ATTACHMENT D.2.1 -
IMPACT ASSESSMENT REPORT, JULY 2024

1. Introduction

This Report provides a summary of the Impact Assessments prepared to determine the impact of the Primary Discharges (SW001) (*i.e.,* the only operational discharge) from the Ballycommon WW agglomeration on the receiving waterbody, the Nenagh_070 River, and also addresses the criteria as outlined in **Section D.2**. of the EPA guidance document.

2. Water Environment

The Primary Discharge (SW001) from the Ballycommon Waste Water Treatment Plant (WwTP) discharges to the Nenagh River (Nenagh_070), which is within the C Lower Shannon (Lough Derg (Hydrometric Area 25C)) catchment. This catchment includes the Lower Shannon (Lough Derg), covers an area of 1,820km² and comprises Lough Derg and its catchment. This catchment can be divided into two regions, the area draining into the western and eastern sides of Lough Derg.

The draft 3rd cycle Catchment Report (2021) for this hydrometric area, determined that the main significant issues for river waterbodies are nutrient pollution, morphological impacts, sediment pollution, organic pollution, hydrological impacts and chemical issues. For lake waterbodies, the main significant issues are nutrient pollution, sediment, morphological impacts and hydrological impacts. For the At Risk groundwater bodies, (Historic Mine (Tynagh), GWDTE-Caherglassaun Turlough (SAC000238) and GWDTE-Rahasane Turlough (SAC000322)), the significant issues are nutrient pollution and chemical issues. The discharge from the Ballycommon WW agglomeration is not listed as a significant pressure in At Risk waterbodies in the 2nd or draft 3rd cycle catchment assessment.

The Nenagh_070 River is listed as an area for action under the 3rd cycle (and the 2nd cycle). The WFD status of the Nenagh_070 River is '*Moderate*' and '*At Risk'* of not achieving Good WFD Status by 2027. The significant pressure impacting this waterbody is Hydromorphology and the recommended Areas for Action (AFA) include the Lower Nenagh and Clareen.

The EPA have 2 No. ambient monitoring river stations which are located upstream and downstream of the Primary Discharge (SW001). The upstream river station (RS25N0100700) is located *ca*. 1.8km upstream and the downstream river station (RS25N0100800) is located *ca.* 3.3km downstream. The Q value at Station RS25N0100700 and RS25N010800 both reported a Q value of 3-4 (Moderate) for the 2021 monitoring period.

The Nenagh_070 River trend at Station RS10A030800 (*ca.* 3.3 km downstream of the SW001) for Total Oxidised Nitrogen (TON) and Ammonia are Upwards (*i.e.,* increasing concentrations), and for Ortho-P is Downwards (*i.e.,* decreasing concentrations).

Recent ambient monitoring data for Nenagh_070 at Station RS25N0100700 and RS25N0100800 can be found in **Table D.2.1** and **Table D.2.2** below.

Table D.2.1 – Ambient Monitoring – Upstream of the Primary Discharge Location (SW001) at RS25N0100700 (Data Source: UÉ/TCC March 2021 – March 2024 Data)[1]

Parameter	pH (pH Unit)	BOD (mg/l)	Ortho-phosphate (mg/l)	Total Ammonia (mg/l)	DO (%sat)	Temp (°C)	Nitrate (as N) (mg/l)	Nitrite (as N) (mg/l)	Total Orgaanic Nitrogen as N (mg/l)	Conductivity @25°C (µS/cm)
Number of Samples	15	15	15	15	15	15	10	10	15	15
Max result	8.4	6.2	0.19	0.3	125	21	4.5	36.2	4.5	882
Min result	7.7	0.5	0.005	0.01	93	7.2	2.7	2.0	2.7	363
Average result	**8.15**	**1.49**	**0.038**	**0.051**	**103.07**	**13.13**	**3.91**	**12.22**	**3.78**	**572.93**
*Mean EQS as per S.I. No. 77/2019 Good Status **	*6-9*	*≤1.5*	*≤0.035*	*≤0.065*	-	-	-	-	-	-
*Mean EQS as per S.I. No. 77/2019 High Status **	*6-9*	*≤1.3*	*≤0.025*	*≤0.040*	-	-	-	-	-	-
*95%ile EQS as per S.I. No. 77/2019 Good Status **	*6-9*	*≤2.6*	*≤0.075*	*≤0.14*	*>80 - <120*	-	-	-	-	-
*95%ile EQS as per S.I. No. 77/2019 High Status **	*6-9*	*≤2.2*	*≤0.045*	*≤0.09*	*>80 - <120*	-	-	-	-	-
*Overall compliance with relevant **Mean EQS Good Status **	*Yes*	*Yes*	***No***	*Yes*	-	-	-	-	-	-
*Overall compliance with relevant **Mean EQS High Status **	*Yes*	***No***	***No***	***No***	-	-	-	-	-	-
*Overall compliance with relevant **95%ile EQS Good Status **	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	-	-	-	-	-

