# Annual Environmental Report

2024



Demintum

D0244-01

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#### 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2024 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 changes undertaken in 2024.

#### 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	Non-Compliant	Ammonia-Total (as N) mg/l BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l ortho-Phosphate (as P) - unspecified mg/l Suspended Solids mg/l Total Phosphorus (as P) mg/l

# 1.4 LICENCE SPECIFIC REPORTING

Assessment / Report

**Small Stream Risk Score Assessment** 

#### 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
Total Phosphorus (as P) mg/l	10	190	34
COD-Cr mg/l	10	24800	4567
Total Nitrogen mg/l	10	960	193
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	10	13080	2435
Suspended Solids mg/l	10	7740	1196
Hydraulic Capacity	N/A	1355	719

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 - 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 exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	11	N/A	N/A	38	Pass
pH pH units	6	9	N/A	11	N/A	N/A	7.92	Pass
Suspended Solids mg/l	8	20	N/A	11	6	4	21	Fail
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	5	10	N/A	11	1	1	4.26	Fail
Total Phosphorus (as P) mg/l	0.5	0.6	N/A	11	2	1	0.521	Fail
Ammonia-Total (as N) mg/l	0.3	0.6	N/A	11	3	2	1.82	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.19	0.37	N/A	11	2	1	0.160	Fail
Conductivity @20°C µS/cm	N/A	N/A	N/A	11	N/A	N/A	843	
Total Nitrogen mg/l	N/A	N/A	N/A	10	N/A	N/A	9.26	

#### 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):**

**Inadequate Operational Procedures/Training.** 

#### **Significance of Results:**

The WWTP is non compliant with the ELV's set in the Wastewater Discharge Licence. The impact on receiving waters is assessed further in Section 2.

# 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 Ecological 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 not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the downstream 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 BOD, Ortho-P, Ammonia (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 Barrow Catchment Report (HA 14), the significant pressures on the At Risk Figile\_010 waterbody are Hydromorphology, Peat, Industry and Urban Waste Water.

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)
COD	1057652	7179	99
TN	44623	1658	96
ss	276991	3855	99
cBOD	564004	794	100
ТР	7814	97	99

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 (m³/day) - As Constructed	1080
DWF to the Treatment Plant (m³/day)	360
Current Hydraulic Loading - annual max (m³/day)	1355
Average Hydraulic loading to the Treatment Plant (m³/day)	719
Organic Capacity (PE) - As Constructed	1600
Organic Capacity (PE) - Collected Load (peak week)Note1	2052
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	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 2024.						

#### 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)
Abatement equipment off-line	Dosing pump failure or maintenance at WWTP	Yes	No
Uncontrolled release	Plant or equipment breakdown at WWTP	No	Yes
Breach of ELV	Inadequate Operational Procedures/Training	Yes	No

#### **3.2.2 SUMMARY OF OVERALL INCIDENTS**

Question	Answer
Number of Incidents in 2024	3
Number of Incidents reported to the EPA via EDEN in 2024	3
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 2024 (No. of events)	Total volume discharged in 2024 (m³)	Monitoring Status
SW-2	270591, 232157	Yes	Low Significance	Meeting Criteria	0	0	Monitored

The contents presented in this table include the most up to date information available at the time of writing. Any TBC SWO(s) were identified as part of the ongoing 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)?	0
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?	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	
There are no Specified Improvement Programmes for this Agglomeration.								

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
D0244-01-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?	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	Ambient Monitoring Location Changes
Have these processes commenced?	No
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: 23/04/2025

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 - Ambient Monitoring Summary** 

Appendix 7.2 - Small Stream Risk Score Assessment

# **Derrinturn Ambient Monitoring Summary 2024**

			Receiving Waters Designation (Yes/No)			(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	1.483	0.011	0.033
Downstream Monitoring Point	269666, 230148	RS14F010050	No	No	No	No	Poor	1.983	0.031	0.091
Difference								0.500	0.020	0.058
EQS								1.500	0.035	0.065
% of EQS								33.333%	56.796%	89.599%

# **Derrinturn Ambient Monitoring Summary 2024**

	Upstream Results						
	Date	pH pH units	BOD mg/ l	Total Nitrogen mg/l	Ammonia mg/l	Ortho-Phosphate mg/l	DO mg/l
U/S	12/03/2024	7.6	< 1	2.9	0.069	< 0.01	7.3
U/S	30/04/2024	7.6	2	4.2	0.024	< 0.01	
U/S	15/05/2024	7.9	< 1	1.9	< 0.015	< 0.01	6.2
U/S	11/06/2024	7.9	< 1	1.4	0.048	0.01	8
U/S	02/07/2024	7.5	4	1.3	< 0.015	< 0.01	7.7
U/S	13/08/2024	7.8	2	< 1	0.056	< 0.01	7.6
U/S	11/09/2024	7.9	< 1	1.3	0.018	< 0.01	6.9
U/S	16/10/2024	8	1	1.5	< 0.015	0.04	8.7
U/S	13/11/2024	8	2	1.4	0.073	0.01	8.6
U/S	04/12/2024	7.8	1	3.6	< 0.015	< 0.01	9.6
	Mean	7.800	1.483	2.021	0.033	0.011	7.844
	95%ile	8.000	3.100	3.930	0.071	0.027	9.240

