILATIVE CAPACITY (WAC)

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Waste Assimilative Capacity (WAC) Calculation

Calculation Sheet

Date	30/11/2021
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WWTP	Ballyvourney WwWP
Name of River	Sullane River

		Data Source	m ³ /d
Q95% Flow	0.260	EPA Estimated 95% ile Flow at Station 19055 (Up to 2018)	22,464

ELVs	mg/l
Carbonaceous BOD	25.000
Ammonia	1.500
Ortho-Phosphate (OP)	0.800

Average Background Concentration (Notional)			Average Background Concentration (Actual)				
Parameter	mg/l	Data Source	mg/l	Data Source			
Carbonaceous BOD	0.260	EPA Notionally Clean	0.318	RS19S020170	Data from 2019-2021		
Ammonia	0.008	EPA Notionally Clean	0.0144				
Ortho-Phosphate (OP)	0.005	EPA Notionally Clean	0.0100				
Allowable Downstream Concentration (Surface Water Regulations) - HIGH STATUS							
Parameter	95% ile mg/l		Data Ref				
Carbonaceous BOD	2.20		Surface Water Regs (S.I. No. 77 of 2019) High Status EQS's				
Ammonia	0.09						
Ortho-Phosphate (OP)	0.045						
PE	WWTP Daily Flow (DWF)	Allowable effluent conc (Notionally Clean)			Allowable effluent conc (Actual)		
Projected 10-year Load		BOD	NH	OP	BOD	NH	OP
	m ³ /d	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
968	218	202.29	8.55	4.17	93.15	242.80	5,756.68
PE	WWTP Daily Flow (DWF)	WAC (Notionally Clean)			WAC (Actual)		
		BOD	NH	OP	BOD	NH	OP
	m ³ /d	kg/d	kg/d	kg/d	kg/d	kg/d	kg/d
968	218	44.06	1.86	0.91	20.29	52.88	1,253.80
PE	WWTP Daily Flow (DWF)	Resultant Concentration (Notionally Clean)			Resultant Concentration (Actual)		
		BOD	NH	OP	BOD	NH	OP
	m ³ /d	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
968	218	0.498	0.022	0.013	1.546	0.029	0.018
		Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Waste Assimilative Capacity (WAC) Calculation

Calculation Sheet

Date	30/11/2021
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WWTP	Ballyvourney WwWP
Name of River	Sullane River

		Data Source	m ³ /d
Q95% Flow	0.260	EPA Estimated 95% ile Flow at Station 19055 (Up to 2018)	22,464

ELVs	mg/l
Carbonaceous BOD	25.000
Ammonia	1.500
Ortho-Phosphate (OP)	0.800

Average Background Concentration (Notional)			Average Background Concentration (Actual)				
Parameter	mg/l	Data Source	mg/l	Data Source			
Carbonaceous BOD	0.260	EPA Notionally Clean	0.318	RS19S020170	Data from 2019-2021		
Ammonia	0.008	EPA Notionally Clean	0.0144				
Ortho-Phosphate (OP)	0.005	EPA Notionally Clean	0.0100				
Allowable Downstream Concentration (Surface Water Regulations) - HIGH STATUS							
Parameter	95% ile mg/l		Data Ref				
Carbonaceous BOD	2.20		Surface Water Regs (S.I. No. 77 of 2019) High Status EQS's				
Ammonia	0.09						
Ortho-Phosphate (OP)	0.045						
PE	WWTP Daily Flow (DWF)	Allowable effluent conc (Notionally Clean)			Allowable effluent conc (Actual)		
Projected 10-year Load		BOD	NH	OP	BOD	NH	OP
	m ³ /d	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
968	218	202.29	8.55	4.17	93.15	242.80	5,756.68
PE	WWTP Daily Flow (DWF)	WAC (Notionally Clean)			WAC (Actual)		
		BOD	NH	OP	BOD	NH	OP
	m ³ /d	kg/d	kg/d	kg/d	kg/d	kg/d	kg/d
968	218	44.06	1.86	0.91	20.29	52.88	1,253.80
PE	WWTP Daily Flow (DWF)	Resultant Concentration (Notionally Clean)			Resultant Concentration (Actual)		
		BOD	NH	OP	BOD	NH	OP
	m ³ /d	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
968	218	0.498	0.022	0.013	1.546	0.029	0.018
		Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable



