Annual Environmental Report

2021

Carndonagh Malin

D0113-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0113-01, Carndonagh Malin, in Donegal in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There was no major capital or operational changes undertaken

1.2 TREATMENT SUMMARY

The agglomeration is served by a wastewater treatment plant(s)

- Carndonagh Malin WWTP with a Plant Capacity PE of 5833, the treatment type is 2 - Secondary treatment

1.3 ELV OVERVIEW

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.

Discharge Point Reference	Treatment Plant	Discharge Type	Compliance Status	Parameters failing if relevant
TPEFF0600D0113SW001	Carndonagh Malin WWTP	Treated	Non-Compliant	Total Oxidised Nitrogen (as N) mg/l Total Phosphorus (as P) mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
There are no Licence Specific Reports included in this AER.

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 CARNDONAGH MALIN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - CARNDONAGH MALIN WWTP

A summary of influent monitoring for the treatment plant is presented below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

Parameters	Number of Samples	Annual Max	Annual Mean
ortho-Phosphate (as P) - unspecified mg/l	12	4.67	1.94
Suspended Solids mg/l	12	402	179
pH units	12	7.40	7.14
Ammonia-Total (as N) mg/l	12	34	19
Total Nitrogen mg/l	12	50	29
COD-Cr mg/l	12	474	222
Total Phosphorus (as P) mg/l	12	6.27	3.34
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	296	149
Hydraulic Capacity	N/A	4159	1884

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 2.1.5 if applicable.

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional 'Operational Performance Summary'.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF0600D0113SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	26	Pass
Suspended Solids mg/l	35	88	N/A	12	1	N/A	14	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	4.69	Pass
Temperature °C	25	25	N/A	12	N/A	N/A	4.91	Pass
Total Oxidised Nitrogen (as N) mg/l	10	12	N/A	12	9	6	12	Fail
pH units	9.00	9.00	N/A	12	N/A	N/A	7.16	Pass
Ammonia-Total (as N) mg/l	5.00	6.00	N/A	12	N/A	N/A	0.330	Pass
Total Phosphorus (as P) mg/l	2.00	2.40	N/A	12	4	4	1.58	Fail

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Nitrate (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	12	
Coliform Bacteria (Total) MPN/100ml	N/A	N/A	N/A	7	N/A	N/A	36673	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	15	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	4	N/A	N/A	7.07	
Faecal coliforms cfu/100ml	N/A	N/A	N/A	6	N/A	N/A	3385	
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	683	
Nitrite (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.157	
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	12	N/A	N/A	1.40	
E. Coli MPN/100ml	N/A	N/A	N/A	12	N/A	N/A	10733	
Enterococci (Intestinal) cfu/100ml	N/A	N/A	N/A	7	N/A	N/A	462	

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied

2 – For pH the WWDA specifies a range of pH 6 - 9

Cause of Exceedance(s):

Minor plant improvements required

Significance of Results:

Possible minor impact on receiving waters

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0600D0113SW001

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	246754, 447993	RS40D010640	No	No	No	Yes	Poor

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary**

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: Total Oxidised Nitrogen (as N) mg/l, Total Phosphorus (as P) mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and the downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in BOD, ortho-Phosphate, concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

Other causes of deterioration in water quality in the area are unknown.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - CARNDONAGH MALIN WWTP

2.1.4.1 Treatment Efficiency Report - Carndonagh Malin WWTP

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
TN	19976	9919	50
COD	152463	16971	89
cBOD	102760	3109	97
SS	122940	9418	92
TP	2300	1048	54

Note: The above data is based on sample results for the number of dates reported

2.1.4.2 Treatment Capacity Report Summary - Carndonagh Malin WWTP

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

Carndonagh Malin WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	3654
DWF to the Treatment Plant (m^3/day)	1218
Current Hydraulic Loading - annual max (m^3/day)	4159
Average Hydraulic loading to the Treatment Plant (m^3/day)	1884
Organic Capacity (PE) - As Constructed	5833
Organic Capacity (PE) - Collected Load (peak week)[Note1]	5248
Organic Capacity (PE) - Remaining	585
Will the capacity be exceeded in the next three years? (Yes/No)	No

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

2.1.5 SLUDGE / OTHER INPUTS - CARNDONAGH MALIN WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)
There is no Sludge and Other Input data for the Treatment Plant included in the AER.							

3 COMPLAINTS AND INCIDENTS

3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature related to the discharge(s) to water from the WWTP and network is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There were no relevant environmental complaints in 2021.			

3.2 REPORTED INCIDENTS SUMMARY

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

3.2.1 SUMMARY OF INCIDENTS

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	Inadequate Infrastructure	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	1
Number of Incidents reported to the EPA via EDEN in 2021	1
Explanation of any discrepancies between the two numbers above	N/A

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

A summary of the operation of the storm water overflows and their significance where known is included below:

4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
SW002	246810, 447962	Yes	Low	Not Meeting	Unknown	Unknown	Not Monitored

Any TBC SWO(s) were identified as part of the on-going National SWO programme and will be updated in subsequent AER(s) once the information is confirmed.

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	No
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	N/A

4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS.

