

Annual Environmental Report

2019



Convoy

D0344-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 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.

Convoy WWTP is operated and maintained by a DBO Contractor, following completion of upgrade works to existing WWTP and construction of new WWTP during 2019. New Storm Pumping Station to be completed in 2020.

1.2 TREATMENT SUMMARY

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

- Convoy WWTP with a Plant Capacity PE of 3500, 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
TPEFF0600D0344SW001	Convoy 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 CONVOY WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - CONVOY 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	12	362	236.17
Suspended Solids mg/l	12	226	116.25
Total Phosphorus (as P) mg/l	2	2.82	2.77
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	191	115.83
Hydraulic Capacity	N/A	1056	1056

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	17.58	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	5	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	2.38	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.43	Pass
Ammonia-Total (as N) mg/l	4	4.8	N/A	12	N/A	N/A	0.19	Pass
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	N/A	N/A	0.13	Pass
Conductivity 20 C μ S/cm	N/A	N/A	N/A	12	N/A	N/A	722.33	

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

The ambient monitoring results does not meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in BOD, Ammonia and Ortho-Phosphorous, 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.

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

The discharge from the wastewater treatment plant does have an observable negative impact on the Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - CONVOY WWTP

2.1.4.1 Treatment Efficiency Report - Convoy 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)
SS	16718	719	96
TP	398	N/A	N/A
COD	33963	2529	93
TN	N/A	N/A	N/A
cBOD	16658	342	98

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

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	
Peak Hydraulic Capacity (m ³ /day) - As Constructed	875
DWF to the Treatment Plant (m ³ /day)	875
Current Hydraulic Loading - annual max (m ³ /day)	1056

Convoy WWTP	
Average Hydraulic loading to the Treatment Plant (m ³ /day)	1056
Organic Capacity (PE) - As Constructed	3500
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}	1752
Organic Capacity (PE) - Remaining	1748
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

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)
There is no Sludge and Other Input data for the Treatment Plant included in the AER.							

3 COMPLAINTS AND INCIDENTS

3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There were no relevant environmental complaints in 2019.			

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)
Abatement Equipment offline	Shock load to the WWTP	1	No	Yes
Uncontrolled release	Shock load to the WWTP	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	2
Number of Incidents reported to the EPA via EDEN in 2019	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 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
TBC	TBC	No	Low	Meeting	Unknown	Unknown	Not Monitored
SW002	222313, 401256	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW003	222183, 401330	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW005	222317, 401241	Yes	Low	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A

SWO Summary	
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
D0344-SIP:01	SW001 Primary Discharge Point Convert to Storm Water overflow	C	31/12/2015	Yes	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	31/12/2019	

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
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	31/12/2019	
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		SWO Assessment Programme to assess performance against DoECLG criteri
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?	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: 29/07/2020

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
Appendix 7.2 - Other

River: U/S DEELE
 Station no. 192501390

Code: _____ Date: 27/4/19
 Location: Upstream
 Stream Order: _____

Time: 9-30
 Grid (6 figure): _____

Field Chemistry	
DO%	<u>97.6</u>
DO mg/l	<u>7.8</u>
Temp (°C)	<u>7.8</u>
Conductivity	<u>305</u>
pH	<u>7.8</u>
Bank width (cm)	<u>1000</u>
Wet width (cm)	<u>600</u>
Avg Depth (cm)	<u>50</u>
Staff gauge	
Velocity	Colour
Torrential	None
Fast	<u>Slight</u>
<u>Moderate</u>	Moderate
Slow	High
Very slow	
Clarity	Discharge
Very clear	Flood
<u>Clear</u>	<u>Normal</u>
Slightly turbid	Low
Highly turbid	Very Low
	Dry
	Percent 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 Compact-d
 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 Y N
 Forestry Other

Stream flow:
Piffle
 Riffle/Glide
 Slow flow
 Shading: High Moderate Low None
 Cattle access: Y upstream downstream (N)
 Photo: Y (N)
 Sewage Fungus:
None Present Moderate Abundant
 Sample retained:
 Pond net x 10
 Stone wash x 10
 Weed sweep x 10/A

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)

