Annual Environmental Report 2018



Killmallock

D0106-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0106-01, Killmallock, in Limerick in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

1.1 Licence specific reporting included in AER

Assessment / Report	Included in AER
No Licence specific reports are included	

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant KILMALLOCK WWTP with a Plant Capacity PE of 4000. The treatment process includes the following:

1.2.1 KILMALLOCK WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Screens
Primary Treatment	No	
Secondary Treatment	Yes	SBR
Nutrient Removal	Yes	Phosphorus Removal
Tertiary Treatment	No	

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 2.2 Discharges from the agglomeration.

1.3 ELV Overview

1.3.1 KILMALLOCK WWTP

Compliance Status	
Were all parameters compliant for KILMALLOCK WWTP treatment plant	No
Where noncompliant see table 2.2.1 for details of parameters	One Condition 2 breech for orthophosphate

1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
KILMALLOCK WWTP	Cake Sludge	201810	Weight (Tonnes)	12	Bunlicky

Annual Statement of Measures

None

2 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

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

2.1.1 Influent Monitoring Summary - KILMALLOCK WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
BOD mg/l	12	844	184.5
COD mg/l	12	60.2	34.8
Suspended Solids mg/l	12	1425	198.8
Total Nitrogen mg/l	12	60.2	34.8
Total Phosphorus (as P) mg/l	12	12	4.69
Hydraulic Capacity	N/A	1582	689

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2.

2.2 Discharges from the agglomeration

2.2.1 Effluent Monitoring Summary - KILMALLOCK WWTP

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)
Ammonia-Total (as N)	1	1.2	N/A	12	0	0	0.03	Pass
BOD	15	30	N/A	12	0	0	2.5	Pass
COD	50	100	N/A	12	0	0	14.5	Pass
Suspended Solids	15	37.5	N/A	12	0	0	8.7	Pass
Total Phosphorus (as P)	1	1.2	N/A	12	0	0	0.13	Pass
Orthophosphate (as P)	0.3	0.36	N/A	12	1	1	0.08	Fail
рН	6-9	6-9	N/A	12	0	0	7.6	Pass

Cause of Exceedance(s):

Unknown

Significance of Results:

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

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied 2 - For parameters where a mean ELV applies

2.3 Ambient monitoring summary

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.

2.3.1 Ambient Monitoring Report Summary - KILMALLOCK WWTP

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	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream - RS24L010410	161054, 127818	TPEFF1900D0106SW001	No	No	No	No	Good
Downstream - RS24L010460	160650, 128428	TPEFF1900D0106SW001	No	Yes	No	No	Good

2.3.2 Ambient Monitoring Parameter Summary - KILMALLOCK WWTP

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary**

Significance of Results:

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

The ambient monitoring results meet the required EQS.

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.

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

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:

3.1.1 Treatment Efficiency Report Summary - KILMALLOCK WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
BOD	22518	577	97	
COD	50019	3399	93	
ss	18534	1015	94	
Total P	766	18.7	97	

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

3.2 Treatment Capacity Report Summary

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.

KILMALLOCK WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	2220
DWF to the Treatment Plant (m3/day)	780

KILMALLOCK WWTP	
Current Hydraulic Loading - annual max (m3/day)	1567
Average Hydraulic loading to the Treatment Plant (m3/day)	675
Organic Capacity (PE) - As Constructed	4000
Organic Capacity (PE) - Collected Load (peak week)	1809
Organic Capacity (PE) - Remaining	2191
Will the capacity be exceeded in the next three years? (Yes/No)	No

3.3 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
2	Blocked Sewer	0	2

3.4 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.

3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)			
There is no Incident data included in the AER.							

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	1
Number of Incidents reported to the EPA via EDEN in 2018	0
Explanation of any discrepancies between the two numbers above	

3.5 Sludge / Other inputs to the 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)? ³	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?2(Y/N)
Other	40072.49	Weight (Tonnes)	1100	2	No	No	No

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:

No Appendix Included

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 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
SW3	160258, 128282	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW4	1611316, 127733	No	Low	Not Meeting	Unknown	Unknown	Not Monitored

4.1.2 Inspection Summary Report

SWO Summary					
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	Unknown				
Is each SWO identified as non meeting DoEHLG Guidance included in the Programme of Improvements?					
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes				
Have the EPA been advised of any additional SWOs / charges to Schedule C3 and A4 under Condition 1.7?	No				

4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.

