Annual Environmental Report

2023

Kilmacreannan

D0513-01

CONTENTS

7 APPENDIX

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2023 AER

This Annual Environmental Report has been prepared for D0513-01, Kilmacreannan, in Donegal 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)

- Kilmacrennan WWTP with a Plant Capacity PE of 500, the treatment type is 2 - Secondary treatment .

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
TPEFF0600D0513SW001	Kilmacrennan WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l BOD, 5 days with Inhibition (Carbonaceo mg/l COD-Cr mg/l ortho-Phosphate (as P) - unspecified mg/l Suspended Solids mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
Small Stream Risk Score Assessment

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 KILMACRENNAN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILMACRENNAN 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	6	873	251
ortho-Phosphate (as P) - unspecified mg/l	6	9.40	2.11
BOD, 5 days with Inhibition (Carbonaceo mg/l	6	231	72
Ammonia-Total (as N) mg/l	6	74	23
pH pH units	6	7.80	7.57
Suspended Solids mg/l	6	432	100
Hydraulic Capacity	N/A	684	390

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 greater 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 - TPEFF0600D0513SW001

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	6	1	1	97	Fail
Suspended Solids mg/l	10	25	N/A	6	5	3	37	Fail
BOD, 5 days with Inhibition (Carbonaceo mg/l	10	20	N/A	6	5	5	43	Fail
pH pH units	9	9	N/A	6	N/A	N/A	7.48	Pass
Ammonia-Total (as N) mg/l	1	1.2	N/A	6	6	6	25	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.5	0.6	N/A	6	6	6	2.04	Fail
Nitrite (as N) mg/l	N/A	N/A	N/A	1	N/A	N/A	0.156	
Conductivity @20°C µS/cm	N/A	N/A	N/A	6	N/A	N/A	604	
Nitrate (as N) mg/l	N/A	N/A	N/A	1	N/A	N/A	0.764	

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):

Refer to the incidents section of this report.

Significance of Results:

The WWTP is not in compliance with the ELVs, as set out with the WWDL. The impact on receiving waters is assessed further in section 2.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0600D0513SW001

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	214107, 420471	RS39L020270	No	No	Yes	No	Moderate
Downstream	214159, 420482	RS39L020280	No	No	Yes	No	Moderate

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

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
BOD - 5 days (Total) mg/l	RS39L020270	1.00	RS39L020280	1.17	1.50	11.1
Ammonia-Total (as N) mg/l	RS39L020270	0.026	RS39L020280	0.145	0.065	182.5
ortho-Phosphate (as P) - unspecified mg/l	RS39L020270	0.039	RS39L020280	0.045	0.035	16.7
Nitrite (as N) mg/l	RS39L020270	0.011	RS39L020280	0.061	N/A	
Nitrate (as N) mg/l	RS39L020270	0.727	RS39L020280	0.841	N/A	
Temperature °C	RS39L020270	11	RS39L020280	12	N/A	
Suspended Solids mg/l	RS39L020270	4.24	RS39L020280	4.24	N/A	
Dissolved Oxygen % Saturation	RS39L020270	100	RS39L020280	95	N/A	
Conductivity @20°C µS/cm	RS39L020270	192	RS39L020280	200	N/A	
pH pH units	RS39L020270	7.73	RS39L020280	7.63	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 Ammonia (as N) mg/l ortho-Phosphate (as P) - unspecified mg/l, 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.

The discharge from the wastewater treatment plant does have an observable impact on the designated shellfish water quality.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - KILMACRENNAN WWTP

2.1.4.1 Treatment Efficiency Report - Kilmacrennan 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	35792	13747	62
TP	N/A	N/A	N/A
cBOD	10309	6070	41
SS	14276	5204	64
TN	N/A	N/A	N/A

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

2.1.4.2 Treatment Capacity Report Summary - Kilmacrennan 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.

Kilmacrennan WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	330
DWF to the Treatment Plant (m^3/day)	110
Current Hydraulic Loading - annual max (m^3/day)	684
Average Hydraulic loading to the Treatment Plant (m^3/day)	390.16
Organic Capacity (PE) - As Constructed	500
Organic Capacity (PE) - Collected Load (peak week)[Note1]	875
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 - KILMACRENNAN 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 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 2023.			

