

# Annual Environmental Report

2019



Roscommon

D0116-01

## **CONTENTS**

### **1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 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 - TREATED DISCHARGE
  - 2.1.1 INFLUENT SUMMARY - ROSCOMMON WWTP
  - 2.1.2 EFFLUENT MONITORING SUMMARY - ROSCOMMON WWTP -
  - 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE -
  - 2.1.4 OPERATIONAL REPORTS SUMMARY FOR ROSCOMMON WWTP
  - 2.1.5 SLUDGE/OTHER INPUTS TO ROSCOMMON WWTP

### **3 COMPLAINTS AND INCIDENTS**

- 3.1 COMPLAINTS SUMMARY
- 3.2 REPORTED INCIDENTS SUMMARY
  - 3.2.1 SUMMARY OF INCIDENTS
  - 3.2.2 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 2019 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.

Main drainage contract tender is due in 2020. The works consist of the abandonment of some SWO's and a network upgrade of the foul sewer, together with the construction of a storm tank at the WWTP and the construction of new pumping stations.

## 1.2 TREATMENT SUMMARY

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

- ROSCOMMON WWTP 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	Treated	Compliant	N/A

## 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 - TREATED DISCHARGE

#### 2.1.1 INFLUENT MONITORING SUMMARY - ROSCOMMON 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	13	1209	345.71
Suspended Solids mg/l	13	397	136.27
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	13	504	117.73
Hydraulic Capacity	N/A	7276	3740

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'. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

## 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	13	0	0	24.12	Pass
Suspended Solids mg/l	35	87.5	N/A	13	0	0	8.25	Pass
pH pH units	9	9	N/A	13	0	0	7.25	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	7	14	N/A	13	0	0	2.92	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.8	1.6	N/A	13	0	0	0.25	Pass
Ammonia-Total (as N) mg/l	0.5	0.6	N/A	13	0	0	0.09	Pass

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):

Not applicable

### Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

## 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
<b>Upstream</b>	186923, 260919	RS26R070250	No	No	No	No	Moderate
<b>Downstream</b>	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
<b>BOD - 5 days (Total) mg/l</b>	RS26R070250	0.617	RS26H010300	1.156	1.5	35.9
<b>Ammonia-Total (as N) mg/l</b>	RS26R070250	0.076	RS26H010300	0.073	0.065	-3.1
<b>ortho-Phosphate (as P) - unspecified mg/l</b>	RS26R070250	0.02	RS26H010300	0.034	0.035	41.5

<b>Dissolved Oxygen % Saturation</b>	RS26R070250	82.783	RS26H010300	80.264		
<b>Dissolved Oxygen mg/l</b>	RS26R070250	8.867	RS26H010300	8.673		
<b>pH pH units</b>	RS26R070250	7.135	RS26H010300	7.231		
<b>Temperature °C</b>	RS26R070250	11.1	RS26H010300	10.982		

### Significance of Results:

The WWTP discharge was compliant with the ELV's set in the wastewater discharge licence.

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

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

Other causes of deterioration in water quality in the area are unknown.

## 2.1.4 OPERATIONAL PERFORMANCE SUMMARY - ROSCOMMON WWTP

### 2.1.4.1 Treatment Efficiency Report - ROSCOMMON 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)
TN	N/A	N/A	N/A
TP	N/A	N/A	N/A
SS	187424	11369	94
COD	475476	33219	93
cBOD	161930	4023	98

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

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	
Peak Hydraulic Capacity (m <sup>3</sup> /day) - As Constructed	7163
DWF to the Treatment Plant (m <sup>3</sup> /day)	2388
Current Hydraulic Loading - annual max (m <sup>3</sup> /day)	7276
Average Hydraulic loading to the Treatment Plant (m <sup>3</sup> /day)	3740
Organic Capacity (PE) - As Constructed	9550
Organic Capacity (PE) - Collected Load (peak week) <sup>Note1</sup>	7432

ROSCOMMON WWTP	
Organic Capacity (PE) - Remaining	2118
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

'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)	3098	Volume (m <sup>3</sup> )	38	0.5	No	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
<b>There were no relevant environmental complaints in 2019.</b>			

### 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)
<b>There were no reportable incidents in 2019.</b>				

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	0
Number of Incidents reported to the EPA via EDEN in 2019	0
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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
<b>SW002</b>	187437, 264098	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
<b>SW004</b>	187621, 264056	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
<b>SW007</b>	187890, 261865	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
<b>TBC</b>	187009.261723455, 265442.710490152	No	Low	Meeting	Unknown	Unknown	Unknown
<b>TBC</b>	187897.919667661, 261867.843740167	No	Low	Not Meeting	Unknown	Unknown	Unknown
<b>TBC</b>	187940, 264564	No	Low	Not yet Assessed	Unknown	Unknown	Unknown