ATTACHMENT D.2.4: PRIORITY SUBSTANCE ASSESSMENT

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Priority Substances Assessment

Agglomeration Name:	Ballyvourney/Ballymakeera
Licence Register No.	D0299 Licence Review

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Appendix 1 – Screening of Parameters for Priority Substances

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1 Introduction

This report has been prepared for the Ballyvourney/Ballymakeera agglomeration, in County Cork to inform the review application of a wastewater discharge licence (D0299-01).

Ballyvourney is located 13 km west of Macroom on the main Cork / Killarney Road. An existing sewerage collection system serves Ballyvourney and Ballymakeera villages conveying flows to a the Ballyvourney/Ballymakeera WwTP which discharges *via* an outfall to the River Sullane. The primary discharge from the new WwTP discharges to the Sullane River at NGR 121449E, 076147N. There are no secondary discharge points associated with the agglomeration. There is 1 no. SWO from the new WwTP (SW002). Upon activation this will discharge to the Sullane River *via* the primary discharge outfall at NGR 121449E, 076147N. There is 1 no. Storm Water Overflow (SW003) from the Pumping Station which is connected to a combined sewer that discharges to the Sullane River at NGR 121225E, 076310N. There is one Emergency Overflows (SW004) from the Pumping Station which will only operate in an emergency event (*e.g.*, prolonged power outage). SW004, when activated, will discharge *via* the same combined sewer as SW003 (NGR 121225E, 076310N).

The Ballyvourney/Ballymakeera WwTP is a tertiary treatment plant (oxidation ditches and disk filter), designed to treat 2,600PE (design horizon to 2046). The discharges from the agglomeration however will not exceed 2,000 p.e for the duration of the reviewed licence. At the time of submitting this WWDL review application, based on existing loads (2020), the projected 10-year load is 968 p.e. Therefore, the agglomeration p.e. threshold is <2000 p.e.

A Waste Water Discharge Licence (WWDL) (Licence Register Number: D0299-01) was granted to Irish Water in accordance with the Waste Water Discharge (Authorisation) Regulations (S.I. No. 684 of 2007) on the 9th October 2015.

This desk top study has been undertaken to determine the necessity, if any, for further analysis of the discharge based on the *Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*, issued by the EPA. Relevant inputs to the Ballyvourney/Ballymakeera WwTP and estimates for the emissions from the discharge point have been taken into account in the preparation of this report.

2 Desktop Study

2.1 Assessment of Analysis Required

A. Review of all industrial inputs into WWTP

A review of all available online mapping and all EPA licensed facilities was undertaken to determine the non-domestic discharge types which will be received at the Ballyvourney/Ballymakeera WwTP. In addition, all planning applications, since 2016, were reviewed to determine the possibility of an increased agglomeration size and the associated non-domestic discharges being sent to the Ballyvourney/Ballymakeera WwTP. The IW Technical Assessment Manual Sectoral Profile Data was reviewed to determine the potential dangerous substances which could be released to sewer from industrial inputs.

As per the EPA, IPC and IE database, there are currently active industrial premises with an IPC licence within the agglomeration accounting for 140 PE load to treatment.

There are three trade effluent licences (and one additional pending licence for Údarás Na Gaeltachta) under Section 16 of the Water Pollution Act 1977 (amended 1990) within the agglomeration, as follows:

- Flesk Meats Ltd.
- An Cruiscin Lan
- Údarás na Gaeltachta

The estimated p.e. load from the Section 16 Licensed discharges to Ballyvourney/Ballymakeera WwTP is 22 p.e. The maximum industrial load to treatment is estimated at 166 p.e., which accounts for approximately 22% of the total load to treatment at Ballyvourney/Ballymakeera.

It is considered that the Priority Substances which are possibly being emitted to sewer have been well represented in this partial characterisation of the wastewater (**Table 2.1**).