	Downstream Results						
	Date	pH pH units	BOD mg/ l	Total Nitrogen mg/l	Ammonia mg/l	Ortho-Phosphate mg/l	DO mg/l
D/S	12/03/2024	7	<1	3.7	0.47	0.02	8.2
D/S	30/04/2024	7.9	6	2	<0.015	<0.010	
D/S	15/05/2024	8	2	2.1	0.15	<0.010	9
D/S	11/06/2024	7.6	3	3.2	0.036	0.02	9
D/S	02/07/2024	7.6	< 1	2.9	0.041	0.15	6.9
D/S	13/08/2024	7.5	< 1	2.8	0.071	0.03	6.5
D/S	11/09/2024	7.9	1	1.1	<0.015	<0.010	6.6
D/S	16/10/2024	7.4	3	4.7	0.025	0.05	6.1
D/S	13/11/2024	8	2	1.6	0.088	0.01	8.3
D/S	04/12/2024	7.8	<1	2.6	<0.015	<0.01	10.5
Mean		7.670	1.983	2.670	0.091	0.031	7.900
	95%ile	8.000	4.650	4.250	0.326	0.105	9.900

Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.

Kildare County Council

# Derrinturn Small Stream Risk Score 2024

Mícheál McHugh Jewell, Daniel Dunleavy



AQUAFACT Ref: P14738

December 2024

COMMERCIAL IN CONFIDENCE

**Client: Kildare County Council** 

Address: Devoy Park, Naas Co Kildare W91 X77F

Reference no: P14738

Date of issue: 02/12/2024

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#### **Report Approval Sheet**

Client	Kildare County Council
Report Title	Derrinturn Small Stream Risk Score 2024
Job Number	P14738
Report Status	Final
Issue Date	02/12/2024

Rev	Status	Issue Date	Document File Name	Author (s)	Approved by:
1	Draft	08/11/2024	P14738 Derrinturn SSRS	Mícheál McHugh Jewell,	E. McCormack
1	Diait	06/11/2024	Nov 2024_Draftv1	Daniel Dunleavy	E. IVICCOTTITACK
2	Einal	02/12/2024	P14738 Derrinturn SSRS	Mícheál McHugh Jewell,	E. McCormack
2 Final		02/12/2024	Nov 2024_Final	Daniel Dunleavy	E. IVICCOTTIACK





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# List of Acronyms/Glossary

D/S	Downstream
EPA	Environmental Protection Agency
G.OL.D	Gastropods, Oligochaetes, Dipterans
IFI	Inland Fisheries Ireland
SSRS	Small Stream Risk Score
U/S	Upstream
WFD	Water Framework Directive
WRBD	Western River Basin District
WWTP	Wastewater Treatment Plant



#### 1. Introduction

AQUAFACT was contracted by Kildare County Council to carry out an SSRS assessment of the watercourse in the vicinity of the discharge pipe of Derrinturn wastewater treatment plant. Field surveys were carried out upstream and downstream of the discharge point. The sampling was carried out on the 15th of October 2024.

#### 2. Methodology

#### 2.1 Sampling

Two kick samples were taken (See Figure 2.1 and Table 2.1). The two-minute kick and one minute stone wash sampling method was employed to collect samples of macroinvertebrates for analysis. This involved placing a standard hand net of pore size 500µm in the river, facing upstream and disturbing the riverbed in front of the net mouth. The surveyor then moved in a diagonal direction upstream to ensure that different micro-habitats were included in the sample. The kick sample method dislodges macroinvertebrates from the substrates and submerged plant material. This was continued for approximately two minutes and followed by one minute of stone washing (Lucey *et al.*, 1999).

The macroinvertebrate assemblages of each sample were identified and counted on the riverbank. The details of the macroinvertebrate assemblages were recorded on data sheets. The resulting species list was then used to assign the SSRS score to the sampled streams. The IFI's 2010 Biosecurity Protocol for Field Survey Work document was followed during sampling. Nets and all other equipment were thoroughly disinfected between stations.



Figure 2-1: Upstream and Downstream positions on the River Figile at Derrinturn



Table 2.1: Derrinturn SSRS station coordinates.

Station	Latitude	Longitude
Derrinturn Upstream	53.3264963	-6.926851
Derrinturn Downstream	53.3170562	-6.9557887

#### 2.2 Small Stream Risk Score

The Small Streams Risk Score (SSRS) is a biological risk assessment system for identifying rivers that are 'at risk' of failing to achieve the 'good' water quality status goals of the Water Framework Directive (WFD). It was developed by the Environmental Protection Agency (EPA) in association with the Western River Basin District (WRBD) in 2006 and revised in 2009.

The SSRS method is a rapid field methodology for risk assessment that is based solely on macroinvertebrate indicators of water quality and their well-understood response to pollution. Importantly, the SSRS score indicates whether or not the stream is at risk from pollution and not the ecological health of the stream. The SSRS score ranges from 0-11.2.

**Table 2.2: SSRS Categories** 

SSRS Range	Category
<6.5	Stream at Risk (AR)
>6.5-7.25	Indeterminate/Stream may be at risk
>7.25	Probably not at risk (PNAR)



#### 3. Results

The upstream station recorded a lower SSRS score. However, both the upstream and downstream stations were categorised as 'Stream at risk' of not meeting Good status. The substrate at the upstream station was mud with a depth of approximately 5-10cm. Leaf litter was abundant, and the velocity of the stream was slow. The downstream station substrate was a mix of cobbles and gravel with some slight siltation. The velocity was moderate. There was cattle access both above and below the downstream station. Macrofaunal assemblages were similar at both stations with GOLD Group taxa far outnumbering a small number of trichoptera.

