Annual Environmental Report

2019

Derrinturn

D0244-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0244-01, Derrinturn, in Kildare 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 this year.

1.2 TREATMENT SUMMARY

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

- DERRINTURN WWTP with a Plant Capacity PE of 1600, 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
TPEFF1400D0244SW001	DERRINTURN WWTP	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
Small Stream Risk Score Assessment	Yes

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 DERRINTURN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - DERRINTURN 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	12	1920	1194.67
Total Nitrogen mg/l	12	246	147.74
Total Phosphorus (as P) mg/l	12	29.05	18.75
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	358	266.84
Suspended Solids mg/l	12	1106	400.24
Hydraulic Capacity	N/A	3544	502

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’. 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 - TPEFF1400D0244SW001

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	12	N/A	N/A	26.02	Pass
pH pH units	6-9	6-9	N/A	12	N/A	N/A	7.52	Pass
Suspended Solids mg/l	8	20	N/A	12	N/A	N/A	1.78	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	5	10	N/A	12	N/A	N/A	1.84	Pass
Total Phosphorus (as P) mg/l	0.5	0.6	N/A	12	N/A	N/A	0.27	Pass
Ammonia-Total (as N) mg/l	0.3	0.6	N/A	12	N/A	N/A	0.15	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.19	0.38	N/A	12	N/A	N/A	0.12	Pass

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

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 TPEFF1400D0244SW001

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
Upstream	273020, 231285	RS14F010020	No	No	No	No	Poor
Downstream	269666, 230148	RS14F010050	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 compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results does not meet the required EQS. 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-P 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 - DERRINTURN WWTP

2.1.4.1 Treatment Efficiency Report - DERRINTURN 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	37487	782	98
TP	4758	44	99
cBOD	67706	299	100
COD	303132	4236	99
SS	101554	290	100

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

2.1.4.2 Treatment Capacity Report Summary - DERRINTURN 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.

DERRINTURN WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	1080
DWF to the Treatment Plant (m^3/day)	360
Current Hydraulic Loading - annual max (m^3/day)	3544

DERRINTURN WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	502
Organic Capacity (PE) - As Constructed	1600
Organic Capacity (PE) - Collected Load (peak week)[Note1]	1702
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.

2.1.5 SLUDGE / OTHER INPUTS - DERRINTURN 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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
1	Blocked 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 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)
There were no reportable incidents in 2019.				

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	0
Number of Incidents reported to the EPA via EDEN in 2019	0
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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW-2	270595, 232156	Yes	Low	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?	N/A
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
There are no Specified Improvement Programmes for this Agglomeration.							

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.

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Small Stream Risk Score Assessment	Yes	2018	Yes	5.1

5.1 SMALL STREAM RISK SCORE ASSESSMENT

The Small Stream Risk Score Assessment Report is included in Appendix 7.2 - Small Stream Risk Score Assessment. A summary of the findings of this report is included below.

Parameter	Value
Condition 5 Improvement Programme Reference	N/A
Does SSRS indicate discharges are posing a pollution risk?	No
Does improvement programme include any procedural and/or infrastructural works?	No
Downstream SSRS Water Quality Risk	At Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	At Risk
What is Downstream SSRS?	1.6

Parameter	Value
What is Upstream SSRS?	3.2

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?	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	Yes

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

Date: 06/03/2020

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
Appendix 7.2 - Small Stream Risk Score Assessment

Derrinturn Ambient Monitoring Summary 2019

			Receiving Waters Designation (Yes/No)					Mean (mg/l)		
Ambient Monitoring Point from WWDL (or as agreed with EPA)	**Irish National Grid Reference (Easting, Northing)**	**EPA Feature Coding Tool code**	**Bathing Water**	**Drinking Water**	**FWPM**	**Shellfish**	**Current WFD Status**	**cBOD**	**o-Phosphate (as P)**	**Ammonia (as N)**
Upstream Monitoring Point	273020, 231285	RS14F010020	No	No	No	No	Poor	1.000	0.066	0.433
Downstream Monitoring Point	269666, 230148	RS14F010050	No	No	No	No	Poor	1.000	0.093	0.330
Difference								*0.000*	*0.027*	*-0.103*
EQS								1.500	0.035	0.065
% of EQS								0.000%	77.551%	-158.242%