Upon review of the types of businesses, amenities and educational facilities in Ballyvourney/Ballymakeera, **Table 2.1** provides an indicative list of non-domestic discharge types to the WwTP and details potential dangerous/priority substance.

Table 2.1 – List of Non-Domestic Discharge Types to WwTP and Details of Potential Dangerous/Priority Substance

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: <i>Technical Assessment Manual - Sectoral Profile Data</i>)
Schools	Yes	Unknown	Dichloromethene Lead and its compounds Nickel and its compounds Tricholormethane
Hairdressers	Yes	Unknown	Nickel and its compounds Cadmium and its compounds
Garages and filling stations	Yes	Unknown	Benzene Di (2-ethylhexyl) phthalate (DEHP) Lead and its compounds Naphthalene Nickel and its compounds Cadmium and its compounds Mercury and its compounds Chromium (III) Copper Toluene Xylenes (Total) Zinc
Manufacture of food products and beverages	Yes	Unknown	Lead and its compounds Nickel and its compounds Cadmium and its compounds Mercury and its compounds Chromium (III) Copper

Type of Industry within the Agglomeration	Potential Source of Dangerous / Priority Substances (Yes / No)	Dangerous / Priority Substances Monitoring Undertaken (Yes / No)	List of Potential Dangerous Substances Based on Industry Type (Source: <i>Technical Assessment Manual - Sectoral Profile Data</i>)
			Zinc
Manufacture of Textiles	Yes	Unknown	Benzene Chlorfenvinphos Chlorpyrifos Dichloromethene Di (2-ethylhexyl) phthalate (DEHP) Lead and its compounds Naphthalene Nickel and its compounds Pentachlorophenol Trichlorobenzene (all isomers) Trichloromethane Anthracene Pentabromodiphenylether Cadmium and its compounds Endosulfan Hexachlorobenzene Hexachlorocyclohexane (Lindane) Mercury and its compounds Nonylphenols Arsenic Chromium (III) Chromium (VI) Copper Cyanide Fluoride Phenol Toluene Xylenes (Total) Zinc
Other supporting transport activities	Yes	Unknown	Benzene

B. Discharge monitoring

No primary discharge monitoring for the possible presence of Specific Pollutants, Priority and Priority Hazardous Substances as outlined in Table 10, 11 and 12 of European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended (now S.I No. 77 of 2019) is available for this agglomeration.

C. Downstream monitoring location's participation in relevant monitoring programme

There is recent no priority substances monitoring data for the downstream ambient monitoring location, River Sullane.

D. Participation in PRTR reporting

Estimated data from the PRTR reporting tool was required for this desktop assessment as measured data was unavailable for all parameters in Appendix 1.

2.2 Review Outcome of Desktop Study

Following the desktop study, all parameters in Appendix 1 have been assessed to establish any potential impact on the receiving waters. Priority substance measured concentrations in the primary discharge were not available for any parameters, as such estimated concentrations were assessed. This desktop study is considered to provide partial characterisation of the wastewater.

3 Assessment of Significance and Recommendations

An assessment of the potential for impacts on receiving waters from priority substances in the primary discharge has been carried out. 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 (now S.I No. 77 of 2019).

Based on the estimated data, no parameters were identified as potentially being higher than the required EQS.

Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance	Desk Top Study
Does the assessment include a review of licensed / authorised inputs to the works?	Yes
Does the assessment include a review of other (unauthorised) inputs to the works?	Yes
Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water)	Yes
Does the assessment identify that priority substances may be impacting the receiving water?	No

Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality?	N/A
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4 Conclusion

An assessment of the potential for impacts on receiving waters from priority substances in the primary discharge has been carried out. 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 (now S.I No. 77 of 2019).

Based on the results of this desk top study, it can be determined that **no for further analysis** of the discharge, based on the *Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*, issued by the EPA, is required.

