Annual Environmental Report

2020

Kilmacreannan

D0513-01

CONTENTS

7 APPENDIX

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 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.

No significant upgrade works were undertaken in 2020. Kilmacreenan WWTP is not currently on IW Capital Investment Programme 2020 to 2024

1.2 TREATMENT SUMMARY

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

- Kilmacrennan WWTP - 2020 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 - 2020	Treated	Non-Compliant	Ammonia-Total (as N) mg/l BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l COD-Cr mg/l ortho-Phosphate (as P) - unspecified mg/l Suspended Solids mg/l

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 KILMACRENNAN WWTP - 2020 - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILMACRENNAN WWTP - 2020

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	978	249.14
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	6	312	81.57
Suspended Solids mg/l	6	422	111.42
Hydraulic Capacity	N/A	940.8	458.19

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	6	2	1	111.87	Fail
Suspended Solids mg/l	10	25	N/A	6	6	3	31.73	Fail
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	10	20	N/A	6	4	3	33.47	Fail
pH pH units	9	9	N/A	6	N/A	N/A	7.44	Pass
Ammonia-Total (as N) mg/l	1	1.2	N/A	6	6	6	19.17	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.5	0.6	N/A	6	6	5	2.26	Fail
Conductivity @20°C µS/cm	N/A	N/A	N/A	6	N/A	N/A	518.7	

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):

See Section 3.2.

Significance of Results:

The WWTP is not compliant with the ELVs set in the WWDL

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 Status
Upstream	214107, 420471	RS39L020270	No	No	Yes	No	Good
Downstream	214159, 420482	RS39L020280	No	No	Yes	No	Good

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	0.941	RS39L020280	18	1.5	1137.2
Ammonia-Total (as N) mg/l	RS39L020270	0.083	RS39L020280	0.271	0.065	289.2

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
ortho-Phosphate (as P) - unspecified mg/l	RS39L020270	0.036	RS39L020280	0.084	0.035	136.7
Temperature °C	RS39L020270	10.817	RS39L020280	10.8		
Suspended Solids mg/l	RS39L020270	4.994	RS39L020280	5.946		
pH pH units	RS39L020270	7.517	RS39L020280	7.417		
Dissolved Oxygen % Saturation	RS39L020270	99.4	RS39L020280	90.683		
Conductivity @20°C µS/cm	RS39L020270	187.433	RS39L020280	198.4		

Significance of Results:

The WWTP discharge was not 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 Ammonia, BOD, Ortho Phosphate, concentrations downstream of the effluent discharge is noted.

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 - KILMACRENNAN WWTP - 2020

2.1.4.1 Treatment Efficiency Report - Kilmacrennan WWTP - 2020

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)
SS	18318	5217	72
TP	N/A	N/A	N/A
TN	N/A	N/A	N/A
cBOD	13410	5503	59
COD	40960	18392	55

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 - 2020

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 - 2020	
Peak Hydraulic Capacity (m³/day) - As Constructed	330
DWF to the Treatment Plant (m³/day)	110
Current Hydraulic Loading - annual max (m³/day)	940.8
Average Hydraulic loading to the Treatment Plant (m³/day)	458.19
Organic Capacity (PE) - As Constructed	500
Organic Capacity (PE) - Collected Load (peak week)[Note1]	834
Organic Capacity (PE) - Remaining	0

Kilmacrennan WWTP - 2020	
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 - 2020

'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
There were no relevant environmental complaints in 2020.			

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)
Breach of ELV	WWTP upgrade required to meet ELV	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	1
Number of Incidents reported to the EPA via EDEN in 2020	1
Explanation of any discrepancies between the two numbers above	No difference

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 2020 (No. of events)	Total volume discharged in 2020 (m3)	Monitoring Status
SW002	214169, 420488	Yes	Low	Not 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?	Yes
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	N/A

4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS.

4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides 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		The required works are not currently funded in the 2020-2024 period, and will be considered when planning for the next investment plan period.
D0513-SIP:02	Infiltration programme - diversion of storm water from the collection network	C	31/12/2019	Yes	Not Started		Requirement to be assessed through Infiltration reduction programme
D0513-SIP:03	Replacement of malfunctioning Rotating Biological Contactor	C	30/06/2014	Yes	Works Completed		

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0513-SIP:04	Upgrade of Kilmacrennan Waste Water Treatment Plant to provide tertiary treatment	C	31/12/2019	Yes	At Planning Stage		The required works are not currently funded in the 2020-2024 period, and will be considered when planning for the next investment plan period.
D0513-SIP:05	Upgrade of waste water collection network	C	31/12/2019	Yes	Work ongoing on-site		

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.

