

Annual Environmental Report

2020



Roscommon

D0116-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

- 1.1 ANNUAL STATEMENT OF MEASURES
- 1.2 TREATMENT SUMMARY
- 1.3 ELV OVERVIEW
- 1.4 LICENSE SPECIFIC REPORT INCLUDED IN AER

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

- 2.1 ROSCOMMON WWTP - 2020 - TREATED DISCHARGE
 - 2.1.1 INFLUENT SUMMARY - ROSCOMMON WWTP - 2020
 - 2.1.2 EFFLUENT MONITORING SUMMARY - ROSCOMMON WWTP - 2020 -
 - 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE -
 - 2.1.4 OPERATIONAL REPORTS SUMMARY FOR ROSCOMMON WWTP - 2020
 - 2.1.5 SLUDGE/OTHER INPUTS TO ROSCOMMON WWTP - 2020

3 COMPLAINTS SUMMARY

- 3.1 REPORTED INCIDENTS SUMMARY
 - 3.1.1 SUMMARY OF INCIDENTS
 - 3.1.2 SUMMARY OF OVERALL INCIDENTS

4 INFRASTRUCTURAL ASSESSMENT AND PROGRAMME OF IMPROVEMENTS

- 4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT
 - 4.1.1 SWO IDENTIFICATION AND INSPECTION SUMMARY REPORT
- 4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS
 - 4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY
 - 4.2.2 IMPROVEMENT PROGRAMME SUMMARY
 - 4.2.3 SEWER INTEGRITY RISK ASSESSMENT

5 LICENCE SPECIFIC REPORTS

- 5.1 PRIORITY SUBSTANCES ASSESSMENT
- 5.2 SMALL STREAM RISK SCORE ASSESSMENT

6 CERTIFICATION AND SIGN OFF

- 6.1 SUMMARY OF AER CONTENTS

7 APPENDIX

7.1 SMALL STREAM RISK SCORE ASSESSMENT

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

This Annual Environmental Report has been prepared for D0116-01, Roscommon, in Roscommon 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.

'Roscommon Town Main Drainage-network upgrade work' contract was tendered in 2020. The works consist of the construction of foul / combined sewers, rising mains, new pumping stations with stormwater storage tanks, upgrade of an existing pumping station to include a new stormwater storage tank and the upgrade of an existing pumping station with a replacement pumping system. It also provides for the relocation of existing stormwater overflows and the decommissioning of existing stormwater overflows on the network. Pending Ministerial consent in April 2021 the Contract will be awarded and works are scheduled to commence in 2021.

1.2 TREATMENT SUMMARY

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

- ROSCOMMON WWTP - 2020 with a Plant Capacity PE of 9550, 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
TPEFF2600D0116SW001	ROSCOMMON WWTP - 2020	Treated	Non-Compliant	ortho-Phosphate (as P) - unspecified 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 ROSCOMMON WWTP - 2020 - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - ROSCOMMON 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	12	1470	460.64
Suspended Solids mg/l	12	568	193.56
BOD, 5 days with Inhibition (Carbonaceo mg/l	12	627	180.94
Hydraulic Capacity	N/A	7892	3606.91

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 - TPEFF2600D0116SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	24.02	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	7.37	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.44	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	7	14	N/A	12	1	N/A	3.92	Pass
Ammonia-Total (as N) mg/l	0.5	1	N/A	12	1	N/A	0.13	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.2	0.4	N/A	12	8	2	0.21	Fail

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):

Inadequate Operational Procedures

Significance of Results:

The WWTP is non compliant with the ELV's set out 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 TPEFF2600D0116SW001

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	186923, 260919	RS26R070250	No	No	No	No	Moderate
Downstream	188064, 261782	RS26H010300	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	RS26R070250	0.97	RS26H010300	1.23	1.5	17.3
Ammonia-Total (as N) mg/l	RS26R070250	0.04	RS26H010300	0.06	0.07	28.7
ortho-Phosphate (as P) - unspecified mg/l	RS26R070250	0.02	RS26H010300	0.03	0.04	41.1

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Dissolved Oxygen mg/l	RS26R070250	8.19	RS26H010300	8.42		
pH pH units	RS26R070250	7	RS26H010300	7.32		
Dissolved Oxygen % Saturation	RS26R070250	73.53	RS26H010300	76.2		
Temperature °C	RS26R070250	10.53	RS26H010300	11.36		

Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

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 slight deterioration in Ammonia, BOD and Ortho-P, concentrations downstream of the effluent discharge is noted, however results remain below the EQS.