Derrinturn Ambient Monitoring Summary 2019

Upstream Results					
Date		Ammonia (mg/l) *	Ortho P (mg/l)	BOD (mg/l) *	pH (mg/l)
04/01/2019	U/S	0.42	0.05	1	7.6
01/03/2019	U/S	0.46	0.07	1	7.72
02/04/2019	U/S	0.39	0.03	1	7.58
10/05/2019	U/S	0.41	0.07	1	7.63
05/07/2019	U/S	0.32	0.06	1	7.8
13/08/2019	U/S	0.35	0.14	1	7.46
18/10/2019	U/S	0.68	0.04	1	7.58
Mean		**0.433**	**0.066**	**1.000**	**7.62**
95%ile		**0.614**	**0.119**	**1.000**	**7.78**

Downstream Results					
Date		Ammonia (mg/l) *	Ortho P (mg/l) *	BOD (mg/l) *	pH (mg/l)
04/01/2019	D/S	0.31	0.07	1	7.66
01/03/2019	D/S	0.34	0.08	1	7.63
02/04/2019	D/S	0.34	0.06	1	7.73
10/05/2019	D/S	0.36	0.06	1	7.74
05/07/2019	D/S	0.19	0.18	1	7.52
13/08/2019	D/S	0.28	0.13	1	7.59
18/10/2019	D/S	0.49	0.07	1	7.57
Mean		**0.330**	**0.093**	**1.000**	**7.634**
95%ile		**0.451**	**0.165**	**1.000**	**7.737**

* Where the concentration in the result is less than the limit of detection (LOD), a value of 50% of the LOD was used in calculating the mean and 95%ile concentrations.

Small Stream Risk Score (SSRS) Assessment

DERRINTURN WASTEWATER AGGLOMERATION

Co. Kildare

October 2019

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Document Control:

Version No.	Date	Author	Signature
1	22/10/19	L. Williams	

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1 INTRODUCTION

This report sets out findings of Small Stream Risk Score (SSRS) assessments at sites upstream and downstream of Derrinturn Waste Water Treatment Plant (WWTP), Co. Kildare. The discharge is to the Cushaling River.

Assessments were carried out on October 18th 2019, in overcast weather conditions during above average flow conditions.

SSRS is a biological risk assessment system for detecting potential sources of diffuse pollution in 1st and 2nd order streams that may be causing main channel sites to fail in reaching Good Ecological Status (Anon., 2009). Sites are evaluated based on their macroinvertebrate assemblage and are assigned to one of 3 risk categories: “At risk”, “May be at risk” and “Probably not at risk”. “Risk” refers to the risk of the watercourse causing water quality problems in larger waterbodies downstream as a result of being polluted.

2 METHODOLOGY

2.1 SSRS

Samples were collected according to the EPA Standard Operating Procedure for River Monitoring adhering to ISO Standard for kick sampling. Under this system, standard 2-minute, travelling, kick-samples are taken in the fast flowing (riffle) areas of the rivers using a long-handled sampling net (250 mm width, mesh size 0.25mm). Riffle areas of streams receive preference in sampling, as the fauna of riffles tends to be more sensitive to pollution impacts. Stone washing is employed to ensure that "clinging" species, e.g. leeches and gastropods, are adequately collected.

Samples were washed and placed in a large, white plastic tray on the bankside and covered in stream water. Samples were then carefully examined and identified in the field, recording absolute abundance of faunal groups for SSRS assessment purposes. Where necessary, and for quality control purposes, same samples were preserved in situ with 70% IMS alcohol; placed in labelled plastic bags and brought back to the laboratory to check identification.

Scores are calculated by examining the relative abundance of faunal groups and through use of the standard SSRS score calculator (Anon., 2009). Scores can range between 0 (lowest; poor water quality) and 11.2 (highest; good water quality). Risk category is assigned based on the individual site score as follows: >7.25 = Probably not at risk; >6.5 – 7.25 = Indeterminate, stream may be at risk; <6.5 = Stream at risk.

3 RESULTS

3.1 SSRS Summary

Appendix 1 contains the SSRS field sheets with score calculations included. **Table 1** summarises the location, SSRS score and risk category for upstream and downstream sites. Sites were sampled October 18th 2019.

Table 1: SSRS summary 2019 - Derrinturn WWTP

Site	Location (X, Y)	SSR Score	SSRS Risk Category
Upstream	271447 231127	3.2	At Risk
Downstream	269664 230138	1.6	At Risk

3.2 Water Quality

SSRS placed both upstream and downstream sites "At Risk" in 2019. Downstream was poorer than upstream. Faunal diversity was low at both sites and no sensitive fauna (mayflies and stoneflies) were recorded at either site. The downstream site was dominated by tubificid worms, a sign of organic enrichment.