Table 3.1: Taxa list and relative abundance scores

Таха	Upstream	Downstream
Trichoptera		
Glossosomatidae		2
Limnephilidae	2	1
Phryganeidae	1	
G.Ol.D	<b>'</b>	<u> </u>
Lumbriculus		4
Planorbis	1	
Naididae	2	
Chironomidae	5	3
Asellus	Common	Absent

Table 3.2: Biological sampling results

Station	SSRS Score	SSRS Category
Derrinturn Upstream	2.4	Stream at Risk (AR)
Derrinturn Downstream	3.2	Stream at Risk (AR)



#### 4. Derrinturn WWTP Comparison 2016 to 2024

Table 4.1 compares the SSRS results from 2016 to 2023. Figure 4.1 displays the trend over time (scores <6.5 are deemed At Risk). Both upstream and downstream sites have been 'at risk' since 2016. The highest SSRS score in that period was 3.2 both upstream and downstream. A tributary joins the stream from the east between the upstream and downstream stations, it is not known if any contamination enters the stream from this point. Just upstream of the downstream station the stream is culverted under the Grand Canal which could be impacting on water quality.

Table 4.1: Derrinturn SSRS Comparison 2016-2024

Year	U/S SSRS	U/S Risk Category	D/S SSRS	D/S Risk Category
2024	2.4	AR	3.2	AR
2023	0.8	AR	0.8	AR
2022	0.8	AR	1.6	AR
2021	2.4	AR	0.8	AR
2020	1.6	AR	3.2	AR
2019	3.2	AR	1.6	AR
2018	1.6	AR	2.4	AR
2017	3.2	AR	1.6	AR
2016	3.2	AR	2.4	AR

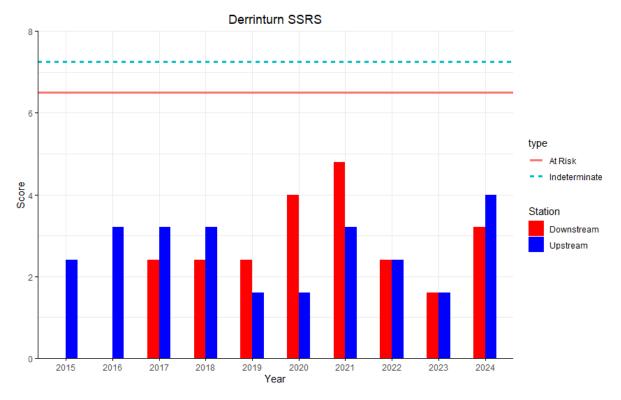


Figure 4-1: SSRS between Upstream and Downstream sites since 2015



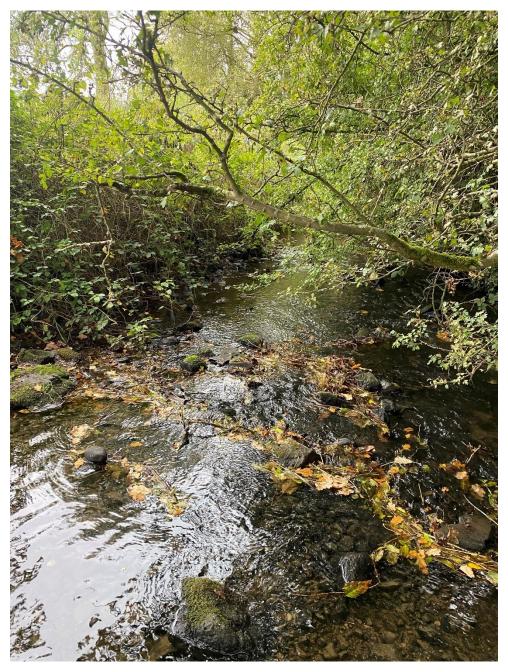
#### 5. References

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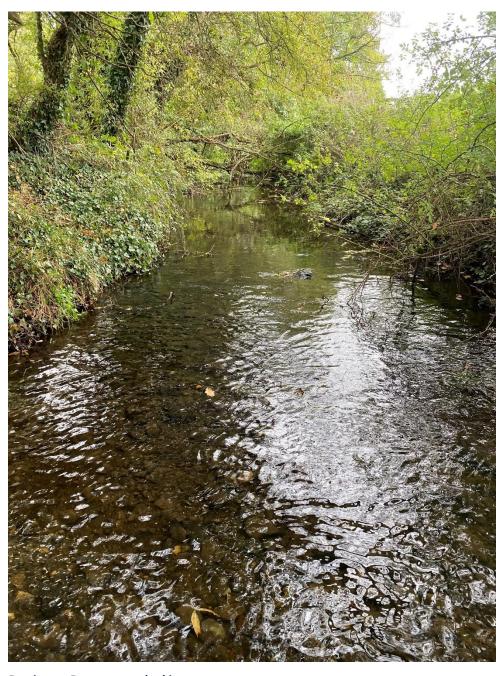
Lucey, J., Bowman, J.J., Klabby, K.J., Cunningham, P., Lehane, M., MacCarthaigh, M., McGarrigle, M.L. and Toner, P.F. 1999. Water Quality in Ireland, 1995 – 1997. EPA.



