Annual Environmental Report

2023

Cavan Town

D0020-01

CONTENTS

7 APPENDIX

7.1 SMALL STREAM RISK SCORE ASSESSMENT

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2023 AER

This Annual Environmental Report has been prepared for D0020-01, Cavan Town, in Cavan 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)

- Cavan WWTP with a Plant Capacity PE of 30000, the treatment type is 3P - Tertiary 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
TPEFF0200D0020SW001	Cavan WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l BOD, 5 days with Inhibition (Carbonaceo mg/l Total Nitrogen mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
Small Stream Risk Score Assessment

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 CAVAN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - CAVAN 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
COD-Cr mg/l	9	938	414
Suspended Solids mg/l	9	772	128
Total Nitrogen mg/l	9	97	45
BOD, 5 days with Inhibition (Carbonaceo mg/l	9	348	142
Ammonia-Total (as N) mg/l	9	57	28
Total Phosphorus (as P) mg/l	9	22	5.20
Hydraulic Capacity	N/A	10255	6176

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 - TPEFF0200D0020SW001

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	9	N/A	N/A	34	Pass
Suspended Solids mg/l	35	87.5	N/A	9	N/A	N/A	10	Pass
Total Nitrogen mg/l	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
pH pH units	9	9	N/A	9	N/A	N/A	7.56	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	4.6	9.2	N/A	9	2	1	5.30	Fail
Total Phosphorus (as P) mg/l	2	2.4	N/A	9	N/A	N/A	0.164	Pass
Ammonia-Total (as N) mg/l	0.26	0.52	N/A	9	4	4	4.72	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.13	0.26	N/A	9	N/A	N/A	0.028	Pass

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)
Conductivity @20°C µS/cm	N/A	N/A	N/A	9	N/A	N/A	989	

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):

Total Nitrogen, BOD, 5 days with Inhibition, Ammonia - Total (as N)

Significance of Results:

The WWTP is non compliant with the ELVs set out in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0200D0020SW001

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	241610, 306189	RS36C020200	No	No	No	No	Poor

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	241290, 306913	RS36C020300	No	No	No	No	Poor

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	RS36C020200	1.56	RS36C020300	3.58	1.50	134.4
Ammonia-Total (as N) mg/l	RS36C020200	0.257	RS36C020300	2.29	0.065	3130.2
ortho-Phosphate (as P) - unspecified mg/l	RS36C020200	0.086	RS36C020300	0.092	0.035	16.7
pH pH units	RS36C020200	7.71	RS36C020300	7.72	N/A	
Temperature °C	RS36C020200	7.85	RS36C020300	9.20	N/A	
Dissolved Oxygen mg/l	RS36C020200	10	RS36C020300	10	N/A	
Total Nitrogen mg/l	RS36C020200	1.70	RS36C020300	4.08	N/A	
Dissolved Oxygen % O2	RS36C020200	86	RS36C020300	88	N/A	
Total Phosphorus (as P) mg/l	RS36C020200	0.159	RS36C020300	0.246	N/A	

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

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 ortho-Phosphate (as P), BOD 5 Daya (Total), 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.

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

The discharge from the wastewater treatment plant does have an observable negative impact on the Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - CAVAN WWTP

2.1.4.1 Treatment Efficiency Report - Cavan 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	327480	9733	97
COD	956731	62127	94
SS	296802	18795	94
TP	12021	302	97
TN	103084	21410	79

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

2.1.4.2 Treatment Capacity Report Summary - Cavan 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.

Cavan WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	20250
DWF to the Treatment Plant (m^3/day)	6750
Current Hydraulic Loading - annual max (m^3/day)	10255
Average Hydraulic loading to the Treatment Plant (m^3/day)	6176
Organic Capacity (PE) - As Constructed	30000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	18210
Organic Capacity (PE) - Remaining	11790
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 - CAVAN 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)
Domestic /Septic Tank Sludge	3297	Volume (m3)		0.15	Yes	Yes	Yes
Domestic /Septic Tank Sludge	9105	Volume (m3)		0.4	Yes	Yes	Yes
Other	538	Volume (m3)		0.02	Yes	Yes	Yes
Other	5198	Volume (m3)		0.23	Yes	Yes	Yes
Industrial / Commercial Sludge	115	Volume (m3)		0.05	No	No	No

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
2	Water Pollution	0	2
1	Broken Sewer	0	1

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 Uisce Éireann 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	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	Shock load to the WWTP	No	No
Breach of ELV	Shock load to the WWTP	No	No