4.2.1 Specified Improvement Programme Summary

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

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
Discharges from SW1 must cease by 01/01/11 at the latest.	А	01/01/2011	Yes	Works Completed		
New WWTP and ancillary works	С	01/01/2011	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	Improvement Source	Expected Completion Date	Comments
There are no Improvements Pr	ogramme 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	Year included in	Included in this	Reference to relevant section of AER (e.g.
	licence	AER	AER	Appendix X).
Small Stream Risk Score Assessment	Yes	2016	Yes (for 2018)	Appendix 7.2

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	
Is there a need to request/advise the EPA of any modifications to the existing WWDL?	No
List reason e.g. changes to monitoring requirements	
Have these processes commenced?	
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: 28/03/2019

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 ,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

In the appendix include all the detailed or site specific reports that are relevant to the AER. Reports omitted from previous AERs should also be appended here.

Appendix

Appendix 7.1 - Ambient monitoring summary

Appendix 7.2 - Small Stream Risk Score Assessment

Kilmallock Upstream.

Entity	Entity Reference	Station	Station Reference	Station Easting	Station Northin	Sample Date
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	16-Jan-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	13-Feb-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	13-Mar-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	10-Apr-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	1-May-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	5-June-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	10-July-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	14-Aug-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	4-Sep-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	9-Oct-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	13-Nov-2018
Loobagh	24L01	Norlth Bridge U/S Kilmallock STP - E11	RS24L010410	160645	128426	11-Dec-2018

	Parameter	Ammonia NH3-	Biological Oxyg	Dissolved Oxyg	Ortho-Phospha	рН	Temperature
	Max.					14	
	Min.						
	Test Method	TM-CHEM-17	TM-CHEM-3	TM-CHEM-8		TM-CHEM-21	
Reason	Analyst Conclusion	mg/l	mg/l	% O2	mg/l	pH units	Degrees C
Compliance	-	0.05	1	92.4	0.062	7.8	5.7
Compliance	-	0.1	2.77	86.5	0.09	7.8	3.5
Compliance	-	0.03	1	102	0.039	8.1	5.1
Compliance	-	0.05	1	96	0.046	7.9	7.9
Compliance	-	0.03	1	103	0.027	8.3	8.9
Compliance	-	0.03	1	103	0.04	8.2	16.1
Compliance	-	0.03	1	93	0.042	8.1	17.4
Compliance	-	0.03	2.4	96.1	0.043	8.4	13.8
Compliance	-	0.03	1	95.8	0.035	8.2	12.7
Compliance	-	0.03	1	94.6	0.035	8.2	12.1
Compliance	-	0.03	1	107	0.047	8.1	9.3
Compliance	-	0.03	1	74	0.049	8.1	9

 good status mean
 ≤0.065
 ≤1.5

 good status mean 95%ile
 ≤0.14
 ≤2.6

 Mean
 0.039166667
 1.264166667

 95%ile
 0.0725
 2.5665

 Mean Compliance
 Yes
 Yes

 95%ile Compliance
 Yes
 Yes

≤0.035 ≤0.075 0.04625 0.0746



Kilmallock Downstream.

Entity	Entity Referenc	Station	Station Referen	Station Easting	Station Northin	Sample Date	Reason
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	16-Jan-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	13-Feb-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	13-Mar-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	10-Apr-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	1-May-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	5-June-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	10-July-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	14-Aug-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	4-Sep-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	9-Oct-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	13-Nov-2018	Compliance
Loobagh	24L01	Glenfield Br d/s Kilmallock STP WDLE 2	RS24L010460	159232	127980	11-Dec-2018	Compliance

Parameter	Ammonia NH3-	Biological Oxyg	Dissolved Oxyg	Ortho-Phospha	pН	Temperature	Visual Inspection
Max.					14		
Min.							
Test Method	TM-CHEM-17	TM-CHEM-3	TM-CHEM-8		TM-CHEM-21		
Analyst Conclusion	mg/l	mg/l	% O2	mg/l	pH units	Degrees C	Descriptive
-	0.04	1	92.8	0.055	7.8	5.9	clear
-	0.1	2.77	88	0.092	7.7	3.5	
-	0.03	1	103	0.039	8.1	5.3	
-	0.06	1	95.4	0.046	8	8	
-	0.03	1	116	0.041	8.3	10.2	clear
-	0.03	1	105	0.049	8.2	16.2	
-	0.03	1	91.9	0.055	8	16.8	
-	0.03	1	103	0.054	8.3	16.7	
-	0.03	1	95.3	0.047	8.2	12	
-	0.03	1	92	0.051	8.1	12.1	
-	0.03	8.2	102	0.056	8.2	8.5	
-	0.03	1	81	0.053	8.1	9	