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	Plant or equipment breakdown at WWTP	No	Yes
Breach of ELV	WWTP upgrade required to meet ELV	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2023	2
Number of Incidents reported to the EPA via EDEN in 2023	2
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
SW002	214169,420488	Yes	Low Significance	Not Meeting Criteria	Unknown	Unknown	Not 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
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	Yes
The SWO Assessment included the requirements of relevant of WWDL schedules?	No
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	Unknown

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
D0513-SIP:01	Cessation or upgrade of storm water overflow (SW002) to comply with the criteria outlined in the DoECLG 'Procedures and Criteria in relation to Storm Water Overflows' (1995).	C	31/12/2019	Yes	At Planning Stage	2026	
D0513-SIP:02	Infiltration programme - diversion of storm water from the collection network	C	31/12/2019	Yes	At Planning Stage	2026	Mobilistation. Procurement process complete. Contract for upgrade to start in 2024
D0513-SIP:03	Replacement of malfunctioning Rotating Biological Contactor	C	30/06/2014	Yes	Works Completed		
D0513-SIP:04	Upgrade of Kilmacrennan Waste Water Treatment Plant to provide tertiary treatment	C	31/12/2019	Yes	At Planning Stage	2026	

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0513-SIP:05	Upgrade of waste water collection network	C	31/12/2019	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
D0513-01-Priority Substances Assessment	Yes	No
D0513-01-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	No

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

Signed: Date: 18/09/2024

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 - Ambient monitoring summary
Appendix 7.2 - Small Stream Risk Score Assessment

Kilmacrennan AMBIENT MONITORING SUMMARY 2023

Ambient Monitoring Point from WWDL (or as agreed with EPA)	***Irish Grid Reference***	**EPA Feature Coding Tool code**	**Receiving Waters Designation (Y/N)**				**WFD Status**
			Bathing Water	**Drinking Water**	**FWPM**	**Shellfish**	
Upstream Monitoring Point	214107, 420471	RS39L020270	No	No	Yes	No	Moderate
Downstream Monitoring Point	214159, 420482	RS39L020280	No	No	Yes	No	Moderate

Ambient Impact Assessment Table

Parameter Name	**Upstream Monitoring Point Location**	**Upstream Monitoring Point Annual Mean**	**Downstream Monitoring Point Location**	**Downstream Monitoring Point Annual Mean**	**EQS (Mean)**	**% EQS**
BOD mg/l	RS39L020270	1.0	RS39L020280	1.2	1.5	13.3%
Ammonia (as N) mg/l	RS39L020270	0.032	RS39L020280	0.145	0.065	173%
ortho-Phosphate (as P) - unspecified mg/l	RS39L020270	0.051	RS39L020280	0.057	0.035	17.1%

Kilmacreannan D0513-01 Ambient Monitoring Data

Station	Date	Ammonia (as N)	BOD	Conductivity @ 20°C	DO	Nitrate (as N)	Nitrite (as N)	Orthophosphate	pH	Suspended Solids	Temperature	SSRS
Kilmacrennan - Upstream	21-Feb-23	<0.015	1	176	104.7	NT	NT	<0.05	7.4	<6	10	SSRS score: 8.8, Stream probably not at risk
Kilmacrennan - Upstream	18-Apr-23	<0.015	1	205	102.7	NT	NT	<0.05	7.6	<6	11.7	NT
Kilmacrennan - Upstream	13-Jun-23	0.081	1	322	94.9	0.727	<0.015	<0.05	8	<6	16.4	NT
Kilmacrennan - Upstream	28-Aug-23	<0.015	1	152.2	96.3	NT	NT	0.058	8.1	<6	14.2	NT
Kilmacrennan - Upstream	12-Oct-23	<0.05	1	169.4	96.7	NT	NT	<0.05	7.7	<6	10.1	NT
Kilmacrennan - Upstream	11-Dec-23	<0.015	1	126.3	103	NT	NT	<0.05	7.6	<6	6.3	NT
Kilmacrennan - Downstream	21-Feb-23	0.053	1	190	103.6	NT	NT	<0.05	7.4	<6	10.9	SSRS score: 6.4, Stream at risk
Kilmacrennan - Downstream	18-Apr-23	0.129	1	213	97.3	NT	NT	<0.05	7.4	<6	11.8	NT
Kilmacrennan - Downstream	13-Jun-23	0.1	2	320	81.8	0.841	0.061	0.093	7.6	<6	16.7	NT
Kilmacrennan - Downstream	28-Aug-23	0.544	1	165.6	95.2	NT	NT	<0.05	8	<6	14.3	NT
Kilmacrennan - Downstream	12-Oct-23	0.034	1	176	94.8	NT	NT	<0.05	7.8	<6	10.1	NT
Kilmacrennan - Downstream	11-Dec-23	<0.015	1	133.1	100.1	NT	NT	<0.05	7.6	<6	6.4	NT

