

Annual Environmental Report

2020



Middleton

D0056-01

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7.1 AMBIENT MONITORING SUMMARY

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

This Annual Environmental Report has been prepared for D0056-01, Midleton, 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.

There was no major capital or operational changes undertaken.

1.2 TREATMENT SUMMARY

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

- MIDLETON WWTP - 2020 with a Plant Capacity PE of 15000, the treatment type is 3N - Tertiary N removal

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
TPEFF0500D0056SW001	MIDLETON WWTP - 2020	Combined	Non - Compliant	Faecal coliforms 95% percentile non-compliant

1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

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

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 MIDLETON WWTP - 2020 - COMBINED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - MIDLETON WWTP - 2020

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
COD-Cr mg/l	14	1029	390.49
BOD, 5 days with Inhibition (Carbonaceo mg/l	14	333	132.08
Total Nitrogen mg/l	14	42.5	26.07
Hydraulic Capacity	N/A	12497	8375

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 – TPEFF0500D0056SW001 COMBINED

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail) *
COD-Cr mg/l	125	250	N/A	29	N/A	N/A	25.54	Pass
Suspended Solids mg/l	35	87.5	N/A	29	1	N/A	6.66	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	29	1	N/A	4.48	Pass
Total Nitrogen mg/l	15	18	N/A	29	N/A	N/A	6.65	Pass
pH pH units	9	9	N/A	29	N/A	N/A	8.02	Pass
ortho-Phosphate (as P) - unspecified mg/l	2	2.4	N/A	29	N/A	N/A	0.51	Pass
Ammonia-Total (as N) mg/l	N/A	N/A	N/A	29	N/A	N/A	0.37	
Lead - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	1	

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail) *
PCB 101 µg/l	N/A	N/A	N/A	2	N/A	N/A	0.01	
Mercury - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	0.5	
Zinc - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	9.5	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	29	N/A	N/A	3.96	
PCB 118 µg/l	N/A	N/A	N/A	1	N/A	N/A	0.01	
Arsenic - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	1	
Copper - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	11.5	
Nickel - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	5	
PCB 153 µg/l	N/A	N/A	N/A	1	N/A	N/A	0.01	

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail) *
Chromium - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	2.85	
PCB 52 µg/l	N/A	N/A	N/A	1	N/A	N/A	0.01	
PCB 138 µg/l	N/A	N/A	N/A	1	N/A	N/A	0.01	
Cadmium - unspecified µg/l	N/A	N/A	N/A	2	N/A	N/A	0.5	
PCB 28 µg/l	N/A	N/A	N/A	1	N/A	N/A	0.01	
PCB 180 µg/l	N/A	N/A	N/A	1	N/A	N/A	0.01	
Faecal coliforms no./100mls	95%ile ≤1000FC/100mls	N/A	N/A	52	N/A	N/A	N/A	Fail

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

3 - SW001 Geometric Mean of 198.4 Faecal Coliforms/100mls (Compliant with ELV)

* Overall Compliance is relevant to only those parameters with an ELV.

Cause of Exceedance(s):

Under investigation.

Significance of Results:

SW001 is non-compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 EFFLUENT MONITORING SUMMARY - WWTP – TPEFF0500D0056SW100

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail) *
COD-Cr mg/l	125	250	N/A	27	0	N/A	20.75	Pass
Suspended Solids mg/l	35	87.5	N/A	27	0	N/A	1.96	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	27	0	N/A	1.58	Pass
Total Nitrogen mg/l	15 (annual mean)	N/A	N/A	27	0	0	7.09	Pass
Faecal coliforms no./100mls	95%ile ≤1000FC/100mls	N/A	N/A	52	N/A	N/A	N/A	Fail

Notes:

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

2 – For parameters where a mean ELV applies 3 – For pH the WWDA specifies a range of pH 6-9

3 - SW100 Geometric Mean of 100.1 Faecal Coliforms/100mls (Compliant with WWDL ELV)

* Overall Compliance is relevant to only those parameters with an ELV.

Cause of Exceedance(s):

Under Investigation

Significance of Results:

SW100 WWTP is compliant with the ELV's set in the Urban Wastewater Treatment Directive however non-compliant with Faecal coliforms requirements set out in condition 4.17 of the licence.

2.1.4 AMBIENT MONITORING SUMMARY FOR THE COMBINED DISCHARGE TPEFF0500D0056SW001

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 Status
Downstream	185998, 68502	TW05003153LE6006	No	No	No	No	Moderate
Downstream	187001, 70001	TW05003153LE6005	No	No	No	No	Moderate

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 non-compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

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

2.1.5 OPERATIONAL PERFORMANCE SUMMARY - MIDLETON WWTP - 2020

2.1.5.1 Treatment Efficiency Report - MIDLETON WWTP - 2020

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)
cBOD	364356	13011	96
TN	71920	19318	73
COD	1077178	74159	93
SS	N/A	19349	N/A
TP	N/A	N/A	N/A

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

2.1.5.2 Treatment Capacity Report Summary - MIDLETON WWTP - 2020

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.

MIDLETON WWTP - 2020	
Peak Hydraulic Capacity (m³/day) - As Constructed	10368
DWF to the Treatment Plant (m³/day)	3456
Current Hydraulic Loading - annual max (m³/day)	12497

MIDDLETON WWTP - 2020	
Average Hydraulic loading to the Treatment Plant (m ³ /day)	8375
Organic Capacity (PE) - As Constructed	15000
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	16265
Organic Capacity (PE) - Remaining	0
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

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.