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Priority Substances Assessment	Yes	2018	No	
Small Stream Risk Score Assessment	Yes	2019	Yes	5.2

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2018

5.2 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
Does SSRS indicate discharges are posing a pollution risk?	No

Parameter	Value
Downstream SSRS Water Quality Risk	>7.25 Probably Not at Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	<6.5 Stream at Risk
What is Downstream SSRS?	9.6
What is Upstream SSRS?	6.4
Condition 5 Improvement Programme Reference	N/A
Does improvement programme include any procedural and/or infrastructal works?	N/A

6 CERTIFICATION AND SIGN OFF

6.1 SUMMARY OF AER CONTENTS

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
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:

Signed: Date: 20/05/2021

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

Municiple	Entity Name	Month	Location	Lab Ref	Date	pH	Temperature	Conductivity @ 20°C	DO	BOD	COD	Suspended Solids	Ammonia (as N)	Nitrate (as N)	Nitrite (as N)	Orthophosphate	Total Nitrogen	TON	Dissolved Inorganic Nitrogen DIN	Total Phosphorus	E coli	Enterococci	Faecal Coliforms	Chlorophyll	Salinity	SSRS
Letterkenny	Lurgy	Feburary	Kilmacrennan - Upstream	202500365	12-Feb-20	7.1	5.9	206	104.9	<1	NT	<6	0.03	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	Feburary	Kilmacrennan - Downstream	202500368	12-Feb-20	7.3	6	208	103.2	1	NT	<6	0.047	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	May	Kilmacrennan - Upstream	202501146	11-May-20	7.8	8.8	238	102.4	1	NT	<6	<0.015	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	May	Kilmacrennan - Downstream	202501149	11-May-20	7.6	8.5	251	90.3	5	NT	10	0.811	NT	NT	0.19	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	June	Kilmacrennan - Upstream	202501462	16-Jun-20	7.6	14.5	245	92	1	NT	<6	0.064	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	June	Kilmacrennan - Downstream	202501465	16-Jun-20	7.2	14.4	261	66.7	4	NT	7	0.335	NT	NT	0.11	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	August	Kilmacrennan - Upstream	202502368	18-Aug-20	7.6	15.4	197	99.5	1	NT	<6	<0.015	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	August	Kilmacrennan - Downstream	202502371	18-Aug-20	7.4	15.5	229	90.1	1	NT	<6	0.097	NT	NT	0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	October	Kilmacrennan - Upstream	202503058	13-Oct-20	7.5	9.8	106	98.4	1	NT	8	0.3	NT	NT	0.04	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	October	Kilmacrennan - Downstream	202503061	13-Oct-20	7.5	9.8	107	98.1	1	NT	<6	0.065	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Letterkenny	Lurgy	November	Kilmacrennan - Upstream	202503138	09-Nov-20	7.5	10.5	132.6	99.2		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	>7.25 - Probaly not at Risk
Letterkenny	Lurgy	November	Kilmacrennan - Downstream	202503423	09-Nov-20	7.5	10.6	134.4	95.7	96	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<6.5 - Stream at Risk

Kilmacrennan

River: Lurgey | **Code:** | **Date:** 9/11/2020 | **Time:**

Station no. 20250318 | **Location:** upstream | **Grid (6 figure):**

Stream Order:

Stream flow: (Riffle) Riffle/Glide Slow flow

Field Chemistry

DO%	99.2
DO mg/l	
Temp (°C)	10.5
Conductivity	132.6
pH	7.52
Bank width (cm)	700
Wet width (cm)	~~750~~ 650
Avg Depth (cm)	60
Staff gauge	

Velocity: Torrential / Fast / (Moderate) / Slow / Very slow

Colour: None / Slight / (Moderate) / High

Clarity: Very clear / (Clear) / Slightly turbid / Highly turbid

Discharge: Flood / (Normal) / Low / 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

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 10
Stone wash x 10
Weed sweep x

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:

Ecdyonurus Ab	
Rhithrogena Ab	3
Heptagenia Ab	1
Ephemerella Ab	
Caenis Ab	
Paraleptophlebia Ab	
Ephemera danica Ab	
Other Ephem Ab	

Total no. of taxa: 2 | Total Relative Abundance: 3

Plecoptera:

