Annual Environmental Report

2021

Moate

D0097-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0097-01, Moate, in Westmeath in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There were no capital works, significant changes or operational improvements undertaken in 2021.

1.2 TREATMENT SUMMARY

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

- MOATE WWTP with a Plant Capacity PE of 4500, 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
TPEFF3200D0097SW001	MOATE WWTP	Treated	Non-Compliant	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 MOATE WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - MOATE 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 Nitrogen mg/l	12	114	43
Ammonia-Total (as N) mg/l	12	75	33
ortho-Phosphate (as P) - unspecified mg/l	12	11	3.84
BOD - 5 days (Total) mg/l	11	637	192
COD-Cr mg/l	12	2725	491.63
Suspended Solids mg/l	12	3270	267.52
pH pH units	12	8.00	7.57
Total Phosphorus (as P) mg/l	12	16	5.66
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	948	197
Hydraulic Capacity	N/A	3595	1042

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 - TPEFF3200D0097SW001

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	12	N/A	N/A	23	Pass
Suspended Solids mg/l	10	25	N/A	12	3	N/A	7.04	Fail
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	10	20	N/A	12	N/A	N/A	2.17	Pass
pH pH units	6.00	9.00	N/A	12	N/A	N/A	7.55	Pass
Ammonia-Total (as N) mg/l	1.00	2.00	N/A	12	1	N/A	0.207	Pass
ortho-Phosphate (as P) - unspecified mg/l	1.00	1.20	N/A	12	1	N/A	0.306	Pass
Nitrite (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.102	

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)
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	13	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	12	
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	598	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.618	
Nitrate (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	9.7	

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):

Biological Sludge Issue at WWTP.

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 TPEFF3200D0097SW001

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	218491, 238039	RS25M050100	No	No	No	No	Poor
Downstream	218396, 236055	RS25M050250	No	No	No	No	Poor

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

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
BOD - 5 days (Total) mg/l	RS25M050100	0.959	RS25M050250	1.23	1.50	18.2
Ammonia-Total (as N) mg/l	RS25M050100	0.027	RS25M050250	0.043	0.065	24.4
ortho-Phosphate (as P) - unspecified mg/l	RS25M050100	0.019	RS25M050250	0.032	0.035	35.8
Dissolved Oxygen % Saturation	RS25M050100	85	RS25M050250	72	N/A	

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Temperature °C	RS25M050100	12	RS25M050250	12	N/A	
Total Phosphorus (as P) mg/l	RS25M050100	0.048	RS25M050250	0.115	N/A	
Total Nitrogen mg/l	RS25M050100	2.89	RS25M050250	3.74	N/A	
pH pH units	RS25M050100	7.93	RS25M050250	7.83	N/A	
Conductivity @20°C µS/cm	RS25M050100	642	RS25M050250	704	N/A	
COD-Cr mg/l	RS25M050100	24	RS25M050250	25	N/A	
Dissolved Oxygen mg/l	RS25M050100	9.26	RS25M050250	7.76	N/A	

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: Suspended Solids mg/l.

The ambient monitoring results 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 and Ortho-P concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status. The WFD status is Poor both upstream and downstream of the WWTP.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - MOATE WWTP

2.1.4.1 Treatment Efficiency Report - MOATE WWTP

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
cBOD	82438	910	99
TP	2372	259	89
TN	17895	5378	70
COD	206047	9769	95
SS	112120	2950	97

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

2.1.4.2 Treatment Capacity Report Summary - MOATE 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.

MOATE WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	3375
DWF to the Treatment Plant (m^3/day)	1125
Current Hydraulic Loading - annual max (m^3/day)	3595

MOATE WWTP	
Average Hydraulic loading to the Treatment Plant (m^3/day)	1042.43
Organic Capacity (PE) - As Constructed	4500
Organic Capacity (PE) - Collected Load (peak week)[Note1]	3806
Organic Capacity (PE) - Remaining	694
Will the capacity be exceeded in the next three years? (Yes/No)	No

