

Wicklow Uplands

SUAS EIP

Water Quality Monitoring Report

31 May 2023

CDM
Smith

Document Control Sheet

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Section 1 Introduction

CDM Smith was engaged by the Sustainable Uplands Agri-Environment Scheme (SUAS) to carry out macroinvertebrate and water quality monitoring at 29 locations in the Wicklow and Dublin uplands. The macroinvertebrate data is compared to small stream risk score (SSRS) data collected at the same locations in 2020. The water quality data is assessed in terms of the macroinvertebrate community and the anthropogenic pressures in the associated catchment.

Monitoring was carried out by Áine O'Shea over nine days (18, 19, 20 & 21 July; 10, 11, 29 & 30 August and 01 September 2022).

The methodology is presented in Section 2. The results and discussion are contained in Section 3, and recommendations are provided in Section 4. The original copies of the field sheets and laboratory reports are contained in **Appendix A**.

Section 2 Methodology

2.1 Monitoring Locations

Monitoring was carried out at twenty eight of twenty nine locations. Sampling was not undertaken at location Slievemweel 2 as there was no flow.

Table 1: Monitoring Locations

Sampling day	Sub catchment	Site number	Stream	GPS
1	Powerscourt	1	Glen River	O 18478 10816
	Powerscourt	2	Unnamed watercourse – tributary River Dargle	O 17731 11245
	Powerscourt	3	Unnamed watercourse – tributary River Dargle	O 18353 12072
	Powerscourt	4	Glen River	O 18965 11493
2	Granamore	1	Douglas River	S 98976 97975
	Granamore	2	Douglas River – unnamed tributary	S 99345 98133
	Granamore	3	Douglas River - unnamed	S 99347 98741
	Granamore	4	Douglas River - Leeawn	S 99493 98934
3	Carrigeenduff	1	Lavarnia River	O 10565 08049
	Carrigeenduff	2	Cornagrinya Brook East (Inchavore River)	O 10246 07622
	Carrigeenduff	3	Cornagrinya Brook West (Inchavore River)	O 09756 06901
	Carrigeenduff	4	Cyowck Brook (Inchavore River)	O 09433 06359
4	Glassavullaun	1	Slade Brook	O 10301 19788
	Glassavullaun	2	Slade Brook	O 09831 18741
	Glassavullaun	3	Glassamucky Brook	O 09510 20771
5	Slievemweel	1	Corndog Stream (Askanagap Stream 010)	T 04732 80529
	Slievemweel	2	Slievemweel Stream (Askanagap Stream 010)	T 05552 80709
	Ballybeg	1	Ballycumber South Stream	T 04582 76775
6	Glassnamullen	1	Glasnamullen Stream	O 19193 09621
	Glassnamullen	2	Glasnamullen Stream	O 18643 09762
7	Corrasillagh	1	Leolassier Brook	T 07160 91377
	Corrasillagh	2	Carrawaystick River	T 06147 91158
	Corrasillagh	3	Carrawaystick River	T 08656 92000
8	Mullaghcleevaun / Ballynultagh	1	Ballydonnell Brook	O 08169 07870

Sampling day	Sub catchment	Site number	Stream	GPS
9	Carrigeenduff	5	Carrigeenshinnagh/Duff Brook (Inchavore River)	O 13855 03035
	Carrigeenduff	6	Inchavore Brook (Inchavore River)	O 13956 04212
	Granamore	5	Douglas River - Roundhill Brook	S 99339 99273
	Granamore	6	Douglas River	S 98603 99290
	Granamore	7	Douglas River	S 98265 00112

2.2 Water Quality Monitoring

Field physico-chemical parameters (pH, temperature, conductivity, oxidation-reduction potential and dissolved oxygen) were measured in-situ using a YSI multi-parameter water quality probe which was calibrated daily before use.

Grab water samples were collected at all locations. The samples were collected in laboratory-supplied sampling containers and stored in a cooler box at a temperature below 4°C prior to delivery to the laboratory. The samples were sent by DHL courier to ALS Environmental, Dublin. ALS Environmental are an INAB ISO 17025 accredited laboratory. Chain of custody (COC) documentation was included with all samples. The methodologies were all ISO/CEN approved or equivalent.

Table 2 Sampling Procedures Standards

ISO Standard	Description
ISO 5667-1-2020	Guidance on the design of sampling programmes and sampling techniques
ISO 5667-3-2018	Guidance on sample preservation and handling
ISO 5667-14-2014	Guidance on quality assurance of environmental sampling and handling
ISO 5667-6-2014	Guidance on sampling of rivers and streams

2.3 Macroinvertebrate Monitoring

Two-minute kick samples were performed at each site and the dislodged fauna were captured in a standard 1-mm mesh pond net attached to a metal frame. The net was positioned in the water approximately 0.5m downstream from where the sampler was standing. The sampler disturbed the stream bed by kicking the substrate to dislodge macroinvertebrates from the rocks, and other substrate, into the net. All material collected in the net was transferred to a white plastic tray for identification. In addition, individual stones and rocks were picked from the river bottom and inspected, and attached organisms were collected and noted as part of the sample.

Sorting and identification of macroinvertebrates was carried out onsite. Two large, white identification trays were filled with stream water and placed on a flat surface. The contents of the net were rinsed and placed into the trays. Large stones and organic material (leaves, twigs, algae, etc.) were examined for any macroinvertebrates present and then removed from the sorting tray. The examination process took at least 30 minutes per sample to ensure all macroinvertebrates were identified to the lowest possible taxonomic level. Each

macroinvertebrate was assigned to one of the five groups (A to E) for classification of sensitivity to potential pollutants.

The small stream risk score (SSRS) scoring criteria are outlined in Table 3.

Table 3: SSRS score criteria

SSRS score	Description
> 7.25	Probably not at risk
> 6.5 - 7.25	Intermediate (Stream may be at risk)
< 6.5	Stream at risk

Section 3 Results and Discussion

3.1 Results

The macroinvertebrate field data, laboratory data and the field physico-chemical data are presented in Table 4.

The complete field sheets including supplementary notes and the full laboratory reports are presented in Appendix A.

Ortho-phosphate, ammoniacal nitrogen and dissolved oxygen (% saturation) are compared to their respective European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) Ecological Quality Standards (EQS) thresholds for “good status” :

- 0.035 mg/L for ortho-phosphate;
- 0.065 mg/L for ammoniacal nitrogen as N; and
- 80-120 % for dissolved oxygen % saturation.

Exceedances of these thresholds are indicated by orange fill in Table 4.

Note, these thresholds are ordinarily for comparison with annual average (AA) values based on a dataset of at least eight datapoints.

Total nitrogen comprises the ammoniacal nitrogen, nitrite and nitrate. Nitrite is generally rapidly nitrified to nitrate in the natural environment and concentrations of nitrite in the natural environment are generally low relative to the nitrate concentrations. Thus, the total nitrogen concentration less the ammoniacal nitrogen concentration is a reasonable approximation of the nitrate concentration. There is no Ecological Quality Standards (EQS) threshold for nitrate as it is generally not the nutrient of ecological concern in surface freshwater bodies (phosphate is generally the nutrient that controls primary production in these settings). However, information on nitrate concentrations can be useful for understanding pressures in the surrounding catchment. Nitrate detections are indicated by green fill in Table 4.

The SSRS numerical values are explained as:

- >7.25 = Probably not at risk
- >6.5 – 7.25 = Intermediate (Stream may be at risk)
- <6.5 = Stream at risk

Table 4: Macroinvertebrate SSRS, Field Physico-chemical Data and Laboratory Data Summary

