

Annual Environmental Report

2021



Navan

D0059-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0059-01, Navan, in Meath 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 were no capital works, significant changes or operational improvements undertaken in 2021.

1.2 TREATMENT SUMMARY

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

- NAVAN WWTP with a Plant Capacity PE of 50000, the treatment type is 3NP - Tertiary N&P 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
TPEFF2300D0059SW001	NAVAN WWTP	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report

Toxicity of Final Effluent

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 NAVAN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - NAVAN 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
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	26	456	277
Ammonia-Total (as N) mg/l	1	36	36
COD-Cr mg/l	26	456	276.7
Suspended Solids mg/l	26	736	205.8
Total Phosphorus (as P) mg/l	25	9.14	6.25
Total Nitrogen mg/l	25	76	48
ortho-Phosphate (as P) - unspecified mg/l	1	3.54	3.54
Hydraulic Capacity	N/A	24233	12274

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 - TPEFF2300D0059SW001

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	100	200	N/A	26	N/A	N/A	31	Pass
Suspended Solids mg/l	35	88	N/A	26	N/A	N/A	11	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	13	26	N/A	26	N/A	N/A	6.54	Pass
pH pH units	9.00	9.00	N/A	25	N/A	N/A	6.98	Pass
Ammonia-Total (as N) mg/l	3.00	3.60	N/A	26	N/A	N/A	0.045	Pass
Total Phosphorus (as P) mg/l	1.00	1.20	N/A	26	N/A	N/A	0.311	Pass
Conductivity @25°C µS/cm	N/A	N/A	N/A	5	N/A	N/A	1095	

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)
Total Nitrogen mg/l	N/A	N/A	N/A	26	N/A	N/A	14	
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	26	N/A	N/A	0.119	

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):

Not applicable

Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF2300D0059SW001

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	288486, 269101	RS07B041900	No	No	No	No	Unassigned
Downstream	291858, 271311	RS07B042000	No	No	No	No	Moderate

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
BOD - 5 days (Total) mg/l	RS07B041900	1.52	RS07B042000	1.36	1.50	-10.7
Ammonia-Total (as N) mg/l	RS07B041900	0.020	RS07B042000	0.023	0.065	4.6
ortho-Phosphate (as P) - unspecified mg/l	RS07B041900	0.028	RS07B042000	0.026	0.035	-5.1
pH pH units	RS07B041900	8.07	RS07B042000	8.14	N/A	

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Dissolved Oxygen mg/l	RS07B041900	10	RS07B042000	11	N/A	
Dissolved Oxygen % Saturation	RS07B041900	101	RS07B042000	103	N/A	
Temperature °C	RS07B041900	14	RS07B042000	13	N/A	
Total Nitrogen mg/l	RS07B041900	3.14	RS07B042000	3.35	N/A	

Significance of Results:

The WWTP discharge was compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the upstream monitoring location. 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-Total (as N) 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.

As per the 3rd Cycle Draft Boyne Catchment Report (HA 07), the significant pressures on the At Risk Boyne_150 waterbody are Domestic Waste Water and Other (Unknown Anthropogenic pressures). There are no significant pressures listed for the Boyne_140 waterbody. The Navan WWTP is not listed as a significant pressure in the Cycle 3 report.

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 - NAVAN WWTP

2.1.4.1 Treatment Efficiency Report - NAVAN 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)
cBOD	1236616	25563	98
COD	2615300	122472	95
SS	919889	42075	95
TP	26904	1217	95
TN	205794	53737	74

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

2.1.4.2 Treatment Capacity Report Summary - NAVAN 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.

NAVAN WWTP	
Peak Hydraulic Capacity (m³/day) - As Constructed	33750
DWF to the Treatment Plant (m³/day)	12500
Current Hydraulic Loading - annual max (m³/day)	24233

NAVAN WWTP	
Average Hydraulic loading to the Treatment Plant (m ³ /day)	12274
Organic Capacity (PE) - As Constructed	50000
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	37869
Organic Capacity (PE) - Remaining	12131
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 - NAVAN 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)
Landfill Leachate (delivered by tanker)	3298	Weight (Tonnes)	40	0.07	Yes	Yes	Yes
Waterworks Sludge	15421	Weight (Tonnes)	188	0.34	Yes	Yes	Yes