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 - ROSCOMMON WWTP - 2020

2.1.4.1 Treatment Efficiency Report - ROSCOMMON 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)
cBOD	250825	5069	98

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
COD	638547	31096	95
TN	N/A	N/A	N/A
TP	N/A	N/A	N/A
SS	268312	9540	96

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

2.1.4.2 Treatment Capacity Report Summary - ROSCOMMON 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.

ROSCOMMON WWTP - 2020	
Peak Hydraulic Capacity (m³/day) - As Constructed	7163
DWF to the Treatment Plant (m³/day)	2388
Current Hydraulic Loading - annual max (m³/day)	7892
Average Hydraulic loading to the Treatment Plant (m³/day)	3606.91
Organic Capacity (PE) - As Constructed	9550
Organic Capacity (PE) - Collected Load (peak week)^{Note1}	7513
Organic Capacity (PE) - Remaining	2037
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 - ROSCOMMON 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)
Landfill Leachate (delivered by sewer network)	9714	Volume (m3)		0.74	Yes	No	No

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	Inadequate Operational Procedures / Training	1	Yes	No
Uncontrolled release	Adverse Weather	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	2
Number of Incidents reported to the EPA via EDEN in 2020	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	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
SW003	187009, 265443	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW004	187898, 261868	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW005	188982, 263845	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW006	187898, 261868	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
TBC	187422, 263745	No	Medium	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	187577, 263408	No	Medium	Not yet Assessed	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	No

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

4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0116-SIP:01	SW002 to be discontinued	C	31/12/2019	Yes	At Planning Stage	31/12/2023	

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
D0116-SIP:02	SW003 to be discontinued	C	31/12/2019	Yes	At Planning Stage	31/12/2023	
D0116-SIP:03	SW004 to be discontinued	C	31/12/2019	Yes	At Planning Stage	31/12/2023	
D0116-SIP:04	SW005 to be discontinued	C	31/12/2019	Yes	At Planning Stage	31/12/2023	
D0116-SIP:05	SW006 to be discontinued	C	31/12/2019	Yes	At Planning Stage	31/12/2023	
D0116-SIP:06	SW007 to be discontinued	C	31/12/2019	Yes	At Planning Stage	31/12/2023	
D0116-SIP:07	Works required to meet ELVs	C	31/12/2019	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.
D0116-SIP:08	Works to facilitate the discontinuation of discharges	C	31/12/2019	Yes	At Planning Stage		

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	2014	No	
Small Stream Risk Score Assessment	Yes	2018	Yes	5.2

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2014

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

Parameter	Value
Does SSRS indicate discharges are posing a pollution risk?	No
Does improvement programme include any procedural and/or infrastructural works?	No
Downstream SSRS Water Quality Risk	Probably Not At Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	The Stream is at Risk
What is Downstream SSRS?	5.6
What is Upstream SSRS?	8.8

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: 13/07/2021

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 - Small Stream Risk Score Assessment