River: Lurgy	**Code:**	**Date:** 21/3/23	**Time:**
Station no.	**Location:** U/S Kilmacremon WTP		**Grid (6 figure):**
	Stream Order:		**Stream flow:** (Riffle) Riffle/Glide Slow flow

Field Chemistry	
DO%	
DO mg/l	
Temp (°C)	
Conductivity	
pH	
Bank width (cm)	
Wet width (cm)	
Avg Depth (cm)	
Staff gauge	

Velocity	Colour
Torrential	None
Fast	Slight
Moderate	Moderate
Slow	High
Very slow	

Clarity	Discharge
Very clear	Flood
Clear	Normal
Slightly turbid	Low
Highly turbid	Very Low
	Dry
	Recent Flood

Modifications: Y/N Canalised-widened-bank erosion-arterial drainage

Dominant Types:
Bedrock
Boulder (>128mm) ✓
Cobble (32-128mm) ✓
Gravel (8-32mm) ✓
Fine Gravel (2-8mm)
Sand (0.25-2mm)
Silt (<0.25mm)

Slope: Low – (Medium) – High – Very High

Geology: Calcareous-Siliceous-Mixed

Substratum Condition: Calcareous-Compacted-Loose - Normal

Substratum: (Stoney bottom)-Muddy bottom-Mud over stones

Degree of siltation: (Clean)-(Slight)-Moderate-Heavy

Depth of mud: None (<1cm:) 1-5cm: 5-10cm: >10cm

Litter: None – (Present) – Moderate - Abundant

Filamentous Algae:
None – (Present) – Moderate - Abundant

Main land use u/s:

(Pasture)	Urban	
Bog	Tillage	
(Forestry)	Other	

Sample retained: Y (N)

Stream flow: (Riffle) Riffle/Glide Slow flow

Shading: (High) – (Moderate) – Low - None

Cattle access (Y:) upstream – downstream or N

Photo: Y / (N)

Sewage Fungus:
None – Present – Moderate - Abundant

Sampled in Minutes:
Pond net x 2
Stone wash x 2
Weed sweep x 2

General Comments:

Macroinvertebrate Composition

The macroinvertebrates are divided into the following 5 specific groups:

- Group 1 = Ephemeroptera (3-tails) – note that tails may be damaged during sampling
- Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling
- Group 3 = Trichoptera
- Group 4 = G.OL.D (Gastropoda, Oligochaeta and Diptera)
- Group 5 = *Asellus*
- Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance – Ab)

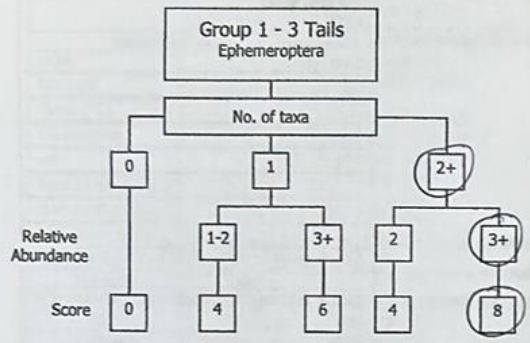
Relative Abundance	
1-5	1
6-20	2
21-50	3
51-100	4
101+	5