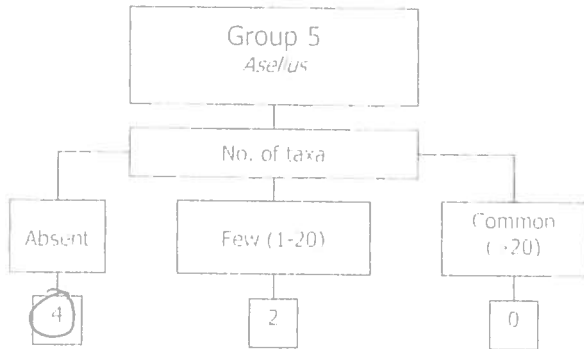
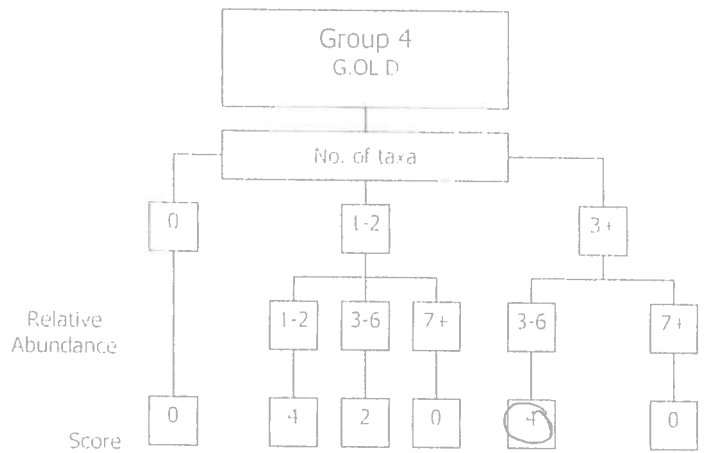
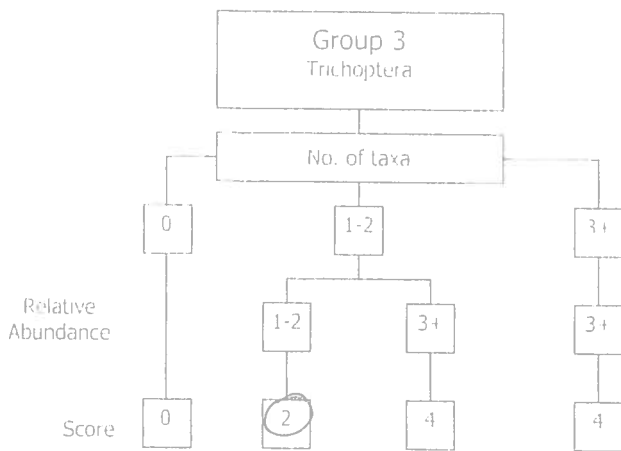
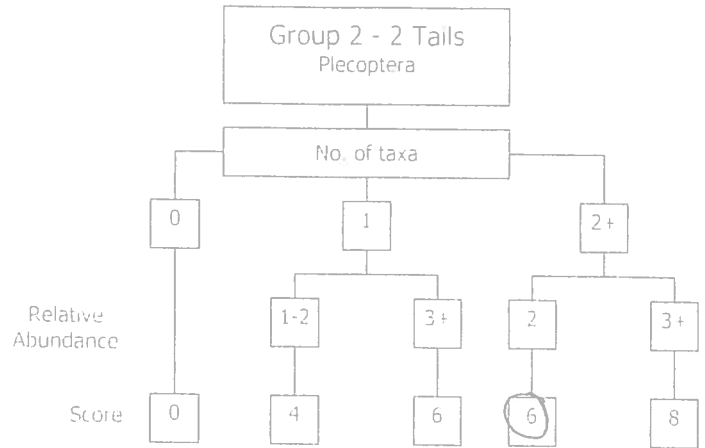
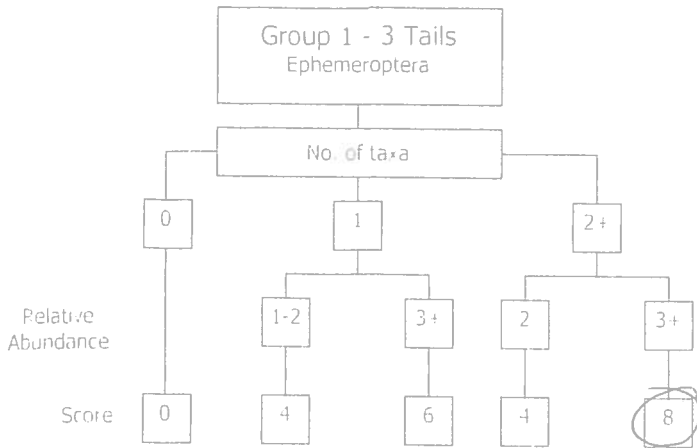
Relative Abundance