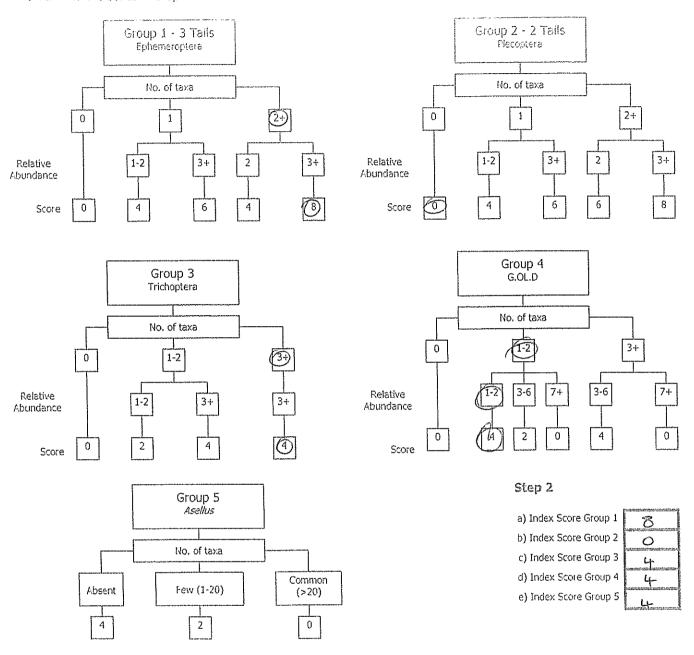
≤0.065 ≤1.5 good status mean good status mean 95%ile ≤0.14 ≤2.6 Mean 0.039166667 1.7475 95%ile 0.078 5.2135 Mean Compliance Yes NO 95%ile Compliance Yes