4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
There are no Specified Improvement Programmes for this Agglomeration.							

A summary of the status of any other improvements identified by under Condition 5 assessments- is included below.

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
No additional improvements planned at this time.				

4.2.3 SEWER INTEGRITY RISK ASSESSMENT

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Tables 4.2.1 and 4.2.2.

5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Licence Specific Report	Required by licence	Year included in AER	Included in this AER
Priority Substances Assessment	Yes	2015	No
Shellfish Impact Assessment	Yes		No

6 CERTIFICATION AND SIGN OFF

6.1 SUMMARY OF AER CONTENTS

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Has a Technical amendment/licence review application been submitted to the Agency by IW?	No
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	No
List reason e.g. changes to monitoring requirements	N/A
Have these processes commenced?	N/A
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	N/A

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed: Date: 14/04/2022

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of ,

Katherine Walshe

Acting Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient monitoring summary

Ambient Monitoring Summary: Carndonagh

Table 1: Ambient Monitoring Table

Ambient Monitoring Point from WWDL (or as agreed with EPA)	*Irish Grid Reference*	EPA Feature Coding Tool code	Receiving Waters Designation (Y/N)				WFD Status
			Bathing Water	Drinking Water	FWPM	Shellfish	
Upstream Monitoring Point	246760,448000	IW-NW-40D010400	no	no	no	Yes	poor
Downstream Monitoring Point	246754,448037	IW-NW-40D010400	no	no	no	Yes	poor

Table 2: Ambient Impact Assessment Table

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS (mean)	%EQS
cBOD mg/l	237901,445828	1.2	237113,446383	2.0	1.5	-53.33 %
Ortho-Phosphate (as P) mg/l	237901,445828	0.049	237113,446383	0.444	.035	-1114%
Ammonia (as N) mg/l	237901,445828	0.04	237113,446383	0.062	.065	-30.76%

Category	Entity Name	Station	Date	pH	Temperature	Conductivity @ 20°C	DO	BOD	COD	Suspended Solids	Ammonia (as N)	Orthophosphate
				pH units	°C	us/cm	% Sat	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
River Quality	Donagh	Carndonagh - Upstream	12-Jan-21	7.2	4.8	104	97.9	1	NT	<6	0.041	<0.05
River Quality	Donagh	Carndonagh - Downstream	12-Jan-21	7.1	5.8	306	93.1	2	NT	<6	0.084	0.269
River Quality	Donagh	Carndonagh - Upstream	11-Feb-21	7.4	3.5	219	92.8	1	NT	<6	0.071	<0.05
River Quality	Donagh	Carndonagh - Downstream	11-Feb-21	7.3	3.8	2153	91.7	4	NT	32	0.079	0.478
River Quality	Donagh	Carndonagh - Upstream	11-Mar-21	7.4	7	82	92.1	1	NT	<6	0.02	<0.05
River Quality	Donagh	Carndonagh - Downstream	11-Mar-21	7.2	7	147	91.8	2	NT	7	0.033	0.115
River Quality	Donagh	Carndonagh - Upstream	29-Apr-21	7.6	11.3	277	103.6	1	NT	<6	0.05	<0.05
River Quality	Donagh	Carndonagh - Downstream	29-Apr-21	7.5	11.5	1747	98.2	1	NT	34	<0.015	0.353
River Quality	Donagh	Carndonagh - Upstream	13-May-21	7.5	11.2	119	94.3	1	NT	<6	<0.015	<0.05
River Quality	Donagh	Carndonagh - Downstream	13-May-21	7.3	12.8	821	101	1	NT	<6	0.028	0.844
River Quality	Donagh	Carndonagh - Upstream	15-Jun-21	7.7	13.3	256	95.9	1	NT	<6	0.066	<0.05
River Quality	Donagh	1.5 Km D/S Carndonagh Br	15-Jun-21	7.7	13.4	2650	103.9	3	NT	14	0.108	0.82
River Quality	Donagh	Carndonagh - Upstream	13-Jul-21	7.7	17.1	256	98.2	1	NT	<6	0.031	<0.05
River Quality	Donagh	Carndonagh - Downstream	13-Jul-21	7.6	15.8	8880	97	1	NT	20	0.061	0.38
River Quality	Donagh	Carndonagh - Upstream	12-Aug-21	7.4	13.9	152	92.8	<1	NT	10	0.042	<0.05
River Quality	Donagh	Carndonagh - Downstream	12-Aug-21	7.4	14.4	10130	87	<1	NT	35	0.053	0.068
River Quality	Donagh	Carndonagh - Upstream	09-Sep-21	7.6	16.4	243	91.1	1	NT	<6	<0.015	<0.05
River Quality	Donagh	Carndonagh - Downstream	09-Sep-21	7.3	17.6	17250	83.6	1	NT	42	0.039	0.998
River Quality	Donagh	Carndonagh - Upstream	19-Oct-21	6.8	14.8	70	92.6	3	NT	22	0.05	0.044
River Quality	Donagh	Carndonagh - Downstream	19-Oct-21	6.7	15.7	132	92.8	4	NT	37	0.123	0.116