Small Steam Risk Assessment Score

*AM
- Error 22/06/20

20441738

Rockavage

River: Trillick 0500	Code:	Date: 22/6/20	Time: 12-00
Station no. 26R07 0250 26H01 0300*	Location: Ros u/s	Grid (6 figure):	
Field Chemistry		Stream Order:	Stream flow:
DO%	8.1	Modifications: Y(N) Canalised-widened-bank erosion-arterial drainage	Riffle Ruffle/Glide Slow flow
DO mg/l	7.92	Dominant Types: Bedrock	
Temp (°C)	15.6	Boulder (>128mm)	
Conductivity		Cobble (32-128mm)	
pH		Gravel (8-32mm)	
Bank width (cm)		Fine Gravel (2-8mm)	
Wet width (cm)		Sand (0.25-2mm)	
Avg Depth (cm)		Silt (<0.25mm)	
Staff gauge		Slope: Low - Medium - High - Very High	
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed	Shading: H - (M) - L - N
Torrential	None	Substratum Condition: Calcareous-Compacted-	Cattle access Y: (u/s) - d/s or N
Fast	Slight	Loose Normal	
Moderate	Moderate	Substratum:	Photo: Y (N)
Slow	High	Stoney bottom-Muddy bottom-Mud over stones	
Very slow		Degree of siltation: Clean (Slight) Moderate-Heavy	
Clarity	Discharge	Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm	
Very clear	Flood	Litters: No - P - M - A	
Clear	Normal	Filamentous Algae: A - M - P (NO)	Sewage Fungus: A - M - P (NO)
Slightly turbid	Low	Main land use u/s:	Sample retained: Y (N)
Highly turbid	Very Low	Pasture Urban	Sampled in Minutes:
	Dry	Bog Tillage	Pond net x 2mins
	Recent Flood	Forestry Other	Stone wash x 1min
			Weed sweep x 1min

General Comments:

Macroinvertebrate Composition

The macroinvertebrates are divided into the following 5 specific groups:

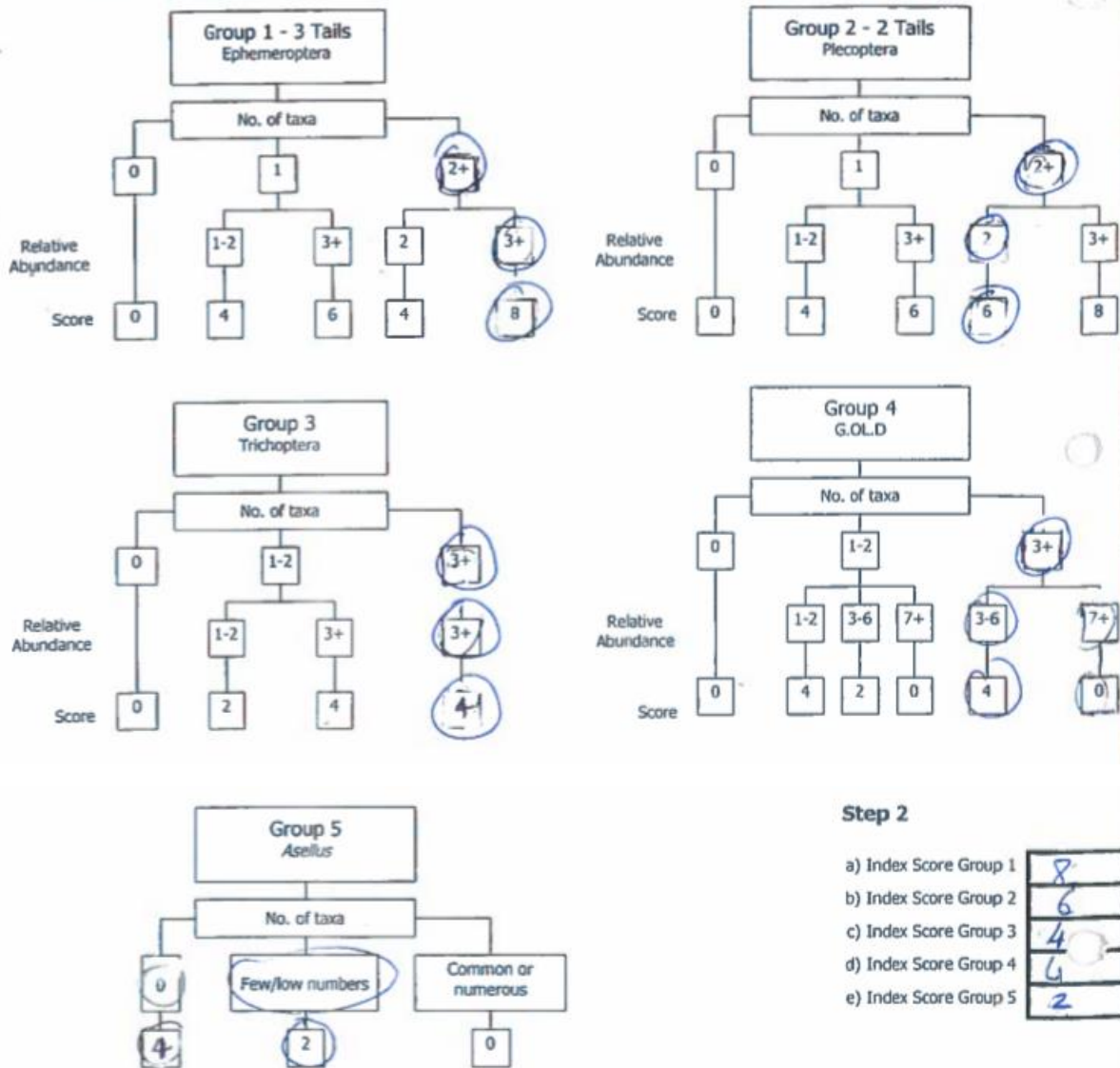
- Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling
- Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling
- Group 3 = Trichoptera
- Group 4 = G.O.L.D (Gastropoda, Oligochaeta and Diptera)
- Group 5 = Asellus