≤0.035 ≤0.075 0.053166667 0.0722 NO Yes

River: Loobagh		Code		T	Date:	28 c	26-18	<u>S</u>	Time: 10	<u>:</u> ح	00.~	
Station no.			Location: u/s Kilmaileak autflow					Gric	Grid (6 figure):			
x 160 602		Stre	Stream Order: 2nd Order Stream					Stre	Stream flow:			
Y 128 364 Field Chemistry		E Codi	Modifications: Y/N Canalised-widened-bank erosion-									ļ
DO%	98%.		رر al drainage د		sea, wiaen	euroma. i	SEUSIUM **	Slow	/Glide 🗸			
DO mg/l	<u> 9070 :</u> 695~%		inant Types					- 31014	HOVE			
Temp (°C)	15°C.) Deale										
Conductivity			er (>128mm)									
pH	275		Cobble (32-128mm) Gravel (8-32mm)									
Bank width (cm)	7.3	Fine (3 (0 32.11.11) 3ravel (2-8m)	n)								
	8 metac	Sand	Sand (0.25-2mm)									
Wet width (cm)	5 _{Meta}		<0.25mm)					-		,		
Avg Depth (cm)	Diope: Land Thedion Stight Very Filight					Ch. di D. d La de La D						
Staff gauge Velocity	Colour	Geol	Geology: Calcareous-Siliceous-Mixed				Shad	Shading: High - Moderate - Low - None				
Torrential	None		Substratum Condition: Calcareous-Compacted-				Caft	le access Y: up	stream	- downstrea	m of N	
Fast	Slight		e - Normal		30.031.0000	our pas						
Moderate	Moderate	e Subs	tratum									
Slow	High	**	ey bottom-14u		_			Pho	to: Y (N)			
Very slow Clarity	Discharg	Degr	ee of siltati	on: Clear	n-Slight-M	oderate-l	łeavy	ļ	_			
Very clear	Flood	Dept	th of mud: N	ارہ: <jo< td=""><td>cภา: 1-5cm</td><td>: 5-10cm</td><td>: >10cm</td><td>1</td><td></td><td></td><td></td><td></td></jo<>	cภา: 1-5cm	: 5-10cm	: >10cm	1				
Clear 1	Normal		r: None – Pçe									
	1.0		nentous Alg					Cau	age/Fungus:			
Slightly turbid	Low {		- Present -		e - Abunda	int			Present - M	oderate	- Abundant	
Highly turbid	Very Lov	v Main	ı land use u	/s:		Sample		Sam	pled in Minut		-	
	Dry		irei		Jrban	retaine	ed:	Pond	net x 2			
	Recent Flo	ood Bog Fores	itry		Tillage Other	Y (1)		Ston	e wash x 🐧			
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		Мас	roinvertel	brate (Compos		······································				Relative Abundar	
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = 7	ates are divide Ephemeroptera Plecoptera (2-ta Frichoptera G.OL.D (Gastro	Macı ed into the fo a (3-tails) – n ails) - note th	roinvertel llowing 5 spe ote that tails nat tails may	brate (cific grou may be o be damag	Compos ips: damaged d	i ition during sar	mpling 9				Abundar 1-5 6-20 21-50 51-100	1 2 3 4
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th	ates are divide phemeroptera Plecoptera (2-ta Frichoptera 3.OL.D (Gastro 4 <i>sellus</i>	Macred into the form (3-tails) - note the popoda, Oligocon of taxa and Ecdy Rhitti	roinvertel llowing 5 spe ote that tails nat tails may haeta and Di relative abur ronurus Ab hrogena Ab otagenia Ab Caenis Ab	brate (cific grou may be o be damag ptera) idance of	Compos ips: damaged o ged during	ition during sar sampling croinverte	9	oup belo	w: (Abundance	Proto Amph	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab onemura Ab inemura Ab	1 2 3 4
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th	ates are divide phemeroptera Plecoptera (2-ta Frichoptera 3.OL.D (Gastro 4 <i>sellus</i>	Macred into the foa (3-tails) - note the poods, Oligocon of taxa and Ecd Rhith Hep Epha	roinvertel llowing 5 spe ote that tails nat tails may haeta and Di relative abur ronurus Ab hrogena Ab otagenia Ab Caenis Ab	brate (cific grou may be o be damag ptera) idance of	Compos ips: damaged o ged during	ition during sar sampling croinverte	9	oup belo	w: (Abundance	Proto Amph Othe	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab onemura Ab inemura Ab inemura Ab Perla Ab Dinocras Ab	1 2 3 4