Date	Site Name	Commonage / Location	River	SSRS results			Laboratory data			Field water quality data					Predominant land-uses upstream and/or adjacent to catchment
				SSRS Score (2020)	SSRS Score (2022)	SSRS score status	Ortho as P (mg/l)	Ammoniacal Nitrogen as N (mg/l)	Nitrogen, Total as N (mg/l)	DO (%)	Temp	Electrical Conductivity	pH	ORP	
18-Jul-22	Powerscourt 1	Powerscourt Paddock	Glen River	6.4	4.8	Unchanged	<0.02	<0.06	<0.5	82	17.9	40.2	6.48	109.1	Bog
18-Jul-22	Powerscourt 2	Powerscourt Paddock	Unnamed watercourse – tributary River Dargle	5.6	8.0	Improved	<0.02	<0.06	<0.5	66.5	16.2	45.2	5.56	99.6	Bog
18-Jul-22	Powerscourt 3	Powerscourt Paddock	Unnamed watercourse – tributary River Dargle	4.8	4.8	Unchanged	<0.02	<0.06	<0.5	84.2	18	38.2	6.86	106.2	Bog
18-Jul-22	Powerscourt 4	Powerscourt Paddock	Glen River	7.2	4.8	Disimproved	<0.02	<0.06	<0.5	93.4	14.1	40.4	6.64	33.7	Bog
19-Jul-22	Granamore 1*	Granamore	Douglas River	7.2	2.4	Disimproved	<0.02	<0.06	0.6	76.1	14.6	38.4	4.71	68.9	Bog & forestry
19-Jul-22	Granamore 2*	Granamore	Douglas River – unnamed tributary	4.8	7.2	Improved	<0.02	0.24	1.1	62	14.3	37.5	5.62	122.6	Bog & forestry
19-Jul-22	Granamore 3	Granamore	Douglas River - unnamed	4.8	6.4	Unchanged	<0.02	<0.06	<0.5	93.5	14.7	117.2	7.72	68.5	Bog & forestry
19-Jul-22	Granamore 4	Granamore	Douglas River - Leeawn	4.0	6.4	Unchanged	<0.02	<0.06	0.6	88.6	14.1	61.5	7.39	105.9	Bog & forestry
01-Sep-22	Granamore 5	Granamore	Douglas River - Roundhill Brook	3.2	7.2	Improved	<0.02	<0.06	<0.5	77.6	14.3	68.4	6.43	-219.6	Bog & forestry
01-Sep-22	Granamore 6	Granamore	Douglas River	8.0	8.8	Unchanged	<0.02	<0.06	<0.5	98.6	15.8	52.1	6.55	-193.9	Bog & forestry
01-Sep-22	Granamore 7	Granamore	Douglas River	5.6	6.4	Unchanged	<0.02	<0.06	<0.5	100.7	15.8	52.9	6.18	-182.5	Bog & forestry
20-Jul-22	Carrigeenduff 1	Carrigeenduff	Lavarnia River	4.8	7.2	Improved	<0.02	<0.06	<0.5	101.5	13.3	32.5	6.53	91.3	Bog
20-Jul-22	Carrigeenduff 2	Carrigeenduff	Cornagrainya Brook East (Inchavore River)	4.8	8.0	Improved	<0.02	<0.06	<0.5	93.2	11.8	30.6	6.35	101.8	Bog
20-Jul-22	Carrigeenduff 3	Carrigeenduff	Cornagrainya Brook West (Inchavore River)	5.6	7.2	Improved	<0.02	<0.06	<0.5	96.5	16.4	32.9	6.82	107.5	Bog
20-Jul-22	Carrigeenduff 4	Carrigeenduff	Cyowck Brook (Inchavore River)	5.6	7.2	Improved	<0.02	<0.06	4.1	98.9	16.3	29.3	6.68	112.5	Bog
30-Aug-22	Carrigeenduff 5	Carrigeenduff	Carrigeenshinnagh/Duff Brook (Inchavore River)	6.4	6.4	Unchanged	<0.02	<0.06	<0.5	91.7	15.1	32.7	5.39	***	Bog
30-Aug-22	Carrigeenduff 6	Carrigeenduff	Inchavore Brook (Inchavore River)	7.2	7.2	Unchanged	<0.02	<0.06	<0.5	95.4	14.8	38.8	5.3	-122.5	Bog
21-Jul-22	Glassavullaun 1	Glassavullaun	Slade Brook	5.6	6.4	Unchanged	<0.02	<0.06	1	93.2	13.8	50.3	7.39	111	Bog, forestry & agriculture
21-Jul-22	Glassavullaun 2	Glassavullaun	Slade Brook	7.2	8.0	Improved	<0.02	<0.06	<0.5	99.6	12.7	52.5	6.99	94	Bog, forestry & agriculture
21-Jul-22	Glassavullaun 3	Glassavullaun	Glassamucky Brook	4.8	8.0	Improved	<0.02	<0.06	2.8	76.9	13.1	44.5	7.03	103.8	Bog, forestry & agriculture
10-Aug-22	Slievemweel 1*	Slievemweel	Corndog Stream (Askanagap Stream 010)	4.0	4.8	Unchanged	<0.02	<0.06	0.6	91.2	14.9	57.2	5.83	-312.7	Bog, forestry & agriculture
10-Aug-22	Slievemweel 2**	Slievemweel	Slievemweel Stream (Askanagap Stream 010)	4.0	-	-	-	-	-	-	-	-	-	-	Bog & forestry
10-Aug-22	Ballybeg	Ballybeg	Ballycumber South Stream	5.6	8.0	Improved	<0.02	<0.06	0.8	104.1	14.1	56.4	5.83	243.8	Bog, forestry & agriculture
11-Aug-22	Glassnamullan 1	Glassnamullen	Glasnamullen Stream	4.8	7.2	Improved	<0.02	<0.06	1.2	95.2	17.7	43.9	5.74	-189.5	Bog & forestry

Date	Site Name	Commonage / Location	River	SSRS results			Laboratory data			Field water quality data					Predominant land-uses upstream and/or adjacent to catchment
				SSRS Score (2020)	SSRS Score (2022)	SSRS score status	Ortho as P (mg/l)	Ammoniacal Nitrogen as N (mg/l)	Nitrogen, Total as N (mg/l)	DO (%)	Temp	Electrical Conductivity	pH	ORP	
11-Aug-22	Glassnamullan 2	Glassnamullen	Glasnamullen Stream	2.4	5.6	Unchanged	<0.02	<0.06	0.9	92.6	13.8	39.5	5.22	-255.1	Bog & forestry
29-Aug-22	Corrasillagh 1	Corrasillagh	Leolassier Brook	5.6	6.4	Unchanged	<0.02	<0.06	<0.5	101.2	14.2	33.1	6.31	-288.7	Bog, forestry & agriculture
29-Aug-22	Corrasillagh 2	Corrasillagh	Carrawaystick River	7.2	7.2	Unchanged	<0.02	<0.06	<0.5	122.9	15.4	33.6	5.91	***	Bog, forestry & agriculture
29-Aug-22	Corrasillagh 3	Corrasillagh	Carrawaystick River	7.2	7.2	Unchanged	<0.02	<0.06	<0.5	116.4	16.6	32.7	6.02	-156.7	Bog, forestry & agriculture
30-Aug-22	Mullaghcleevaun / Ballynultagh	Ballynultagh / Mullacleevaun	Ballydonnell Brook	6.4	5.6	Unchanged	<0.02	<0.06	<0.5	101	12.6	23.8	5.33	-196	Bog

*SSRS location dry; therefore SSRS undertaken downstream of designated SSRS location
**Stream dry 300 metres downstream of actual SSRS location, therefore no SSRS undertaken.
***ORP not recorded due to field error

3.2 Discussion

The SSRS of most sites remained unchanged (15) or improved (11), with only two sites disimproving (2). Further details are provided below, at a catchment level.

3.2.1 Observation of Land Use

Deer and sheep grazing were observed in every catchment surveyed. Cows were observed grazing in the Glassavullaun and Corrasillagh catchments.

- Bog was the most frequently observed land-use upstream and/or in each catchment.
- Bog & forestry land-uses were observed upstream and/or in ten of the 29 catchments.
- Bog, forestry & agriculture land-uses were observed upstream and/or in eight of the 29 catchments.

3.2.2 Powerscourt Paddock

In general, the ecological health of this stream, as indicated by the macroinvertebrate community, is unchanged.

- Powerscourt 2 improved from 'Stream at risk' in 2020, to 'Probably not at risk' in 2022.
- Powerscourt 1 and Powerscourt 3 remained unchanged between 2020 and 2022, with a score of 'Stream at risk'.
- Powerscourt 4 disimproved from 'Intermediate - Steam may be at risk' in 2020 to 'Stream at risk' in 2022.

Ortho-phosphate, ammoniacal nitrogen and nitrogen concentrations were below the LOD (limit of detection) across all four Powerscourt Paddock locations. The dissolved oxygen at Powerscourt 2 was below the EQS range for Good status (80-120%), at 66.5%. The field pH data was below the EQS value range of (6.9-9.5) at each of the four Powerscourt Paddock locations. All other field parameters were within the EQS good status thresholds and expected ranges for all four locations.

Deer and sheep were observed throughout Powerscourt Paddock, which may have an impact water quality. Bog and forestry are adjacent to each of the four Powerscourt Paddock locations, which also may impact water quality. High proliferation of algal growth was noted at all four locations in Powerscourt Paddock. This may indicate nutrient enrichment in this catchment.