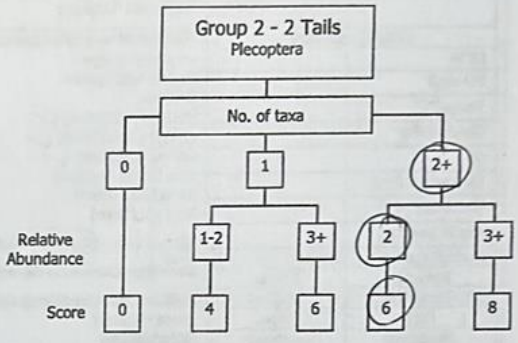
Ephemeroptera:		**Plecoptera:**	
Ecdyonurus Ab		*Leuctra* Ab	\
Rhithrogena Ab	\	*Isoperla* Ab	\
Heptagenia Ab	2	*Protonemura* Ab	
Ephemerella Ab		*Amphinemura* Ab	
Caenis Ab		*Perla* Ab	
Paraleptophlebia Ab		*Dinocras* Ab	
Ephemera danica Ab		Other Plecop Ab	
Other Ephem Ab		Other Plecop Ab	
Total no. of taxa	2	**Total no. of Taxa**	2
Total Relative Abundance	3	**Total Relative Abundance**	2

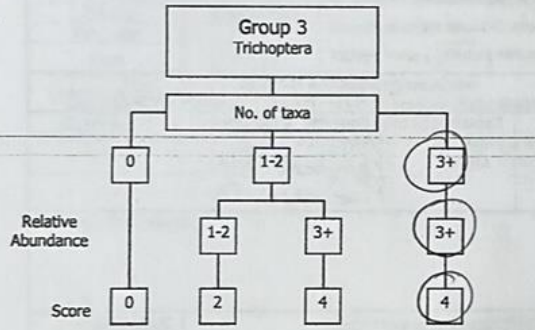
Trichoptera:		**G.OL.D:**				**Asellus:**	
Hydropsychidae Ab		*Lymnaea* (G) Ab		Chironomidae (D) Ab		Absent	✓
Polycentropodidae Ab		*Potamopyrgus* (G) Ab		*Chironomus* (D) Ab		Few/Low	
Rhyacophila Ab	\	*Planorbis* (G) Ab		Simulilidae (D) Ab	\	Common/ Numerous	
Philopotamidae Ab		*Ancylus* (G) Ab		*Dicranota* (D) Ab			
Limnephilidae Ab		*Physa* (G) Ab		Tipulidae (D) Ab	\		
Sericostomatidae Ab		*Lumbriculus* (Ol) Ab		Ceratopogonidae (D) Ab			
Glossosomatidae Ab		*Eiseniella* (Ol) Ab		Other GOLD Ab		**NOTE:** *Asellus* must be recorded as absent if none are found	
Lepidostomatidae Ab	\	Tubificidae (Ol) Ab	\				
Other Trichoptera Ab	\						
Total no. of Taxa	3	**Total no. of Taxa**	3	**Total Relative Abundance**	3		
Total Relative Abundance	3						

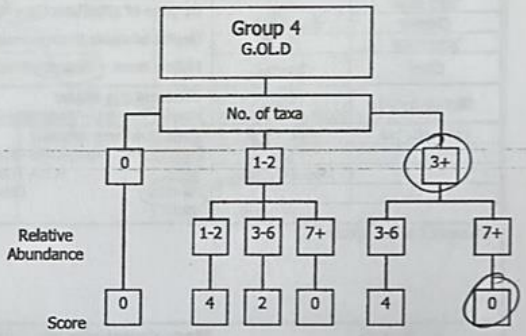
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

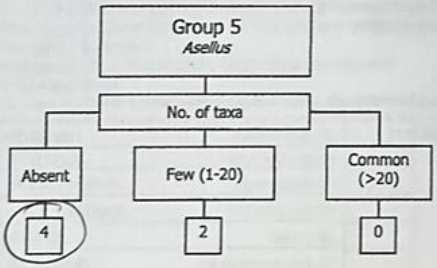
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	8
b) Index Score Group 2	6
c) Index Score Group 3	4
d) Index Score Group 4	0
e) Index Score Group 5	4