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th	ates are divide Ephemeroptera Plecoptera (2-ta Frichoptera S.OL.D (Gastro Asellus e total number	Macred into the foa (3-tails) - note the opoda, Oligocon of taxa and Ecclosed Rhiti Hep Ephe Paralepto	roinvertel Ilowing 5 spe ote that tails nat tails may haeta and Di relative abur yonurus Ab hrogena Ab otagenia Ab Caenis Ab	brate (cific grou may be o be damag ptera) idance of	Compos ips: damaged o ged during	ition during sar sampling croinverte	g brate gr		w: (Abundance	Proto Amph Othe	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab inemura Ab inemura Ab Perla Ab	1 2 3 4
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th	ates are divide phemeroptera Plecoptera (2-ti Frichoptera 3.OL.D (Gastro Asellus e total number	Macred into the foa (3-tails) - note the opoda, Oligocon of taxa and Ecclosed Rhiti Hep Ephe Paralepto	roinvertel llowing 5 spe ote that tails nat tails may haeta and Di relative abur ronurus Ab hrogena Ab otagenia Ab Caenis Ab ophilebia Ab a danica Ab	brate (cific groumay be cobe damagnetera) and ance of 2	compos ps: damaged deged during feach made	ition during sar sampling croinverte	g brate gr			Proto Amph Othe	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab onemura Ab inemura Ab inemura Ab Perla Ab Dinocras Ab	1 2 3 4
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = 7 Group 5 = A Calculate th Ephemeroptera:	ates are divide Ephemeroptera Plecoptera (2-tr Trichoptera S.OL.D (Gastro Asellus e total number Hydrop: Polycentro Rh)	Macced into the foot (3-tails) - note the opoda, Oligocon of taxa and Ecolombia Relative Augustia Rela	roinvertel llowing 5 spe ote that tails nat tails may haeta and Di relative abur ronurus Ab hrogena Ab caenis Ab caenis Ab a danica Ab Ephem Ab abundance 2 G.OL	brate (cific groumay be cobe damage ptera) adance of 2	Composips: lamaged of ged during leach made Plecope Total ne Lymnae lamopyrgu Planorb	sition during sar grampling croinverte tera: o, of Tax a(G) Abl s(G) Ab	g brate gr	Chir	Total Rel onomidae (D) A hironomus (D) A	Proto Amph Other Other ative A	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab Inemura	1CG 1 2 3 4 5
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = 7 Group 5 = A Calculate th Ephemeroptera:	ates are divide Ephemeroptera Plecoptera (2-trichoptera S.OL.D (Gastro Asellus e total number Hydrop: Polycentro Rh) Philopo	Macred into the for a (3-tails) – note the opoda, Oligocon of taxa and Ecological Rhitu Hep Ephemera Other otal Relative A sychidae Abotamidae	roinvertel llowing 5 spe ote that tails nat tails may haeta and Di relative abur ronurus Ab hrogena Ab caenis Ab caenis Ab a danica Ab Ephem Ab abundance 2 G.OL	brate (cific groumay be cobe damage) brates) adance of the color of th	Composips: lamaged oged during leach mad Plecopy Total no Lymnae tamopyrgu Planorb Ancyle	o, of Tax a(G) Ab b(G) Ab c(G) Ab c(G) Ab c(G) Ab c(G) Ab	g brate gr	Chir	Total Rel onomidae (D) A hironomus (D) A Simuliidae (D) A Dicranota (D) A	Proto Amph Other Other ative A b	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab Inemura	1CC 1 2 3 4 5
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 5 = A Calculate th Ephemeroptera: Total no. of tax Trichoptera:	xa 3 To Hydropic Polycentrol Control C	Macred into the for a (3-tails) – note the opoda, Oligocon of taxa and Ecdy Rhitu Hep Epheles Paralepto Fphemera Other otal Relative Abstractophila Abstract	roinvertel llowing 5 spe ote that tails nat tails may haeta and Di relative abur ronurus Ab hrogena Ab caenis Ab caenis Ab a danica Ab Ephem Ab abundance 2 G.OL	brate (cific groumay be cobe damage) adance of the color	Total no Lymnae tamopyrgu. Flanorb. Ancylu. Eisenielli.	o, of Tax a(G) Ab s(G) Ab s(G) Ab s(G) Ab s(G) Ab s(G) Ab a(G) Ab a(G) Ab	g brate gr	Cerato	Total Rel onomidae (D) A hironomus (D) A Simuliidae (D) A Dicranota (D) A Tipulidae (D) A	Other Other ative A b b b b b b b b b b b b b b b b b b	Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab Isoperia Ab Inemura Ab Inemur	TICE 1 2 3 4 5
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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 is not counted in SSRS. See Appendix B for more details on how to identify Baetis.