3.3 Site Photographs

Plate 1: Derrinturn WWTP – upstream SSRS site (18/10/19)

Plate 2: Derrinturn WWTP – downstream SSRS site (18/10/19)

3.4 SSRS Comparison 2014 - 2019

Table 2 compares SSRS results 2014 to 2019. **Figure 1** illustrates trends at sites across sampling years. Both sites are consistently "At Risk" and of poor water quality. Even though the upstream site is not

ideal habitat for SSRS sampling (i.e., slow run/glide), there is clearly a water quality problem in this stream, affecting upstream and downstream of the WWTP discharge.

Table 2: SSRS Comparison 2014 - 2019 Derrinturn WWTP

Site	SSRS						SSRS Risk Category					
	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
U/S	N/A	0.8	3.2	3.2	1.6	3.2	AR	AR	AR	AR	AR	AR
D/S	0.8	0.8	2.4	1.6	2.4	1.6	AR	AR	AR	AR	AR	AR

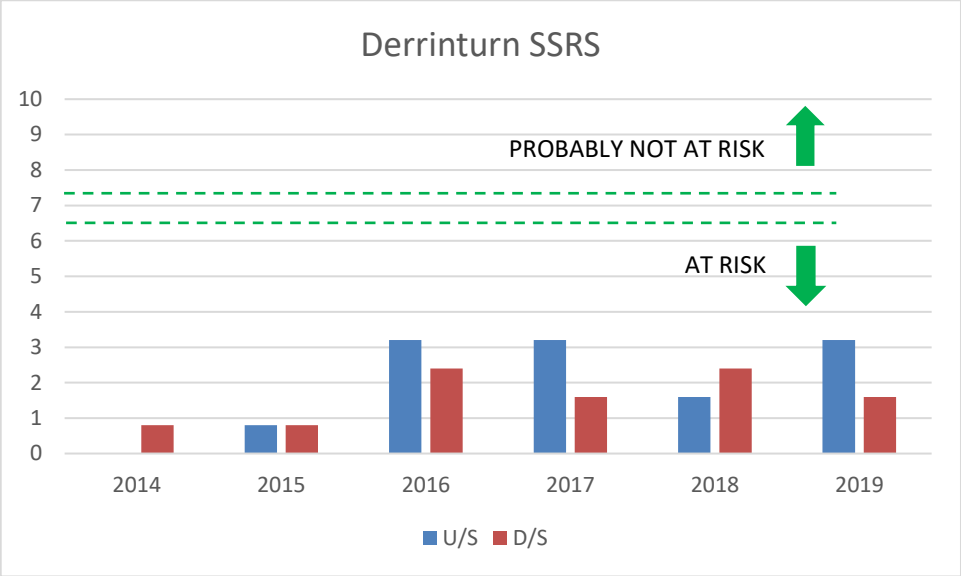

Figure 1 – SSRS Comparison 2014 -2019 Derrinturn WWTP

4 REFERENCES

Anon. (2009) Small Streams Risk Score (SSRS) Training Manual. A pollution investigation tool for use in the field. White Young Green, Apex Business Centre, Blackthorn Road, Sandyford, Dublin.

APPENDIX 1 SSRS Sheets

River	Cushaling	**SITE**:	UPSTREAM	Date:	18/10/2019
WWTP Code:		Agglomeration name:	Derrinturn	Location	Upstream
SSRS Score:	**3.2**	**Stream Assessment:**	**At Risk**		
DO (%):	-	Bedrock:	-	Stream Flow:	Run / Glide
DO (mg/l):	-	Boulder (>128mm):	-	Clarity:	Good
Temp (°C):	-	Cobble (32-128mm):	+	Colour:	High
Conductivity (µS/cm):	-	Gravel (8-32mm):	++	Discharge:	Above Average
pH:	-	Fine Gravel (2-8mm):	-	Slope:	Low
Bank width (cm):	300cm	Sand (0.25-2mm):	+	Sewage Fungus:	0
Wet width (cm):	300cm	Silt (<0.25mm):	++	Filamentous Algae:	0
Avg depth (cm):	35cm	Main land use US:	Pasture	Shading:	High
Depth mud (cm):	-	Cattle Access US/DS:	None observed		
Comments:	Deepened, channelised farm drain.Not ideal riffle section. High water levels. High colour				

Invertebrate Groups	**Number of specimens**	**Relative Abundance**
Group 1: Ephemeroptera	1-5	1
Group 2: Plecoptera	6-20	2
Group 3: Trichoptera	21-50	3
Group 4: G.OL.D (Gastropoda, Oligochaeta and Diptera)	51-100	4
Group 5: Asellus	>100	5