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

2.1.5 SLUDGE / OTHER INPUTS - MOATE 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 2021.			

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 biological sludge issue	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	1
Number of Incidents reported to the EPA via EDEN in 2021	1
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 2021 (No. of events)	Total volume discharged in 2021 (m^3)	Monitoring Status
SW002	218670, 237766	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m^3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	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
D0097-SIP:01	Phase 1 upgrade of WWTP and ancillary works	C	01/01/2015	Yes	Works Completed		
D0097-SIP:02	Re-location of primary discharge to R. Brosna	C	01/01/2015	Yes	Not Started		Capital works not funded in RC3. Capital works funding post 2024 will be contingent on the project being included in the 2025-2029 investment period.
D0097-SIP:04	SW003 to Moate stream & any other discharges identified under conditions 4.12 & 5.1 to be discontinued	A	01/01/2015	Yes	Works Completed		SW003 does not exist so SIP deemed complete.

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
D0097-SIP:05	Upgrade and rehabilitation of sewer network (phase I and phase II)	C	01/01/2015	Yes	Not Started	31/12/2022	Rehabilitation works are currently being prioritised for pipelines within a national risk scoring system. Moate still falls below the risk threshold required for the progression of works under this programme. In Moate all surveys carried out in the network were successful.
D0097-SIP:06	Upgrade to storm water management system	C	01/01/2015	Yes	Not Started		Capital works not funded in RC3. Capital works funding post 2024 will be contingent on the project being included in the 2025-2029 investment period.

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	Year included in AER	Included in this AER
Priority Substances Assessment	Yes	2012	No
Small Stream Risk Score Assessment	Yes	2022	Yes

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2012.

5.2 SMALL STREAM RISK SCORE ASSESSMENT

The Small Stream Risk Score Assessment Report is included in Appendix 7.1 - Small Stream Risk Score Assessment. A summary of the findings of this report is included below.

Parameter	Value
Condition 5 Improvement Programme Reference	N/A
Does SSRS indicate discharges are posing a pollution risk?	Yes

Parameter	Value
Downstream SSRS Water Quality Risk	At Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	At Risk
What is Downstream SSRS?	2.4
What is Upstream SSRS?	4
Does improvement programme include any procedural and/or infrastructural works?	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
Has a Technical amendment/licence review application been submitted to the Agency by IW?	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	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	N/A

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

Date: 12/04/2022

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 - Small Stream Risk Score Assessment

Moate u/s

River: Moate Stm	Code:	Date: 11/10/21	Time: 12:30
Station no.	Location:		Grid (6 figure):
	Stream Order:		Stream flow: Riffle / Riffle/Glide / Slow flow

Field Chemistry	
DO%	85.2
DO mg/l	9.72
Temp (°C)	11.7
Conductivity	
pH	
Bank width (cm)	2
Wet width (cm)	1.5
Avg Depth (cm)	20
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

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 Mins
Stone wash x —
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:		Plecoptera:	
	Ecdyonurus Ab		*Leuctra* Ab
	Rhithrogena Ab		*Isoperla* Ab
	Heptagenia Ab		*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: 0	Total Relative Abundance: 0	Total no. of Taxa: 0	Total Relative Abundance: 0

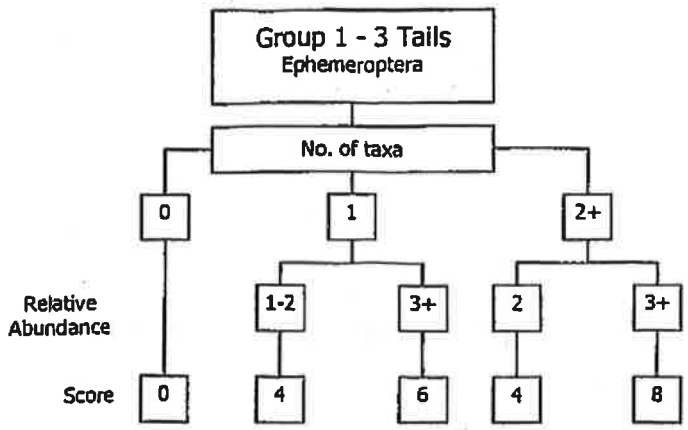
Trichoptera:		G.OL.D:				Asellus:	
	Hydropsychidae Ab		*Lymnaea* (G) Ab		Chironomidae (D) Ab (2)		
	Polycentropodidae Ab		*Potamopyrgus* (G) Ab		*Chironomus* (D) Ab	Absent	
1	*Rhyacophila* Ab		*Planorbis* (G) Ab		Simulidae (D) Ab (1)	Few/Low	
	Philopotamidae Ab		*Ancylus* (G) Ab		*Dicranota* (D) Ab	Common/ Numerous	✓
	Limnephilidae Ab		*Physa* (G) Ab		Tipulidae (D) Ab (1)		
	Sericostomatidae Ab (1)	11	*Lumbriculus* (Ol) Ab (1)		Ceratopogonidae (D) Ab		
	Glossosomatidae Ab		*Eisenlella* (Ol) Ab		Other GOLD Ab		
	Lepidostomatidae Ab		Tubificidae (Ol) Ab				
	Other Trichoptera Ab						
Total no. of Taxa: 1	Total Relative Abundance: 1	Total no. of Taxa: 4			Total Relative Abundance: 5		