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)	22	Average Index Score (AIS) TIS/5 (5 for 5 groups)	4.4	**SSR Score** (AIS x 2)	8.8

Step 4. Assess the stream by comparing the final SSR score with the categories below and tick the appropriate box

> 7.25 Probably not at risk	✓	> 6.5 – 7.25 Indeterminate Stream may be at risk		<6.5 Stream at risk	

Surveyor (signed): _____ Name (print): K. Mc Bride Date: 21/02/2023

River: Lurgy	**Code:**	**Date:** 21/3/23	**Time:**
Station no.	**Location:** DS Kilnacreenan WWTP		**Grid (6 figure):**
	Stream Order:		**Stream flow:** Riffle / Riffle/Glide / Slow flow

Field Chemistry	
DO%	
DO mg/l	
Temp (°C)	
Conductivity	
pH	
Bank width (cm)	5.5-6
Wet width (cm)	5-5.2
Avg Depth (cm)	400-500
Staff gauge	

Velocity	Colour
Torrential	None
Fast	(Slight)
Moderate	(Moderate)
(Slow)	High
Very slow	

Clarity	Discharge
Very clear	Flood
Clear	(Normal)
(Slightly turbid)	Low
Highly turbid	Very Low
	Dry
	Recent Flood

Modifications: Y/N Canalised-widened-bank erosion-arterial drainage

Dominant Types:
Bedrock
Boulder (>128mm)
Cobble (32-128mm) ✓
Gravel (8-32mm) ✓
Fine Gravel (2-8mm)
Sand (0.25-2mm)
Silt (<0.25mm)

Slope: Low – (Medium) – High – Very High

Geology: Calcareous-Siliceous-Mixed

Substratum Condition: Calcareous-Compacted-Loose - Normal

Substratum:
(Stoney bottom)-Muddy bottom-Mud over stones

Degree of siltation: Clean-(Slight)-Moderate-Heavy

Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm

Litter: None – (Present) – Moderate - Abundant

Filamentous Algae:
None – (Present) – Moderate - Abundant

Main land use u/s:
(Pasture)
(Bog)
(Forestry)
(Urban)
Tillage
Other

Sample retained: Y / N

Stream flow:
Riffle
Riffle/Glide
Slow flow

Shading: (High) – (Moderate) – Low - None

Cattle access Y: upstream – downstream or N

Photo: Y / (N)

Sewage Fungus:
None – Present – Moderate - Abundant

Sampled in Minutes:
Pond net x 2
Stone wash x 2
Weed sweep x 2

General Comments:

Macroinvertebrate Composition

The macroinvertebrates are divided into the following 5 specific groups:

- Group 1 = Ephemeroptera (3-tails) – note that tails may be damaged during sampling
- Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling
- Group 3 = Trichoptera
- Group 4 = G.OL.D (Gastropoda, Oligochaeta and Diptera)
- Group 5 = *Asellus*
- Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance – Ab)

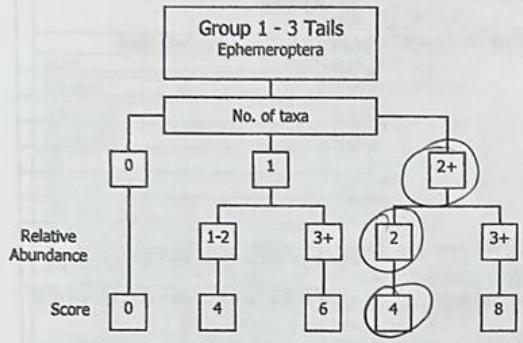
Relative Abundance	
1-5	1
6-20	2
21-50	3
51-100	4
101+	5