Ephemeroptera	**Ab**	**Plecoptera**	**Ab**	**Trichoptera**	**Ab**
Ecdyonurus:		Leuctra:		Hydropscyche:	
Rhitrogena:		Isoperla:		Polycentropus:	
Heptagenia:		Protonemura:		Rhyacophila:	
Ephemerella:		Amphinemura:		Philopotamus:	
Caenis:		Perla:		Limnephilidae:	1
Paraleptophlebia:		Dinocras:		Sericostomatidae:	
Emphemera danica:		Other Plecoptera:		Glossosomatidae:	
Other Ephemeroptera:				Leptostomatidae:	
				Other Trichoptera:	
Total No. of Taxa	0	**Total No. of Taxa**	0	**Total No. of Taxa**	1
Total Relative Abundance	0	**Total Relative Abundance**	0	**Total Relative Abundance**	1

GOLD (Gastropoda; Oligochaeta and Diptera)					
Lymnaea:		Lumbriculus:		Simulium:	
Potamopyrgus:		Eiseniella:		Dicronata:	1
Planorbis:		Tubificidae:	1	Tipula:	1
Ancylus:		Chironomidae:	1	Ceratopogonidae:	
Physa:		Chironomus:		Other GOLD	
Total No. of Taxa	4				
Total Relative Abundance	4				

Asellus					
Absent:		**Few (1-20):**	Yes	**Common (>20):**	

SSRS Calculation				
Group 1	0	AT RISK		
Group 2	0			
Group 3	2		**Total Index Score**	8
Group 4	4		**Average Index Score**	1.6
Group 5	2		**SSRS**	3.2

River	Cushaling	**SITE:**	DOWNSTREAM	Date:	18/10/2019
WWTP Code:	-	Agglomeration name:	Derrinturn	Location	Downstream
SSRS Score:	**1.6**	**Stream Assessment:**	**AT RISK**		
DO (%):	-	Bedrock:	-	Stream Flow:	Run / Glide
DO (mg/l):	-	Boulder (>128mm):	-	Clarity:	Good
Temp (°C):	-	Cobble (32-128mm):	++	Colour:	High
Conductivity (µS/cm):	-	Gravel (8-32mm):	+++	Discharge:	Above Average
pH:	-	Fine Gravel (2-8mm):	+	Slope:	Low-Mod
Bank width (cm):	300cm	Sand (0.25-2mm):	+	Sewage Fungus:	0
Wet width (cm):	250cm	Silt (<0.25mm):	-	Filamentous Algae:	0
Avg depth (cm):	25cm	Main land use US:		Shading:	Low
Depth mud (cm):	-	Cattle Access US/DS:	Access US – low impact		
Comments:	Good substrates. High water level. Fast flowing.				

Invertebrate Groups	**Number of specimens**	**Relative Abundance**
Group 1: Ephemeroptera	1-5	1
Group 2: Plecoptera	6-20	2
Group 3: Trichoptera	21-50	3
Group 4: G.OL.D (Gastropoda, Oligochaeta and Diptera)	51-100	4
Group 5: Asellus	>100	5

Ephemeroptera	**Ab**	**Plecoptera**	**Ab**	**Trichoptera**	**Ab**
Ecdyonurus:		Leuctra:		Hydropscyche:	
Rhitrogena:		Isoperla:		Polycentropus:	
Heptagenia:		Protonemura:		Rhyacophila:	
Ephemerella:		Amphinemura:		Philopotamus:	
Caenis:		Perla:		Limnephilidae:	2
Paraleptophlebia:		Dinocras:		Sericostomatidae:	
Emphemera danica:		Other Plecoptera:		Glossosomatidae:	
Other Ephemeroptera:				Leptostomatidae:	
				Other Trichoptera:	
Total No. of Taxa	0	**Total No. of Taxa**	0	**Total No. of Taxa**	1
Total Relative Abundance	0	**Total Relative Abundance**	0	**Total Relative Abundance**	2

GOLD (Gastropoda; Oligochaeta and Diptera)					
Lymnaea:		Lumbriculus:		Simulium:	
Potamopyrgus:		Eiseniella:		Dicronata:	
Planorbis:		Tubificidae:	5	Tipula:	
Ancylus:		Chironomidae:	2	Ceratopogonidae:	
Physa:		Chironomus:		Other GOLD	
Total No. of Taxa	2				
Total Relative Abundance	7				

Asellus					
Absent:		**Few (1-20):**	Yes	**Common (>20):**	

SSRS Calculation				
Group 1	0	AT RISK		
Group 2	0			
Group 3	2		**Total Index Score**	4
Group 4	0		**Average Index Score**	0.8
Group 5	2		**SSRS**	1.6