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

Ephemeroptera:	<i>Ecdyonurus</i> Ab _____	Plecoptera:	<i>Leuctra</i> Ab _____
	<i>Rhythrogena</i> Ab <u>2</u>		<i>Isoperla</i> Ab <u>1</u>
	<i>Heptagenia</i> Ab <u>1</u>		<i>Protonemura</i> Ab <u>1</u>
	<i>Ephemerella</i> Ab _____		<i>Amphinemura</i> Ab _____
	<i>Caenis</i> Ab <u>1</u>		<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>3</u>	Total Relative Abundance	<u>4</u>
Trichoptera:	G.O.L.D.:	Chironomidae (D) Ab	Asellus:
<i>Hydropsychidae</i> Ab _____	<i>Limnæa</i> (G) Ab <u>1</u>	<i>Chironomus</i> (D) Ab _____	Absent <input checked="" type="checkbox"/>
<i>Polycentropodidae</i> Ab _____	<i>Potamopygus</i> (G) Ab _____	Simuliidae (D) Ab _____	Few/Low _____
<i>Rhyacophila</i> Ab <u>1</u>	<i>Planorbis</i> (G) Ab _____	<i>Dicranota</i> (D) Ab _____	Common/ Numerous _____
<i>Philopotamidae</i> Ab _____	<i>Ancyclus</i> (G) Ab _____	Tipulidae (D) Ab <u>2</u>	
<i>Limnephilidae</i> Ab _____	<i>Physa</i> (G) Ab _____	Ceratopogonidae (D) Ab <u>2</u>	
<i>Sericostomatidae</i> Ab _____	<i>Lumbriculus</i> (Ol) Ab _____	Other GOLD Ab _____	
<i>Glossosomatidae</i> Ab <u>1</u>	<i>Eiseniella</i> (Ol) Ab _____		NOTE: <i>Asellus</i> must be recorded as absent if none are found
<i>Lepidostomatidae</i> Ab _____	Tubificidae (Ol) Ab _____		
Other Trichoptera Ab _____			
Total no. of Taxa	<u>2</u>	Total Relative Abundance	<u>2</u>
		Total no. of Taxa	<u>3</u>
		Total Relative Abundance	<u>5</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	6
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) **24**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **4.8**

SSR Score
(AIS x 2) **9.6**

Step 4. Assess the stream by comparing the final SSR score with the categories below and tick the appropriate box

> 7.25
Probably not at risk

> 6.5 – 7.25
Indeterminate
Stream may be at risk

< 6.5
Stream at risk

Surveyor (signed): *Don Smith*

Name (print): *DON SMITH*

Date: *29 / 4³ / 2019*

River: *dls DUBLIN*
 Station no. *192501391*

Code: _____ Date: *29/9/19*

Time: *9.50*

Location: _____

Grid (6 figure): _____

Stream Order: _____

Stream flow:

Riffle
 Riffle/Glide
 Slow flow

Field Chemistry

DO% *96.3*
 DO mg/l *✓*
 Temp (°C) *7.4*
 Conductivity *302*
 pH *7.6*
 Bank width (cm) *1000*
 Wet width (cm) *600*
 Avg Depth (cm) *45*
 Staff gauge _____
Velocity
 Torrential _____
 Fast _____
 Moderate
 Slow _____
 Very slow _____
Clarity
 Very clear _____
 Clear
 Slightly turbid _____
 Highly turbid _____

Colour
 None _____
 Slight
 Moderate _____
 High _____

Discharge
 Flood _____
 Normal
 Low _____
 Very Low _____
 Dry _____
 Recent Flood _____

Modifications: Y N analysed-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:
 Stony 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 N

Photo: Y N

Sewage Fungus: None Present Moderate Abundant

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

General Comments: _____

Macroinvertebrate Composition

The macroinvertebrates are divided into the following 5 specific groups:

- Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling
- Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling
- Group 3 = Trichoptera
- Group 4 = G.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>Rhithrogena</i> Ab	<i>3</i>
<i>Heptagenia</i> Ab	<i>2</i>
<i>Ephemerella</i> Ab	_____
<i>Caenis</i> Ab	_____
<i>Paraleptophlebia</i> Ab	_____
<i>Ephemera danica</i> Ab	_____
Other Ephem Ab	_____

Plecoptera:

<i>Leuctra</i> Ab	_____
<i>Isoperla</i> Ab	<i>1</i>
<i>Protonemura</i> Ab	<i>2</i>
<i>Amphinemura</i> Ab	_____
<i>Perla</i> Ab	_____
<i>Dinocras</i> Ab	_____
Other Plecop Ab	_____
Other Plecop Ab	_____

Total no. of taxa *2* Total Relative Abundance *5*

Total no. of Taxa *2*

Total Relative Abundance *3*

Trichoptera:

Hydropsychidae Ab	_____
Polycentropodidae Ab	<i>1</i>
<i>Rhyacophila</i> Ab	<i>2</i>
Philopotamidae Ab	_____
Limnephilidae Ab	_____
Sericostomatidae Ab	_____
Glossosomatidae Ab	<i>2</i>
Lepidostomatidae Ab	_____
Other Trichoptera Ab	_____

Total no. of Taxa *3* Total Relative Abundance *5*

G.O.L.D.:

<i>Lymnaea</i> (G) Ab	<i>1</i>
<i>Potamopyrgus</i> (G) Ab	_____
<i>Planorbis</i> (G) Ab	_____
<i>Ancylus</i> (G) Ab	_____
<i>Physa</i> (G) Ab	_____
<i>Lumbriculus</i> (OI) Ab	<i>1</i>
<i>Eiseniella</i> (OI) Ab	<i>1</i>
Tubificidae (OI) Ab	<i>1</i>