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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW003	187698, 263481	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW005	187940, 264564	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW006	187940, 264564	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	187897.919667661, 261867.843740167	No	Low	Not Meeting	Unknown	Unknown	Unknown
TBC	TBC	No	Low	Not yet Assessed	Unknown	Unknown	Unknown
TBC	TBC	No	Medium	Not yet Assessed	Unknown	Unknown	Unknown
TBC	TBC	No	Unknown	Meeting	Unknown	Unknown	Unknown

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m <sup>3</sup> )?	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
<b>D0116-SIP:01</b>	SW002 to be discontinued	C	31/12/2019	No	At Planning Stage	01/11/2022	
<b>D0116-SIP:05</b>	SW006 to be discontinued	C	31/12/2019	No	At Planning Stage	01/11/2022	
<b>D0116-SIP:06</b>	SW007 to be discontinued	C	31/12/2019	No	At Planning Stage	01/11/2022	
<b>D0116-SIP:02</b>	SW003 to be discontinued	C	31/12/2019	No	At Planning Stage	01/11/2022	
<b>D0116-SIP:03</b>	SW004 to be discontinued	C	31/12/2019	No	At Planning Stage	01/11/2022	
<b>D0116-SIP:04</b>	SW005 to be discontinued	C	31/12/2019	No	At Planning Stage	01/11/2022	
<b>D0116-SIP:07</b>	Works required to meet ELVs	C	31/12/2019	No	At Planning Stage	01/11/2022	

<b>D0116-SIP:08</b>	Works to facilitate the discontinuation of discharges	C	31/12/2019	No	Work ongoing on-site	Unknown	
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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
<b>There are no Improvement Programmes for this Agglomeration.</b>				

## 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.

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 2014 AER.

### 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?	No

<b>Parameter</b>	<b>Value</b>
<b>Does improvement programme include any procedural and/or infrastructural works?</b>	No
<b>Downstream SSRS Water Quality Risk</b>	Probably Not At Risk
<b>SSRS Required?</b>	Yes
<b>Upstream SSRS Water Quality Risk</b>	The Stream is at Risk
<b>What is Downstream SSRS?</b>	5.6
<b>What is Upstream SSRS?</b>	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	No

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

Signed:

Date: 15/04/2020

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 Stream Risk Score Assessment 2019 - Roscommon**

uls

19661579

U15790001

<b>River:</b> ROCKSAVAGE		<b>Code:</b> 26ROT 0250	<b>Date:</b> 17/05/19	<b>Time:</b> 12:00
<b>Station no.</b> 26ROT 0250		<b>Location:</b>		<b>Grid (6 figure):</b>
<b>Field Chemistry</b>		<b>Stream Order:</b>		<b>Stream flow:</b> Riffle Riffle/Gide Slow flow
DO%	86.3%	<b>Modifications:</b> Y/N Canals-d-widened-bank erosion-arterial drainage		
DO mg/l	9.40	<b>Dominant Types:</b> Bedrock		
Temp (°C)	11.3°C	Boulder (>128mm)		
Conductivity		Cobble (32-128mm)		
pH		Gravel (8-32mm)		
Bank width (cm)	60cm	Fine Gravel (2-8mm)		
Wet width (cm)	51cm	Sand (0.25-2mm)		
Avg Depth (cm)	25cm	Silt (<0.25mm)		
Staff gauge		Slope: Low - Medium - High - Very High		<b>Shading:</b> High - Moderate - Low - None
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		<b>Cattle access:</b> Y upstream - downstream or N
Torrential	(None)	Substratum Conditions: Calcareous-Compacted-Loose Normal		<b>Photo:</b> Y/N
Fast	Slight	Substratum: Money bottom Muddy bottom Mud over stones		
Moderate	Moderate	Degree of siltation: Clear Slight Moderate Heavy		
Slow	High	Depth of mud: None <1cm 1-5cm 5-10cm >10cm		
Very slow	Discharge	Litter: None - Present - Moderate - Abundant		
Clarity	Flood	<b>Elementous Algae:</b> None - Present - Moderate - Abundant		<b>Sewage Fungus:</b> None - Present - Moderate - Abundant
Clear	Normal	<b>Main land use u/s:</b> Pasture Urban Bog Tillage Forestry Other		<b>Sample retained:</b> Y/N
Slightly turbid	Low			<b>Sampled in Minutes:</b> Pond net x 2mins Stone wash x 1min Weed sweep x 1min
Highly turbid	Very Low			
	Dry			
	Recent Flood			