Incident Type	Cause	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Plant or equipment breakdown at WWTP	Yes	Yes
Abatement equipment off-line	Emergency overflow caused by pump failure	No	Yes
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Breach of ELV	Shock load to the WWTP	Yes	No
Breach of ELV	Inadequate Operational Procedures/Training	No	Yes
Uncontrolled release	Broken Sewer Pipe	No	Yes
Breach of ELV	Shock load to the WWTP	Yes	Yes
Uncontrolled release	Blocked Sewer	No	Yes
Breach of ELV	Shock load to the WWTP	No	Yes
Abatement equipment off-line	Emergency overflow caused by pump failure	No	No
Other	Shock load to the WWTP	No	Yes
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes
Abatement equipment off-line	Plant or equipment breakdown at WWTP	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2023	15

Question	Answer
Number of Incidents reported to the EPA via EDEN in 2023	15
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 2023 (No. of events)	Total volume discharged in 2023 (m3)	Monitoring Status
SW012	242576,305219	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW015	242481,303149	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored
SW011. James Connolly Street	241985,304543	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Monitored
SW5	241531,306329	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	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 wastewater discharge by metered SWOs during the year (m3)?	Unknown

SWO Summary	
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?	Yes

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
D0020-SIP:01	Waste water sewer network improvements (including upgrade of pumping stations)	C	31/12/2014	Yes	Works Completed		
D0020-SIP:02	WWTP upgrade and ancillary works	C	31/12/2014	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
D0020-SIP:03	Upgrade of SWO's to comply with criteria set out in DoEHLG Procedures and Criteria....	C	31/12/2014	Yes	Works Completed		
D0020-SIP:04	Upgrading of emergency overflows from pumping stations so that the overflows do not activate in response to rainfall events or lack of capacity in the sewer network.	C	31/12/2014	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	Included in this AER
D0020-01-Priority Substances Assessment	Yes	No
D0020-01-Small Stream Risk Score Assessment	Yes	Yes

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?	N/A
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	N/A
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	Yes

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

Signed: Date: 04/06/2024

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

Eleanor Roche

Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Small Stream Risk Score Assessment

SSRS Compliance Monitoring: *Cavan* Waste Water Treatment Plant 2023

Report to Uisce Éireann

Limnos Consultancy, January 2024

Contents

Cavan Town WWTP

Introduction

Small Streams Risk Score (SSRS) assessments on the Cavan River upstream and downstream of the Cavan Town waste water treatment plant (WWTP) are outlined in this report. The assessments were made on 25 October 2023. Limnos Consultancy was contracted by Irish Water to undertake the surveys.

Methodology

Small Streams Risk Score (SSRS)

Samples were taken using an ISO compliant kick-sampling sampling method compatible with the Environmental Protection Agency (EPA) Standard Operating Procedure for sampling aquatic macroinvertebrates. Samples were taken upstream and downstream of the discharge from the WWTP. SSRS results were assigned based on the macroinvertebrate fauna.

The author was the main initiator of the SSRS system developed by the Western River Basin District and the EPA under his supervision in 2005–2006 (McGarrigle 2014). He has undertaken SSRS training of local authority and other professional staff at the Local Government Water Services Training Centres around the country for over 100 personnel.

The SSRS was calculated based on selected sub-groups of the macroinvertebrates recorded. The score is calculated based on the number of taxa and their relative abundance in four main invertebrate groups as follows:

Group 1: Ephemeroptera (excluding *Baetis rhodani*)
Group 2: Plecoptera
Group 3: Trichoptera
Group 4: GOlD (Gastropoda, Oligochaeta, Diptera)
Group 5: *Asellus*

The first three groups above, mayflies, stoneflies, and caddis flies, are regarded as pollution-sensitive whereas gastropods, oligochaetes, dipterans and *Asellus* are relatively pollution-tolerant. The maximum score that can be achieved is 11.2 and threshold scores deciding the degree of risk of not being at good ecological status are as follows:

> 7.25 Probably not at risk
- > 6.5 to 7.25 Indeterminate
< 6.5 Stream may be at risk.

Samples were taken with a standard 1 mm mesh pond net. A 3-minute kick sample was combined with a 1-minute stonewash. Samples were placed on a white tray and, once cleaned of debris such as leaves and twigs and excessive sand or gravel by decanting and hand picking, the sample was examined carefully to identify the macroinvertebrates. At least 25 minutes were spent identifying and assigning each taxon found to a relative abundance category. Table 1 gives the definition of the relative abundance terms Few, Common, Numerous, Dominant and Excessive. The numeric code is used in the results tables below.