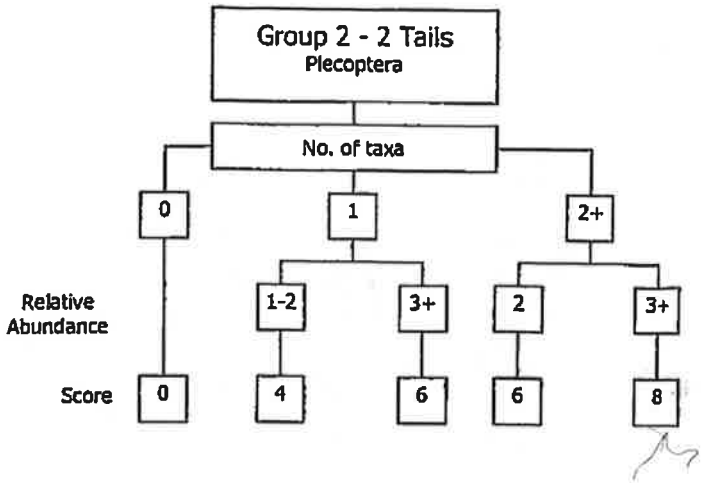
NOTE: *Asellus* must be recorded as absent if none are found

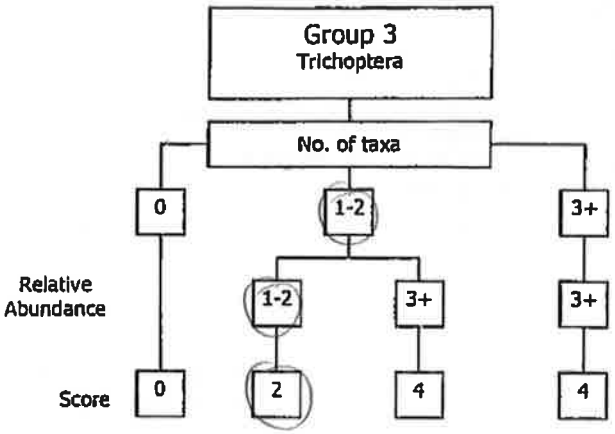
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

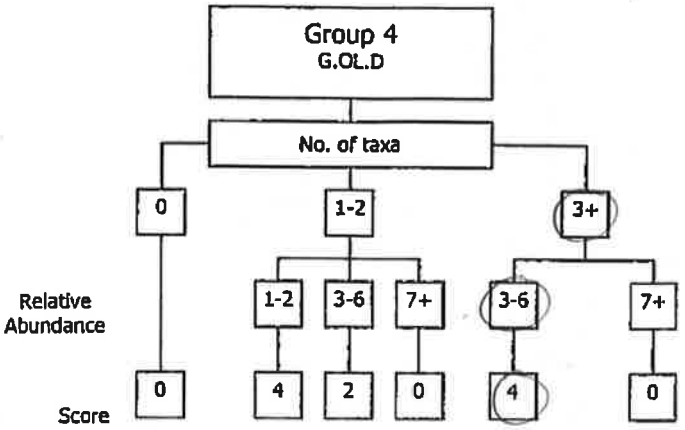
4 Juv. fish.
gammerus (1)
baetus (2)