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
3	Discharge to waters	0	3

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)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
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)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	No
Abatement Equipment offline	Plant or equipment maintenance at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	No
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	Yes
Uncontrolled release	EO caused by power failure	1	No	Yes
Uncontrolled release	EO caused by power failure	1	No	Yes
Uncontrolled release	Plant or equipment maintenance at WWTP	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	11
Number of Incidents reported to the EPA via EDEN in 2021	11
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	Total volume discharged in 2021 (m3)	Monitoring Status
SW11	287961.04, 266645.28	Yes	Medium	Meeting	Unknown	Not Monitored
SW12	288482.06 265674.18	Yes	Medium	Meeting	Unknown	Not Monitored
SW2	288375.62, 268807.5	Yes	Medium	Meeting	Unknown	Not Monitored
SW3	288082.09, 268258.1	Yes	Medium	Not Meeting	Unknown	Not Monitored
SW5	287210.99, 267990.17	Yes	Medium	Meeting	Unknown	Not Monitored
SW6	286581, 268367	Yes	Medium	Not Meeting	Unknown	Not Monitored

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	Total volume discharged in 2021 (m3)	Monitoring Status
SW7	287187.478, 267930.61	Yes	Medium	Not yet Assessed	Unknown	Not Monitored
SW8	287251.83, 267761.4	Yes	Medium	Meeting	Unknown	Not Monitored
SW9	286812.78, 266104.49	Yes	Medium	Meeting	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m ³)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	Yes
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
D0059-SIP:01	Upgrading of sewer network to ensure all SWO's comply with criteria set out in DoEHLG.....	C	31/01/2011	Yes	Works Completed		
D0059-SIP:02	Waste water sewer network rehabilitation works and improvements	C	31/01/2011	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

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
Toxicity of Final Effluent	Yes	2016	Yes

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2015.

5.2 TOXICITY OF FINAL EFFLUENT

The Toxicity of Final Effluent Report is included in Appendix 7.1. A summary of the findings of this report is included below.

Parameter	Value
Are any procedural and/or infrastructural works to reduce the toxicity of the final discharge included?	No
Does the report identify that the discharge is toxic to any of the species in the study?	No
Has the study been carried out against 4 species in 3 trophic levels?	Yes

Parameter	Value
Is a Toxicity report required?	Yes
List species impacted	None
Recommendations	None
Status of any improvement measures required	N/A

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:

Date: 18/02/2022

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 - Toxicity of Final Effluent

A copy of this certificate is available on www.fitzsci.ie

Customer supplied information appear in italics.

Customer	Kieran Cunningham	Lab Report Ref. No.	0490/533/02
	<i>Meath Co. Co.</i>	Date of Receipt	22/04/2021
	<i>Environmental Section</i>	Sampled On	22/04/2021
	<i>Farganstown</i>	Date Testing Commenced	22/04/2021
	<i>Navan</i>	Received or Collected	Delivered by Customer
	<i>Co. Meath</i>	Condition on Receipt	Acceptable
Customer PO	51590170	Date of Report	11/05/2021
Customer Ref	21-0231 Navan FE	Sample Type	Effluent
Ref 2	22/04/21 09:30		
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Toxicity (Daphnia Magna) 24hrs	0	By Subcontractor	>100	% v/v	
Toxicity (Daphnia magna) 48 hrs	0	By Subcontractor	>100	% v/v	

Signed : 
Aoife Harmon - Laboratory Supervisor

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Date : 11/05/2021

Acc. : Accredited Parameters by ISO/IEC 17025:2017

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

Results shall not be reproduced, except in full, without the approval of Fitz Scientific

Results contained in this report relate only to the samples tested (P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2018)

* Subcontracted

Final results will be issued without any estimated uncertainty of measurement being applied. This can be supplied on request.

Fitz Scientific maintain all customer information in the strictest confidence which is legally enforceable.

A copy of this certificate is available on www.fitzsci.ie

Customer	Kieran Cunningham	Lab Report Ref. No.	0490/533/01
	Meath Co. Co.	Date of Receipt	22/04/2021
	Environmental Section	Sampled On	22/04/2021
	Farganstown	Date Testing Commenced	22/04/2021
	Navan	Received or Collected	Delivered by Customer
	Co. Meath	Condition on Receipt	Acceptable
Customer PO	51590170	Date of Report	29/04/2021
Customer Ref	21-0230 Navan FE	Sample Type	Effluent
Ref 2	22/04/21 09:30		
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Toxicity (Vibrio Fischeri) TU	0	By Subcontractor	<2.2	Toxic Units	Yes
Toxicity (Vibrio Fischeri)	0	By Subcontractor	>45	% v/v	Yes

Signed : 
Aoife Harmon - Laboratory Supervisor

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Date : 29/04/2021

Acc. : Accredited Parameters by ISO/IEC 17025:2017

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

Results shall not be reproduced, except in full, without the approval of Fitz Scientific

Results contained in this report relate only to the samples tested (P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2018)

* Subcontracted

Final results will be issued without any estimated uncertainty of measurement being applied. This can be supplied on request.

Fitz Scientific maintain all customer information in the strictest confidence which is legally enforceable.