2.1.6 SLUDGE / OTHER INPUTS - MIDDLETON WWTP - 2020

'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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There were no relevant environmental complaints in 2020.			

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)
Uncontrolled release	Network Infrastructure	1	Yes	No
Breach of ELV	Inadequate Infrastructure	1	Yes	No
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Blocked Sewer	1	No	No
Uncontrolled release	Adverse Weather	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	No
Uncontrolled release	Plant or equipment calibration at WWTP	1	No	Yes
Monitoring Equipment Issues	Plant or equipment calibration at WWTP	1	No	No
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	9
Number of Incidents reported to the EPA via EDEN in 2020	9
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	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (m3)	Monitoring Status
SW001	186518, 69727	Yes	Medium	Meeting	Unknown	Unknown	Monitored
SW03MIDL	187974, 73109	Yes	Medium	Meeting	Unknown	Unknown	Monitored
SW04MIDL	188044, 72524	Yes	Medium	Meeting	Unknown	Unknown	Monitored
SW05MIDL	188518, 71783	Yes	Medium	Meeting	Unknown	Unknown	Monitored
SW07MIDL	187516, 72901	Yes	Medium	Meeting	Unknown	Unknown	Monitored
TBC	188366, 71789	No	Medium	Meeting	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (m3)	Monitoring Status
TBC	188269, 72059	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	187346, 75170	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	188333, 73317	No	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	187438, 74619	No	Medium	Meeting	Unknown	Unknown	Not Monitored

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?	No
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 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
D0056-SIP:01	Increase Midleton WWTP capacity to 15,000PE	C	31/12/2011	Yes	Works Completed		
D0056-SIP:02	Infiltration programme	C	31/12/2011	Yes	Works Completed		
D0056-SIP:03	Infiltration programme - SW03	C	31/12/2011	Yes	Works Completed		
D0056-SIP:04	Infiltration programme - SW04	C	31/12/2011	Yes	Works Completed		
D0056-SIP:05	Upgrading of Storm Water Overflows to comply with the limits outlined in Schedule A.4 (Condition 5.6) - SW03	C	31/12/2011	Yes	At Planning Stage	31/12/2026	
D0056-SIP:06	Upgrading of Storm Water Overflows to comply with the	C	31/12/2011	Yes	At Planning Stage	31/12/2026	

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
	limits outlined in Schedule A.4 (Condition 5.6) - SW04						

A summary of the status of any improvements identified by under Condition 5.2 is included below.

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
There are no Improvements Programme for this Agglomeration.				

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 Table.

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 list of the various reports required for this agglomeration and a brief summary of their recommendations.

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Priority Substances Assessment	Yes	2014	No	

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2014

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
Is there a need to advise the EPA for consideration of a Technical Amendment / Review of the licence?	Yes
List reason e.g. additional SWO identified	Additional SWOs identified
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?	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:

Signed: Date: 25/06/2021

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 Data for Coastal/transitional waters - Where the ambient data is not in EIMS, please complete the table below and append with ambient monitoring results (into 1 combined PDF). Please read notes tab for further info on coastal and transitional assessment.

Ambient Monitoring Report Summary Data

Ambient monitoring point/Coastal Monitoring Code	Irish Grid Reference	Designations				
		Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
TW5003153LE6005	187001, 70001	No	No	No	No	
TW5003153LE6006	185998, 68502	No	No	No	No	

Ambient Monitoring Results Summary

Monitoring point	Date	Surface/Bottom	D.O. %O2	Temperature Co	pH	BOD mg/L	Orthophosphate (P) mg/L	Ammonia (N) mg/L	DIN (N) mg/L
TW5003153LE6005	13/08/2020	Surface	134	18.6	8.2	1.8	<0.005	0.022	0.036
TW5003153LE6005	13/08/2020	Bottom	122	19.4	8.1	2.6	0.0075	0.029	0.034
TW5003153LE6005	23/07/2020	Surface	125	17.2	8.4		0.005	0.014	0.019
TW5003153LE6005	23/07/2020	Bottom	126	16.5	8.4		0.005	0.023	0.044
TW5003153LE6005	24/06/2020	Surface	97	15.5	8		0.015	0.07	0.023
TW5003153LE6005	24/06/2020	Bottom	99	15.3	8.1		0.016	0.072	0.172
TW5003153LE6005	05/02/2020	Surface	95	8.6	7.9		0.027	0.067	0.767
TW5003153LE6006	13/08/2020	Surface	120	17.1	8.1	1.6	0.051	0.056	0.061
TW5003153LE6006	13/08/2020	Bottom	115	16.8	8.1		0.0056	0.028	0.046
TW5003153LE6006	23/07/2020	Surface	120	15.8	8.3	3.2	NR	0.017	0.053
TW5003153LE6006	23/07/2020	Bottom	120	15.8	8.3	3.3	NR	0.017	0.04
TW5003153LE6006	24/06/2020	Surface	95	15.2	8.1	1.5	0.013	0.076	
TW5003153LE6006	24/06/2020	Bottom	96	15.1	8	1	0.016	0.094	0.167
TW5003153LE6006	05/02/2020	Surface	95	8.7	7.9	0.5	0.051	0.055	0.575