Leuctra Ab	
Isoperla Ab	1
Protonemura Ab	
Amphinemura Ab	
Perla Ab	
Dinocras Ab	
Other Plecop Ab	
Other Plecop Ab	

Total no. of Taxa: 1 | Total Relative Abundance: 1

Trichoptera:

Hydropsychidae Ab	1
Polycentropodidae Ab	
Rhyacophila Ab	
Philopotamidae Ab	
Limnephilidae Ab	
Sericostomatidae Ab	
54 Glossosomatidae Ab	4
Lepidostomatidae Ab	
Other Trichoptera Ab	

Total no. of Taxa: 2 | Total Relative Abundance: 5

G.OL.D:

Lymnaea (G) Ab	
Potamopyrgus (G) Ab	
Planorbis (G) Ab	
Ancylus (G) Ab	
Physa (G) Ab	
Lumbriculus (Ol) Ab	
Eiseniella (Ol) Ab	1
Tubificidae (Ol) Ab	1

Total no. of Taxa: 2 | Total Relative Abundance: 2

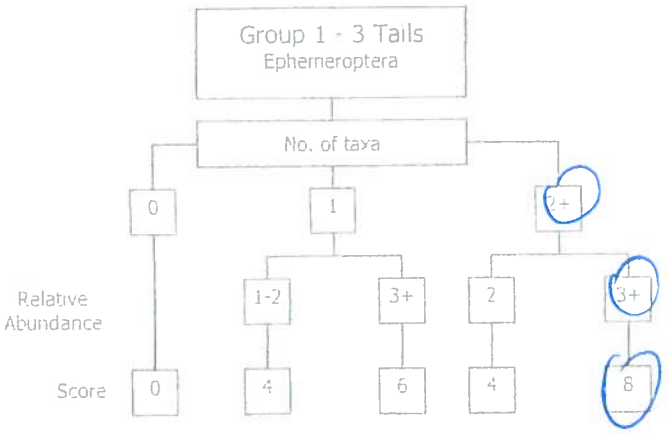
Chironomidae (D) Ab	
Chironomus (D) Ab	
Simuliidae (D) Ab	
Dicranota (D) Ab	
Tipulidae (D) Ab	
Ceratopogonidae (D) Ab	
Other GOLD Ab	

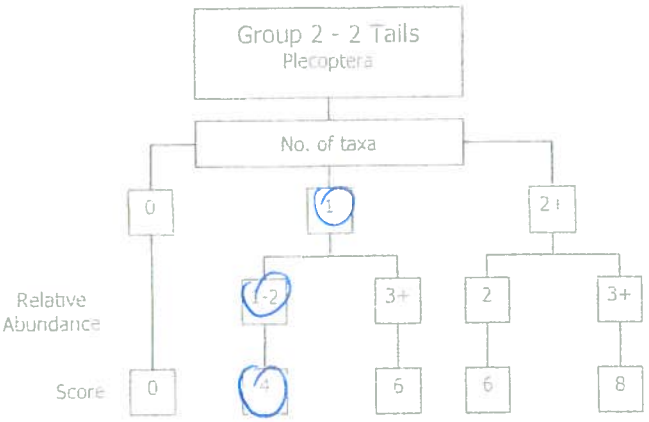
***Asellus*:**
Absent ✓
Few/Low
Common/ Numerous

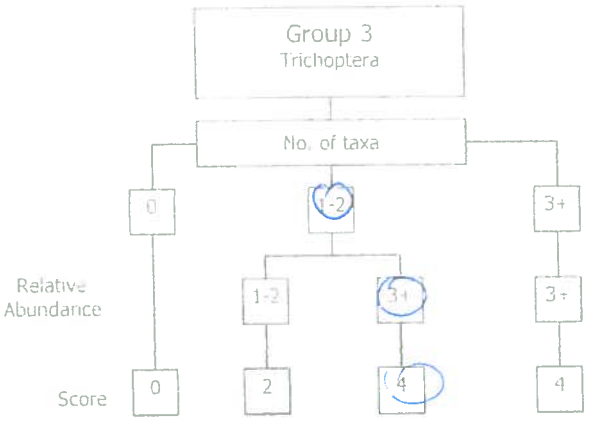
NOTE: *Asellus* must be recorded as absent if none are found