Table 1. Relative abundance table.

Abundance	Number of Individual Specimens	SSRS Relative abundance numeric code
Few:	1 to 5 individuals	1
Common:	6 to 20	2
Numerous:	21-50	3
Dominant:	51 to 100	4
Excessive:	>100	5

Physico-Chemical Measurements

Physico-chemical measurements were also made for dissolved oxygen, temperature, conductivity and pH using a HACH HQ40d meter with appropriate compatible probes.

Location of Sites Sampled

Figure 1 maps the sampling sites and Table 2 gives the details of the locations sampled.

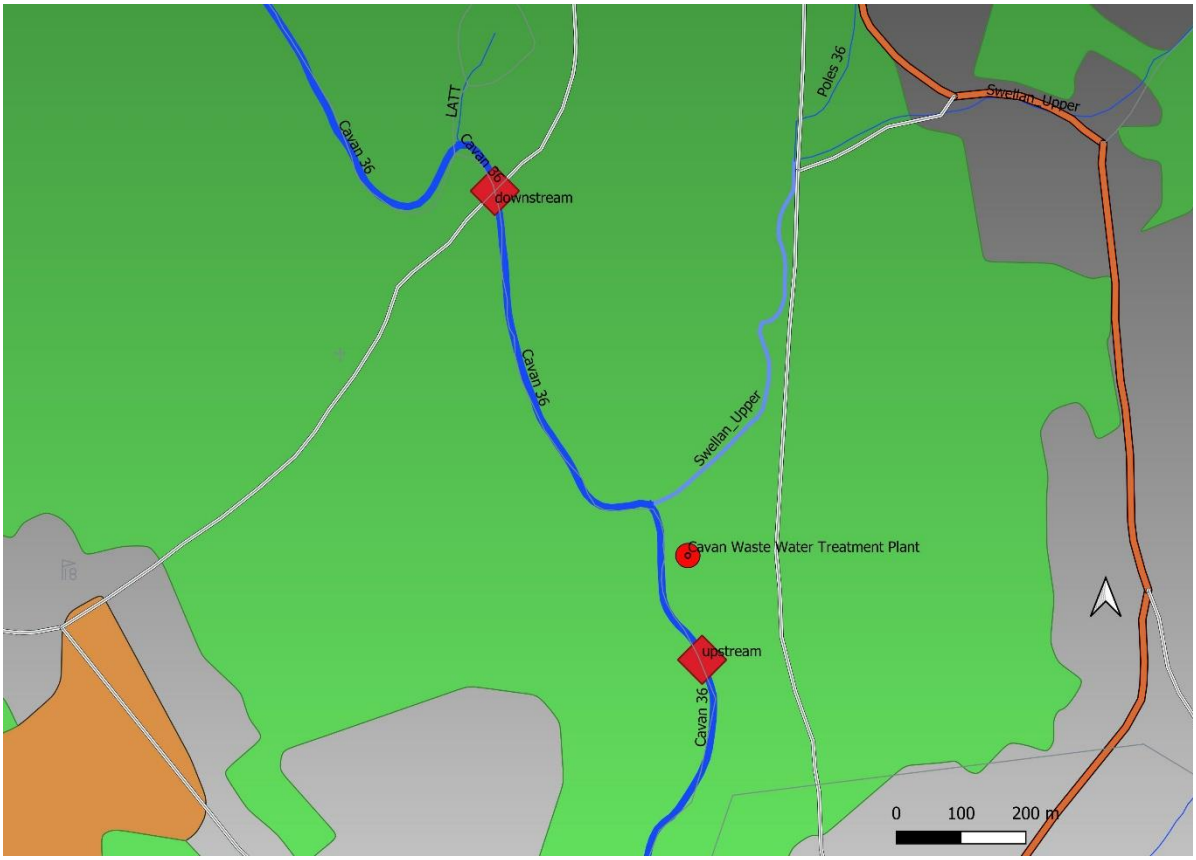

Figure 1. Location of upstream and downstream monitoring sites for Cavan WWTP. River flows North. ©OpenStreetMap contributors.

Table 2. Location of sites sampled upstream and downstream of Cavan Town WWTP.

