

Annual Environmental Report

2020



Convoy

D0344-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

This Annual Environmental Report has been prepared for D0344-01, Convoy, 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.

There was no major capital or operational changes undertaken by DBO Contractor operating plant as noted within PMS Report for 2020.

1.2 TREATMENT SUMMARY

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

- Convoy WWTP - 2020 with a Plant Capacity PE of 3500, 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
TPEFF0600D0344SW004	Convoy WWTP - 2020	Treated	Non-Compliant	Ammonia-Total (as N) 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 CONVOY WWTP - 2020 - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - CONVOY 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
There is no Influent data included in the AER.			

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'. 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 - TPEFF0600D0344SW004

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	17.26	Pass

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)
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	4.69	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	1.96	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.37	Pass
Ammonia-Total (as N) mg/l	4	4.8	N/A	12	1	1	0.81	Fail
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	N/A	N/A	0.2	Pass
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	627.37	

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):

Alleged shock loading from 3rd party non domestic discharge within network to plant. Plant breakdown.

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 TPEFF0600D0344SW004

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	222245, 401274	RS01D010404	No	No	No	No	Poor
Downstream	222344, 401226	RS01D010410	No	No	No	No	Poor

Where the receiving water body is not a river or where the data is not in EDEN – the Ambient data will be appended.

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.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

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 - CONVOY WWTP - 2020

2.1.4.1 Treatment Efficiency Report - Convoy 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)
COD	N/A	5292	N/A
SS	N/A	1438	N/A
cBOD	N/A	601	N/A
TP	N/A	N/A	N/A
TN	N/A	N/A	N/A

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

2.1.4.2 Treatment Capacity Report Summary - Convoy 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.

Convoy WWTP - 2020	
Peak Hydraulic Capacity (m³/day) - As Constructed	875
DWF to the Treatment Plant (m³/day)	875
Current Hydraulic Loading - annual max (m³/day)	1605
Average Hydraulic loading to the Treatment Plant (m³/day)	877
Organic Capacity (PE) - As Constructed	3500
Organic Capacity (PE) - Collected Load (peak week)^{Note1}	1565
Organic Capacity (PE) - Remaining	1935

Convoy WWTP - 2020

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 - CONVOY 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
1	Blocked Sewer	0	1

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)
Spillage	Shock load to the WWTP	1	Yes	Yes

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	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	222172, 401333	Yes	Low	Meeting	Unknown	171	Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	171
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/NAY)	Status of Works	Timeframe for Completing the Work	Comments
D0344-SIP:01	SW001 Primary Discharge Point Convert to Storm Water overflow	C	31/12/2015	No	Works Completed		
D0344-SIP:02	Upgrade of storm water overflow (associated with discharge point SW001/SW005) to comply with the criteria outlined in the DoECLG 'Procedures and Criteria in relation to Storm Water Overflows' (1995)	C	31/12/2015	Yes	Works Completed		

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NAY)	Status of Works	Timeframe for Completing the Work	Comments
D0344-SIP:03	Upgrade of storm water overflow (associated with discharge point SW002) to comply with the criteria outlined in the DoECLG 'Procedures and Criteria in relation to Storm Water Overflows' (1995)	C	31/12/2015	Yes	Works Completed		
D0344-SIP:04	Upgrade of storm water overflow (associated with discharge point SW003) to comply with the criteria outlined in the DoECLG 'Procedures and Criteria in relation to Storm Water Overflows' (1995)	C	31/12/2015	Yes	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis
D0344-SIP:05	WWTP upgrade to provide secondary treatment	C	31/12/2015	Yes	Works Completed		

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	2015	No	
Small Stream Risk Score Assessment	Yes	2016	Yes	5.2

5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2015

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	Na

Parameter	Value
Does SSRS indicate discharges are posing a pollution risk?	No
Downstream SSRS Water Quality Risk	Moderately Polluted
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	Moderately Polluted
What is Downstream SSRS?	Q3 Poor
What is Upstream SSRS?	Q3 Poor
Does improvement programme include any procedural and/or infrastructural 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?	N/A
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	N/A
List reason e.g. changes to monitoring requirements	N/A
Have these processes commenced?	N/A
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	Yes

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

Signed: Date: 04/05/2021

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 - Small Stream Risk Score Assessment