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

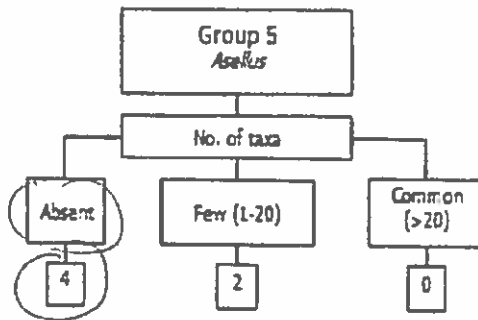
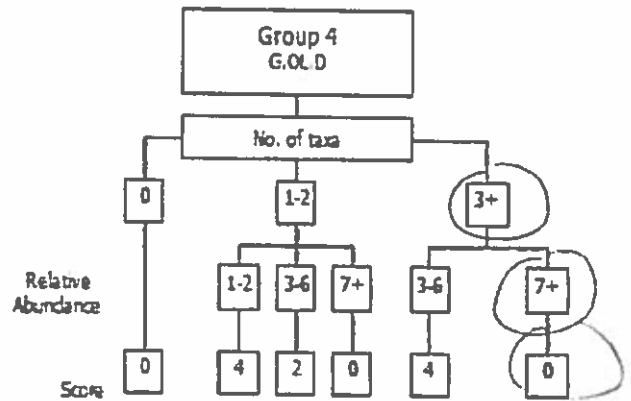
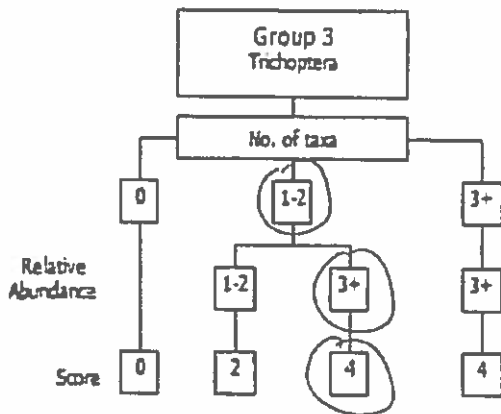
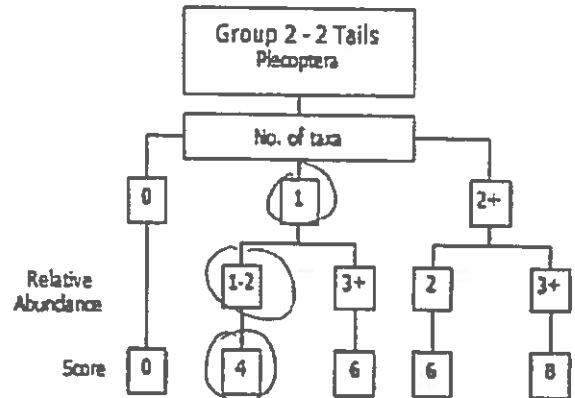
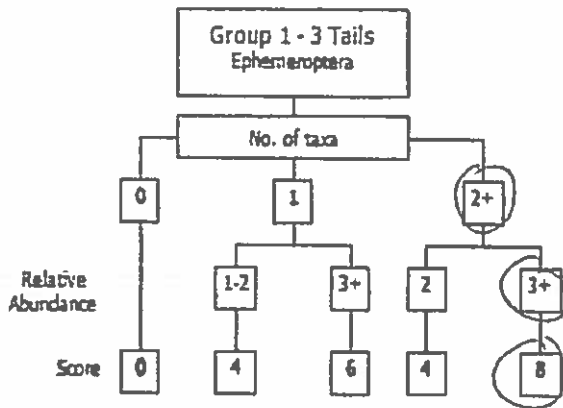
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)