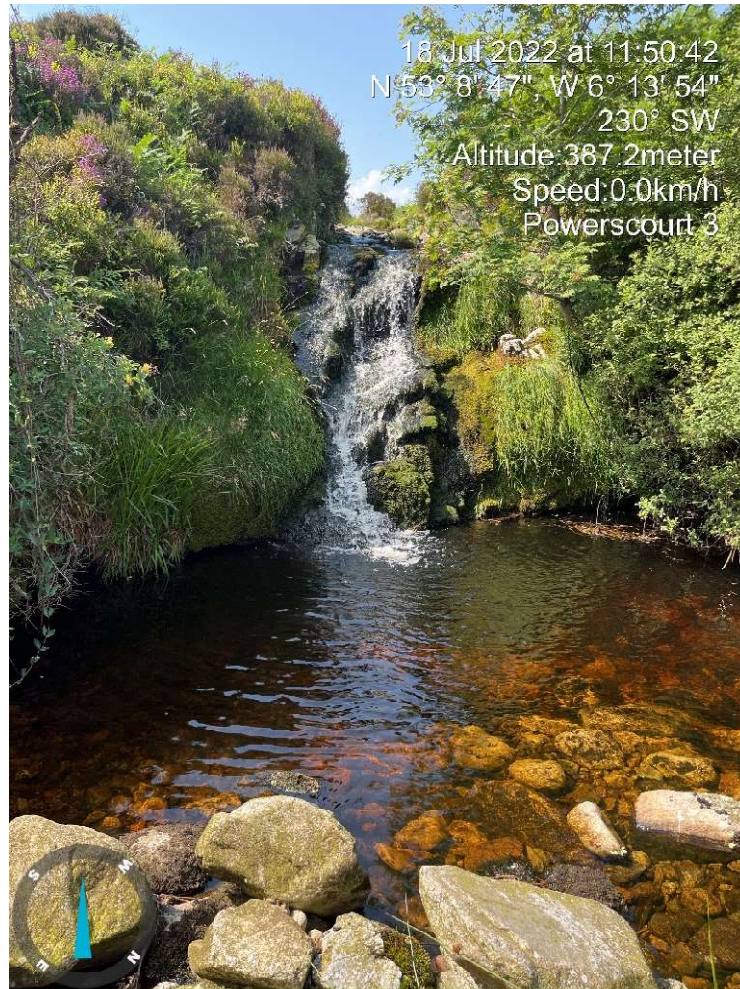


Figure 1: Powerscourt Paddock 3 monitoring location

3.2.3 Granamore

In general, the ecological health of this stream, as indicated by the macroinvertebrate community, is unchanged.

- Granamore 2 and Granamore 5 improved from 'Stream at risk' in 2020, to 'Intermediate - Steam may be at risk' in 2022.
- Granamore 3, Granamore 4 and Granamore 7 remain unchanged between 2020 and 2022, with a score of 'Stream at risk'.
- Granamore 6 remains unchanged between 2020 and 2022 with a score of 'Probably not at risk'.
- Granamore 1 disimproved from 'Intermediate - Steam may be at risk' in 2020 to 'Stream at risk' in 2022.

Ortho-phosphate was below the LOD at each of the seven Granamore locations. The field dissolved oxygen was outside the EQS Good status range (80-120%) at Granamore 1, Granamore 2 and Granamore 5.

The concentration of ammoniacal nitrogen was 0.24 mg/l at Granamore 2, which exceeds the EQS threshold for 'good status' (0.065 mg/l). While the absolute SSRS score for Granamore 2 improved, it still remains in the 'at risk' classification. Ammoniacal nitrogen inputs may be contributing to this status. Elevated ammoniacal nitrogen was not detected at any other location in this stream or catchment, however there were detections of total nitrogen at three locations (Granamore 1, Granamore 2 and Granamore 4). The nitrate may be derived from either a nitrate source such as synthetic fertiliser, or more likely given the surrounding landuse, ammoniacal nitrogen from animal waste which was nitrified to ammonia in transit to the stream.

Deer and sheep grazing was observed throughout the Granamore catchment. Bog and forestry are adjacent to each of the Granamore monitoring locations.

Granamore 1 was dry and therefore monitoring was undertaken approximately 80 metres downstream of the designated monitoring location. This change of location may have impacted the SSRS score.

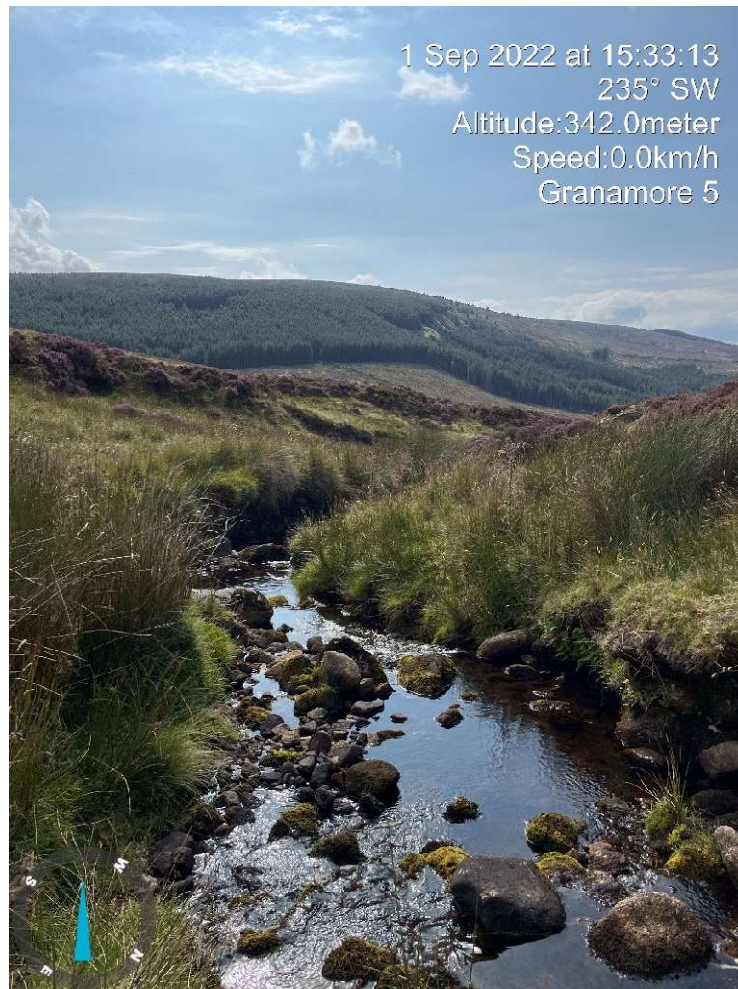


Figure 2: Granamore 5 monitoring location

3.2.4 Carrigeenduff and Ballynultagh/Mullacleevaun

In general, the ecological health of this catchment, as indicated by the macroinvertebrate community, has improved.

- Carrigeenduff 2 improved from 'Stream at risk' in 2020 to 'Probably not at risk' in 2022.
- Carrigeenduff 1, 3 and 4 improved from 'Stream at risk' in 2020, to 'Intermediate - Steam may be at risk' in 2022.
- Carrigeenduff 5 and 6, remained unchanged between 2020 and 2022, with a score of 'Intermediate - Steam may be at risk'.
- Ballynultagh / Mullacleevaun remained unchanged between 2020 and 2022, with a score of 'Steam at risk'.

Ortho-phosphate was below the LOD at all of the Carrigeenduff and Ballynultagh / Mullacleevaun locations. Ammoniacal nitrogen was below the LOD all of the Carrigeenduff and Ballynultagh / Mullacleevaun locations. The concentration of total nitrogen was 4.1 mg/l at Carrigeenduff 4, which may indicate distant ammoniacal nitrogen inputs. Nitrogen as nitrate is not as consequential for surface water bodies as nitrogen in ammoniacal form; ammoniacal nitrogen is toxic to macroinvertebrates at relatively low concentrations.

Field dissolved oxygen was within the EQS good status range (80-120%) at all of the Carrigeenduff and Ballynultagh / Mullacleevaun locations. All other field and laboratory parameters were within the thresholds and expected ranges.

Deer and sheep grazing was observed throughout the Carrigeenduff and Ballynultagh / Mullacleevaun catchment. Bog is adjacent to each of the Carrigeenduff and Ballynultagh / Mullacleevaun SSRS locations.



Figure 3: Carrigeenduff 2 macroinvertebrate sample in identification tray

3.2.5 Glassavullaun

In general, the ecological health of this stream, as indicated by the macroinvertebrate community, has improved.

- Glassavullaun 1 remains unchanged between 2020 and 2022 with a score of 'Stream at risk'.
- Glassavullaun 2 improved from 'Intermediate - Stream may be at risk' in 2020, to 'Probably not at risk in 2022'.
- Glassavullaun 3 improved from 'Stream at risk' in 2020 to 'Probably not at risk' in 2022.

Ortho-phosphate and ammoniacal nitrogen were below the LOD and the DO field data was within the EQS good status range (80-120%) at all three Glassavullaun locations. The concentration of total nitrogen at Glassavullaun 1 and Glassavullaun 3 were 1 mg/l and 2.8 mg/l, respectively, which may indicate distant ammoniacal nitrogen inputs. All other parameters were within their expected ranges.