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:	<i>Ecdyonurus</i> Ab		
	<i>Rhythrogena</i> Ab		
	<i>Heptagenia</i> Ab	2	
	<i>Ephemerella</i> Ab		
	<i>Caenis</i> Ab	3	
	<i>Paraleptophlebia</i> Ab		
	<i>Ephemera danica</i> Ab	1	
	Other Ephem Ab		
Total no. of taxa	2	Total Abundance	6
Plecoptera:	<i>Leuctra</i> Ab	1	
	<i>Isoperla</i> Ab		
	<i>Protonemura</i> Ab		
	<i>Amphinemura</i> Ab		
	<i>Perla</i> Ab	1	
	<i>Dinocras</i> Ab		
	Other Plecop Ab		
	Other Plecop Ab		
Total no. of Taxa	2	Total Abundance	2
Trichoptera:	Hydropsychidae Ab		
	Polycentropodidae Ab		
	<i>Rhyacophila</i> Ab		
	Philopotamidae Ab		
	Limnephilidae Ab	1	
	Sericostomatidae Ab	1	
	Glossosomatidae Ab	5	
	Lepidostomatidae Ab		
	Other Trichoptera Ab		
Total no. of Taxa	7	Total Abundance	7
G.O.L.D:	<i>Lymnaea</i> (G) Ab	1	
	<i>Potamopyrgus</i> (G) Ab		
	<i>Planorbis</i> (G) Ab		
	<i>Ancylus</i> (G) Ab		
	<i>Physa</i> (G) Ab	1	
	<i>Lumbriculus</i> (O) Ab		
	<i>Eiseniella</i> (O) Ab		
	Tubificidae (O) Ab		
Total no. of Taxa	4	Total Abundance	5
Chironomidae (D) Ab			
<i>Chironomus</i> (D) Ab			
<i>Simulidae</i> (D) Ab	2		
<i>Dicranota</i> (D) Ab			
<i>Tipulidae</i> (D) Ab	1		
<i>Ceratopogonidae</i> (D) Ab			
Other 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 3. Calculate the Total Index Score, the Average Index Score and the SSR Score using the boxes below

Total Index Score sum (a+b+c+d+e) 24

Average Index Score (AIS) 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): A. Mulhille Name (print): ADAM MULHILL Date: 22 / 06 / 20