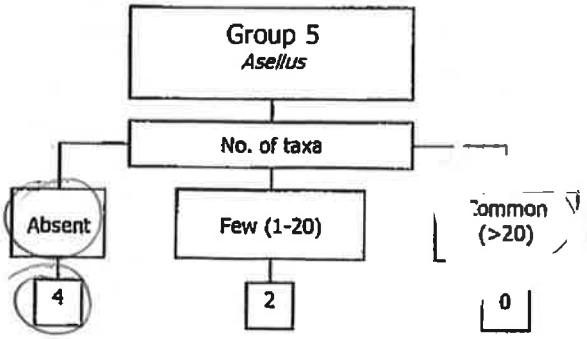
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	0
b) Index Score Group 2	0
c) Index Score Group 3	2
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)	10	Average Index Score (AIS) TIS/5 (5 for 5 groups)	2	SSR Score (AIS x 2)	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): E. Whelan Name (print): _____ Date: 11 / 10 / 21

Moate d/s.

River:	Code:	Date: 11/10/21	Time: 11:20.
Station no.	**Location:**		**Grid (6 figure):**
	Stream Order:		**Stream flow:** Riffle / Riffle/Glide / Slow flow ✓

Field Chemistry	
DO%	66.2
DO mg/l	7.44
Temp (°C)	10.5
Conductivity	
pH	
Bank width (cm)	5
Wet width (cm)	2.5
Avg Depth (cm)	30
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 at bridge, upstream

Dominant Types:
Bedrock
Boulder (>128mm) ✓
Cobble (32-128mm) ✓
Gravel (8-32mm) ✓ mixture of all.
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: mixed
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)

Shading: (High) – Moderate – Low – None

Cattle access Y: upstream – downstream or N ? 0

Photo: (Y) / N

Sewage Fungus:
(None) – Present – Moderate - Abundant

Sampled in Minutes:
Pond net x ✓ 2
Stone wash x ✓ 2
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:		Plecoptera:	
	Ecdyonurus Ab		*Leuctra* Ab
	Rhithrogena Ab		*Isoperla* Ab
	Heptagenia Ab		*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: 0	Total Relative Abundance: 0	Total no. of Taxa: 0	Total Relative Abundance: 0

Trichoptera:		G.OL.D:				*Asellus*:	
	Hydropsychidae Ab		*Lymnaea* (G) Ab		1 (1) Chironomidae (D) Ab	1	Absent
	Polycentropodidae Ab		*Potamopyrgus* (G) Ab		*Chironomus* (D) Ab		Few/Low ✓
1	*Rhyacophila* Ab		*Planorbis* (G) Ab		Simulidae (D) Ab		Common/ Numerous
	Philopotamidae Ab		*Ancylus* (G) Ab		*Dicranota* (D) Ab		
	Limnephilidae Ab		*Physa* (G) Ab		Tipulidae (D) Ab		
	Sericostomatidae Ab	2	11 (1) *Lumbriculus* (Ol) Ab	1	Ceratopogonidae (D) Ab		
	Glossosomatidae Ab		*Eisenlella* (Ol) Ab		Other GOLD Ab		
	Leptidostomatidae Ab	(4) →	Tubificidae (Ol) Ab	3			
	Other Trichoptera Ab						
Total no. of Taxa: 0	Total Relative Abundance: 0	Total no. of Taxa: 3			Total Relative Abundance: 5		

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

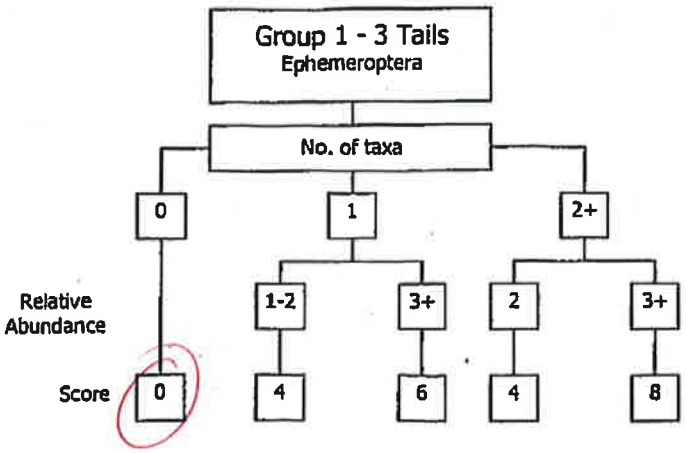
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