Deer and sheep grazing was observed throughout the Glassavullaun catchment. Bog, forestry & agriculture were noted adjacent to each of the Glassavullaun monitoring locations.

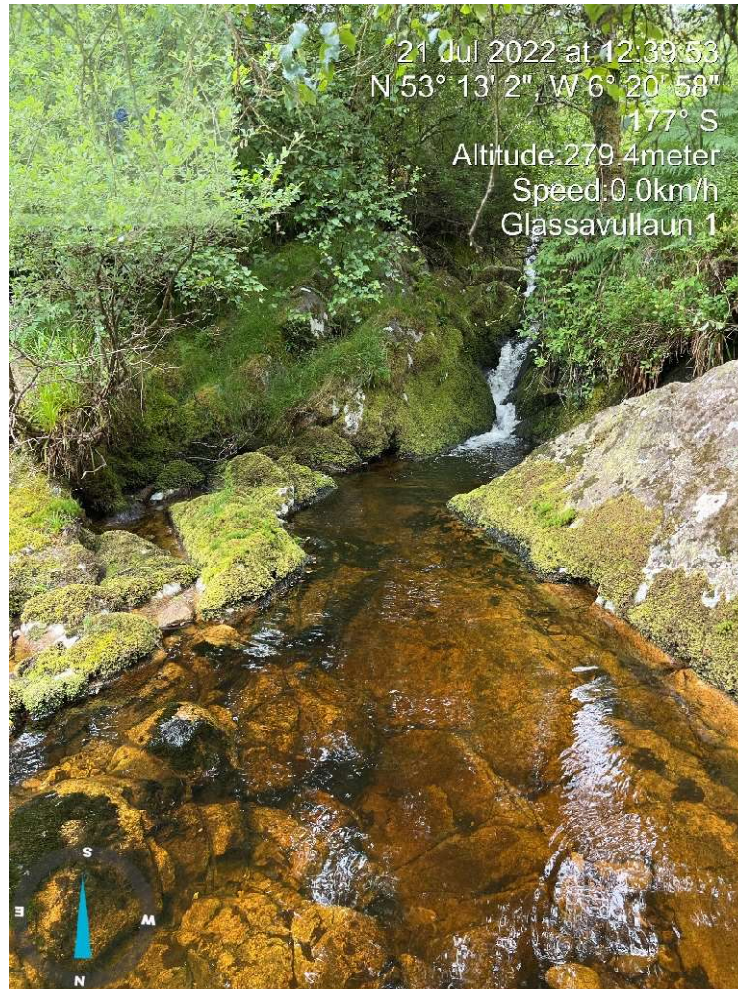


Figure 4: Glassavullaun 1 Monitoring location

3.2.6 Slievemweel and Ballybeg

In general, the ecological health of this stream as indicated by the macroinvertebrate community, has improved.

- Slievemweel 1 remains unchanged between 2020 and 2022 with a score of 'Stream at risk'.
- Ballybeg improved from 'Stream at risk' in 2020 to 'Probably not at risk' in 2022.
- Slievemweel 2 was dry, therefore no SSRS or water sampling took place.

Ortho-phosphate and ammoniacal nitrogen concentrations were below the LOD and the DO field data was within the EQS good status range (80-120%) at Slievemweel 1 and Ballybeg. Total nitrogen was detected at 0.8 mg/l at Ballybeg, which may indicate distant ammoniacal nitrogen inputs.

Deer and sheep grazing was observed throughout the Slievemweel 1 and Ballybeg catchment. Bog, forestry & agricultural land uses were noted adjacent to Slievemweel 1 and Ballybeg.



Figure 5: Ballybeg macroinvertebrates on petri dish

3.2.7 Glassnamullen

In general, the ecological health of this stream as indicated by the macroinvertebrate community, remains unchanged.

- Glassnamullen 1 improved from 'Stream at risk' in 2020 to 'Intermediate (Stream may be at risk)' in 2022.
- Glassnamullen 2 remains unchanged between 2020 and 2022 with a score of 'Stream at risk'.

Ortho - phosphate and ammoniacal nitrogen were below the LOD and the DO field data was within the EQS good status range (80-120%) at Glassnamullen 1 and 2. Total nitrogen was detected at both locations, possibly indicating a distant ammonia input.

Deer and sheep grazing was observed throughout the Glassnamullen catchment. Bog and forestry land-uses were noted adjacent to Glassnamullen 1 and 2.

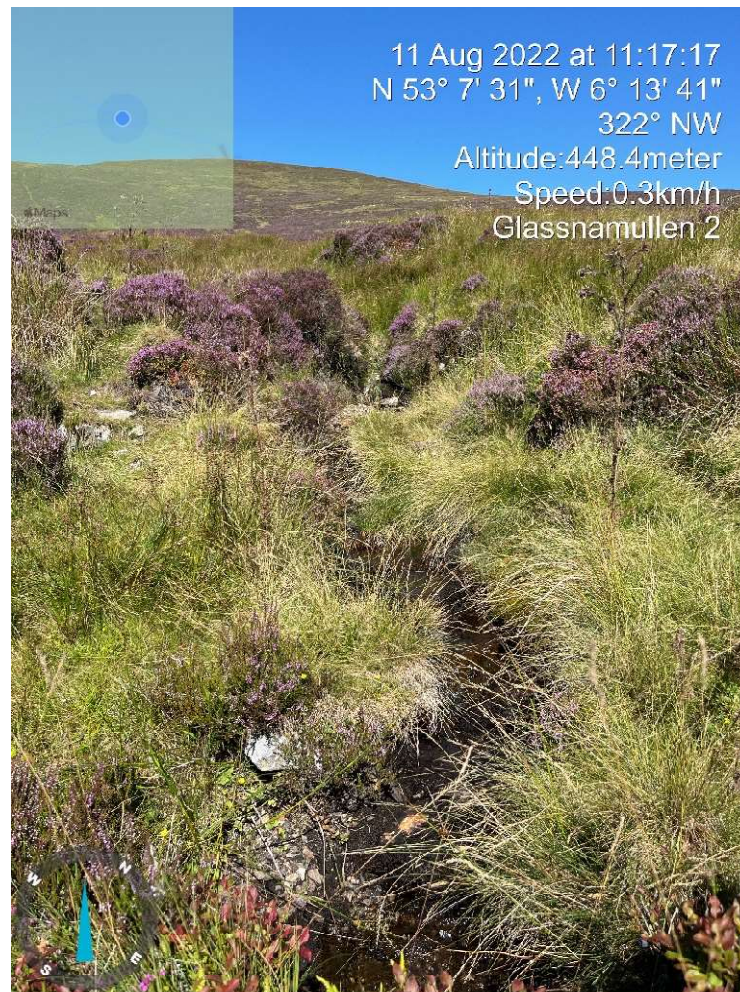


Figure 6: Glassnamullen 2 monitoring location

3.2.8 Corrasillagh

In general, the ecological health of this stream as indicated by the macroinvertebrate community, remains unchanged.

- Corrasillagh 1 remains unchanged between 2020 and 2022 with a score of 'Stream at risk'.
- Corrasillagh 2 and 3 remains unchanged between 2020 and 2022 with a score of 'Intermediate - Stream may be at risk'.

Ortho-phosphate and ammoniacal nitrogen were below the LOD, and the DO field reading was within the EQS good status range (80-120%) at Corrasillagh 1, 2 and 3.

Deer, sheep and cow grazing was observed throughout the Corrasillagh catchment. Bog, forestry and agricultural land uses were noted adjacent to Corrasillagh.