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

<b>Ephemeroptera:</b>		<i>Ephoron</i> Ab	1	<b>Plecoptera:</b>		<i>Leuctra</i> Ab	
		<i>Rhyacina</i> Ab				<i>Isoperla</i> Ab	
		<i>Haemaphysalis</i> Ab	2			<i>Protonotaria</i> Ab	
		<i>Ephemerella</i> Ab				<i>Anisopteryx</i> Ab	
		<i>Carex</i> Ab				<i>Baetis</i> Ab	1
		<i>Paralembia</i> Ab				<i>Dixa</i> Ab	
		<i>Ephemerella clausa</i> Ab	1			Other Plecop Ab	
		Other Ephem Ab				Other Plecop Ab	
Total no. of taxa	3	Total Relative Abundance	4	Total no. of Taxa	1	Total Relative Abundance	1
<b>Trichoptera:</b>		<i>Hydropsychidae</i> Ab		<b>G.O.L.D:</b>		<i>Chironomidae</i> (D) Ab	2
		<i>Polycentropodidae</i> Ab				<i>Chironomus</i> (D) Ab	
		<i>Rhyacophila</i> Ab				<i>Simuliidae</i> (D) Ab	3
		<i>Phlebotomidae</i> Ab				<i>Dixa</i> (D) Ab	
		<i>Limnephilidae</i> Ab	1			<i>Tipula</i> (D) Ab	1
		<i>Senecostomatidae</i> Ab				<i>Ceratopogonidae</i> (D) Ab	
		<i>Glossosomatidae</i> Ab	3			Other GOLD Ab	
		<i>Lepidostomatidae</i> Ab					
		Other Trichoptera Ab					
Total no. of Taxa	2	Total Relative Abundance	4	Total no. of Taxa	4	Total Relative Abundance	7

**NOTE:** *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* 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	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) **20**

Average Index Score (AIS)  
TIS/5 (5 for 5 groups) **4**

SSR Score  
(AIS x 2) **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): Adam Mulvihill Name (print): Adam Mulvihill Date: 17 10 5 19



015

YOUNGIRK...

19441580

River: <u>HIND</u>		Code: <u>26H01 0300</u>		Date: <u>17/05/19</u>	Time: <u>11:00</u>
Station no. <u>26H01 0300</u>		Location:		Grid (6 figure):	
Field Chemistry		Stream Order:		Stream flow:	
DO%	<u>82.5</u>	Modifications: <u>Y/N</u> <u>Ca</u> <u>na</u> <u>sed</u> <u>wide</u> <u>red</u> <u>bank</u> <u>erosion</u>		Riffle	
DO mg/l	<u>8.67</u>	arterial drainage		Riffle/Glide	
Temp (°C)	<u>12.1°C</u>	Dominant Types:		Slow flow	
Conductivity		Bedrock			
pH		Boulder (>128mm)			
Bank width (cm)	<u>40.4m</u>	Cobble (32-128mm)			
Wet width (cm)	<u>40.2m</u>	Gravel (8-32mm)			
Avg Depth (cm)	<u>30cm</u>	Fine Gravel (2-8mm)			
Staff gauge		Sand (0.25-2mm)			
Velocity	<u>Colour</u>	Silt (<0.25mm)			
Torrential	<u>None</u>	Slope: <u>Low</u> - Medium - High - Very High		Shading: <u>High</u> - Moderate - Low - None	
Fast	<u>Slight</u>	Geology: <u>Calcareous</u> - Siliceous - Mixed		Cattle access: <u>Y</u> upstream - downstream or N	
Moderate	<u>Moderate</u>	Substratum Condition: <u>Calcareous</u> - Compacted - Loose - Normal		Photo: <u>Y/N</u>	
Slow	<u>High</u>	Substrate: <u>Stoney</u> bottom - Muddy bottom - Mud over stores			
Very slow		Degree of siltation: <u>Clear</u> - Slight - Moderate - Heavy			
Clarity	<u>Discharge</u>	Depth of mud: <u>None</u> <1cm 1-5cm 5-10cm >10cm			
Very clear	<u>Flood</u>	Litter: <u>None</u> - Present - Moderate - Abundant			
Clear	<u>Normal</u>	Filamentous Algae: <u>None</u> - Present - Moderate - Abundant		Sewage Fungus: <u>None</u> - Present - Moderate - Abundant	
Slightly turbid	<u>Low</u>	Man-land use u/s:		Sample retained: <u>Y/N</u>	
Highly turbid	<u>Very Low</u>	Pasture		Sampled in Minutes: <u>2min</u>	
	<u>Dry</u>	Urban		Pond net x <u>2min</u>	
	<u>Recent Flood</u>	Tillage		Stone wash x <u>1min</u>	
		Bog		Weed sweep x <u>1min</u>	
		Forestry			
General Comments:					