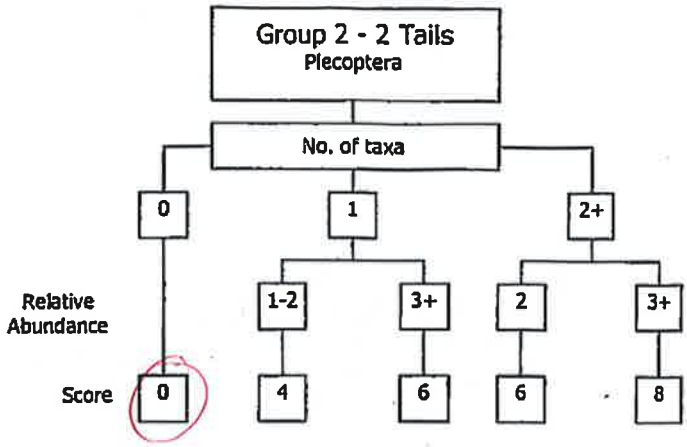
Baetis x 2

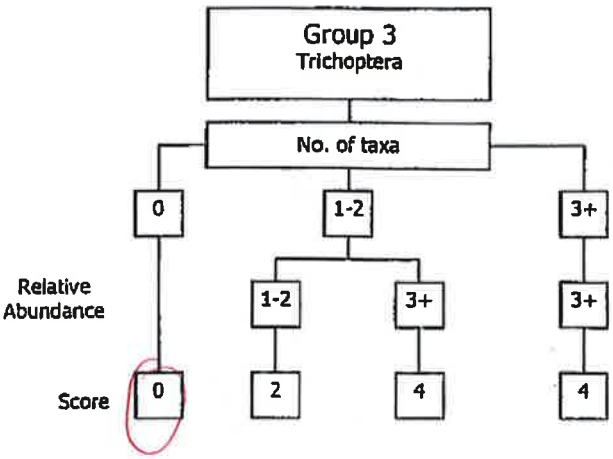
Asellus x 2

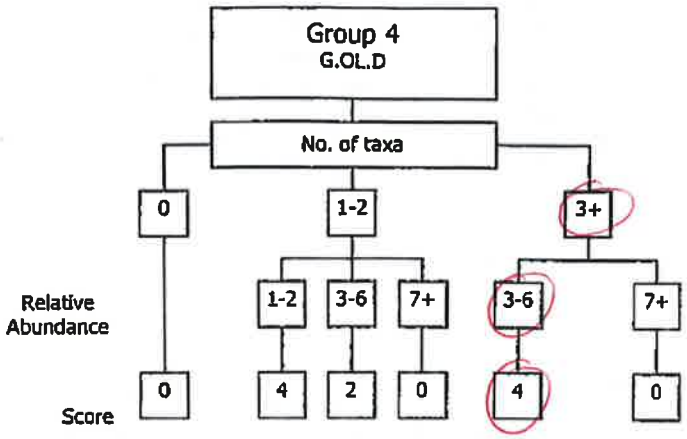
25+ by numbers

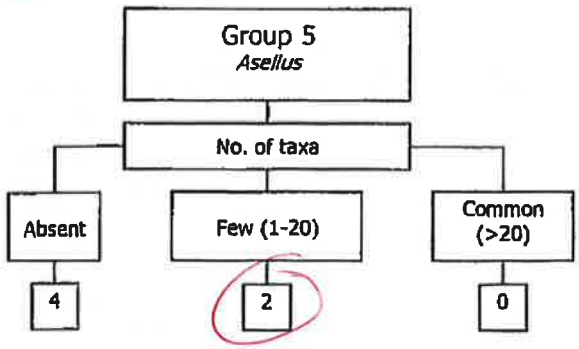
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

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

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)	6	Average Index Score (AIS) TIS/5 (5 for 5 groups)	1·2	SSR Score (AIS x 2)	2·4

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): E Whelan Name (print): _____ Date: 11 / 10 / 21