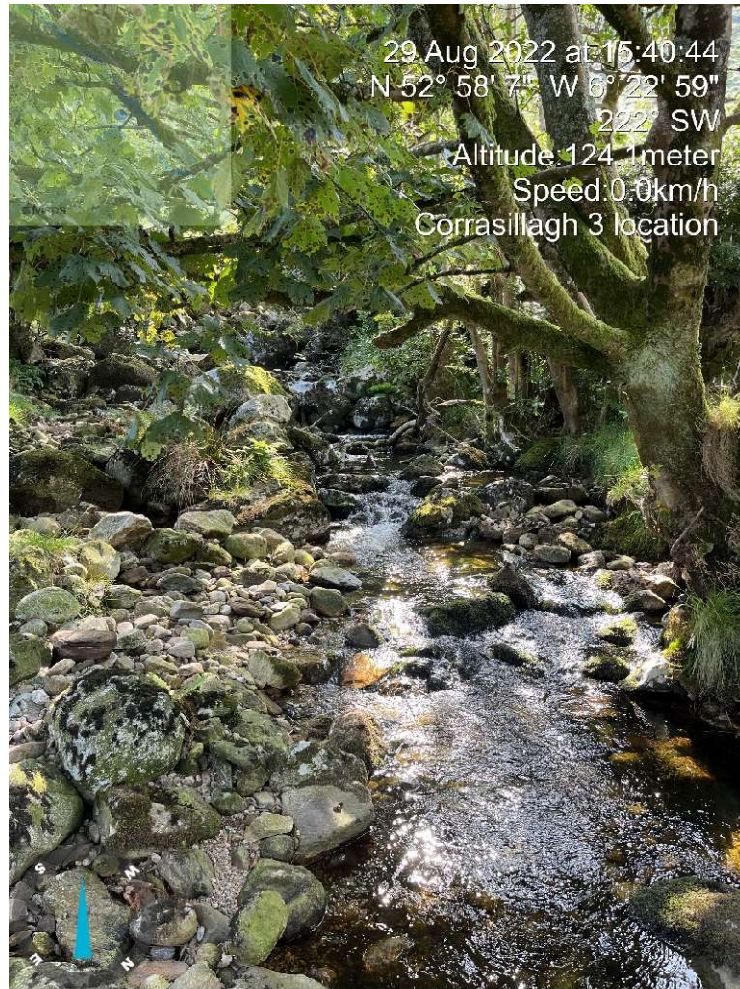


Figure 7: Corrasillagh 3 monitoring location

Section 4 Recommendations

Three locations were dry: Granamore 1, Granamore 2 & Slievenweel 2, and thus monitoring was carried out downstream of Granamore 1 and Granamore 2. Monitoring was not carried out downstream of Slievenweel 2 as the stream was dry for 300 metres downstream. It is recommended to repeat macroinvertebrate monitoring at the correct locations during spring when flows are higher and there is likely to be flow at these locations.

Macroinvertebrate monitoring is most useful when undertaken in winter/spring/early summer months, as the most sensitive macroinvertebrates should be present (within the constraints of H&S (accessing streams during higher flow etc.)). The data is expected to be most representative when macroinvertebrate identification and enumeration are carried out in-situ. It is recommended to undertake SSRS within the same time period e.g. within two or three weeks from year to year to compare like with like and with the macroinvertebrate assessment carried out in-situ.

Appendix A: Field Sheets & Laboratory Reports

River:		Code:	Date: 10 Aug 22	Time: 14:15
Station no. Ballybeg		Location:		Grid (6 figure):
Stream Order:		Stream flow: Riffle Runnel Slow flow		
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO%	104.1	Dominant Types:		
DO mg/l	10.21	Bedrock 10		
Temp (°C)	14.1	Boulder (>128mm) 10		
Conductivity	56.4	Cobble (32-128mm) 20		
pH	5.83	Gravel (8-32mm) 10		
Bank width (cm)	180	Fine Gravel (2-8mm) 10		
Wet width (cm)	100	Sand (0.25-2mm) 20		
Avg Depth (cm)	30	Silt (<0.25mm) 20		
Staff gauge		Slope: Low - Medium - High - Very High		
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		
Torrential	None	Substratum Condition: Calcareous-Compacted		
Fast	Slow	Loose - Normal		
Moderate	Moderate	Substratum:		
Slow	High	Stoney bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None: <10cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		
Slightly turbid	Low	None - Present - Moderate - Abundant		
Highly turbid	Very Low	Main land use u/s:		
	Dry	Pasture	Urban	Sample retained: Y / N
	Recent Flood	Beach	Tillage	
		Forestry	Other	
		Sewage Fungus: None - Present - Moderate - Abundant		
		Sampled in Minutes:		
		Pond net x 2		
		Stone wash x 2		
		Weed sweep x 1		

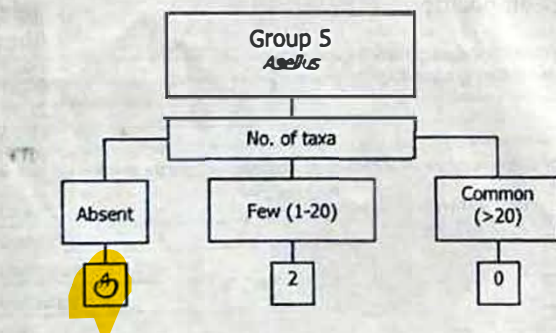
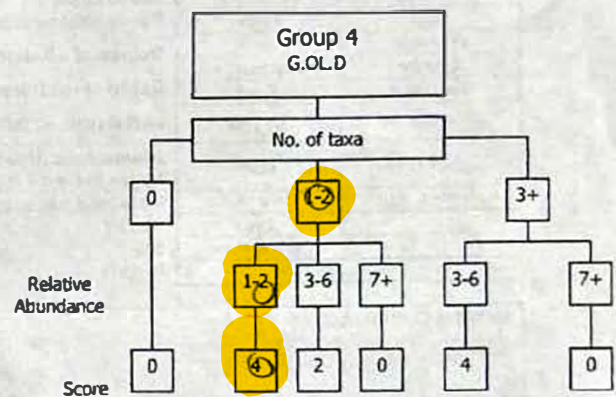
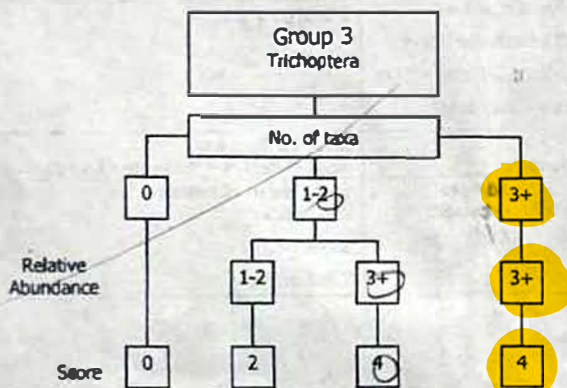
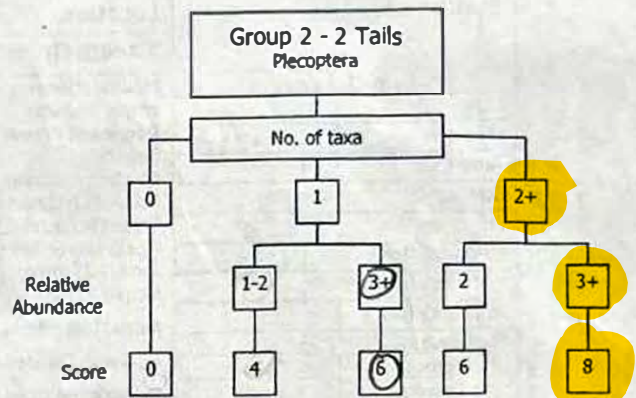
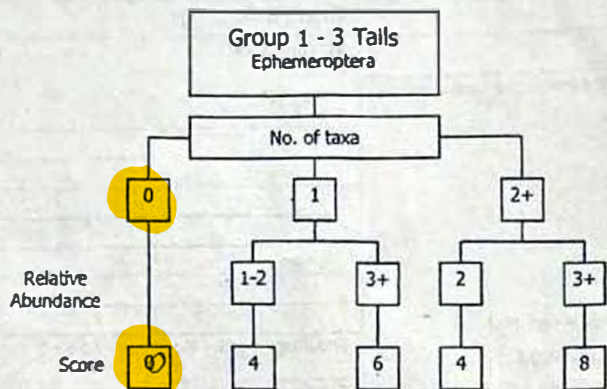
General Comments:

Much overgrowth overhanging the stream. Stream is fully shaded. Ferns, moss, gorse, brambles + rushes present here.