# Appendix 1 – Site photos



**Derrinturn Downstream looking downstream** 



**Derrinturn Downstream looking upstream** 



**Derrinturn Upstream looking downstream** 



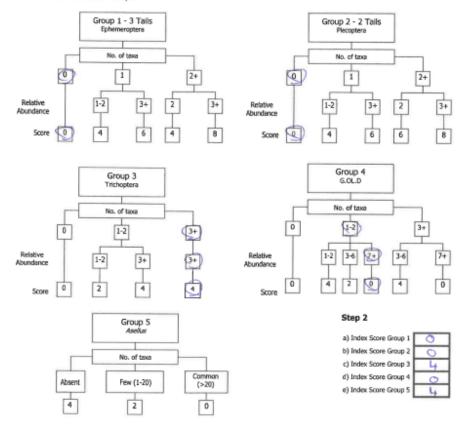
**Derrinturn Upstream looking upstream** 

## Appendix 2 – SSRS Data Sheets

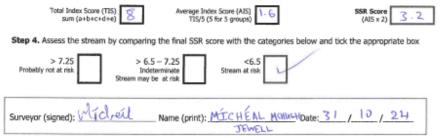
River: FIG	-								
Station no.		Location: DE	KKTWII	KRN.	G	rid (6 figure):	26	4 69 4	235
DOWNS	TREAM	Stream Order	1	ALSO		ream flow:	21.12	200	
Field Che		Modifications: Y/	N Canalised-wid	ened-bank erre		ffe/Gade			
DO%	90.96	arterial drainage				IN DOW			
DO mg/l	1.82	Dominant Types:			-	100.00			
Temp (°C)	11.90	Bedrock (bouldeh(>128mm)							
Conductivity	11.10	Cobble 132-128mm	1						
pH	7.46	Graves (8-32mm)	*						
Bank width (cm)		Fine Gravel (2-6ms	n)						
Wet width (cm)	300	Sand (0.25-2mm)			-				
wg Depth (cm)	200	Sit (<0.25mm)			-				
staff gauge	15-20	Slope: Low - Med	um – High – Ve	ry High	61	ading: High-@io	down	Less Ma	
Velocity	Colour	Geology: Calcareo	us-Siliceous-Mix	ed	30	adding: high-ord	oeran	I - row - wo	THE .
Tomential	None	Substratum Cond	Ottion: Calcareo	us-Compacted-	Ca	ettle access Y: up	stream	n downstre	am or N
Fast	Slight	(Loose) Normal			3. 11.123				
Moderate	Moderate	Substratum:							
(Slow)	High	Stoney bottom Muc	dy bottom-Mud	over stones	Pi	hotos Y N			
Very slow Clarity	Discharge	Degree of siltation	mi Clean Slight-	Moderate-Heav	y				
Very dear	Flood	Depth of mud: No	me: <1cm) 1-5c	m: 5-10cm: >1	Dom				
(Gear)	(Normal)	Litter: None - Fre	Contraction of the Contraction o		1000				
(Clear)	(Normal)	and the second second		POURINGE	-				
Slightly turbid	Low	Nories - Present - N		fort		wage Fungus:	damete	Abundant	
Highly turbid	Very Low	Main land use u/		Sample		mpled in Minute		- Abundant	
	Dry	(Pasture	Urban	retained:		nd net x Z	200		
	Recent Flood	Bog	Tillage	(Y)'N	Sh	one wash x			
		Forestry	Other	-	1				
he macroinvertebra	rtes are divided into	Macroinverteb the following 5 speci is) - note that take	fic groups:			eed sweep x		Relative Abunda	nce
The macroinvertebra Group 1 = E; Group 2 = M Group 3 = T; Group 5 = A	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tails in note that tails may be Oligochaeta and Dipt	fic groups: nay be damaged a damaged durin era)	during sampling g sampling	g			Abunda 1-5 6-20 21-50 51-100	nce 1 2 3 4
Fine macroinvertebra Group I = Eg Group 2 = M Group 3 = G Group 4 = G Group 5 = A Calculate the	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tails in note that tails may be Oligochaeta and Dipt is and relative abund	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g		Ab)	Abunda 1-5 6-20 21-50 51-100 101+	nce 1 2 3
Fine macroinvertebra Group I = Eg Group 2 = M Group 3 = G Group 4 = G Group 5 = A Calculate the	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tals in note that tals may be Oligochaeta and Dipt is and relative abund Ecdyonurus Ab	fic groups: nay be damaged a damaged durin era)	during sampling g sampling croinvertebrate	g		a training	Abunda 1-5 6-20 21-50 51-100 101+	nce 1 2 3 4
Fine macroinvertebra Group I = Eg Group 2 = M Group 3 = G Group 4 = G Group 5 = A Calculate the	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tals in note that tals may be Oligochaeta and Dipt is and relative abund Ecdyonurus Ab Rhibbrogena Ab	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g			Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab	nce 1 2 3 4
From Front F	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tails in note that tails may be Oligochaeta and Dipt is and relative abund Ecohorurus Nb Rhithropena Ab Heptagenia Ab	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g	iow: (Abundance –	Proto	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isip eria Ab Inemura Ab	nce 1 2 3 4
From Front F	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tails in note that tails may be Okgochaeta and Dipt is and relative abund Ecolyonurus Ab Khithrogena Ab Heptagenia Ab Ephemereša Ab	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g	iow: (Abundance –	Proto	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isap eria Ab Inamura Ab	nce 1 2 3 4
he macroinvertebra Group 1 = E Group 2 = M Group 3 = Group 4 = G Group 5 = A Calculate the	etes are divided into phemeroptera (3-tails) - richoptera O.L.D. (Gastropoda, softus	the following 5 speci is) – note that tails in note that tails may be Oligochaeta and Dipt is and relative abund Ecohorurus Nb Rhithropena Ab Heptagenia Ab	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g	iow: (Abundance –	Proto	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isip eria Ab Inemura Ab	nce 1 2 3 4
