Annual Environmental Report

2019

Ballybofey Stranorlar

D0120-01

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 D0120-01, Ballybofey Stranorlar, 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.

Ballybofey/ Stranorlar WWTP operated and maintained by DBO Contractor during 2019. The new upgrade to existing Aeration plant and new SBR plant was constructed and operational on the 31/01/2020.

1.2 TREATMENT SUMMARY

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

- Ballybofey/Stranorlar WWTP with a Plant Capacity PE of 4000, 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
TPEFF0600D0120SW001	Ballybofey/Stranorlar WWTP	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 BALLYBOFEY/STRANORLAR WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - BALLYBOFEY/STRANORLAR WWTP

A summary of influent monitoring for the treatment plant is presented below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

Parameters	Number of Samples	Annual Max	Annual Mean
Total Phosphorus (as P) mg/l	1	1.41	1.41
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	326	126.25
Suspended Solids mg/l	12	352	99.17
COD-Cr mg/l	12	531	232.92
Hydraulic Capacity	N/A	14071	2866

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 - TPEFF0600D0120SW001

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	24.43	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	10.11	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	5.14	Pass
Temperature °C	25	25	N/A	5	N/A	N/A	4.3	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.12	Pass
Ammonia-Total (as N) mg/l	2	2.4	N/A	12	N/A	N/A	0.45	Pass
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	1	1	0.38	Fail
Conductivity 20 C µS/cm	N/A	N/A	N/A	12	N/A	N/A	538.37	

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):

Plant overloaded

Significance of Results:

The WWTP is non-compliant with the ELV's set in the Wastewater Discharge Licence. The impact on receiving waters was assessed as not significant. The existing plant was also under extensive upgrade construction works at the time of the ELV exceedance prior to new SBR plant becoming operational.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0600D0120SW001

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	214444, 394835	RS01F010700	No	No	No	No	Poor
Downstream	215246, 394601	RS01F010800	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	RS01F010700	1.136	RS01F010800	1.35	1.5	14.2

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Ammonia-Total (as N) mg/l	RS01F010700	0.018	RS01F010800	0.028	0.065	16.2
Orthophosphate (MRP) filtered (As P) mg/l	RS01F010700	0.031	RS01F010800	0.024	0.035	-18.4
ortho-Phosphate (as P) - unspecified mg/l	RS01F010700	0.03	RS01F010800	0.034	0.035	12
Suspended Solids mg/l	RS01F010700	3.4	RS01F010800	3.5		
Total Nitrogen mg/l	RS01F010700	0.778	RS01F010800	0.788		
Conductivity 20 C µS/cm	RS01F010700	108	RS01F010800	112.545		
Dissolved Oxygen % Saturation	RS01F010700	99.545	RS01F010800	100.05		
pH pH units	RS01F010700	7.082	RS01F010800	6.844		
Temperature °C	RS01F010700	11.755	RS01F010800	11.194		

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 deterioration in Ammonia, 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 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 - BALLYBOFEY/STRANORLAR WWTP

2.1.4.1 Treatment Efficiency Report - Ballybofey/Stranorlar 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	1334	N/A	N/A
SS	93745	9035	90
COD	220182	21830	90
cBOD	119348	4594	96

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

2.1.4.2 Treatment Capacity Report Summary - Ballybofey/Stranorlar 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.

Ballybofey/Stranorlar WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	3000
DWF to the Treatment Plant (m^3/day)	1000

Ballybofey/Stranorlar WWTP	
Current Hydraulic Loading - annual max (m^3/day)	14071
Average Hydraulic loading to the Treatment Plant (m^3/day)	2866
Organic Capacity (PE) - As Constructed	4000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	5973
Organic Capacity (PE) - Remaining	0
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

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 - BALLYBOFEY/STRANORLAR 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)
Breach of ELV	WWTP biological sludge issue	1	No	Yes
Uncontrolled release	Plant or equipment calibration at WWTP	1	No	Yes
Uncontrolled release	EO caused by power failure	1	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	3
Number of Incidents reported to the EPA via EDEN in 2019	3
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
SW4	215178, 394996	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW5	214749, 395330	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW2	214462, 394837	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW3	214069, 394831	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW6	214596, 394771	Yes	Low	Not Meeting	Unknown	Unknown	Not Monitored
TBC	212911.447799441, 394954.526265471	No	Low	Not Meeting	Unknown	Unknown	Not Monitored