Macroinvertebrate Composition				Relative Abundance
The macroinvertebrates are divided into the following 5 specific groups:				
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20
Group 3 = Trichoptera				21-50
Group 4 = G.O.L.D. (Glossosomatidae, Oligoneuridae, Limnephilidae, Dipseudopsidae)				51-100
Group 5 = Asellus				101+
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)				
Ephemeroptera:		Plecoptera:		
Ecdyonurus Ab		Leuctra Ab		
Rhithrogena Ab		Isoperla Ab		
Heptagenia Ab		Protonemura Ab		
Ephemerella Ab		Amphinemura Ab		
Caenis Ab		Perla Ab		
Paraleptophlebia Ab		Dinocras Ab		
Ephemera danica Ab		Other Plecop Ab		
Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance	
		3	X 3	
Trichoptera:		G.O.L.D.:		
Hydropsychidae Ab		Lymnaea (G) Ab		
Polycentropodidae Ab		Potamopyrgus (G) Ab		
Rhyacophila Ab		Planorbis (G) Ab		
Philopotamidae Ab		Ancylus (G) Ab		
Limnephilidae Ab		Physa (G) Ab		
Sericostomatidae Ab		Lumbriculus (OI) Ab		
Glossosomatidae Ab		Eiseniella (OI) Ab		
Lepidostomatidae Ab		Tubificoides (OI) Ab		
Other Trichoptera Ab				
Total no. of Taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance	
3	X 6	1	2	
				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
b) Index Score Group 2
c) Index Score Group 3
d) Index Score Group 4
e) Index Score Group 5

0
8
4
4
4

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

Total Index Score (TIS)
sum (a+b+c+d+e)

☒ 20

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

☒ 4

SSR Score
(AIS x 2)

☒ 8

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

> 7.25
Probably not at risk

☒

> 6.5 – 7.25
Indeterminate
Stream may be at risk

< 6.5
Stream at risk

☐

Surveyor (signed):

Bohlan

Name (print):

Anne O'Shaughnessy

Date: 10 / 02 / 22

River:		Code:	Date: 30. Aug. 22	Time: 11:30
Station no. Ballynallagh / Mullacree		Location:		Grid (6 figure):
Stream Order:		Stream flow: Rifle Riffle Slow flow		
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO%	101.0	Dominant Types:		
DO mg/l	10.73	Bedrock		
Temp (°C)	12.6	Boulder (>128mm) 10		
Conductivity	23.8	Cobble (32-128mm) 10		
pH	5.33	Gravel (8-32mm) 20		
Bank width (cm)	150	Fine Gravel (2-8mm) 20		
Wet width (cm)	100	Sand (0.25-2mm) 20		
Avg Depth (cm)	15	Silt (<0.25mm) 20		
Staff gauge		Slope: Low - Medium - High - Very High		
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		
Torrential	None	Substratum Condition: Calcareous-Compacted-Loose - Normal		
Fast	Slight	Substratum:		
Moderate	Moderate	Stoney bottom-Mud bottom-Mud over stones		
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very slow		Depth of mud: None - <5cm - 1-5cm - 5-10cm - >10cm		
Clarity	Discharge	Litter: None - Present - Moderate - Abundant		
Very clear	Flood	Filamentous Algae:		
Clear	Normal	None - Present - Moderate - Abundant		
Slightly turbid	Low	Main land use u/s:		
Highly turbid	Very Low	Pasture	Urban	Sample retained: N
	Dry	Bar	Tillage	
	Recent Flood	Forestry	Other	
		Sewage Fungus:		
		None - Present - Moderate - Abundant		
		Sampled in Minutes:		
		Pond net x 2		
		Stone wash x 0.5		
		Weed sweep x 0.5		

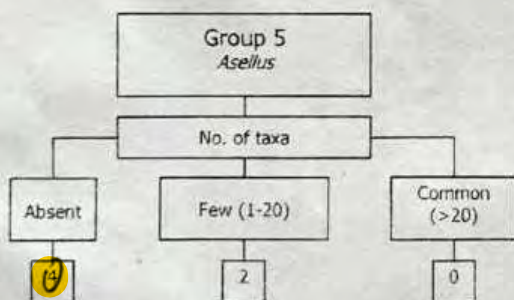
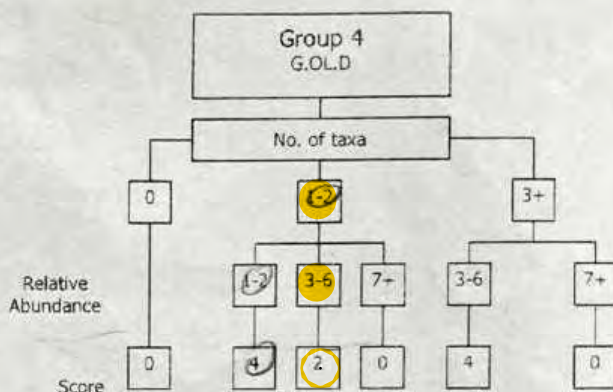
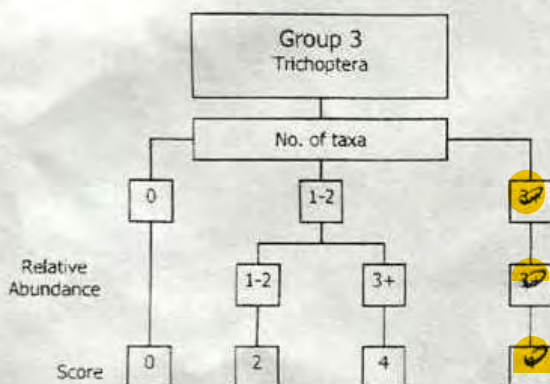
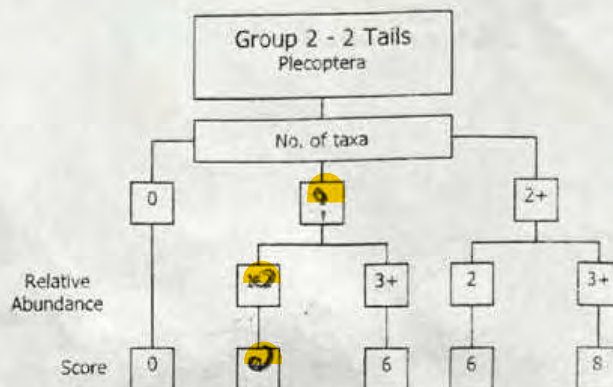
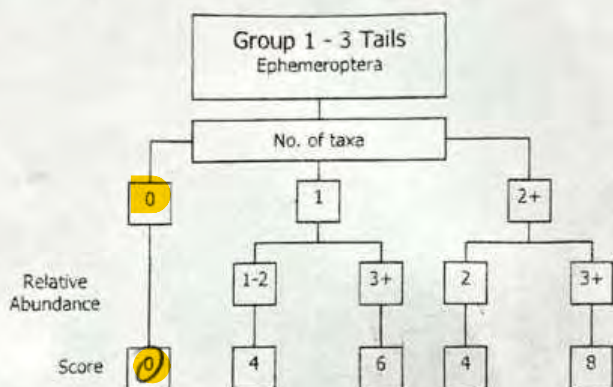
General Comments:
Sleep & deer grazing in this area. Land surrounding stream is blanket bog heather & tussock grass on bogs.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:				1-5	1
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				6-20	2
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				21-50	3
Group 3 = Trichoptera				51-100	4
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				101+	5
Group 5 = Asellus					
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
	<i>Ecdyonurus</i> Ab		<i>Leuctra</i> Ab		
	<i>Rhythrogena</i> Ab		<i>Isoperla</i> Ab		
	<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab		
	<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>Ephemerella danica</i> Ab		Other Plecop Ab		
	Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
Trichoptera:	G.O.L.D.:	Chironomidae (D) Ab	Asellus:		
<i>Hydropsychidae</i> Ab	<i>Lymnaea</i> (G) Ab	22	<i>Chironomus</i> (D) Ab	Absent	
11 <i>Polycentropodidae</i> Ab	<i>Potamopyrgus</i> (G) Ab		<i>Simuliidae</i> (D) Ab	Few/Low	
<i>Rhyacophila</i> Ab	<i>Planorbis</i> (G) Ab		<i>Dicranota</i> (D) Ab	Common/Numerous	
<i>Philopotamidae</i> Ab	<i>Ancylus</i> (G) Ab		<i>Tipulidae</i> (D) Ab		
<i>Umnephilidae</i> Ab	<i>Physa</i> (G) Ab		<i>Ceratopogonidae</i> (D) Ab	3	
11 <i>Sericostomatidae</i> Ab	<i>Lumbriculus</i> (OI) Ab	50	Other GOLD Ab		
<i>Glossosomatidae</i> Ab	<i>Eiseniella</i> (OI) Ab				
<i>Lepidostomatidae</i> Ab	<i>Tubificidae</i> (OI) Ab				
2 <i>Other Trichoptera</i> Ab					
Total no. of Taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
4	5	2	5		

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*.

Baetis present.