Total no. of Taxa *7*

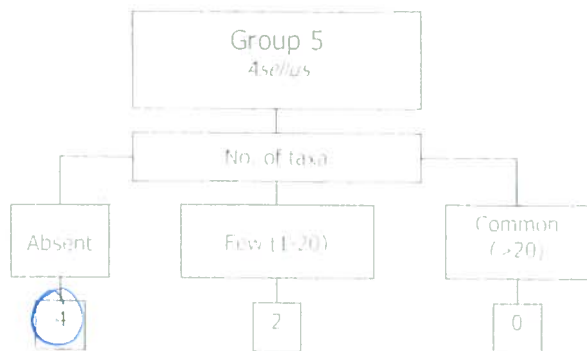
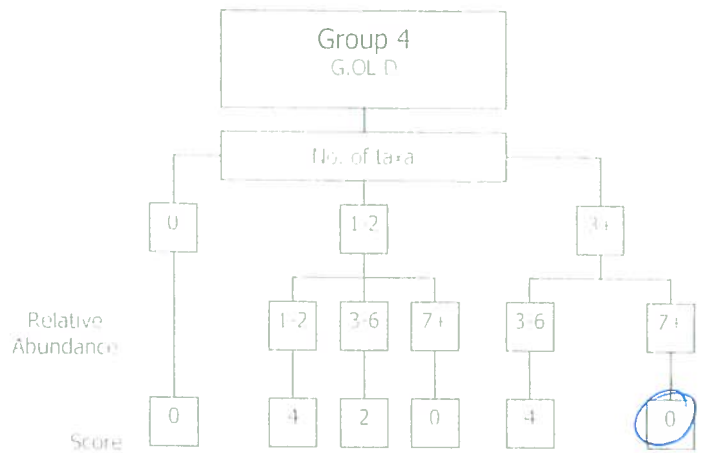
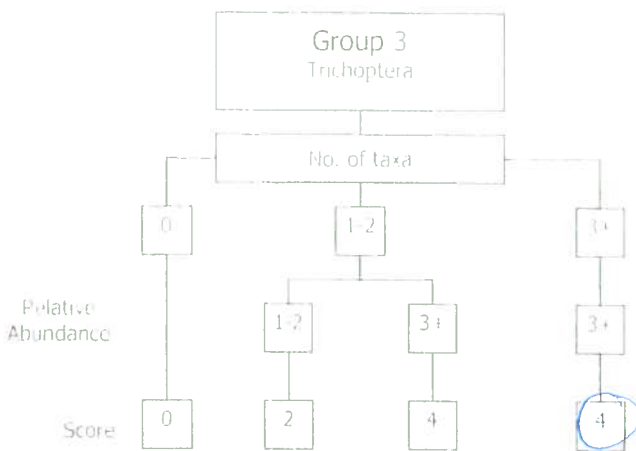
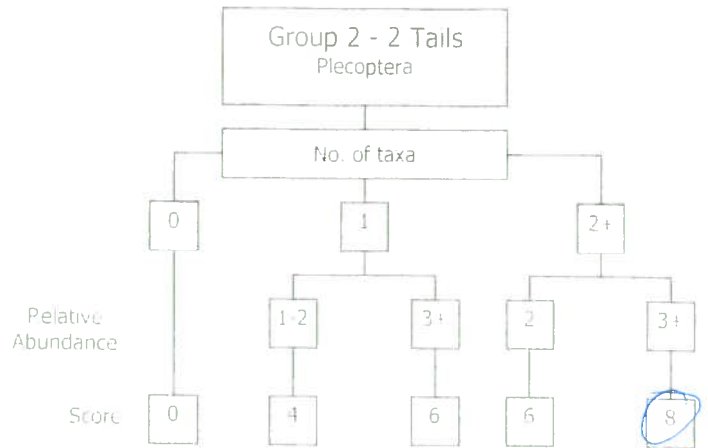
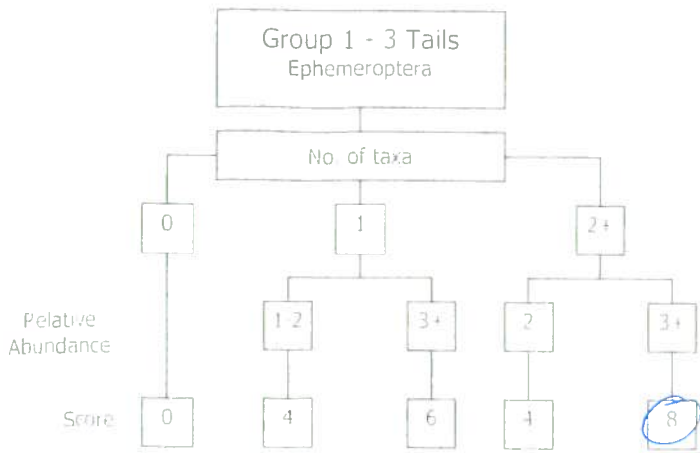
Chironomidae (D) Ab	_____	Asellus:	_____
<i>Chironomus</i> (D) Ab	_____	Absent	<input checked="" type="checkbox"/>
Simuliidae (D) Ab	<i>2</i>	Few/Low	_____
<i>Dicranota</i> (D) Ab	<i>1</i>	Common	_____
Tipulidae (D) Ab	_____	Numerous	_____
Ceratopogonidae (D) Ab	<i>2</i>		
Other GOLD Ab	_____		

Total Relative Abundance *9*

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): *Don Smith* Name (print): **DON SMITH** Date: **29 / 4³ / 2019**