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Appendix 1 – Screening of Parameters for Priority Substances

AA: Annual Average

MAC: Maximum Allowable Concentration

EQS: Environmental Quality Standards

Dilution factor in receiving water: 38 dilutions estimated immediately in the proximity of the discharge point (based on design 585 m³/d DWF and 95%ile flow of 0.26 m³/s) in the proximity of the discharge point (based on the nature of the receiving waterbody, River Sullane (Sullane_030))

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Estimated Conc. (µg/l) ¹	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
1	Benzene	VOCs	10	8	0.0000	PRTR Electronic Toolset	N/A	No	No
2	Carbon tetrachloride	VOCs	12	12	0.0000	PRTR Electronic Toolset	N/A	No	No
3	1,2-Dichloroethane	VOCs	10	10	0.0000	PRTR Electronic Toolset	N/A	No	No
4	Dichloromethane	VOCs	20	20	0.0000	PRTR Electronic Toolset	N/A	No	No
5	Tetrachloroethylene	VOCs	10	10	0.0000	PRTR Electronic Toolset	N/A	No	No
6	Trichloroethylene	VOCs	10	10	0.0000	PRTR Electronic Toolset	N/A	No	No
7	Trichlorobenzenes	VOCs	0.4	0.4	0.0000	PRTR Electronic Toolset	N/A	No	No
8	Trichloromethane	VOCs	2.5	2.5	0.0000	PRTR Electronic Toolset	N/A	No	No
9	Xylenes (all isomers)	VOCs	10	10	0.0000	PRTR Electronic Toolset	N/A	No	No

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Estimated Conc. (µg/l) ¹	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
10	Ethyl Benzene	VOCs	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
11	Toluene	VOCs	10	10	0.0000	PRTR Electronic Toolset	N/A	No	No
12	Naphthlene ¹	PAHs	2	2	0.0000	PRTR Electronic Toolset	N/A	No	No
13	Fluoranthene ¹	PAHs	0.0063	0.0063	0.0000	PRTR Electronic Toolset	N/A	No	No
14	Benzo[k]fluoranthene ²	PAHs	MAC of 0.017	MAC of 0.017	0.0000	PRTR Electronic Toolset	N/A	No	No
15	Benzo[ghi]perylene ²	PAHs	MAC of 8.2 x 10 ⁻³	MAC of 8.2 x 10 ⁻³	0.0000	PRTR Electronic Toolset	N/A	No	No
16	Indeno[1,2,3-c,d]pyrene ²	PAHs			0.0000	PRTR Electronic Toolset	N/A	No	No
17	Benzo[b]fluoranthene ²	PAHs	MAC of 0.017	MAC of 0.017	0.0000	PRTR Electronic Toolset	N/A	No	No
18	Benzo[a]pyrene	PAHs	1.7 x 10 ⁻⁴	1.7 x 10 ⁻⁴	0.0000	PRTR Electronic Toolset	N/A	No	No
19	Di(2-ethylhexyl)phthalate (DEHP)	Plasticiser	1.3	1.3	0.0000	PRTR Electronic Toolset	N/A	No	No
20	Isodrin ³	Pesticides	Σ=0.01	Σ=0.005	0.0000	PRTR Electronic Toolset	N/A	No	No

¹ The EQS for these substances shall take effect from 22 December 2015

² No indicative parameter is provided for this group of substances

³ Σ of Aldrin, Dieldrin, Endrin and Isodrin.