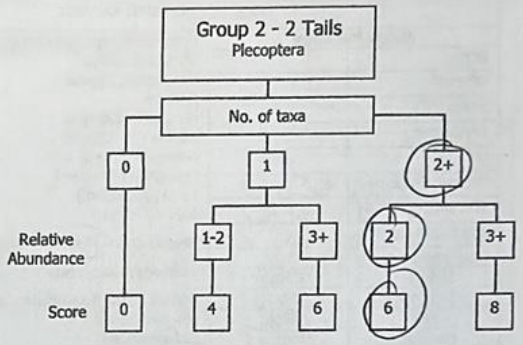
Ephemeroptera:		**Plecoptera:**	
Ecdyonurus Ab		*Leuctra* Ab	1
Rhithrogena Ab	1	*Isoperla* Ab	1
Heptagenia Ab	1	*Protonemura* Ab	
Ephemerella Ab		*Amphinemura* Ab	
Caenis Ab		*Perla* Ab	
Paraleptophlebia Ab		*Dinocras* Ab	
Ephemera danica Ab		Other Plecop Ab	
Other Ephem Ab		Other Plecop Ab	
Total no. of taxa	2	**Total no. of Taxa**	2
Total Relative Abundance	2	**Total Relative Abundance**	2

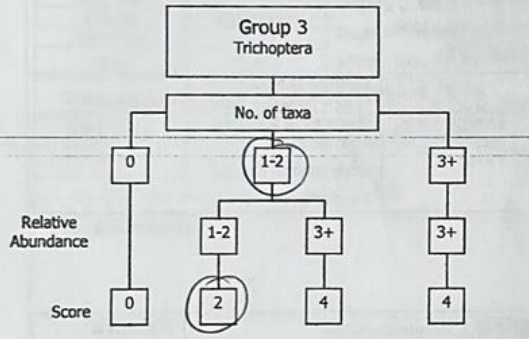
Trichoptera:		**G.OL.D:**				**Asellus:**	
Hydropsychidae Ab		*Lymnaea* (G) Ab		Chironomidae (D) Ab		Absent	
Polycentropodidae Ab		*Potamopyrgus* (G) Ab		*Chironomus* (D) Ab		Few/Low	
Rhyacophila Ab	1	*Planorbis* (G) Ab		Simulilidae (D) Ab	1	Common/ Numerous	✓
Philopotamidae Ab		*Ancylus* (G) Ab		*Dicranota* (D) Ab			
Limnephilidae Ab		*Physa* (G) Ab		Tipulidae (D) Ab	1		
Sericostomatidae Ab		*Lumbriculus* (Ol) Ab		Ceratopogonidae (D) Ab			
Glossosomatidae Ab		*Eiseniella* (Ol) Ab		Other GOLD Ab		**NOTE:** *Asellus* must be recorded as absent if none are found	
Lepidostomatidae Ab		Tubificidae (Ol) Ab	1				
Other Trichoptera Ab							
Total no. of Taxa	1	**Total no. of Taxa**	3	**Total Relative Abundance**	3		
Total Relative Abundance	1						

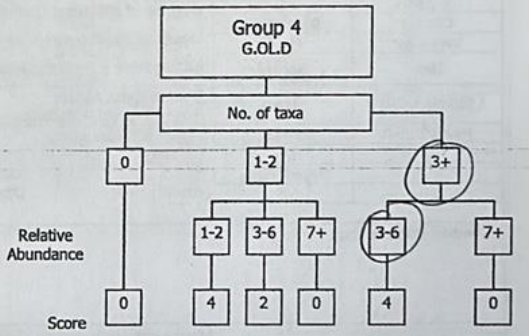
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

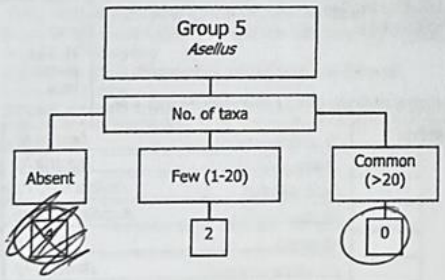
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	4
b) Index Score Group 2	6.
c) Index Score Group 3	2
d) Index Score Group 4	4
e) Index Score Group 5	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)	16	Average Index Score (AIS) TIS/5 (5 for 5 groups)	3.2	**SSR Score** (AIS x 2)	6.4

Step 4. Assess the stream by comparing the final SSR score with the categories below and tick the appropriate box

> 7.25 Probably not at risk		> 6.5 – 7.25 Indeterminate Stream may be at risk		<6.5 Stream at risk	✓

Surveyor (signed): _____ Name (print): K. Mc Bride. Date: 21 / 02 / 2023