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



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

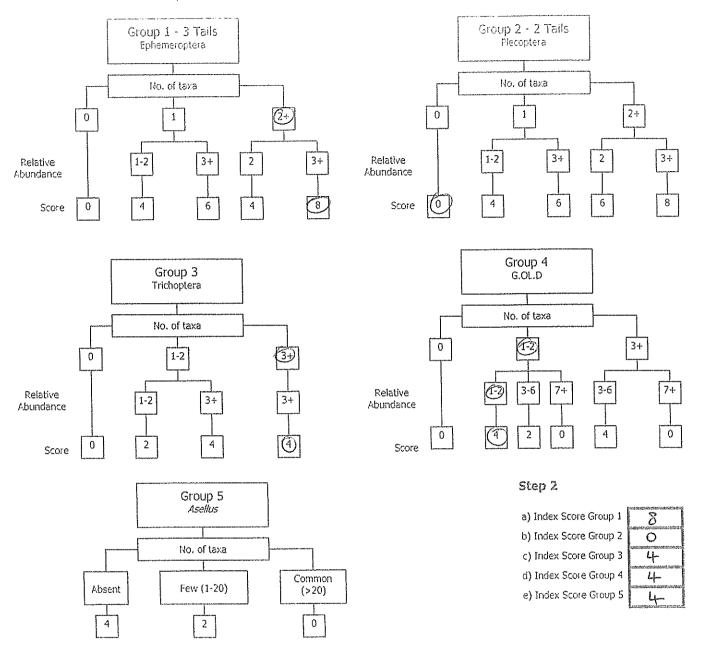
Stream may be lat risk

Surveyor (signed): A. July Name (print): Addion Insty Date: 28 / 06 / 18

River: Loobagh		Code:	Da	ite: 28-06	- 18	Time: i	1130a.m.		
Station no. $ \it O $		Location:	Location: DIS KILLIONER OULFOU				Grid (6 figure):		
K 159,700	9	Stream Ord				Stream flow:			
y 123 286.						Riffle L			
Field Che				I widened bank e	rosion	Riffle/Glide			
D0%	101%	arterial drainage Dominant Typ				Slow flow			
DO mg/l	7.29%	Bedrock	E5.						
Temp (°C)	15°C.	Boulder (>128n	nm)			~~~			
Conductivity	273	Cobble (32-128)							
pH	7.3.	Gravel (8-32mn							
Bank width (cm)	8 melie	Fine Gravel (2-8 Sand (0.25-2mr							
Wet width (cm)	5 mele		''7						
Avg Depth (cm)	20 cm	,	todiuse - High	- Venc High					
Staff gauge	No					Shading: High - 160d	erate - Low - None		
Velocity	Colour	Geology: Calca	<u> </u>						
Torrential	None			careous-Compacte	ed-	Cattle access Y: upst	ream – downstream or 🕏		
Fast V	Slight	Loose - Normal Substratum:					_		
Moderate Slow	Moderate: High		Muddy bottom	-Mud over stones		Photo: Y (N)	M. M		
Very slow	111911			light-Moderate-H		PHOLO: 17 (N)			
Clarity	Discharge			"_					
Very clear	Flood	1		: 1-5cm: 5-10cm:					
Clear 🗸	Normal	Litter: None -	Present - Mod	lerate - Abundant					
Slightly turbid	Low	Filamentous /	lgae:			Sewage Fungus:	addining to the control of the contr		
,		None - Present				None - Present - Mode			
Highly turbid	Very Low		:u/s: Urbi	Sample retained		Sampled in Minutes Pond net x 2	;		
	Dry Recent Floo	Pasture ad Bog	Tilla		ur				
	1 1100011011100	Forestry	Oth			Stone wash x \			
						Weed sweep x (
General Commen	ts:								
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e.	uson los	,							
R	iuez loc	۵.							
R	iuez loc	۵. Macroinver	tebrate Co	mposition			Relative		
The macroinvertebr	ates are divided	Macroinver	specific groups	;		annonina de la companya de la compa	Relative Abundance		
The macroinvertebr Group 1 = E	ates are divided	Macroinver I into the following 5 s (3-tails) – note that ta	specific groups ils may be dan	: naged during sam			Abundance		
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The macroinvertebr Group 1 = E Group 2 = F Group 3 = 7 Group 4 = 0 Group 5 = 7	rates are divided Ephemeroptera (Plecoptera (2-tai Frichoptera G.OL.D (Gastrop Asellus	Macroinver t into the following 5 s (3-tails) – note that ta ils) - note that tails m noda, Oligochaeta and	specific groups ils may be dan ay be damaged Diptera) oundance of ea	: naged during sam d during sampling		p below: (Abundance – .	Abundance 1-5 1 6-20 2 21-50 3 51-100 4 101+ 5		
The macroinvertebr Group 1 = E Group 2 = F Group 3 = 7 Group 4 = 0 Group 5 = 7 Calculate th	rates are divided Ephemeroptera (Plecoptera (2-tai Frichoptera G.OL.D (Gastrop Asellus	Macroinver i into the following 5 s (3-tails) – note that ta ils) - note that tails m noda, Oligochaeta and of taxa and relative al	specific groups sils may be dan ay be damaged Diptera) Dundance of ea	: naged during sam d during sampling ach macroinverteb		p below: (Abundance –	Abundance 1-5 1 6-20 2 21-50 3 51-100 4 101+ 5		
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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 is not counted in SSRS. See Appendix B for more details on how to identify Baetis.

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



Step 3. Calculate the Total Index Score, the Average Index Score and the SSR Score using the I	ooxes below
Total Index Score (TIS) sum (a+b+c+d+e) Average Index Score (AIS) TIS/5 (5 for 5 groups)	SSR Score (AIS x 2)
Step 4. Assess the stream by comparing the final SSR score with the categories below and tick	the appropriate box
> 7.25 > 6.5 – 7.25 <6.5 Probably not at risk Stream at risk Stream may be at risk Stream at risk	
Surveyor (signed): A. July Name (print): Adrich Insle, Date: 28	