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	214382.111684178, 394253.317175715	No	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?	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
D0120-SIP:01	Expansion and upgrade of WWTP to 6,000 p.e. capacity (stage 2) and ancillary works	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
D0120-SIP:02	Upgrading of emergency overflows from pumping station so that the overflows do not activate in response to rainfall events or lack of capacity in the sewer network.	C	31/12/2012	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
D0120-SIP:03	Upgrading of storm water overflows to comply with the criteria outlined in the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, 1995'	C	31/12/2012	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
D0120-SIP:04	Waste water sewer network improvements (including upgrade of pumping station)	C	31/12/2012	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

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
Does SSRS indicate discharges are posing a pollution risk?	No

Parameter	Value
Downstream SSRS Water Quality Risk	Moderately Polluted
SSRS Required?	No
Upstream SSRS Water Quality Risk	Moderately Polluted
What is Downstream SSRS?	Q3
What is Upstream SSRS?	Q3
Condition 5 Improvement Programme Reference	N/A
Does improvement programme include any procedural and/or infrastructal 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	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: 24/04/2020

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

River: U/S FINN BALLYJAMESDUFF	Code:	Date: 1/3/19	Time: 11:30 AM

Station no. 192500864

Location: Upstream

Stream Order:

Grid (6 figure):

Field Chemistry

DO%	101.3
DO mg/l	
Temp (°C)	8.6
Conductivity	97.5
pH	6.95
Bank width (cm)	220.00
Wet width (cm)	200.00
Avg Depth (cm)	650
Staff gauge	

Velocity	Colour
Torrential	None
Fast	Slight
Moderate	Moderate
Slow	High
Very slow	

Clarity	Discharge
Very clear	Flood
Clear	Normal
Slightly turbid	Low
Highly turbid	Very Low
	Dry
	Recent Flood

Modifications: Y/N Canalised-widened-bank erosion-arterial drainage

Dominant Types:
Bedrock
Boulder (>128mm)
~~Cobble (32-128mm)~~
Gravel (8-32mm)
Fine Gravel (2-8mm)
Sand (0.25-2mm)
Silt (<0.25mm)

Slope: Low – Medium – High – Very High

Geology: Calcareous-Siliceous-Mixed

Substratum Condition: Calcareous-Compacted-Loose – Normal

Substratum: Stoney bottom-Muddy bottom-Mud over stones

Degree of siltation: Clean-Slight-Moderate-Heavy

Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm

Litter: None – Present – Moderate - Abundant

Filamentous Algae:
None – Present – Moderate - Abundant

Main land use u/s:
Pasture
Bog
Forestry
Urban
Tillage
Other

Sample retained: Y / N

Stream flow:
Riffle
Riffle/Glide
Slow flow

Shading: High – Moderate – Low – None

Cattle access Y: upstream – downstream or N

Photo: Y / N

Sewage Fungus:
None – Present – Moderate - Abundant

Sampled in Minutes:
Pond net x 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.OL.D (Gastropoda, Oligochaeta and Diptera)
Group 5 = *Asellus*
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance – Ab)

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

Ephemeroptera:

Ecdyonurus Ab	
Rhithrogena Ab	2
Heptagenia Ab	
Ephemerella Ab	
Caenis Ab	
Paraleptophlebia Ab	
Ephemera danica Ab	
Other Ephem Ab	
Total no. of taxa	1
Total Relative Abundance	2

Plecoptera:

Leuctra Ab	1
Isoperla Ab	1
Protonemura Ab	1
Amphinemura Ab	
Perla Ab	
Dinocras Ab	
Other Plecop Ab	
Other Plecop Ab	
Total no. of Taxa	3
Total Relative Abundance	3

Trichoptera:

Hydropsychidae Ab	3
Polycentropodidae Ab	
Rhyacophila Ab	1
Philopotamidae Ab	
Limnephilidae Ab	
Sericostomatidae Ab	
Glossosomatidae Ab	3
Lepidostomatidae Ab	2
Other Trichoptera Ab	
Total no. of Taxa	4
Total Relative Abundance	10

G.OL.D:

Lymnaea (G) Ab	
Potamopyrgus (G) Ab	
Planorbis (G) Ab	
Ancylus (G) Ab	
Physa (G) Ab	
Lumbriculus (Ol) Ab	2
Eiseniella (Ol) Ab	
Tubificidae (Ol) Ab	
Total no. of Taxa	4
Total Relative Abundance	6