* AM - Error 22/06/20

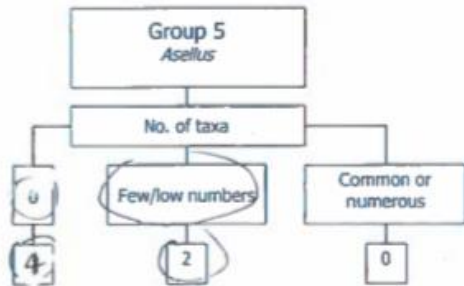
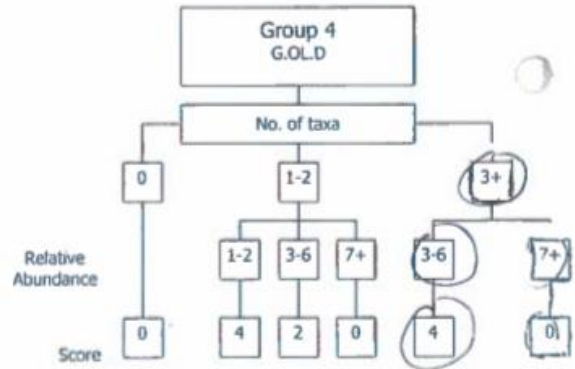
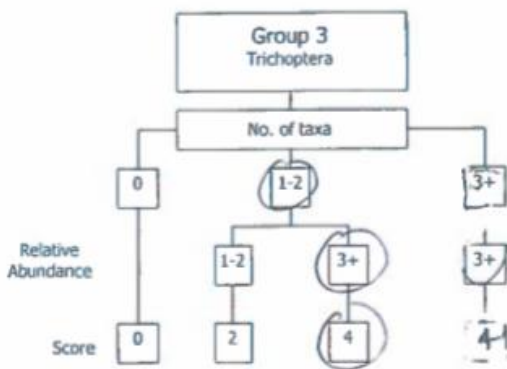
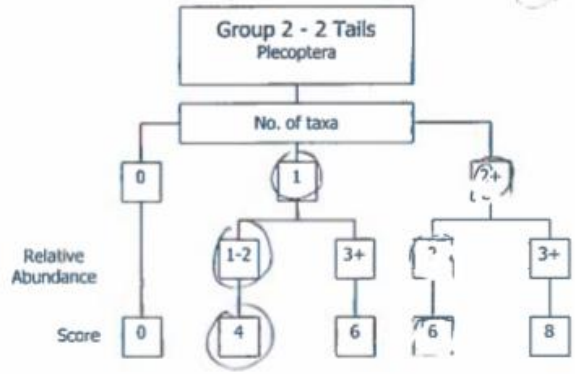
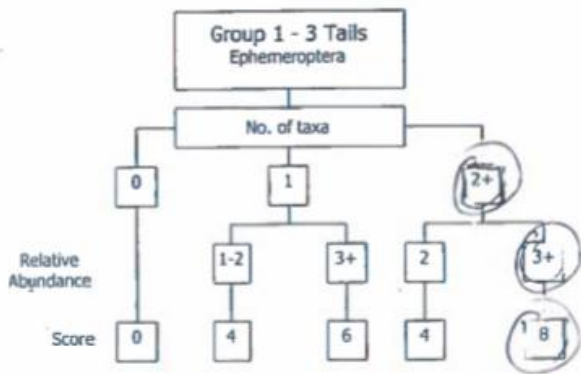
20441739