River: <u>Deele (Conroy)</u>		Code:	Date: <u>27/03/2020</u>	Time: <u>11:45</u>
Station no. <u>202501075</u>		Location:		Grid (6 figure):
Field Chemistry		Stream Order: <u>Upstream</u>		Stream flow:
DO%	<u>106.17</u>	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		<u>Riffle</u>
DO mg/l	7.1	Dominant Types:		Riffle/Glide
Temp (°C)	<u>7.1</u>	Bedrock:		Slow flow
Conductivity		<u>Boulder (>128mm)</u>		
pH	<u>7.68</u>	Cobble (32-128mm)		
Bank width (cm)	<u>1000</u>	Gravel (8-32mm)		
Wet width (cm)	<u>600</u>	Fine Gravel (2-8mm)		
Avg Depth (cm)	<u>50</u>	Sand (0.25-2mm)		
Staff gauge		Silt (<0.25mm)		
Velocity	Colour	Slope: <u>Low</u> - Medium - High - Very High		Shading: High - Moderate - <u>Low</u> - None
Torrential	<u>None</u>	Geology: Calcareous- <u>siliceous</u> -Mixed		Cattle access Y: upstream - downstream of <u>(N)</u>
Fast	<u>Slight</u>	Substratum Condition: Calcareous-Compacted-		Photo: Y / <u>(N)</u>
<u>Moderate</u>	Moderate	Loose - <u>Normal</u>		
Slow	High	Substratum:		
Very slow		<u>Stoney bottom</u> -Muddy bottom-Mud over stones		
Clarity	Discharge	Degree of siltation: <u>Clean</u> -Slight-Moderate-Heavy		
<u>Very clear</u>	Flood	Depth of mud: <u>None</u> - 1cm - 1.5cm - 5-10cm - 10cm		
Clear	<u>Normal</u>	Litter: <u>None</u> - Present - Moderate - Abundant		
Slightly turbid	Low	Filamentous Algae:		Sewage Fungus:
Highly turbid	Very Low	<u>None</u> - Present - Moderate - Abundant		<u>None</u> - Present - Moderate - Abundant
	Dry	Main land use u/s:		Sampled in Minutes: <u>10mins</u>
	Recent Flood	<u>Pasture</u>	Urban	Pond net x <u>3</u>
		Bog	Tillage	Stone wash x <u>3</u>
		Forestry	Other	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.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

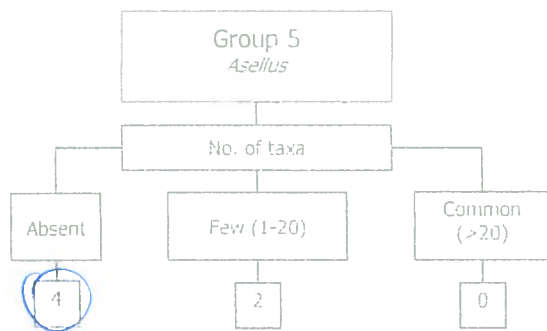
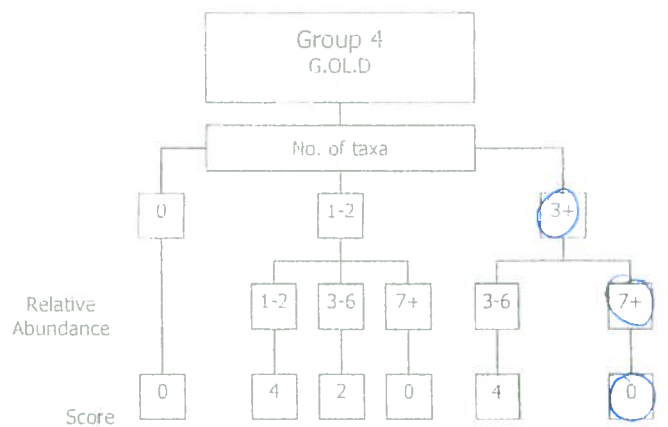
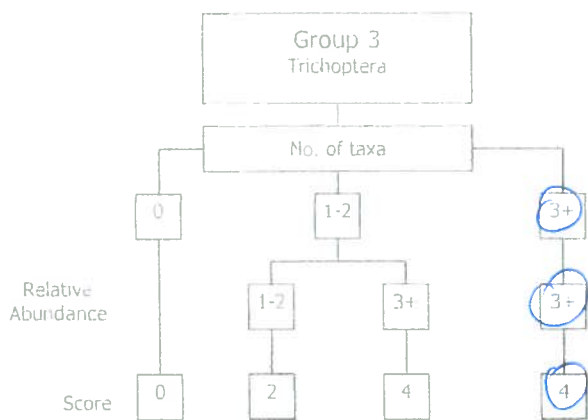
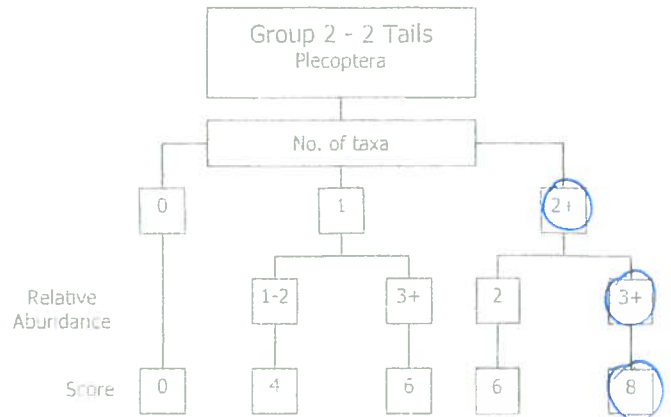
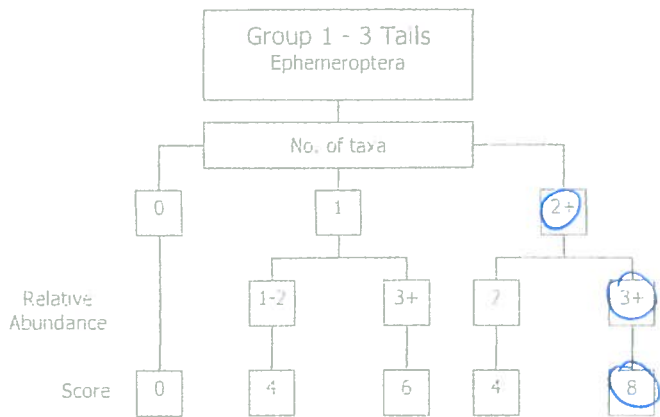
1-5	1
6-20	2
21-50	3
51-100	4
101+	5