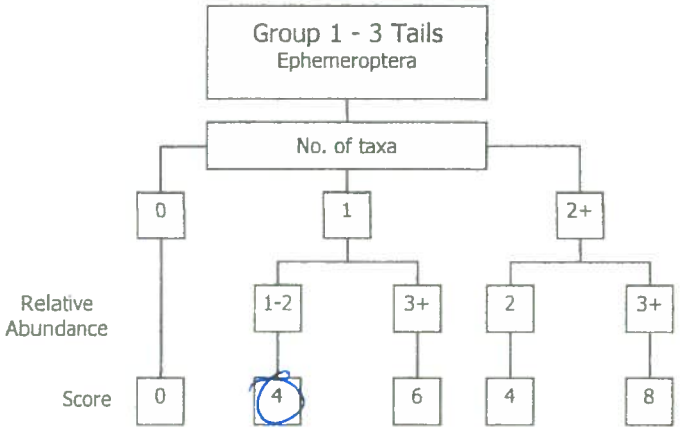
Chironomidae (D) Ab	
Chironomus (D) Ab	
Simuliidae (D) Ab	2
Dicranota (D) Ab	
Tipulidae (D) Ab	1
Ceratopogonidae (D) Ab	1
Other GOLD Ab	

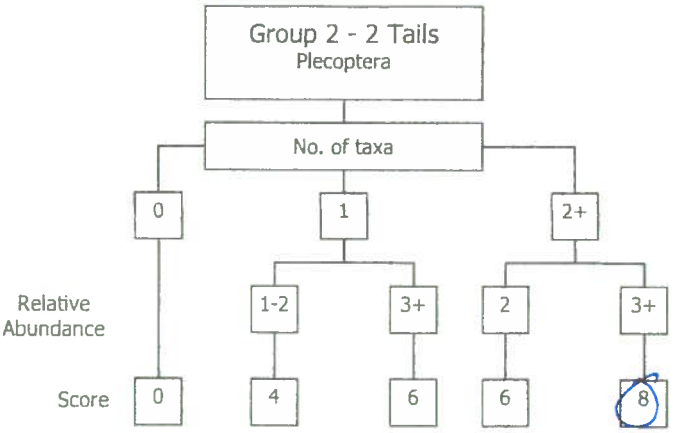
***Asellus*:**
Absent ✓
Few/Low
Common/ Numerous

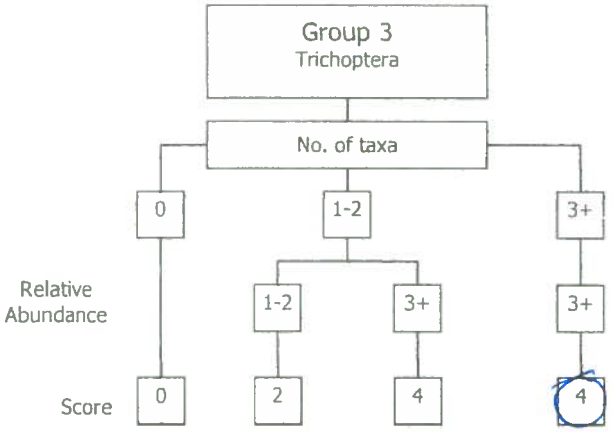
NOTE: *Asellus* must be recorded as absent if none are found

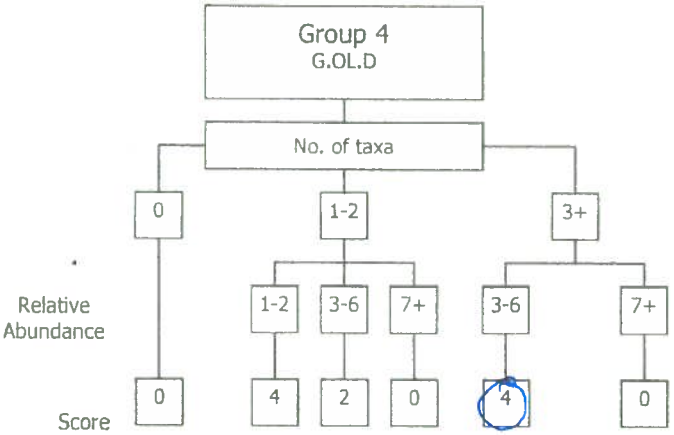
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

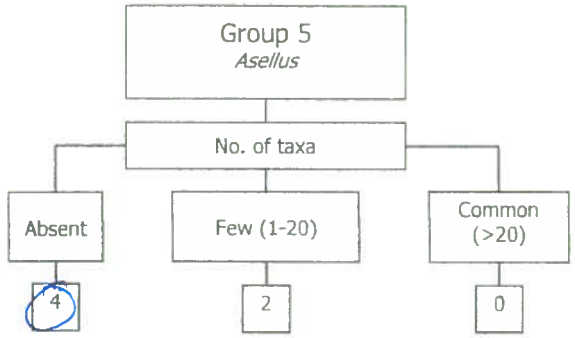
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	4
b) Index Score Group 2	8
c) Index Score Group 3	4
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: 1 / 3 / 2019