River: <u>HOOKSMAISE HIND</u>		Code:	Date: <u>22/06/20</u>	Time: <u>11:00</u>
Station no. <u>26 H01</u> <u>* 26 H01</u> <u>0302</u>		Location: <u>Ros D's</u>		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	<u>73.7</u>	Modifications: <u>Y(N)</u> Canalised-widened-bank erosion-arterial drainage		<u>Riffle</u>
DO mg/l	<u>6.88</u>	Dominant Types: Bedrock		<u>Riffle/Glide</u>
Temp (°C)	<u>17.1</u>	Boulder (>128mm)		<u>Slow flow</u>
Conductivity		Cobble (32-128mm)		
pH		Gravel (8-32mm)		
Bank width (cm)		Fine Gravel (2-8mm)		
Wet width (cm)		Sand (0.25-2mm)		
Avg Depth (cm)		Silt (<0.25mm)		
Staff gauge		Slope: <u>Low</u> - Medium - High - Very High		Shading: <u>H</u> - M - L - N
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: u/s - d/s or <u>(N)</u>
Torrential	<u>(None)</u>	Substratum Condition: Calcareous-Compacted-Loose/Normal		Photo: <u>Y (N)</u>
Fast	Slight	Substratum:		
<u>(Moderate)</u>	Moderate	Stoney bottom-Muddy bottom-Mud over stones		
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very slow		Depth of mud: <u>None</u> < 1cm: 1-5cm: 5-10cm: >10cm		
Clarity	Discharge	Litter: <u>(No)</u> - P - M - A		
Very clear	Flood	Filamentous Algae: <u>A - M - P (NO)</u>		Sewage Fungus: <u>A - M - P (NO)</u>
<u>(Clear)</u>	Normal	Main land use u/s:		Sample retained:
Slightly turbid	<u>(Low)</u>	Pasture	Urban	Sampled in M/minutes:
Highly turbid	Very Low	Bog	Tillage	Pond net x <u>2mins</u>
	Dry	Forestry	Other	Stone wash x <u>1min</u>
	Recent Flood			Weed sweep x <u>1min</u>
General Comments:				

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
<ul style="list-style-type: none"> 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.O.L.D (Gastropoda, Oligochaeta and Diptera) Group 5 = Asellus Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab) 					
Ephemeroptera:		Plecoptera:			
<i>Ecdyonurus</i> Ab	<u>1</u>	<i>Leuctra</i> Ab	<u>1</u>		
<i>Rhithrogena</i> Ab		<i>Isoperla</i> Ab			
<i>Heptagenia</i> Ab	<u>2</u>	<i>Protonemura</i> Ab			
<i>Ephemerella</i> Ab		<i>Amphinemura</i> Ab			
<i>Caenis</i> Ab		<i>Perla</i> Ab			
<i>Paraleptophlebia</i> Ab		<i>Dinocras</i> Ab			
<i>Ephemera danica</i> Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	<u>2</u>	Total no. of Taxa	<u>1</u>	Total Abundance	<u>1</u>
Total Abundance	<u>3</u>	Total no. of Taxa	<u>5</u>	Total Abundance	<u>5</u>
Trichoptera:		G.O.L.D:		Asellus:	
Hydropsychidae Ab		<i>Lymnaea</i> (G) Ab	<u>1</u>	<i>Chironomidae</i> (D) Ab	
Polycentropodidae Ab		<i>Potamopygus</i> (G) Ab	<u>1</u>	<i>Chironomus</i> (D) Ab	Absent
<i>Rhyacophila</i> Ab		<i>Planorbis</i> (G) Ab	<u>1</u>	<i>Simuliidae</i> (D) Ab	Few/low
Philopotamidae Ab		<i>Ancyclus</i> (G) Ab		<i>Dicranota</i> (D) Ab	Common/numerous
Limnephilidae Ab		<i>Physa</i> (G) Ab	<u>1</u>	<i>Tipulidae</i> (D) Ab	
Sericostomatidae Ab	<u>1</u>	<i>Lumbriculus</i> (OI) Ab		<i>Ceratopogonidae</i> (D) Ab	
Glossosomatidae Ab	<u>5</u>	<i>Eiseniella</i> (OI) Ab		Other Ab	
Lepidostomatidae Ab		<i>Tubificidae</i> (OI) Ab			
Other Trichoptera Ab					
Total no. of Taxa	<u>2</u>	Total no. of Taxa	<u>5</u>	Total Abundance	<u>5</u>
Total Abundance	<u>6</u>				

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	2

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

Total Index Score sum (a+b+c+d+e) **22**

Average Index Score (AIS) **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): A. Mulhill Name (print): ADAM MULHILL Date: 22 / 06 / 20