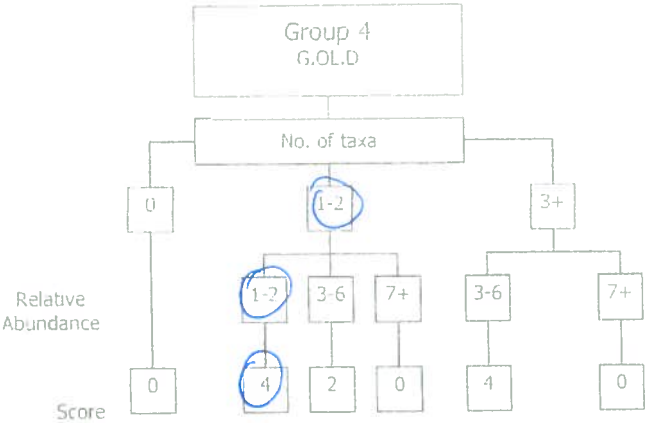
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

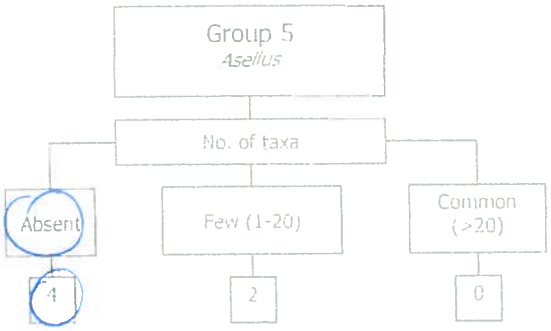
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	8
b) Index Score Group 2	4
c) Index Score Group 3	4
d) Index Score Group 4	4
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)	24	Average Index Score (AIS) TIS/5 (5 for 5 groups)	4.8	**SSR Score** (AIS x 2)	9.6

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): Don Smith Name (print): DON SMITH Date: 9 / 11 / 2020

Kilmacrennan

River: LURGY d/s	**Code:**	**Date:** 9/11/2020	**Time:**
Station no. 20250 3423	**Location:** Downstream		**Grid (6 figure):**
	Stream Order:		**Stream flow:** Riffle / Riffle/Glide / Slow flow

Field Chemistry

DO%	95.7
DO mg/l	
Temp (°C)	10.6
Conductivity	134.4
pH	7.49
Bank width (cm)	500
Wet width (cm)	500
Avg Depth (cm)	80
Staff gauge	

Velocity: Torrential / Fast / Moderate / Slow / Very slow

Colour: None / Slight / Moderate / High

Clarity: Very clear / Clear / Slightly turbid / Highly turbid

Discharge: Flood / Normal / Low / 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

Shading: High – Moderate – Low – None

Cattle access Y – upstream – downstream of N

Photo: Y / N

Sewage Fungus: None – Present – Moderate - Abundant

Sampled in Minutes:
Pond net x 10
Stone wash x 10
Weed sweep x

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:

Ecdyonurus Ab	
Rhithrogena Ab	2
Heptagenia Ab	
Ephemerella Ab	
Caenis Ab	
Paraleptophlebia Ab	
Ephemera danica Ab	
Other Ephem Ab	
Total no. of taxa	1
Total Relative Abundance	2

Plecoptera:

Leuctra Ab	1
Isoperla Ab	1
Protonemura Ab	1
Amphinemura Ab	
Perla Ab	
Dinocras Ab	
Other Plecop Ab	
Other Plecop Ab	
Total no. of Taxa	3
Total Relative Abundance	3

Trichoptera:

Hydropsychidae Ab	
Polycentropodidae Ab	
Rhyacophila Ab	
Philopotamidae Ab	
Limnephilidae Ab	
Sericostomatidae Ab	
Glossosomatidae Ab	1
Lepidostomatidae Ab	
Other Trichoptera Ab	
Total no. of Taxa	1
Total Relative Abundance	1

G.OL.D:

Lymnaea (G) Ab	
Potamopyrgus (G) Ab	
Planorbis (G) Ab	
Ancylus (G) Ab	
Physa (G) Ab	
Lumbriculus (Ol) Ab	
Eiseniella (Ol) Ab	1
Tubificidae (Ol) Ab	2
Chironomidae (D) Ab	
Chironomus (D) Ab	
Simuliidae (D) Ab	
Dicranota (D) Ab	
Tipulidae (D) Ab	
Ceratopogonidae (D) Ab	
Other GOLD Ab	
Total no. of Taxa	2
Total Relative Abundance	3