Ephemeroptera:		<i>Ecdyonurus</i> Ab	<u>2</u>	Plecoptera:		<i>Leuctra</i> Ab	<u>1</u>
		<i>Rhythrogena</i> Ab	<u>3</u>			<i>Isoperla</i> Ab	<u>1</u>
		<i>Heptagenia</i> Ab				<i>Protonemura</i> Ab	<u>1</u>
		<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>Ephemeria danica</i> Ab				Other Plecop Ab	
		Other Ephem Ab				Other Plecop Ab	
Total no. of taxa	<u>2</u>	Total Relative Abundance	<u>5</u>	Total no. of Taxa	<u>3</u>	Total Relative Abundance	<u>3</u>
Trichoptera:		<i>Hydropsychidae</i> Ab	<u>1</u>	G.O.L.D:		<i>Lymnaea</i> (G) Ab	
		<i>Polycentropodidae</i> Ab				<i>Potamopyrgus</i> (G) Ab	
		<i>Rhyacophila</i> Ab	<u>1</u>			<i>Planorbis</i> (G) Ab	
		<i>Philopotamidae</i> Ab				<i>Ancylus</i> (G) Ab	
		<i>Limnephilidae</i> Ab				<i>Physa</i> (G) Ab	
		<i>Sericostomatidae</i> Ab				<i>Lumbriculus</i> (OI) Ab	<u>1</u>
		<i>Glossosomatidae</i> Ab	<u>1</u>			<i>Eiseniella</i> (OI) Ab	
		<i>Lepidostomatidae</i> Ab				<i>Tubificidae</i> (OI) Ab	<u>3</u>
		Other Trichoptera Ab					
Total no. of Taxa	<u>3</u>	Total Relative Abundance	<u>3</u>	Total no. of Taxa	<u>4</u>	Total Relative Abundance	<u>9</u>
						<i>Chironomidae</i> (D) Ab	Asellus:
						<i>Chironomus</i> (D) Ab	Absent ✓
						<i>Simuliidae</i> (D) Ab	<u>2</u> Few/Low
						<i>Dicranota</i> (D) Ab	<u>3</u> Common/Numerous
						<i>Tipulidae</i> (D) Ab	
						<i>Ceratopogonidae</i> (D) Ab	
						Other GOLD Ab	

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: 8
- 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) **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): B. Gault Name (print): BERNADETTE GAULT Date: 27 / 03 / 2020