River: d/s FINN BALLYBAY	Code:	Date: 1/3/19	Time: 11:45

Station no. 19250993

Location:

Stream Order:

Grid (6 figure):

Field Chemistry	
DO%	96.5
DO mg/l	
Temp (°C)	7.8
Conductivity	130
pH	6.8
Bank width (cm)	2700
Wet width (cm)	2600
Avg Depth (cm)	500
Staff gauge	

Velocity	Colour
Torrential	None
Fast	Slight
(Moderate)	Moderate
Slow	High
Very slow	

Clarity	Discharge
Very clear	Flood
Clear	(Normal)
(Slightly turbid)	Low
Highly turbid	Very Low
	Dry
	Recent Flood

Modifications: Y/N Canalised-widened-bank erosion-arterial drainage

Dominant Types:
Bedrock
(Boulder (>128mm))
Cobble (32-128mm)
Gravel (8-32mm)
Fine Gravel (2-8mm)
Sand (0.25-2mm)
Silt (<0.25mm)

Slope: (Low) – Medium – High – Very High

Geology: Calcareous-Siliceous-(Mixed)

Substratum Condition: Calcareous-Compacted-Loose-(Normal)

Substratum:
Stoney bottom-Muddy bottom-Mud over stones

Degree of siltation: Clean-(Slight)-Moderate-Heavy

Depth of mud (None): <1cm: 1-5cm: 5-10cm: >10cm

Litter: None – (Present) – Moderate - Abundant

Filamentous Algae:
(None) – Present – Moderate - Abundant

Main land use u/s:
(Pasture)
Bog
Forestry
Urban
Tillage
Other

Sample retained: Y / N

Stream flow:
(Riffle)
Riffle/Glide
Slow flow

Shading: High – Moderate – (Low) – None

Cattle access Y: upstream – downstream or (N)

Photo: Y / (N)

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

Sampled in Minutes:
Pond net x 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.OL.D (Gastropoda, Oligochaeta and Diptera)
Group 5 = *Asellus*
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance – Ab)

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

Ephemeroptera:

Ecdyonurus Ab	
Rhithrogena Ab	1
Heptagenia Ab	
Ephemerella Ab	
Caenis Ab	
Paraleptophlebia Ab	
Ephemera danica Ab	
Other Ephem Ab	
Total no. of taxa	1
Total Relative Abundance	1

Plecoptera:

Leuctra Ab	
Isoperla Ab	
Protonemura Ab	
Amphinemura Ab	
Perla Ab	
Dinocras Ab	
Other Plecop Ab	
Other Plecop Ab	
Total no. of Taxa	0
Total Relative Abundance	0

Trichoptera:

Hydropsychidae Ab	3
Polycentropodidae Ab	
Rhyacophila Ab	2
Philopotamidae Ab	
Limnephilidae Ab	
Sericostomatidae Ab	
Glossosomatidae Ab	2
Lepidostomatidae Ab	1
Other Trichoptera Ab	
Total no. of Taxa	4
Total Relative Abundance	8

G.OL.D:

Lymnaea (G) Ab	
Potamopyrgus (G) Ab	1
Planorbis (G) Ab	
Ancylus (G) Ab	
Physa (G) Ab	
Lumbriculus (Ol) Ab	
Eiseniella (Ol) Ab	2
Tubificidae (Ol) Ab	1
Total no. of Taxa	5
Total Relative Abundance	6

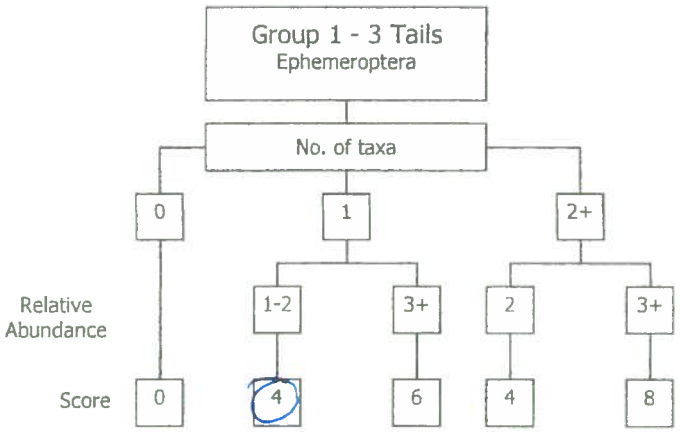
Chironomidae (D) Ab	
Chironomus (D) Ab	
Simuliidae (D) Ab	1
Dicranota (D) Ab	
Tipulidae (D) Ab	1
Ceratopogonidae (D) Ab	
Other GOLD Ab	