he macroinvertebra Group 1 = E Group 2 = M Group 3 = Group 4 = G Group 5 = A Calculate the	ntes are divided into phemeroptasa (3-tai ecoptasa (2-tails) - ichoptera O.L.D (Gastropoda, seelus total number of tas	the following 5 speci is) – note that tails in note that tails may be Okgochaeta and Dipt is and relative abund Ecolyonurus Ab Khithrogena Ab Heptagenia Ab Ephemereša Ab	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g	iow: (Abundance –	Proto Amph	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isap eria Ab Inamura Ab	nce 1 2 3 4
he macroinvertebra Group 1 = E Group 2 = M Group 3 = Group 4 = G Group 5 = A Calculate the	ntes are divided into hecopiera (2-ta) ecopiera (2-ta) ecopiera (2-ta) ecopiera ecopiera ecopiera total number of tas Par	the following 5 speci ls) – note that talls in more that talls may be Oligochaeta and Dipt is and relative abund Ecolyonurus Nb Rhithrogena Ab Heptagenia Ab Ephemoreta Ab Ceenis Ab	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g	iow: (Abundance –	Proto Amph	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isap eria Ab Inamura Ab Inamura Ab Paria Ab	nce 1 2 3 4
From Front F	ntes are divided into phemeroptisa (3-ta) - cocoptera (2-ta) - irchoptera (0-LD (Gastropoda, seribar total number of tax Par Eph	the following 5 speci 5) - note that tails may be considered and Dipti as and relative abund Ecohorurus Ab Ahabhrogena Ab Heptangenia Ab Cernis Ab raleptoptiebus Ab emera donica Ac	fic groups: ay be damaged a damaged durin era) ance of each ma	during sampling g sampling croinvertebrate	g	iow: (Abundance –	Proto Amph	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isaperia Ab Isaperia Ab Isaperia Ab Isaperia Ab Isaperia Ab Isaperia Ab Isaperia Ab	nce 1 2 3 4
The macroinvertebra Group 1 = ½ Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the	ntes are divided into phemeroptera (3-ta ecoptera (2-ta) richoptera O.D. D (Gastropeda, seiks: total number of tas Pac	the following 5 specifis) – note that tails in more that tails may be object that sails may be object that and plet to an and relative abund Ecohorurus Ab Rhibthrogena Ab Heptagenia Ab Ephermenetia Ab Centis Ab nateorophiesiba Ab emera danica Ab Other Ephern Ab	fic groups: iny be demaged demaged durin era)  Plecog	during sampling g sampling scroliwertebrate stera:	g e group bel	iow: (Abundance –	Proto Amphi Other	Abunda 1-5 6-20 51-100 101+ Leuctra Ab Isoperia Ab Internura Ab Anne Ab Otrocras Ab r Plecop Ab	nce 1 2 3 4
the macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 3 = T Group 4 = G Group 5 = A Cabuste the Ephemeroptera:  Total no. of taxa	ntes are divided into phemeroptisa (3-tai ecoptera (2-tai ecoptera) (2-tai	the following 5 speci ls) – note that tails in note that tails may be Oligochaeta and Dipt as and relative abund Ecohorurus Ab Minthropena Ab Heptagenia Ab Ephermeneta Ab Coemis Ab relejotophietia Ab emera dionica Ab Other Ephern Ab atter Abundance	fic groups: any be demaged demaged durin era) ance of each me Plecog	during sampling sampl	g group bei	iow: (Abundance – Total Relat	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+  Leuctra Ab Isaperia Ab Inamura Ab inamura Ab Pacia Ab Precap Ab Precap Ab Precap Ab	nce 1 2 3 4
he macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 3 = T Group 4 = G Group 5 = A Cabuste the Chuste	ntes are divided into hereoptera (2-tals) -	the following 5 spec is) - note that tails in note that tails may be Oligochaeta and Diph is and relative abund Ecolyonaris Ab Rhithrogena Ab Heptagenia Ab Ephemerella Ab Genis Ab ralepotophietia Ab sthe Abundance e Ab IGOLD	fic groups: inty be damaged during et al. properties of each market pr	during sampling grampling sampling sampling sampling strotowertebrate observations of Taxas as (G) Ab	g group bei	iow: (Abundance – Total Relateromisiae (D) Ab	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Leuctra Ab Insperia	nce 1 2 3 4 5
he macroinvertebra Group 1 = B; Group 2 = Pi Group 3 = Ti Group 3 = Ti Group 4 = G Group 5 = A Calculate the phemeroptera:  Total no. of taxa	ntes are divided into shemeroptisa (3-tai ecoptera (2-tai ecoptera (2-tai ecoptera (2-tai ecoptera (2-tai ecoptera (2-tai ecoptera (2-tai ecoptera	the following 5 specision – note that tails may be object that sails may be object to the sail of the sails of t	fic groups: iny be damaged defined during era) ance of each ma Plecog  Total in  Lymnae Potamatyrge	during sampling sampling sampling sampling sampling scrotiwertebrate steers:	g group bei	Total Relationments (D. Ab	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Issperia Ab Insperia	nce 1 2 3 3 4 4 5 5
he macroinvertebra Group 1 = B; Group 2 = Pi Group 3 = Ti Group 3 = Ti Group 4 = G Group 5 = A Calculate the phemeroptera:  Total no. of taxa	rites are divided into phemeroptiza (3-ta ecoptera (2-ta) includera (0-ta) (0-ta) (6-ta) (6-t	the following 5 specifies) — note that tails in more that tails may be noted that in the specifies of the sp	Total n	during sampling sampl	g group bei	Total Relations (D) Ab Sensitive (D) Ab	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 51-101+  Leuctra Ab Isip erik Ab Internara Ab Peria Ab Okocras Ab Flecop Ab Bundance Aseflus Abos Few Los	nce 1 2 3 4 4 5 5
he macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 3 = T Group 4 = G Group 5 = A Cabuste the Chuste	Alter are divided into ecopiera (3-ta ecopiera e	the following 5 spec is) - note that tails m note that tails may be Oligochaeta and Diph is and relative abund Ecolyonurus Ab Rhithrogena Ab Heptagenia Ab Caenis Ab Caenis Ab alleptophietia Ab other Ephern Ab stite Abundance e Ab GOLD is Ab is Ab e Ab	Total n	during sampling sampl	g group bei	Total Relationment (D) Ab Personnidae (D) Ab Personnidae (D) Ab Okranatic (D) Ab	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+  Leuctra Ab Isap eria A	1 2 3 4 5 5
The macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 4 = G Group 5 = A Cabulate the Ephemeroptera:	ntes are divided into phemeropitas (2-tals) - (2-tals) - (1-tals)	the following 5 specision - note that tails may be object that sails may be object that tails may be object that tails may be object that tails may be object to the sail of t	of Total n	during sampling sampl	g group be	Total Relations of the Communication of the Communication (D) Ab Travidise	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 51-101+  Leuctra Ab Isip erik Ab Internara Ab Peria Ab Okocras Ab Flecop Ab Bundance Aseflus Abos Few Los	1 2 3 4 5 5
The macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 4 = G Group 5 = A Cabulate the Ephemeroptera:	rites are divided into phemeroptica (3-ta) ecoptera (2-ta) eco	the following 5 speciliss) – note that tails in more that tails may be object that is may be object that and Dipt in an and relative abund Ecohorusus Ab Abbitrogena Ab Applemented Ab Ephemoreta Ab Centis Ab aleptophiethe Ab emera donlar Ab Other Ephem Ab the Abundance e Ab Godb De Ab e	Tetal n  Lymna  Placet  Anology  Combinatel  Combinate	during sampling sampling sampling sampling sampling sampling scrolinvertebrate shere:	g group bei	Total Relative CD Ab Dicaraota (D) An Smulidae (D) Ab Dicaraota (D) An Toulidae (D) An Dicaraota (D) An Toulidae (D) An Dicaraota (D) An Toulidae (D) An Dicaraota	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+  Leuctra Ab Isap eria A	1 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
the macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 3 = T Group 4 = G Group 5 = A Cabuste the Ephemeroptera:  Total no. of taxa	Alter are divided into hereoptera (2-ta); including a completa (2-ta); inc	the following 5 spec is) - note that tails may be Oligochaeta and Diph is and relative abund Ecolyonurus Ab Rhithrogena Ab Heptagenia Ab Ceenis Ab ceenis Ab solution Ab other Ephern Ab stree Abundance e Ab	Total n  Plecog  Total n  Lymna  Placon  Anology  Lymna  L	during sampling sampl	g group bei	Total Relations of the Communication of the Communication (D) Ab Travidise	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+  Leuctra Ab Isip erik Ab Internaria Ab Perica Ab Plecop Ab Bundance Asellus Abose Few Lor Numerou Numerou Numerou Numerou	nce 1 2 3 4 5 5
* Group 1 = B Group 2 = Pi Group 3 = Ti Group 4 = G Group 5 = A Calculate the	Ales are divided into phemeropitas (3-tals) - incheptera (2-tals)	the following 5 spec is) - note that tails may be Oligochaeta and Dipt as and relative abund Ecohorumas Ab Rhathrogena Ab Heptagenas Ab Cernis Ab raleptophische Ab raleptophische Ab atte Abundance B Ab a Ab e	Tetal n  Lymna  Placet  Anology  Combinatel  Combinate	during sampling sampl	g group bei	Total Relative CD Ab Dicaraota (D) An Smulidae (D) Ab Dicaraota (D) An Toulidae (D) An Dicaraota (D) An Toulidae (D) An Dicaraota (D) An Toulidae (D) An Dicaraota	Proto Amph  Other Other	Abunda 1-5 6-20 21-50 51-100 101+  Leuctra Ab Isap eria A	nce 1 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
The macroinvertebra Group 1 = B Group 2 = P Group 3 = T Group 4 = G Group 5 = A Cabulate the Ephemeroptera:	ties are divided into the are divided into the copiera (3-tais) - ichoptera (3-tais) - ichopt	the following 5 spec is) - note that tails may be Oligochaeta and Dipt as and relative abund Ecohorumas Ab Rhathrogena Ab Heptagenas Ab Cernis Ab raleptophische Ab raleptophische Ab atte Abundance B Ab a Ab e	Total n  Plecog  Total n  Lymna  Placon  Anology  Lymna  L	during sampling sampl	g group bel	Total Relative CD Ab Dicaraota (D) An Smulidae (D) Ab Dicaraota (D) An Toulidae (D) An Dicaraota (D) An Toulidae (D) An Dicaraota (D) An Toulidae (D) An Dicaraota	Proto Amph  Other Other 3	Abunda 1-5 6-20 21-50 51-100 101+  Leuctra Ab Isip erik Ab Internaria Ab Perica Ab Plecop Ab Bundance Asellus Abose Few Lor Numerou Numerou Numerou Numerou	1 2 3 4 5 5 Solus