River: <u>Deele</u>	Code:	Date: <u>27/03/2020</u>	Time:
Station no. <u>202501078</u>	Location: <u>Concy Downstream</u>	Grid (6 figure):	
Field Chemistry		Stream Order:	Stream flow:
DO%	<u>104.5</u>	Modifications: Y/N <u>Canalised-widened-bank erosion-arterial drainage</u>	<u>Riffle</u>
DO mg/l		Dominant Types:	<u>Riffle/Glide</u>
Temp (°C)		<u>Bedrock</u>	<u>Slow flow</u>
Conductivity	<u>269</u>	<u>Boulder (>128mm)</u>	
pH	<u>7.71</u>	<u>Cobble (32-128mm)</u>	
Bank width (cm)	<u>1000</u>	<u>Gravel (8-32mm)</u>	
Wet width (cm)	<u>600</u>	<u>Fine Gravel (2-8mm)</u>	
Avg Depth (cm)	<u>45</u>	<u>Sand (0.25-2mm)</u>	
Staff gauge		<u>Silt (<0.25mm)</u>	
Velocity	Colour	Slope: <u>Low</u> - Medium - High - Very High	Shading: High - <u>Moderate</u> - Low - None
Torrential	<u>None</u>	Geology: <u>Calcareous Siliceous-Mixed</u>	Cattle access Y: upstream - downstream or <u>N</u>
Fast	<u>Slight</u>	Substratum Condition: <u>Calcareous-Compacted</u>	Photo: Y <u>N</u>
<u>Moderate</u>	Moderate	<u>Loose - Normal</u>	
<u>Slow</u>	High	Substratum:	
Very slow		<u>Stoney bottom Muddy bottom-Mud over stones</u>	
Clarity	Discharge	Degree of siltation: <u>Clean-Slight-Moderate-Heavy</u>	
Very clear	<u>Flood</u>	Depth of mud: <u>None >1cm 1-5cm 5-10cm >10cm</u>	
<u>Clear</u>	<u>Normal</u>	Litter: <u>None</u> - Present - Moderate - Abundant	
Slightly turbid	Low	Filamentous Algae:	Sewage Fungus:
Highly turbid	Very Low	<u>None</u> - Present - Moderate - Abundant	<u>None</u> - Present - Moderate - Abundant
	Dry	Main land use u/s:	Sample retained:
	Recent Flood	<u>Pasture</u> Urban	Y/N
		<u>Boy</u> Tillage	
		Forestry Other	
General Comments:			

Macroinvertebrate Composition

The macroinvertebrates are divided into the following 5 specific groups:

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- 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