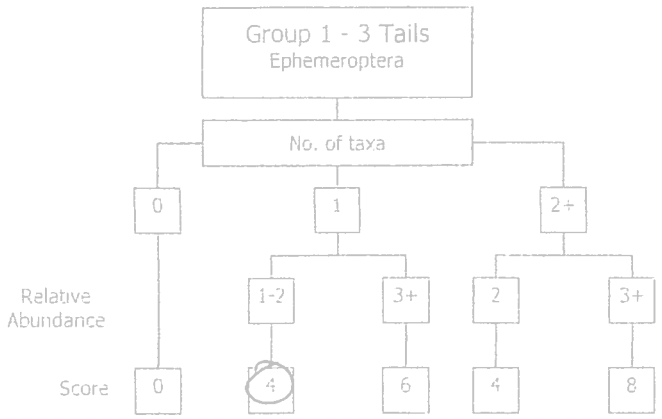
Asellus:

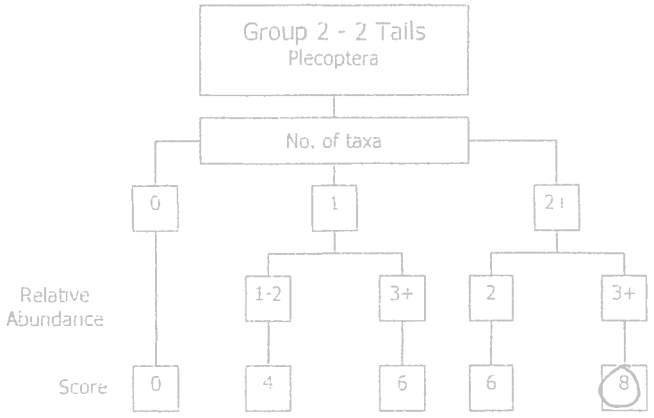
Absent	
Few/Low	
Common/ Numerous	✓

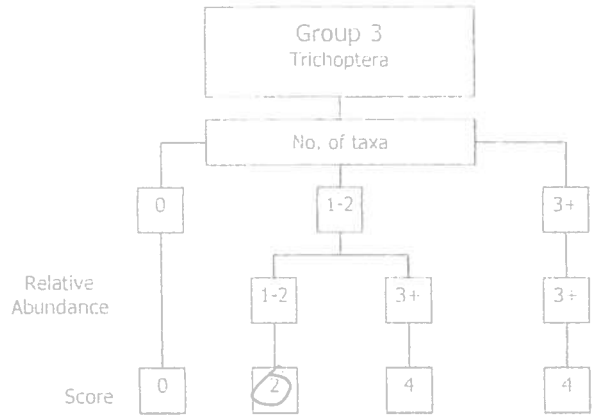
NOTE: *Asellus* must be recorded as absent if none are found

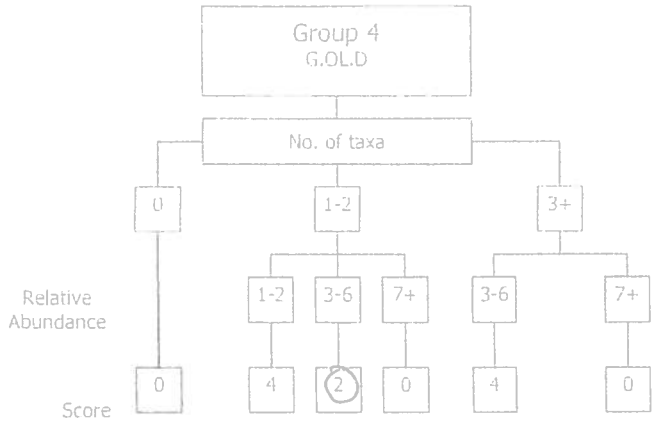
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

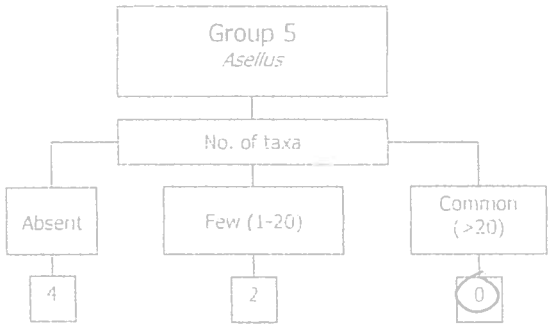
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	4
b) Index Score Group 2	8
c) Index Score Group 3	2
d) Index Score Group 4	2
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): Don Smith Name (print): DON SMITH Date: 9 / 11 / 2020