**Downstream** 

Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from each macroinvertebrate group calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.



Step 3. Calculate the Total Index Score, the Average Index Score and the SSR Score using the boxes below



#### **Downstream II**

O mg/l emp (°C) Conductivity H lank width (cm) Wet width (cm) wg Depth (cm)		arterial drainag Dominumt Typ Bedrock Bedrock Boulder (>128n Cobble (32-128n Gravel (8-32nm Fine Gravel (2-4 Sand (0.25-2mm SRE) <0.255mm) Slopes (60) = 1 Geology: Calca Substratum C	Y/N Canalised-wide e ses: nm) mmn) shorm) nn) kedium — High — Ver		Stream flow: Riffle Riffle Riffle Side Side (Side (Flow			, 23
Field Chem DON: DON: DO mg/l Temp (*C) Conductivity ght Bank width (cm) Wet width (cm) Kwg Depth (cm) Staff gauge Velocity Tomential First Hoderate Slow (Very slow) Clarity	Colour None (Sight) Moderate	arterial drainag Dominumt Typ Bedrock Bedrock Boulder (>128n Cobble (32-128n Gravel (8-32nm Fine Gravel (2-4 Sand (0.25-2mm SRE) <0.255mm) Slopes (60) = 1 Geology: Calca Substratum C	e nes: mm) mm) :) smm) n) Hedium – High – Ver		n- Riffle/Glide			
DO mg/l Temp (*C) Conductivity phl Bank width (cm) Wet width (cm) Staff gauge Velocity Tomential First Moderate Slow (Very slow) Charity	None (Slight) Moderate	Dominant Typ Bedrock Boulder (> 128r Cobble (32-128 Gravel (8-32rm Fine Gravel (2-5-2m Sit (< 0.25-2m Sit (< 0.25mm) Slopes (3-1-2) Geology: Calci Substratum C	nes: nmn) mmn) i) ivnm) n) Hedium – High – Ver	v Hish				
Temp (°C) Conductivity pH Bank width (cm) Wet width (cm) Aug Depth (cm) Staff gauge Velocity Torrential Fast Moderate Slow Very slow) Charity	None (Slight) Moderate	Bedrock Boulder (>128n Cobbie (32-128 Gravel (8-32mm Fine Gravel (2-4 Sand (0.25-2mm Silope (0.25-2mm) Geology: Calca Substratum C	nm) mm) i) knm) n) Nedium – High – Ver	v High				
Conductivity pH Stark width (cm) Wet width (cm) Avg Depth (cm) Staff gauge Velocity Torrential Fast Moderate Slow Very slow Clarity	None (Slight) Moderate	Boulder (>128r Cobble (32-128r Gravel (8-32m Fine Gravel (2-4 Send (0.25-2m SR) <0.25mm) Slopes (0) - h Geology: Calca Substratum C	mm) n) kmm) n) Kedium – High – Ver	v High				
pH (Bank width (cm)) Wet width (cm) Aug Depth (cm) Staff gauge Velocity Tomential Fest Hoderate Slow (Very slow) Clarity	None (Slight) Moderate	Cobble (32-128 Gravel (8-32mm Fine Gravel (2-4 Sand (0.25-2mm) SIC) < 0.25mm) Slopes (30-1) Geology: Calca Substratum C	mm) n) kmm) n) Kedium – High – Ver	v High				
Bank width (cm) Wet width (cm) Avg Depth (cm) Staff gauge Velocity Torrential Fast Moderate Slow Very stow Charity	None (Slight) Moderate	Gravei (8-32mm Fine Gravei (2-4 Sand (0.25-2mm SR*) < 0.25mm) Slopes (30-1 Geology: Calca Substratum O	n) Smm) n) 4edium – High – Ver	v High				
Bank width (cm) Wet width (cm) Way Depth (cm) Staff gauge Velocity Tomential Fast Moderate Slow Very stow Charity	None (Slight) Moderate	Sand (0.25-2mm Sarty < 0.25mm) Slopes (20) - N Geology: Calca Substratum O	n) 4edium – High – Ver	v High				
Wet width (om)  Avg Depth (om)  Staff gauge  Velocity  Torrential  Fast  Moderate  Slow  (Very storr)  Clarity	None (Slight) Moderate	Sity < 0.25mm) Slopes (30) - N Geology: Calca Substratum C	tedium – High – Ver	v High				
Avg Depth (cm) Staff gauge Velocity Torretial Fast Moderate Slow (Very slow) Clarity	None (Slight) Moderate	Slope: Col - N Geology: Calca Substratum C	tedium – High – Ver	v High				
Staff gauge Velocity Torrential Fast Moderate Slow (Very stori) Clarity	None (Slight) Moderate	Geology: Calca Substratum C		v High				
Velocity Torrential Fast Moderate Slow (Very slow) Clarity	None (Slight) Moderate	Substratum C	renus Silvania Man	F. C. Caller		-		
Torrential Fast Moderate Slow (Very slow) Clarity	None (Slight) Moderate	Substratum C	THE PROPERTY OF STREET	nd)	Shading: High- Moo	derate -	- Low - No	ne