Location	Cavan Town WWTP Upstream	Cavan Town WWTP Downstream
EPA Code	RS36C020200	RS36C020300
Station	Bridge next to WWTP site	Br SSE Loretto College
River	Cavan	Cavan
Easting	241530	241290
Northing	306426	306914

Results

Site Photographs

Figure 2 shows photographs taken when sampling at Site 1 and Site 2 upstream and downstream of the Cavan WWTP on 25 October 2023.

	
U/S Cavan WWTP looking downstream	U/S Cavan WWTP looking upstream
	
D/S Cavan WWTP looking downstream	D/S Cavan WWTP looking upstream

Figure 2. Upstream (U/S) and downstream (D/S) of Cavan Town WWTP.

Macroinvertebrates – SSRS

Table 3 gives the recorded macroinvertebrate taxa for the standard kick samples taken at these sites.

Table 3. Macroinvertebrates recorded upstream and downstream of Cavan Town WWTP discharge point.

		Upstream Cavan Town WWTP	**Downstream Cavan Town WWTP**
		Date of Surveys	
SSRS Group	**Taxon**	**25/10/2023**	**25/10/2023**
1, Ephem	*Heptagenia*	Few	-
3, Trich	*Hydropsyche*	-	Few
3, Trich	Limnephilidae	Few	Few
4, GOlD	Ancylidae	Few	Few
4, GOlD	Chironomidae	Few	Few
4, GOlD	*Potamopyrgus antipodarum*	Few	-
4, GOlD	Simuliidae	Few	Numerous
4, GOlD	*Sphaerium*	Few	-
4, GOlD	Tubificidae		Few
5, Asellus	*Asellus*	-	Few
n/a	*Baetis rhodani*	Common	Numerous
n/a	*Elmis aenea*	-	Few
n/a	*Gammarus*	Dominant	Excessive
n/a	*Glossiphonia complanata*	-	Few
n/a	*Limnius volckmari*	Few	-
	Number Taxa	**11**	**11**
	SSRS	**4**	**3.2**
	Q-Value	**Q3-4**	**Q3**

The taxa are ordered from top to bottom in terms of their SSRS grouping and broad sensitivity to pollution with *Heptagenia* at the top being the most sensitive and Tubificidae and *Asellus* at the bottom being the most tolerant. The table shows the SSRS Group to which the taxon belongs, where relevant –

not all taxa are considered when calculating the SSRS. Both samples contained 11 taxa. This is a relatively low number of taxa for a 4 to 5 m-wide stream in October. Diversity should generally be higher in winter than in summer with more stonefly species likely to be present plus some mayfly species such as *Rhithrogena*. The upstream site had the mayfly, *Heptagenia* and the downstream site had a few Limnephilidae belonging to the Group 3 Trichoptera in the SSRS system. Both sites scored lower than in 2022 at SSRS values of 4 and 3.2, respectively. No stoneflies were recorded.

The most recent (2022) EPA monitoring at this site (RS36C020300) places the river in Poor status (Q2-3*) at this downstream station with a note regarding a decline from Q3 in 2019 due to excessive siltation. The current survey was undertaken in fast-flowing flood conditions and siltation was not noted as a particular issue in October 2023.

The results in Table 3 also give an estimated Q-Value that would be most likely for a summer sample at these locations. The upstream site is potentially a Q3-4 (Moderate), and the downstream site is likely to be a Q3 indicating Poor condition or Poor ecological status. The physico-chemical measurements made in the field on the day of sampling (Table 4) show a lowish dissolved oxygen both upstream and downstream at just over 87% saturation. The river was in flood on the day of sampling and on occasion low dissolved oxygens are noted during and after floods due to, e.g., storm overflows and in-wash of organic material. The conductivity and pH are similar to the 2022 results.

Physico-Chemical Results

Table 4. Physico-chemical results for Cavan River, 25 October 2023.

Station	Dissolved Oxygen (DO) % Saturation	DO mg/l	Temp. °C	Conductivity µS/cm	pH
Upstream Cavan WWTP	**87.4**	**9.54**	**11.3**	**272**	**7.13**
Downstream Cavan WWTP	**87.3**	**9.31**	**12.3**	**301**	**7.30**

Summary

The Cavan River is in Moderate or Poor condition before it reaches the Cavan Town WWTP. The upstream and downstream sites had SSRS values of 4 and 3.2, respectively; this suggests a slight further deterioration at the site sampled

downstream of the works. The scores were lower than the October 2022 scores at the same sites.

Reference

McGarrigle, M. 2014. “Assessment of Small Water Bodies in Ireland.” *Biology and Environment* 114B(3). doi: 10.3318/BIOE.2014.15.