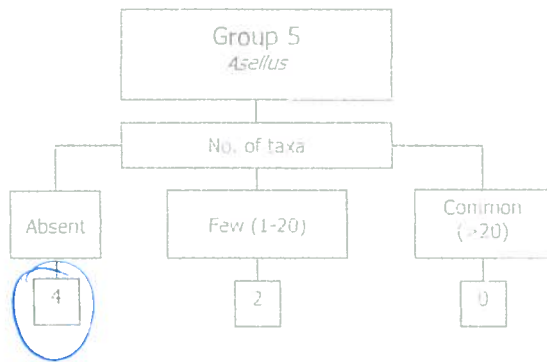
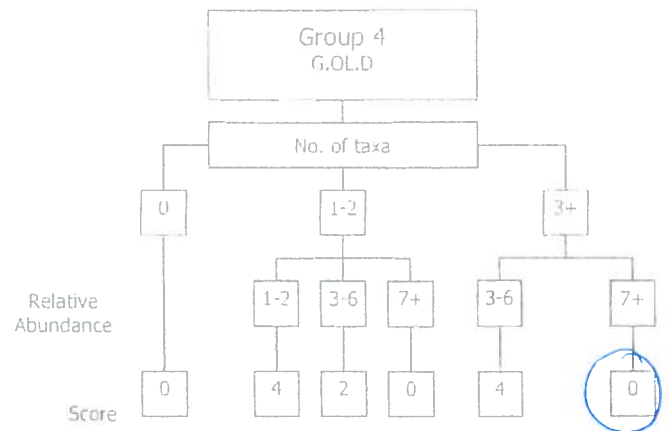
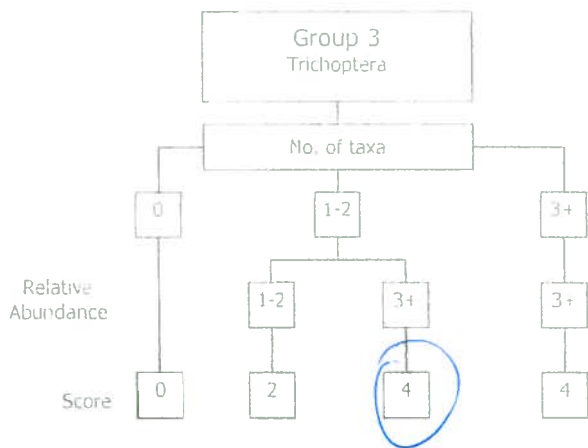
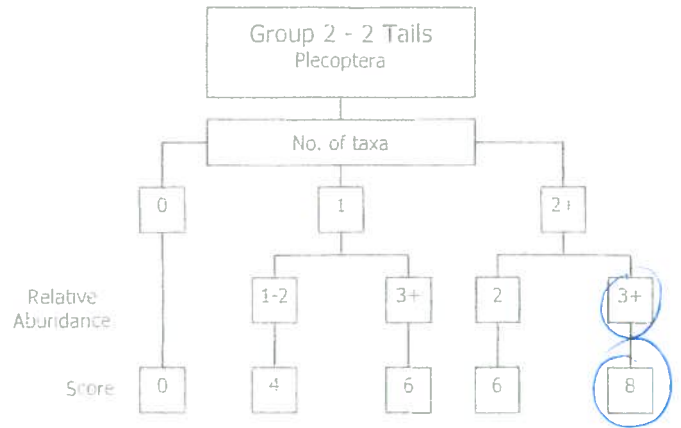
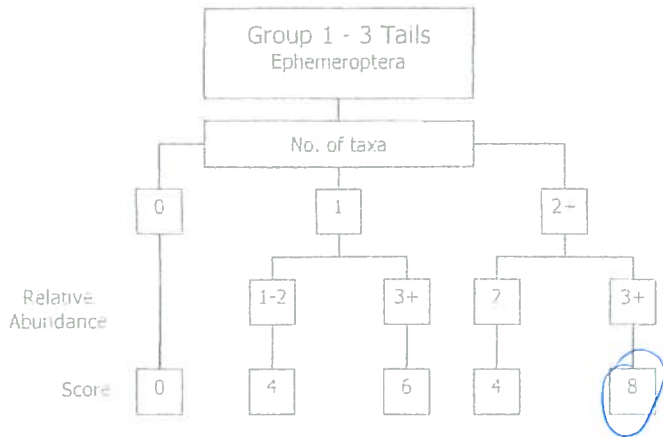
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)

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

Ephemeroptera:		Plecoptera:	
<i>Ecdyonurus</i> Ab	<u>2</u>	<i>Leuctra</i> Ab	<u>1</u>
<i>Rhythrogena</i> Ab	<u>3</u>	<i>Isoperla</i> Ab	<u>1</u>
<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab	<u>2</u>
<i>Ephemerella</i> Ab		<i>Amphimerura</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 Relative Abundance	<u>5</u>
Trichoptera:		G.O.L.D:	
Hydropsychidae Ab		<i>Lymnaea</i> (G) Ab	<u>2</u>
Polycentropodidae Ab		<i>Potamopyrgus</i> (G) Ab	<u>1</u>
<i>Rhyacophila</i> Ab	<u>1</u>	<i>Planorbis</i> (G) Ab	
Philopotamidae Ab		<i>Ancylus</i> (G) Ab	
Limnephilidae Ab		<i>Physa</i> (G) Ab	
Sericostomatidae Ab		<i>Lumbriculus</i> (OI) Ab	
Glossosomatidae Ab	<u>2</u>	<i>Eiseniella</i> (OI) Ab	
Lepidostomatidae Ab		Tubificidae (OI) Ab	<u>3</u>
Other Trichoptera Ab			
Total no. of Taxa	<u>2</u>	Total Relative Abundance	<u>3</u>
		Chironomidae (D) Ab	
		<i>Chironomus</i> (D) Ab	
		Simuliidae (D) Ab	<u>3</u>
		<i>Dicranota</i> (D) Ab	<u>2</u>
		Tipulidae (D) Ab	
		Ceratopogonidae (D) Ab	<u>1</u>
		Other GOLD Ab	
		Asellus:	
		Absent <u>✓</u>	
		Few/Low	
		Common/Numerous	
		NOTE: Asellus must be recorded as absent if none are found	
Total no. of Taxa	<u>2</u>	Total Relative Abundance	<u>3</u>
		Total no. of Taxa	<u>5</u>
		Total Relative Abundance	<u>10</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	8
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) **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): B. Gault Name (print): BERNADETTE GAULT Date: 27 / 03 / 2020