Fest Moderate Slow (Very slow) Clarity	(Slight) Moderate		ondition: Calcareou	s-Comparted	Cattle access Y3upst	tream .	downstre	am nr N
Slow (Very slow) Clarity	Moderate	Loosey- Normal	Distriction Contactor	ar companies	Carton access Contra		- down core	don or re
(Very slow) Clarity	High	Substratum:			1 N-10215			
Clarity		Stoney bottom-	Muddy bottom-Mud	over stones	Photo(Y) N			
		Degree of silt	etion: Clean-Slight-I	Moderate Heavy	)			
VETV CREEF	Discharge	Death of mud	: None: <1cm: 1-5c	mc \$-10cm( > 10c	-			
	Flood		and the second					
Clear	Normal		Present Moderate	- Abundant				
(Slightly turbid)	Low	Filamentous A	ligae:	20.50	Sewage Fungus:		Managa N	
Highly turbid	-	None Present	- Moderate - Abund		None - Present - Mod		Abundant	
regary suroid	Very Low Dry	Main land use Pasture	u/s: Urban	Sample retained:	Sam pled in Minutes Pond net x 2	H		
	Recent Flood	Bog	Tillage	(Y) N				
	TOTAL CONT.	Forestry	Other	-	Stone wash x			
our well and		1000000			Weed sweep x			
<ul> <li>Group 3 = Trich</li> <li>Group 4 = G.Ot</li> <li>Group 5 = Aset</li> </ul>				g sampling		1	<b>Abunda</b> 1-5 5-20	1 2
	N/S	Oligochaeta and (				6	1-5 5-20 21-50 51-100	1 2 3 4
	N/S		11111111		group below; (Abundance – A	6	I-5 5-20 21-50	1 2 3
<ul> <li>Calculate the to</li> </ul>	N/S	xa and relative abo	11111111	croinwertebrate g		Ab)	1-5 5-20 21-50 51-100	1 2 3 4
<ul> <li>Calculate the to</li> </ul>	N/S	xa and relative abo	undance of each ma	croinwertebrate g		Ab)	1-5 5-20 21-50 51-100	1 2 3 4
<ul> <li>Calculate the to</li> </ul>	N/S	xa and relative abo	undance of each ma	croinwertebrate g	group below: (Abundance – A	Ab)	1-5 5-20 21-50 51-200 101+	1 2 3 4
<ul> <li>Calculate the to</li> </ul>	N/S	xa and relative abs Ecdyonurus Ab Rhibhrogena Ab	undance of each ma	croinwertebrate g	group below: (Abundance – A	Ab)	1-5 5-20 21-50 51-100 101+ euczira Ab gravila Ab	1 2 3 4
<ul> <li>Calculate the to</li> </ul>	N/S	Ecdyonurus Ab Rhithrogena Ab Heptagenia Ab Ephemerella Ab	undance of each ma	croinwertebrate g	group below: (Abundance – A	Ab)	1-5 5-20 21-50 51-100 101+ cuctra Ab granta Ab ensura Ab	1 2 3 4
<ul> <li>Calculate the to</li> </ul>	Nos Ral number of ta	Ecdyonurus Ab Risthrogena Ab Historia Ab Historia Ab Ephemerella Ab Caents Ab	undance of each ma	croinwertebrate g	group below: (Abundance – A	Ab)  Li  Se  Protone Imphine	1-5 5-20 21-50 51-100 101+ euctra Ab grevia Ab emura Ab emura Ab	1 2 3 4
<ul> <li>Calculate the to</li> </ul>	Nos ital number of ta Pa	Ecdyonurus Ab Rhithrogenia Ab Histhrogenia Ab Hisptagenia Ab Ephemerella Ab Caenis Ab valleptophlebia Ab	undance of each ma	croinwertebrate g	proup below: (Abundance – A	Ab)  Li Jis Protone Imphine	1-5 5-20 21-50 51-100 101+ euctra Ab grania Ab entura Ab entura Ab entura Ab	1 2 3 4
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#### Upstream

Group 1 - 3 Talls Ephemeroptera Group 2 - 2 Tails Plecoptera No. of taxa No. of taxa 1 1 1-2 3+ 1-2 Score 0 Score 0 4 Group 3 Trichoptera No. of taxa No. of taxa 1-2 0 0 [1-2] 1-2 3-6 Relative Abundance Abundance 0 2 Score Step 2 Group 5 a) Index Score Group 1 b) Index Score Group 2 No. of taxa c) Index Score Group 3 14 d) Index Score Group 4 Common (>20) 0 Absent Few (1-20) e) Index Score Group 5 4 (2) 0 Step 3. Calculate the Total Index Score, the Average Index Score and the SSR Score using the boxes below Total Index Score (TIS) sum (a+b+c+d+e) Average Index Score (AIS) TIS/5 (5 for 5 groups) 2.4 Step 4. Assess the stream by comparing the final SSR score with the categories below and tick the appropriate box > 7.25 > 6.5 - 7.25 Indeterminate Stream may be at risk Name (print): DANGEL DUNLEAVY Date: 01 / 11 / 2021 Surveyor (signed): 🄙

Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from each macroinvertebrate group calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.

**Upstream II**