Parameter	pH (pH Unit)	BOD (mg/l)	Ortho-phosphate (mg/l)	Total Ammonia (mg/l)	DO (%sat)	Temp (°C)	Nitrate (as N) (mg/l)	Nitrite (as N) (mg/l)	Total Orgaanic Nitrogen as N (mg/l)	Conductivity @25°C (µS/cm)
*Overall compliance with relevant **95%ile EQS High Status** *	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	-	-	-	-	-

[1]Where data was reported as less than the limit of detection, ½ LOD was applied.

Table D.2.2 – Ambient Monitoring – Downstream of the Primary Discharge Location (SW001) at RS25N0100800 (Data Source: UÉ/TCC March 2021 – March 2024 Data)[1]

Parameter	pH (pH Unit)	BOD (mg/l)	Ortho-phosphate (mg/l)	Total Ammonia (mg/l)	DO (%sat)	Temp (°C)	Nitrate (as N) (mg/l)	Nitrite (as N) (mg/l)	Total Orgaanic Nitrogen as N (mg/l)	Conductivity @25°C (µS/cm)
Number of Samples	15	15	15	15	15	15	10	10	15	15
Max result	8.4	2.4	0.15	0.18	110	21.2	4.8	36.4	4.8	858
Min result	7.8	0.5	0.005	0.010	90	7.2	2.7	2.0	2.7	377
Average result	**8.14**	**0.97**	**0.031**	**0.032**	**98.20**	**13.07**	**3.95**	**11.24**	**3.86**	**572.2**
*Mean EQS as per S.I. No. 77/2019 Good Status *	*6-9*	*≤1.5*	*≤0.035*	*≤0.065*	-	-	-	-	-	-
*Mean EQS as per S.I. No. 77/2019 High Status *	*6-9*	*≤1.3*	*≤0.025*	*≤0.040*	-	-	-	-	-	-
*95%ile EQS as per S.I. No. 77/2019 Good Status *	*6-9*	*≤2.6*	*≤0.075*	*≤0.14*	*>80 - <120*	-	-	-	-	-
*95%ile EQS as per S.I. No. 77/2019 High Status *	*6-9*	*≤2.2*	*≤0.045*	*≤0.09*	*>80 - <120*	-	-	-	-	-
Overall compliance with relevant	*Yes*	*Yes*	*Yes*	*Yes*	-	-	-	-	-	-

Parameter	pH (pH Unit)	BOD (mg/l)	Ortho-phosphate (mg/l)	Total Ammonia (mg/l)	DO (%sat)	Temp (°C)	Nitrate (as N) (mg/l)	Nitrite (as N) (mg/l)	Total Orgaanic Nitrogen as N (mg/l)	Conductivity @25°C (µS/cm)
***Mean EQS Good Status** *										
*Overall compliance with relevant **Mean EQS High Status** *	*Yes*	*Yes*	***No***	*Yes*	-	-	-	-	-	-
*Overall compliance with relevant **95%ile EQS Good Status** *	*Yes*	*Yes*	*Yes*	*Yes*	Yes	-	-	-	-	-
*Overall compliance with relevant **95%ile EQS High Status** *	*Yes*	*Yes*	*Yes*	*Yes*	Yes	-	-	-	-	-

[1]Where data was reported as less than the limit of detection, ½ LOD was applied.

Based on the above ambient monitoring results for the period between March 2021 to March 2024, at the upstream station RS25N0100700, BOD met the '*Good*' Status EQS (mean and 95%ile), and '*High*' Status for 95%ile. Ortho-P met the '*Good*' and '*High*' Status EQS (95%ile) but failed to meet the mean '*Good*' Status EQS. Ammonia met the '*Good*' Status EQS (mean and 95%ile), and '*High*' Status for 95%ile.

Based on the above ambient monitoring results for the period between March 2021 to March 2024 at the downstream station RS25N0100800, BOD and Ammonia met the '*Good*' Status and '*High*' Status EQS (mean and 95%ile). Ortho-P met the '*Good*' Status EQS (mean and 95%ile), and '*High*' Status for 95%ile.

There are no designated salmonid waterbodies, shellfish areas, freshwater pearl mussel habitats or bathing waters in proximity to the Ballycommon WW agglomeration, or downstream within a zone of impact of its Primary Discharge (SW001).

