Annual Environmental Report

2021

Courtmacsherry

D0294-02

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0294-02, Courtmacsherry, in Cork 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.

1.2 TREATMENT SUMMARY

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

- Courtmacsherry WWTP with a Plant Capacity PE of 2500, 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
TPEFF0500D0294SW001	Courtmacsherry WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l Total Oxidised Nitrogen (as N) 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 COURTMACSHERRY WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - COURTMACSHERRY 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
Ammonia-Total (as N) mg/l	8	61	12
BOD, 5 days with Inhibition (Carbonaceo mg/l	8	1010	135
Suspended Solids mg/l	8	2143	183
ortho-Phosphate (as P) - unspecified mg/l	8	6.14	0.863
COD-Cr mg/l	8	1374	287
Hydraulic Capacity	N/A	1680	588

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 less than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional ‘Operational Performance Summary’. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF0500D0294SW002

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	25	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	6.13	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	12	N/A	N/A	6.34	Pass
Total Oxidised Nitrogen (as N) mg/l	15	18	N/A	11	3	2	7.50	Fail
Ammonia-Total (as N) mg/l	10	12	N/A	12	2	2	2.36	Fail
ortho-Phosphate (as P) - unspecified mg/l	8.00	9.60	N/A	12	N/A	N/A	0.753	Pass
E. Coli no./100mls	N/A	N/A	N/A	2	N/A	N/A	24197	
Faecal coliforms no./100mls	N/A	N/A	N/A	2	N/A	N/A	N/A	

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)
Enterococci (Intestinal) no./100mls	N/A	N/A	N/A	2	N/A	N/A	7699	

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):

TON and N as mg/l. Exceedances caused by catchment pressures and inadequate operational procedures

Significance of Results:

The WWTP is not compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0500D0294SW002

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
Downstream	147200, 43523	TW05003171AR1011	No	No	No	No	Poor
Downstream	150732, 42818	TW05003171AR1009	No	No	No	No	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, Ammonia-Total (as N) 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 Ammonia, BOD, DIN & Orthophosphate, 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: Catchment Pressures/Coastal Processes

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 - COURTMACSHERRY WWTP

2.1.4.1 Treatment Efficiency Report - Courtmacsherry 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)
COD	86186	6846	92
SS	54975	1686	97
cBOD	40406	1728	96
TP	N/A	N/A	N/A
TN	N/A	N/A	N/A

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

2.1.4.2 Treatment Capacity Report Summary - Courtmacsherry 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.

Courtmacsherry WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	2500
DWF to the Treatment Plant (m^3/day)	1686
Current Hydraulic Loading - annual max (m^3/day)	1680
Average Hydraulic loading to the Treatment Plant (m^3/day)	588
Organic Capacity (PE) - As Constructed	2500
Organic Capacity (PE) - Collected Load (peak week)[Note1]	1939
Organic Capacity (PE) - Remaining	561
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 - COURTMACSHERRY 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 Operational Procedures / Training	1	Yes	No
Spillage	Broken Sewer Pipe	1	No	No
Uncontrolled release	Broken Sewer Pipe	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Broken Sewer Pipe	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	4
Number of Incidents reported to the EPA via EDEN in 2021	4
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
SW003	151498, 42565	Yes	Low Significance	Unknown	Unknown	Unknown	Not Monitored
SW005	147090, 43460	Yes	Medium Significance	Meeting	Unknown	Unknown	Monitored
SW002	150732, 42818	Yes	Low Significance	Meeting	Unknown	Unknown	Monitored
SW004	150038, 42674	Yes	Low Significance	Unknown	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?	N/A
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?	No

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
D0294-SIP:01	Appropriate improvements to ensure compliance with the emission limit values as set out in Schedule A: Discharges and Discharge Monitoring, of this licence.	C	31/12/2019	Yes	Works Completed		

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
D0294-SIP:02	Discharge to be discontinued: SW006	C	31/12/2019	Yes	Works Completed		
D0294-SIP:03	Discharge to be discontinued: SW007	C	31/12/2019	Yes	Works Completed		
D0294-SIP:04	Discharge to be discontinued: SW008	C	31/12/2019	Yes	Works Completed		
D0294-SIP:05	Discharge to be discontinued: SW009	C	31/12/2019	Yes	Works Completed		
D0294-SIP:06	Discharge to be discontinued: SW010	C	31/12/2019	Yes	Works Completed		
D0294-SIP:07	Discharge to be discontinued: SW011	C	31/12/2019	Yes	Works Completed		
D0294-SIP:08	Improvement works to ensure compliance with Condition 1.7 of this licence	C	31/12/2019	Yes	Works Completed		

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

N/A

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		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	Yes
List reason e.g. changes to monitoring requirements	Proposed new emission limit values
Have these processes commenced?	No
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:

Date: 18/05/2022

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

Upstream - Inchy Bridge	Transitional							Median	Mean	95%ile
	EQS									
	Mean	95%ile	18/02/2021 10:30	23/06/2021 13:30	11/08/2021 11:15	08/09/2021 10:30	20/10/2021 12:15			
D.O % O_2	80%<95%ile<120%		99.2	103.5	106.7	89.3	96.7		99.1	106.1
Temperature C°	≤ 1.5 C° increase		6.9	13.6	18.0	17.2	12.9		13.7	17.8
BOD mg/L	n/a	≤ 4	1.8	2.0	0.5		3.6		2.0	3.4
COD mg/l	n/a	n/a	10.5	10.5	10.5		10.5		11	11
SS mg/l	n/a	n/a	13	3	1.25		23		10	22
Orthophosphate (P) mg/l	≤0.04 @35 PSU (Median)		0.062	0.02	0.034		0.138	0.048	0.064	0.127
Ammonia (N) mg/l	≤ 0.065	≤ 0.140	0.109	0.04	0.064		0.116		0.082	0.115
DIN (N) mg/l	≤ 2.6 @ 0 PSU ≤ 0.25 @ 34 PSU		2.99		3.23		1.29		2.50	3.21
TON (N) mg/l	n/a		2.88		3.23	3	1.17		2.57	3.20
E.Coli MPN/100mls	n/a			921	1203				1062	1189
Faecal Coliforms MPN/100mls	n/a			866	1733				1300	1690
Intestinal enterococci CFU/100mls	n/a			173	172				173	173

Spittal Bridge	Transitional							Median	Mean	95%ile
	EQS									
	Mean	95%ile	18/02/2021 10:10	23/06/2021 13:40	11/08/2021 11:50	08/09/2021 10:10	20/10/2021 12:00			
D.O % O_2	80%<95%ile<120%		98.2	100.1	75.6	84.7	94.5		90.6	99.7
Temperature C°	≤ 1.5 C° increase		7.3	14.4	17.2	17.1	12.9		13.8	17.2
BOD mg/L	n/a	≤ 4	5.9	2.1	7.7		3.2		4.7	7.4
COD mg/l	n/a	n/a	25	10.5	27		10.5		18	27
SS mg/l	n/a	n/a	26	3	6		8		11	23
Orthophosphate (P) mg/l	≤0.04 @35 PSU (Median)		0.169	0.240	0.134		0.203	0.186	0.187	0.234
Ammonia (N) mg/l	≤ 0.065	≤ 0.140	0.499	0.050	0.210		0.177		0.234	0.456
DIN (N) mg/l	≤ 2.6 @ 0 PSU ≤ 0.25 @ 34 PSU		6.14		6.98		19.06		10.73	17.85
TON (N) mg/l	n/a		5.64		6.77	5.36	18.88		9.16	17.06
E.Coli MPN/100mls	n/a			1414	2420				1917	2370
Faecal Coliforms MPN/100mls	n/a			2420	2420				2420	2420
Intestinal enterococci CFU/100mls	n/a			166	866				516	831

Downstream	Transitional						Median	Mean	95%ile
	EQS								
	Mean	95%ile	18/02/2021 10:45	23/06/2021 13:00	11/08/2021 13:30	20/10/2021 11:45			
D.O % O_2	80%<95%ile<120%		101.8	101.2	104	96.1		100.8	103.7
Temperature C°	≤ 1.5 C° increase		7.1	14	17.5	13.7		13.1	17.0
COD mg/L	n/a	n/a	123	39	170	175		127	174
BOD mg/L	n/a	≤ 4	2	1.4	2.7	2.6		2	3
Suspended Solids mg/l	n/a	n/a	68	23	30	26		37	62
Orthophosphate (P) mg/l	≤0.04 @35 PSU (Median)		0.09	0.01	0.02	0.1	0.055	0.055	0.099
Ammonia (N) mg/l	≤ 0.065	≤ 0.140	0.107	0.0175	0.0175	0.138		0.070	0.133
DIN (N) mg/l	≤ 2.6 @ 0 PSU ≤ 0.25 @ 34 PSU		1.44	2.113	21.601	2.721		6.97	18.77
E.Coli MPN/100mls	n/a			86	120			103	118
Faecal Coliforms MPN/100mls	n/a			181	399			290	388
Intestinal enterococci CFU/100mls	n/a			5	5			5	5

Ambient Monitoring Point from WWDL (or as agreeded with EPA)	Irish Grid Reference	EPA Feature Coding tool Code	Bathing Water	Drinking Water	FWPM	Shellfish	Current WFD Status
Upstream Monitoring Point - Inchy Bridge	146445 45774	TW05003171AR1001	No	No	No	No	Poor
Upstream Monitoring Point - Spittal Bridge	146890 42705	TW05003171AR1011	No	No	No	No	Poor
Downstream Monitoring Point	151707 42994	TW05003171AR1009	No designated & Designated approx. 3 km east	No	No	No	Poor

Significace of Results	
Did the ambient monitoring results meet the EQS Required?	No
Is there an obervable negative impact on water quality?	Unknown - "observable" TBC
List the parameters causing the impact?	Ammonia, BOD, DIN & Orthophosphate
A deterioration has been identified, but it is not known if it is caused by the TP	TRUE
Do the discharges from the WWTP have an observable negative impact on the WFD?	Unknown - "observable" TBC
Any other known impacts	Catchment pressures/Coastal processes