Municiple	Entity Name	Month	Location	Lab Ref	Date	pH	Temperature	Conductivity @ 20°C	DO	BOD	COD	Suspended Solids	Ammonia (as N)	Nitrate (as N)	Nitrite (as N)	Orthophosphate	Total Nitrogen	E coli	Faecal Coliforms (E. coli)	Enterococci	Salinity	SSRS
District						pH units	°C	us/cm	% Sat	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	MPN/100mls	cfu/100mls	cfu/100mls	PSU	Descriptive
Stranorlar	Deele	January	Convoy - Upstream	192500215	22-Jan-19	7.5	6.5	118	105.4	<1	NT	<6	<0.015	NT	NT	0.01	<1.0	193	40	122	NT	NT
Stranorlar	Deele	January	Convoy - Downstream	192500218	22-Jan-19	7.4	6.5	126	103.4	<1	NT	<6	0.033	NT	NT	0.03	1.03	855	70	845	NT	NT
Stranorlar	Deele	February	Convoy - Upstream	192500777	26-Feb-19	7.7	10.4	277	114.5	1	NT	<6	0.02	NT	NT	<0.05	1.39	NT	NT	NT	NT	NT
Stranorlar	Deele	February	Convoy - Downstream	192500780	26-Feb-19	7.7	10.2	285	115.7	1	NT	<6	0.017	NT	NT	<0.05	1.43	NT	NT	NT	NT	NT
Stranorlar	Deele	March	Convoy - Upstream	192500960	05-Mar-19	6.9	6.6	124	100.5	4	NT	35	0.171	NT	NT	0.116	1.88	NT	NT	NT	NT	NT
Stranorlar	Deele	March	Convoy - Downstream	192500963	05-Mar-19	7	6.7	142	99.4	4	NT	40	0.197	NT	NT	0.111	1.99	NT	NT	NT	NT	NT
Stranorlar	Deele	March	Convoy - Upstream	192501390	29-Mar-19	7.8	7.8	305	97.6	<1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	>7.25 Probably not at risk
Stranorlar	Deele	March	Convoy - Downstream	192501391	29-Mar-19	7.6	7.4	302	96.3	<1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	>7.25 Probably not at risk
Stranorlar	Deele	April	Convoy - Upstream	192501601	25-Apr-19	8.8	13.4	311	114.1	3	NT	<6	0.019	NT	NT	<0.05	1.06	NT	NT	NT	NT	NT
Stranorlar	Deele	April	Convoy - Downstream	192501604	25-Apr-19	8.4	13.7	308	144.1	1	NT	<6	<0.015	NT	NT	<0.05	<1	NT	NT	NT	NT	NT
Stranorlar	Deele	May	Convoy - Upstream	192501881	16-May-19	8.1	11.8	308	101.9	1	NT	<6	<0.015	NT	NT	<0.05	1.39	NT	NT	NT	NT	NT
Stranorlar	Deele	May	Convoy - Downstream	192501884	16-May-19	8.3	11.8	309	116.2	1	NT	<6	<0.015	NT	NT	<0.05	1.02	NT	NT	NT	NT	NT
Stranorlar	Deele	June	Convoy - Upstream	192502511	25-Jun-19	7.9	14.2	274	101.5	1	NT	<6	0.038	NT	NT	0.051	1.17	NT	NT	NT	NT	NT
Stranorlar	Deele	June	Convoy - Downstream	192502514	25-Jun-19	7.9	14.6	278	100.3	1	NT	<6	0.031	NT	NT	<0.05	1.15	NT	NT	NT	NT	NT
Stranorlar	Deele	July	Convoy - Upstream	192503061	30-Jul-19	7.9	15.3	294	101	1	NT	<6	<0.015	NT	NT	<0.05	1.5	NT	NT	NT	NT	NT
Stranorlar	Deele	July	Convoy - Downstream	192503064	30-Jul-19	7.8	15.5	303	100.4	1	NT	<6	0.034	NT	NT	0.171	1.3	NT	NT	NT	NT	NT
Stranorlar	Deele	August	Convoy - Upstream	192503499	27-Aug-19	7.8	14.8	261	102	1	NT	<6	0.031	NT	NT	0.033	1.38	NT	NT	NT	NT	NT
Stranorlar	Deele	August	Convoy - Downstream	192503502	27-Aug-19	7.8	14.8	277	100.1	3	NT	<6	0.194	NT	NT	0.062	1.87	NT	NT	NT	NT	NT
Stranorlar	Deele	September	Convoy - Upstream	192504013	24-Sep-19	7.6	13.4	192	102.5	1	NT	<6	0.018	NT	NT	0.03	1.54	NT	NT	NT	NT	NT
Stranorlar	Deele	September	Convoy - Downstream	192504016	24-Sep-19	7.7	13.6	204	101.3	1	NT	<6	0.019	NT	NT	0.04	1.48	NT	NT	NT	NT	NT
Stranorlar	Deele	October	Convoy - Upstream	192504465	23-Oct-19	7.7	10.1	254	100.7	1	NT	7	<0.015	NT	NT	<0.05	1.19	NT	NT	NT	NT	NT
Stranorlar	Deele	October	Convoy - Downstream	192504468	23-Oct-19	7.7	10.3	265	98.9	1	NT	<6	<0.015	NT	NT	<0.05	1.25	NT	NT	NT	NT	NT