Lough Derg *ca.* 5.8km downstream of the Primary Discharge Point (SW001) is a designated a drinking water lake (IE_SH_25_191a) under Article 7 of the Water Framework Directive for Abstraction for Drinking Water. The Nenagh_070 River enters Lough Derg downstream of the drinking water abstraction points and therefore the Ballycommon Primary Discharge (SW001) does not pose a risk to drinking water abstraction points from Lough Derg and to drinking water supplies.

The River Nenagh is designated as a Nutrient Sensitive River in accordance with the Urban Waste Water Treatment (UWWT) Directive 91/271/EEC on Urban Waste Water Treatment S.I. No. 48 of 2010, however the design capacity of the Ballycommon WwTP is below the p.e. 10,000 threshold and is not required to provide more stringent treatment than secondary treatment. Based on the WAC calculations, it is clear that the Ballycommon

Primary Discharge (SW001) contributes a low level of nutrients to the Nenagh_070 River, due to the small volume of the discharge and the flow of the receiving water.

In terms of NHAs and pNHAs, the WwTP does not discharge directly to any NHA / pNHA. The closest NHA / pNHA sites are tabled below:

Table D.2.4 – NHA/pNHA

NHA / pNHA Site Name & Code	Distance from Primary Discharge (SW001)
Scohaboy Bog NHA (Site Code: 000937)	*ca*. 13.7km North West
Lough Ourna pNHA (Site code: 000650)	*ca*. 4.4km North East
Newchapel Turlough pNHA (Site Code: 000653)	*ca*. 9.9km North
Clareen Lough pNHA (Site Code: 000929)	*ca*. 4.9km North
Silvermine Mountains pNHA (Site Code: 000939)	*ca*. 12.2km South
Willsborough Esker pNHA (Site Code: 000943)	*ca*. 6.4km North
Killavalla Wood pNHA (Site Code: 001178)	*ca*. 14.8km South East
Keeper Hill pNHA (Site Code: 001197)	*ca*. 14.4km South
Cloonamirran Wood pNHA (Site Code: 001686)	*ca*. 12.9km North West
Lough Ava pNHA (Site Code: 001995)	*ca*. 10.5km North
Lough Derg pNHA (Site Code: 000011)	*ca*. 5.8km downstream *via* Nenagh River

The Ballycommon WW agglomeration does not discharge directly to any European sites. The European sites within the surrounding environment and downstream of the Primary Discharge (SW001) include the following:

Table D.2.5 – European Sites

SAC / SPA Site Name & Code	Pathway and Distance from Primary Discharge (SW001)
Lough Derg (Shannon) SPA (Site Code: 004058)	*ca.* 5.5km downstream *via* the Nenagh River.
Lough Derg, North-east Shore SAC (Site Code: 002241)	*ca.* 6.5km directly north, or *ca.* 9.5km hydrologically *via* the Nenagh River and north/upstream along Lough Derg.
Lower River Shannon SAC (Site Code:002165)	*ca.* 26km downstream *via* the Nenagh River and Lough Derg.
River Shannon and River Fergus Estuaries SPA (Site Code: 004077)	*ca.* 47km downstream *via* the Nenagh River and Lough Derg.

The WAC calculations which support this application show that the receiving Nenagh_070 River has adequate assimilative capacity for the discharge based on the maximum package WwTP design p.e. of 300, under the '*Notionally Clean River'* Scenario.

The operation of the WwTP in line with the proposed Operational Standards will ensure compliance with the European Communities Environmental Objectives (Surface Water) Regulations, 2009, as amended (now S.I. No. 77 of 2019) and will assist the receiving waterbody in achieving '*Good'* WFD Status by 2027.

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

Waste Assimilative Capacity (WAC) calculations have been completed to inform this CoA application process.

The WwTP design average effluent flow of 0.00098m^3/s (based on the maximum WwTP design p.e. of 300), the mean effluent concentration based on data from February 2021 to July 2023 (*i.e.,* mean results BOD 125mg/l, Ammonia, 31.4 mg/l, and Ortho-P 6.06 mg/l), the UÉ river flow estimation of 1.040 m^3/s (95%ile) and 7.040 m^3/s (30%ile mean) (Refer to **Attachment D.2.4:** Low Flow Hydrological Estimation Report, April 2023) have been used to inform the calculations.