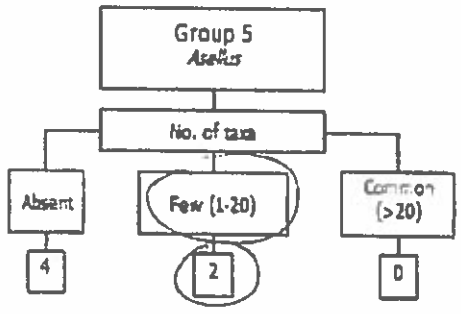
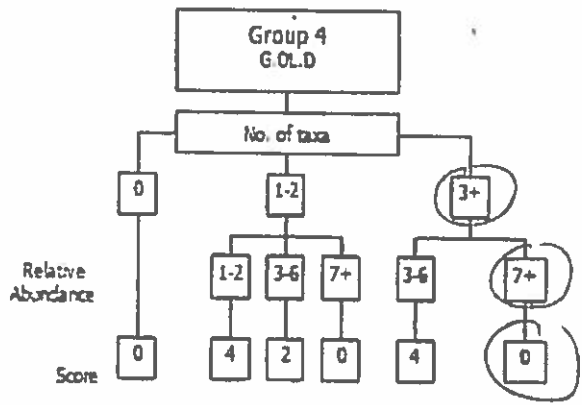
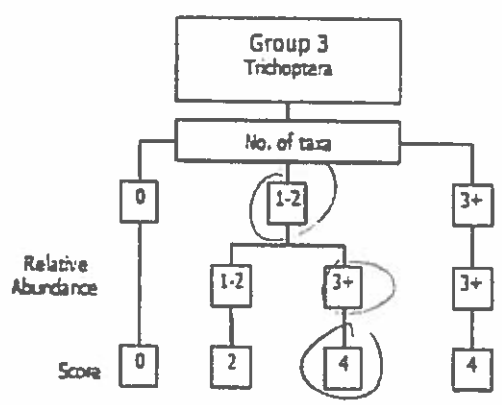
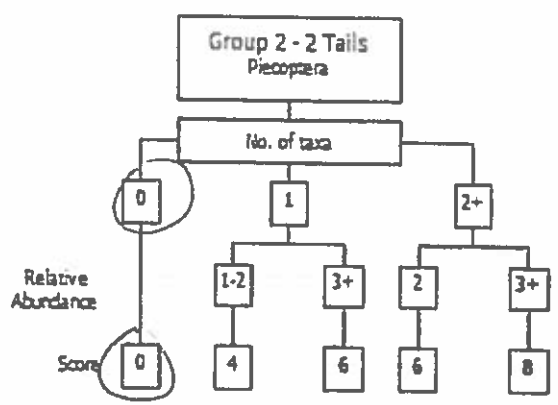
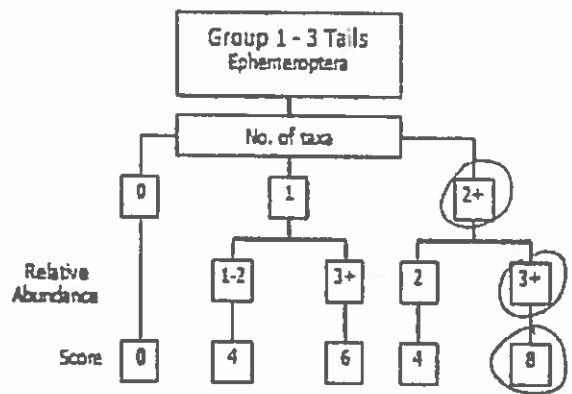
Leeches present, Abundant Simuliidae, indicates poor quality - score agrees

Macroinvertebrate Composition				Relative Abundance																																																									
The macroinvertebrates are divided into the following 5 specific groups																																																													
<ul style="list-style-type: none"> <li>Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling</li> <li>Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling</li> <li>Group 3 = Trichoptera</li> <li>Group 4 = G.O.L.D (Gastropoda, Oligochaeta and Diptera)</li> <li>Group 5 = Asellus</li> </ul>																																																													
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)																																																													
Ephemeroptera:		Plecoptera:																																																											
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NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

# DOWNSTREAM

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



**Step 2**

a) Index Score Group 1	8
b) Index Score Group 2	0
c) Index Score Group 3	4
d) Index Score Group 4	0
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 (abundance) **14**

Average Index Score (AIS)  
TIS/5 (5 for 5 groups) **2.8**

SSR Score  
(AIS x 2) **5.6**

**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) Adam Mulvihill Name (print) ADAM MULVIHILL Date: 17 10 5 19