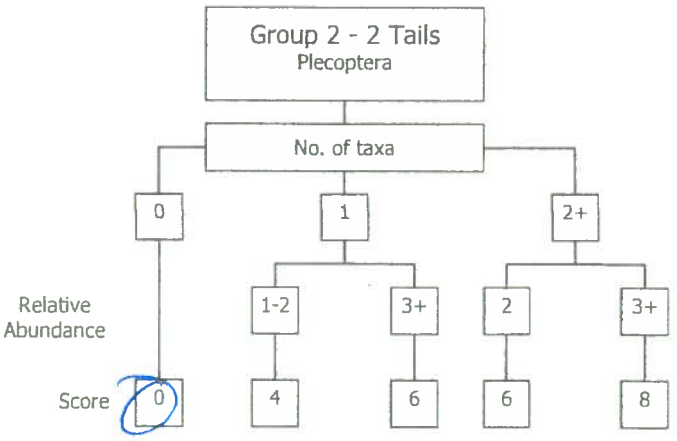
Asellus:
Absent ✓
Few/Low
Common/ Numerous

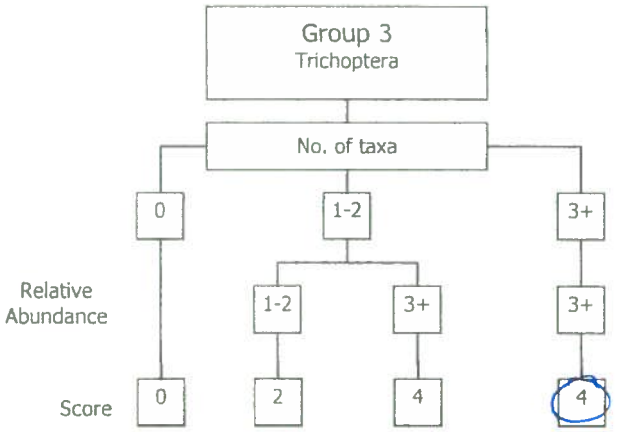
NOTE: *Asellus* must be recorded as absent if none are found

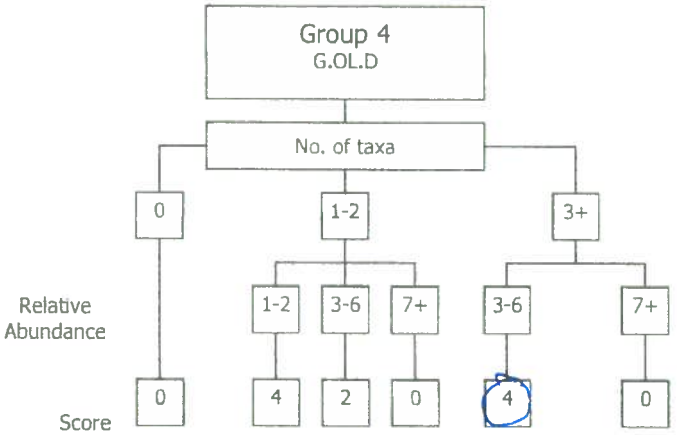
NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

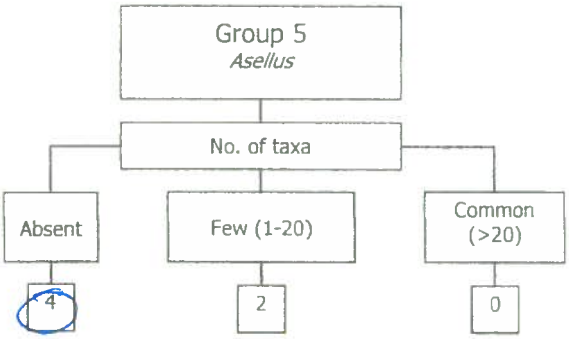
Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from ***each macroinvertebrate group*** calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.











Step 2

a) Index Score Group 1	4
b) Index Score Group 2	0
c) Index Score Group 3	4
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) **16**

Average Index Score (AIS) TIS/5 (5 for 5 groups) **3.2**

SSR Score (AIS x 2) **6.4**

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

> 7.25 Probably not at risk		> 6.5 – 7.25 Indeterminate Stream may be at risk		<6.5 Stream at risk	✓

Surveyor (signed): Don Smith Name (print): DON SMITH Date: 1 / 3 / 2019