For the purposes of this WAC, as the 95%ile upstream ambient monitoring concentration (March 2021 – March 2024 data) at river station RS25N010700 for Ammonia and BOD, and the mean and 95%ile concentrations for Ortho-P were above the relevant EQSs for 'Good' status, a 'Notionally Clean River' approach has been used. The calculations have therefore been carried out based on notionally clean background concentrations of 0.26 mg/l BOD, 0.005 mg/l Ortho-P (as P) and 0.008 mg/l Ammonia (as N). Refer to **Table D.2.6** below.

Table D.2.6 – Based on Notionally Clean Background and Mean Effluent Concentrations

Parameter	Upstream River Conc. Note 1	Predicted Downstream 95% Conc. (mg/l)	Good Status 95%ile EQS (mg/l) Note 2	Predicted Downstream 30%ile Mean Conc. (mg/l)	Good Status 30%ile Mean EQS (mg/l) Note 2
BOD	0.26	0.377	≤2.6	0.277	≤1.5
Ortho-P (MRP)	0.005	0.011	≤0.075	0.006	≤ 0.035
Ammonia	0.008	0.037	≤0.14	0.012	≤0.065

Note 1: *Based on the 'Notionally Clean River' background concentrations.*
Note 2: *European Union Environmental Objectives (Surface Waters) (Amendment). Regulations 2019 (S.I. No. 77 of 2019)*

As tabled above, based on a *'Notionally Clean River'*, the predicted downstream mean and 95%ile concentrations for BOD, Ortho-P and Ammonia meet the requisite mean and 95%iile '*Good*' Status EQSs.

In addition to the above, separate calculations were carried out to determine the predicted downstream concentrations for BOD, Ortho-P and Ammonia based on the proposed Operational Standards for the Ballycommon WwTP (*i.e.*, BOD 25 mg/l, Ammonia 15 mg/l, and Ortho-P 10 mg/l). Refer to **Table D.2.7** below.

Table D.2.7 – Based on Notionally Clean Background and Proposed Operational Standards

Parameter	Upstream River Conc. Note 1	Predicted Downstream 95% Conc. (mg/l)	Good Status 95%ile EQS (mg/l) Note 2	Predicted Downstream 30%ile Mean Conc. (mg/l)	Good Status 30%ile Mean EQS (mg/l) Note 2
BOD	0.26	0.283	≤2.6	0.263	≤1.5
Ortho-P (MRP)	0.005	0.014	≤0.075	0.006	≤ 0.035
Ammonia	0.008	0.022	≤0.14	0.010	≤0.065

Note 1: *Based on the 'Notionally Clean River' background concentrations.*
Note 2: *European Union Environmental Objectives (Surface Waters) (Amendment). Regulations 2019 (S.I. No. 77 of 2019)*

As tabled above, based on a '*Notionally Clean River'* and the proposed Operational Standards, the predicted downstream mean and 95%ile concentrations for BOD, Ortho-P and Ammonia and further reduced and meet the requisite mean and 95%iile '*Good'* Status EQSs.

In summary, achieving the proposed Operational Standards will ensure that the Primary Discharge (SW001) from the WwTP contributes towards achieving '*Good'* status of the Nenagh_070 River, 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 existing or future loads at the WwTP.

4. Appropriate Assessment

A combined Appropriate Assessment (AA) Screening Report and Natura Impact Statement (NIS) was prepared in July 2024 to accompany this CoA Application. This Report will enable the EPA (as competent authority) to conduct an AA Screening Determination, and

Stage 2 AA in respect of the Ballycommon Primary Discharge (SW001), for the purposes of the European Union (Waste Water Discharge) Regulations 2007 to 2020.

The AA Screening of the Primary Discharge (SW001) assessed whether the discharge activity, alone or in combination with other plans and projects, is likely to have significant effects on a European Site(s) in view of best scientific knowledge and the conservation objectives of the site(s).

Based on the information set out in the AA Screening, and the documentation referenced therein, it was concluded that the likelihood of significant effects to the Lough Derg (Shannon) SPA, Lough Derg, North-east Shore SAC, and the Lower River Shannon SAC cannot be excluded, and a Stage Two AA was therefore provided.

The NIS was prepared following the EPA (2009) '*Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)*'. The Department of the Environment, Heritage and Local Government guidance '*Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'* (DoEHLG, 2009) was also taken into account.

The NIS concludes that the Ballycommon agglomeration Primary Discharge (SW001), alone or in-combination with other plans and / or projects will not give rise to adverse effects on the integrity of the Lough Derg, North-east Shore SAC, the Lower River Shannon SAC or Lough Derg (Shannon) SPA, or any other European Site, as detailed in the NIS and that the Competent Authority will not need to proceed past Stage 2 Assessment.