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Estimated Conc. (µg/l) ¹	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
21	Dieldrin ³	Pesticides			0.0000	PRTR Electronic Toolset	N/A	No	No
22	Diuron	Pesticides	0.2	0.2	0.0000	PRTR Electronic Toolset	N/A	No	No
23	Isoproturon	Pesticides	0.3	0.3	0.0000	PRTR Electronic Toolset	N/A	No	No
24	Atrazine	Pesticides	0.6	0.6	0.0000	PRTR Electronic Toolset	N/A	No	No
25	Simazine	Pesticides	1	1	0.0000	PRTR Electronic Toolset	N/A	No	No
26	Glyphosate	Pesticides	60	-	0.0000	PRTR Electronic Toolset	N/A	No	No
27	Mecoprop	Pesticides	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
28	2,4-D	Pesticides	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
29	MCPA	Pesticides	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
30	Linuron	Pesticides	0.7	0.7	0.0000	PRTR Electronic Toolset	N/A	No	No
31	Dichlobenil	Pesticides	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
32	2,6-Dichlorobenzamide	Pesticides	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
33	PCBs	PCBs	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Estimated Conc. (µg/l) ¹	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
34	Phenols (as Total C)	Phenols	8	8	0.0000	PRTR Electronic Toolset	N/A	No	No
35	Lead	Metals	1.2	1.3	0.0000	PRTR Electronic Toolset	N/A	No	No
36	Arsenic	Metals	25	20	0.0000	PRTR Electronic Toolset	N/A	No	No
37	Copper	Metals	5 or 30 ²	5	0.0000	PRTR Electronic Toolset	N/A	No	No
38	Zinc	Metals	8 or 50 or 100 ³	40	0.00005	PRTR Electronic Toolset	N/A	No	No
39	Cadmium	Metals	0.08 or 0.09 or 0.15 or 0.25 ⁴	0.2	0.0000	PRTR Electronic Toolset	N/A	No	No
40	Mercury	Metals	MAC of 0.07	MAC of 0.07	0.0000	PRTR Electronic Toolset	N/A	No	No
41	Chromium VI	Metals	3.4	0.6	0.0000	PRTR Electronic Toolset	N/A	No	No
42	Selenium	Metals	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
43	Antimony	Metals	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
44	Molybdenum	Metals	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
45	Tin	Metals	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A

No.	Compound	Group of compounds	AA-EQS Inland SW (µg/l)	AA-EQS Other SW (µg/l)	Estimated Conc. (µg/l) ¹	Data Source	Sample Date (if applicable)	Effluent Concentration above AA concentration (Yes/No)	Effluent Concentration above AA concentration after dilution (Yes/No)
46	Barium	Metals	n/a	n/a	0.00001	PRTR Electronic Toolset	N/A	N/A	N/A
47	Boron	Metals	n/a	n/a	0.00006	PRTR Electronic Toolset	N/A	N/A	N/A
48	Cobalt	Metals	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
49	Vanadium	Metals	n/a	n/a	0.0000	PRTR Electronic Toolset	N/A	N/A	N/A
50	Nickel	Metals	4	8.6	0.0000	PRTR Electronic Toolset	N/A	No	No
51	Fluoride	General	500	1,500	0.0002	PRTR Electronic Toolset	N/A	No	No
52	Chloride	General	n/a	n/a	0.0541	PRTR Electronic Toolset	N/A	N/A	N/A
53	TOC	General	n/a	n/a	0.0092	PRTR Electronic Toolset	N/A	N/A	N/A
54	Cyanide	General	10	10	0.0000	PRTR Electronic Toolset	N/A	No	No
	Conductivity	General	n/a	n/a	-	PRTR Electronic Toolset	N/A	N/A	N/A
	Hardness (mg/l CaCO ₃)	General	n/a	n/a	201.750	PRTR Electronic Toolset	N/A	N/A	N/A
	pH	General	n/a	n/a	-	PRTR Electronic Toolset	N/A	N/A	N/A

Notes:

1. Where measured values are available these should be used instead of estimated values from PRTR tool.
2. In the case of Copper, the value 5 applies where the water hardness measured in mg/l CaCO₃ is less than or equal to 100; the value 30 applies where the water hardness exceeds 100 mg/l CaCO₃. Estimated CaCO₃ value > 100 where no sampling data available (based on PRTR tool)
3. In the case of Zinc, the standard shall be 8 µg/l for water hardness with annual average values less than or equal to 10 mg/l CaCO₃, 50 µg/l for water hardness greater than 10 mg/l CaCO₃ and less than or equal to 100 mg/l CaCO₃ and 100 µg/l elsewhere. Estimated CaCO₃ value > 100 where no sampling data available
4. For Cadmium and its compounds the EQS values vary dependent upon the hardness of the water as specified in five class categories (Class 1: <40 mg CaCO₃/l, Class 2: 40 to <50 mg CaCO₃/l, Class 3: 50 to <100 mg CaCO₃/l, Class 4: 100 to <200 mg CaCO₃/l and Class 5: >200 mg CaCO₃/l)

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