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	0
b) Index Score Group 2	4
c) Index Score Group 3	4
d) Index Score Group 4	2
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) **14**

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

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

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

> 7.25
Probably not at risk ☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): Alan Name (print): Alan O'Shea Date: 30/08/22

River:		Code:	Date: 20 July 22	Time: 10:30
Station no. Canageenduff 1		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow: Riffle Rapid/Glide Slow flow
DO%	101.5	Modifications: Y/N Canals/widened-bank erosion-arterial drainage		
DO mg/l	10.63	Dominant Types:		
Temp (°C)	13.3	Bedrock 0		
Conductivity	32.5 uS/cm	Boulder (>128mm) 25		
pH	6.53	Cobble (32-128mm) 25		
Bank width (cm)	1-2m	Gravel (8-32mm) 25		
Wet width (cm)	7m	Fine Gravel (2-8mm) 15		
Avg Depth (cm)	10cm	Sand (0.25-2mm) 10		
Staff gauge		Silt (<0.25mm) 10		
Velocity	Colour	Slope: Low - Medium - High - Very High		Shading: High - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - downstream or (N)
Fast	Slight	Substratum Condition: Calcareous-Compacted-Loose - Normal		Photo: Y/N
Moderate	Moderate	Substratum:		
Slow	High	Stony bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Pasture	Urban	Y/N
	Recent Flood	Forestry	Tillage	
			Other	
				Sampled in Minutes:
				Pond net x 2
				Stone wash x 2
				Weed sweep x 1

General Comments: Baetis (S), Gairdner, Interch
Dead present in the area. No steep present Adjacent to + upstream of forestry
ORP: 91.3mV

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Ecdyonurus Ab		Plecoptera:	Leuctra Ab
		Rhythrogena Ab			Isoperla Ab
		Heptagenia Ab			Protonemura Ab
		Ephemerella Ab			Amphinemura Ab
		Caenis Ab			Perla Ab
		Paraleptophlebia Ab			Dinocras Ab
		Ephemerella danica Ab			Other Plecop Ab
		Other Ephem Ab			Other Plecop Ab
Total no. of taxa	0	Total Relative Abundance	0	Total no. of Taxa	2
Trichoptera:	Hydropsychidae Ab	G.O.L.D.:	Lymnaea (G) Ab	Chironomidae (D) Ab	Asellus:
	Polycentropodidae Ab		Potamopyrgus (G) Ab	Chironomus (D) Ab	Absent
	Rhyacophila Ab		Planorbis (G) Ab	Simuliidae (D) Ab	Few/Low
	Philopotamidae Ab		Ancyclus (G) Ab	Dicranota (D) Ab	Common/Numerous
	Limnephilidae Ab		Physa (G) Ab	Tipulidae (D) Ab	
	Sericostomatidae Ab		Lumbriculus (OI) Ab	Ceratopogonidae (D) Ab	
	Glossosomatidae Ab		Eiseniella (OI) Ab	Other GOLD Ab	
	Lepidostomatidae Ab		Tubificidae (OI) Ab		
	Other Trichoptera Ab				
Total no. of Taxa	7	Total Relative Abundance	87	Total no. of Taxa	3
				Total Relative Abundance	85

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.

Baetis present 5

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.

<p>Group 1 - 3 Tails Ephemeroptera</p> <p>No. of taxa</p> <p>0 (circled) 1 2+</p> <p>Relative Abundance</p> <p>Score: 0 (circled) 4 6 4 8</p>	<p>Group 2 - 2 Tails Plecoptera</p> <p>No. of taxa</p> <p>0 1 2+ (circled)</p> <p>Relative Abundance</p> <p>Score: 0 4 6 (circled) 8</p>
<p>Group 3 Trichoptera</p> <p>No. of taxa</p> <p>0 1-2 3+ (circled)</p> <p>Relative Abundance</p> <p>Score: 0 2 4 4 (circled)</p>	<p>Group 4 G.O.L.D</p> <p>No. of taxa</p> <p>0 1-2 3+ (circled)</p> <p>Relative Abundance</p> <p>Score: 0 4 2 0 4 (circled) 0</p>
<p>Group 5 Asellus</p> <p>No. of taxa</p> <p>Absent (circled) Few (1-20) Common (>20)</p> <p>Score: 4 (circled) 2 0</p>	

Step 2

- a) Index Score Group 1
b) Index Score Group 2
c) Index Score Group 3
d) Index Score Group 4
e) Index Score Group 5

6
6
4
4
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) **18**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **3.6**

SSR Score
(AIS x 2) **7.2**

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): Aine O'Shea Name (print): Aine O'SHEA Date: 20/07/22

River:	Code:	Date: 20 July 22	Time: 12:15
Station no. Anigeenduff 2	Location:	Grid (6 figure):	
Field Chemistry		Stream Order:	Stream flow: Riffle Riffle/Slide Slow flow
DO%	98.2	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage	
DO mg/l	10.09	Dominant Types:	
Temp (°C)	11.8	Bedrock 25	
Conductivity	30.6 u/cm	Boulder (>128mm) 25	
pH	6.35	Cobble (32-128mm) 25	
Bank width (cm)	1m	Gravel (8-32mm) 10	
Wet width (cm)	0.5m	Fine Gravel (2-8mm) 5	
Avg Depth (cm)	5cm	Sand (0.25-2mm) 5	
Staff gauge		Silt (<0.25mm) 5	
Velocity	Colour	Slope: Low - Medium - High - Very High	Shading: High - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed	Cattle access Y: upstream - downstream or (N)
Fast	Slight	Substratum Condition: Calcareous-Compacted-Loose - Normal	Photo: Y/N
Moderate	Moderate	Substratum:	
Slow	High	Stoney bottom-Muddy bottom-Mud over stones	
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy	
Clarity	Discharge	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm	
Very clear	Flood	Litter: None - Present - Moderate - Abundant	
Clear	Normal	Filamentous Algae:	Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant	None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:	Sample retained:
	Dry	Pasture	Urban
	Recent Flood	Forest	Tillage
			Other

General Comments:

SSRS undertaken downstream of map location due to access.
SSRS undertaken d/s after influence; before forestry
No steep present. Deer observed in this area.

ORP: 101.8 mV

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

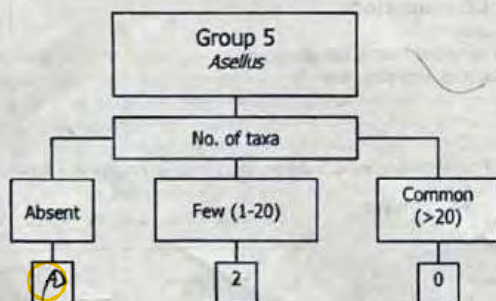
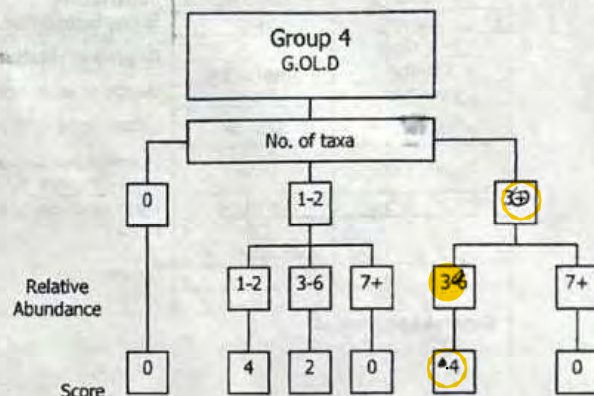
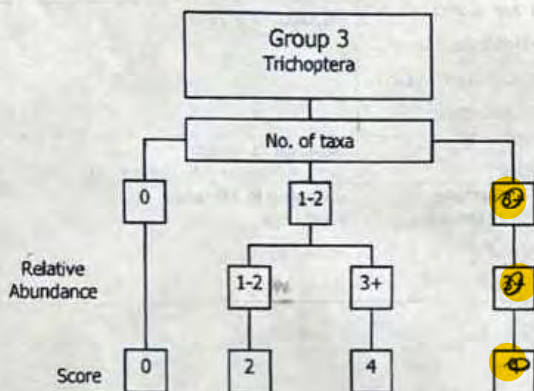
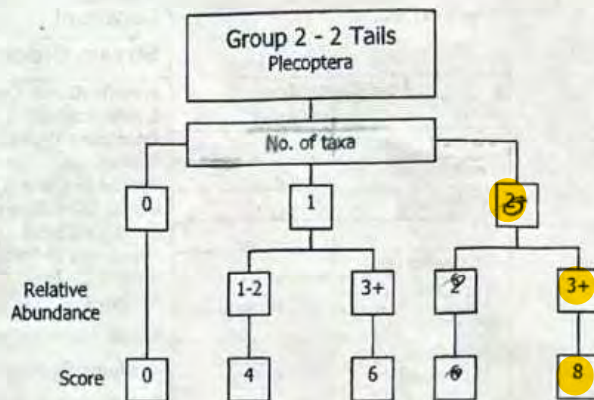
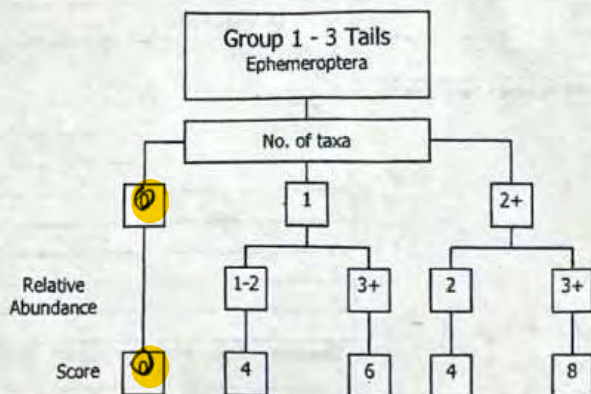
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)