Please refer to **Attachment D.2.2** for a copy the combined AA Screening & NIS Report prepared to inform this CoA review process.

5. Environmental Impact Assessment

An Environmental Impact Assessment (EIA) Screening Report (July 2024) has been prepared to form an opinion as to whether or not the operational activities from the agglomeration (*i.e.,* the Primary Discharge (SW001) from the Ballycommon WwTP) in so far as they relate to the risk of environmental pollution of the receiving waters, the Nenagh River (Nenagh_070) should be subject to Environmental Impact Assessment (EIA) and if so, whether an Environmental Impact Assessment Report (EIAR) should be prepared in respect of it.

Based on the information contained in the EIA Screening Report (see **Attachment B.5**), it is UÉ's opinion that there is no significant and realistic doubt in regard to the likelihood of significant effects on the environment arising from the Primary Discharge (SW001) from the Ballycommon WwTW in so far as they relate to the risk of environmental pollution of the receiving waters and it is considered that an EIA is not required for the authorisation to which this application relates by virtue of its nature, size and location.

6. Priority Substances Assessment Report

An assessment of the potential for impacts on receiving waters from priority substances in the Primary Discharge (SW001) has been carried out to inform this CoA application. Estimated data from the PRTR reporting tool was used to inform this desktop assessment. The assessment considered the Primary Discharge (SW001) 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.

It was concluded that with dilution, none of the substances listed in the Specific Pollutants, Priority and Priority Hazardous Substances as outlined in the Surface Water Regulations, are likely to be present in the Primary Discharge (SW001) to the Nenagh_070 River at concentrations above the specified standards as per European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended. Based on the results of the assessment, it can be determined that no for further analysis of the Ballycommon WW agglomeration Primary Discharge (SW001).

This Report is contained in **Attachment D.2.3**: Priority Substances Assessment Report, July 2024.

7. Shellfish Waters

There are no designated shellfish waters located downstream in the vicinity of the Ballycommon WW agglomeration Primary Discharge (SW001).

8. Bathing Waters

There are no designated bathing waters located downstream in the vicinity of the Ballycommon WW agglomeration Primary Discharge (SW001).

9. River Flow Estimation

The 95%ile flow of the Nenagh_070 River at the Primary Discharge Point (SW001) has been calculated by UÉ as 1.04m^3/s. See **Attachment D.2.4** Low Flow Hydrological Estimation Report, April 2023.

10. 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 proposed Operational Standards of the Ballycommon WwTP based on the WAC Assessment (refer to **Section 3** above) 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 waterbody, the Nenagh River (Nenagh_070).

11. Compliance with Relevant National or EU Legislation

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

The operation of the WwTP in line with the proposed Operational Standards will ensure that the Primary Discharge (SW001) from the Ballycommon agglomeration: (i) contributes towards achieving the '*Good*' status of the Nenagh_070 River; and (ii) will ensure that there is no environmental risk posed to the receiving water environment as a result of the Primary Discharge (SW001) from the WW agglomeration.

The proposed Operational Standards will not compromise the achievement of the objectives and EQSs established for any European sites water dependant species and natural habitats and designations in the wider environs or downstream of the agglomeration.

12. Data Sources

The following data sources were used to complete this application.

- Online data available on held by the NPWS, the EPA and UÉ:
    - www.npws.ie;
    - epawebapp.epa.ie;
    - gis.epa.ie/EPAMaps;
    - catchments.ie.
- GIS data for European site boundaries obtained in digital format online from European Environmental Agency;
- EPA / Tipperary County Council Monitoring & Sampling Data.

13. Cumulative and In Combination Effects

The combined AA Screening Report and NIS (July 2024) addresses cumulative and in-combination effects. Refer to **Attachment D.2.2**.

14. Mixing zone or transitional areas of exceedance

Not applicable.

15. Dilutions and retention times for lakes

Not applicable. No discharges to lakes.

16. 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 Primary Discharge (SW001) is made.

17. Groundwater Details

Not applicable. No discharge to groundwaters.

18. High Status Waterbodies

Not applicable. No *'High'* status waterbodies within the region of the Ballycommon WW agglomeration (including WwTW and/or Primary Discharge (SW001).

19. Fresh Water Pearl Mussels

There are no Designated Freshwater Pearl Mussel (FWPM) Waterbodies within the region of the Ballycommon WW agglomeration (including WwTW and/or Primary Discharge (SW001)).

20. Impacts on Transboundary / Territory of other States

The Primary Discharge (SW001) from Ballycommon WW agglomeration to which this application relates will not result in transboundary impacts or impacts on the territory of other states.

21. 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. No discharge to a coastal waterbody.