Ephemeroptera:		Plecoptera:	
Ecdyonurus Ab		Leuctra Ab	2
Rhythrogena Ab		Isoperla Ab	
Heptagenia Ab		Protonemura Ab	
Ephemerella Ab		Amphinemura Ab	1
Caenis Ab		Perla Ab	
Paraleptophlebia Ab		Dinocras Ab	
Ephemerella danica Ab		Other Plecop Ab	
Other Ephem Ab		Other Plecop Ab	
Total no. of taxa 0	Total Relative Abundance 0	Total no. of Taxa 2	Total Relative Abundance 3
Trichoptera:	G.O.L.D.:	Chironomidae (D) Ab	Asellus:
Hydropsychidae Ab	Lymnaea (G) Ab	Chironomus (D) Ab	Absent
Polycentropodidae Ab	Potamopyrgus (G) Ab	Simuliidae (D) Ab	Few/Low
Rhyacophila Ab	Planorbis (G) Ab	Dicranota (D) Ab	Common/
Philopotamidae Ab	Ancylus (G) Ab	Tipulidae (D) Ab	Numerous
Limnephilidae Ab	Physa (G) Ab	Ceratopogonidae (D) Ab	
Sericostomatidae Ab	Lumbriculus (Ol) Ab	Other GOLD Ab	
Glossosomatidae Ab	Eiseniella (Ol) Ab		
Lepidostomatidae Ab	Tubificidae (Ol) Ab		
Other Trichoptera Ab			
Total no. of Taxa 4	Total Relative Abundance 8	Total no. of Taxa 3	Total Relative Abundance 4

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.

Baetis present here: 40-50.

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	0
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) **20**

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

SSR Score
(AIS x 2) **8**

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

> 7.25
Probably not at risk

☒

> 6.5 - 7.25
Indeterminate
Stream may be at risk

☒

< 6.5
Stream at risk

☐

Surveyor (signed):

A. Shea

Name (print):

Aime O SHEA

Date: 20 / 07 / 22

River:		Code:	Date: 20 July 22.	Time: 14.00
Station no. Canigenduff 3		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	96.5	Modifications: Y/K Canalsid-widened-bank erosion-arterial drainage		Riffle
DO mg/l	9.45	Dominant Types:		Riffle side
Temp (°C)	16.4	Bedrock		Slow flow
Conductivity	329	Boulder (>128mm) 20		
pH	6.82	Cobble (32-128mm) 40		
Bank width (cm)	3-4m	Gravel (8-32mm) 15		
Wet width (cm)	2-3m	Fine Gravel (2-8mm) 15		
Avg Depth (cm)	15cm	Sand (0.25-2mm) 15		
Staff gauge		Silt (<0.25mm) 15		
Velocity	Colour	Slope: Low - Medium - High - Very High		Shading: High - Moderate - <u>Low</u> - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - downstream <u>Y</u>
Fast	<u>Slight</u>	Substratum Condition: Calcareous-Compacted-Mixed - Normal		Photo: Y/N
<u>Moderate</u>	Moderate	Substratum:		
Slow	High	Stoney Bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
<u>Clear</u>	<u>Normal</u>	Filamentous Algae:		Sewage Fungus:
Slightly turbid	<u>Low</u>	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sampled in Minutes:
	Dry	Pasture	Urban	Pond net x 2
	Recent Flood	Bag	Tillage	Stone wash x 1
		Forestry	Other	Weed sweep x 1

General Comments:

ORP 107.5mV
More macrophyte growth observed here.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
	Ecdyonurus Ab		Leuctra Ab	1	
	Rhythrogena Ab		Isoperla Ab		
	Heptagenia Ab		Protonemura Ab		
	Ephemerella Ab		Amphinemura Ab	1	
	Caenis Ab		Perla Ab		
	Paraleptophlebia Ab		Dinocras Ab		
	Ephemera danica Ab		Other Plecop Ab		
	Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	0	Total Relative Abundance	0	Total no. of Taxa	2
Trichoptera:		G.O.L.D.:		Asellus:	
	Hydropsychidae Ab		Lymnaea (G) Ab		Chironomidae (D) Ab
	Polycentropodidae Ab	1	Potamopyrgus (G) Ab		Chironomus (D) Ab
	Rhyacophila Ab	1	Planorbis (G) Ab	1	Simuliidae (D) Ab
	Philopotamidae Ab	1	Ancylus (G) Ab	1	Dicranota (D) Ab
	Limnephilidae Ab	1	Physa (G) Ab	1	Tipulidae (D) Ab
	Sericostomatidae Ab	1	Lumbriculus (OI) Ab		Ceratopogonidae (D) Ab
	Glossosomatidae Ab	3	Eiseniella (OI) Ab		Other GOLD Ab
	Lepidostomatidae Ab		Tubificidae (OI) Ab		
	Other Trichoptera Ab				
Total no. of Taxa	6	Total Relative Abundance	8	Total no. of Taxa	3

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*.

Baetis present: less than 20.

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.

<p>Group 1 - 3 Tails Ephemeroptera</p> <p>No. of taxa</p> <p>0 (circled) 1 2+ (circled)</p> <p>Relative Abundance</p> <p>Score</p> <p>0 (circled) 4 6 4 8</p>	<p>Group 2 - 2 Tails Plecoptera</p> <p>No. of taxa</p> <p>0 1 2+ (circled)</p> <p>Relative Abundance</p> <p>Score</p> <p>0 4 6 6 (circled) 8</p>
<p>Group 3 Trichoptera</p> <p>No. of taxa</p> <p>0 1-2 3+ (circled)</p> <p>Relative Abundance</p> <p>Score</p> <p>0 2 4 4 (circled)</p>	<p>Group 4 G.O.L.D</p> <p>No. of taxa</p> <p>0 1-2 3+ (circled)</p> <p>Relative Abundance</p> <p>Score</p> <p>0 4 2 0 0 (circled) 0</p>
<p>Group 5 Asellus</p> <p>No. of taxa</p> <p>Absent (circled) Few (1-20) Common (>20)</p> <p>Score</p> <p>0 (circled) 2 0</p>	<p>Step 2</p> <p>a) Index Score Group 1 0</p> <p>b) Index Score Group 2 6</p> <p>c) Index Score Group 3 4</p> <p>d) Index Score Group 4 4</p> <p>e) Index Score Group 5 4</p>

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) 18

Average Index Score (AIS)
TIS/5 (5 for 5 groups) 3.6

SSR Score
(AIS x 2) 7.2

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): Aine

Name (print): Aine O'SHEA

Date: 20 / 07 / 22

orp: 112.5

River:	Code:	Date: 20. July. 22	Time: 15:00
Station no. Carrigeen Duff 4	Location:	Grid (6 figure):	
Field Chemistry	Stream Order:	Stream flow: Riffle Riffle slide Slow flow	
DO% 98.9	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO mg/l 9.79	Dominant Types:		
Temp (°C) 16.3	Bedrock 0		
Conductivity 29.3	Boulder (>128mm) 15		
pH 6.68	Cobble (32-128mm) 25		
Bank width (cm) 300	Gravel (8-32mm) 15		
Wet width (cm) 150	Fine Gravel (2-8mm) 15		
Avg Depth (cm) 20	Sand (0.25-2mm) 15		
Staff gauge	Silt (<0.25mm) 15		
Velocity	Slope: Low - Medium - High - Very High	Shading: High - Moderate - Low - None	
Torrential	Geology: Calcareous-Siliceous-Mixed	Cattle access Y: upstream - downstream or W	
Fast	Substratum Condition: Calcareous-Compacted-Loose - Normal		
Moderate	Substratum:	Photo: 0/ N	
Slow	Stoney bottom-Muddy bottom-Mud over stones		
Very slow	Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Litter: None - Present - Moderate - Abundant		
Clear	Filamentous Algae:	Sewage Fungus:	
Slightly turbid	None - Present - Moderate - Abundant	None - Present - Moderate - Abundant	
Highly turbid	Main land use u/s:	Sample retained:	
	Pasture	Urban	
	Recent Flood	Tillage	
	Forestry	Other	
		Sampled in Minutes:	
		Pond net x 1.5	
		Stone wash x 1	
		Weed sweep x 1	

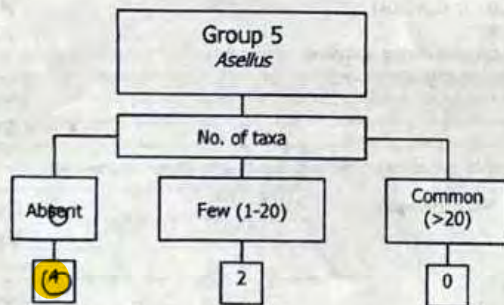
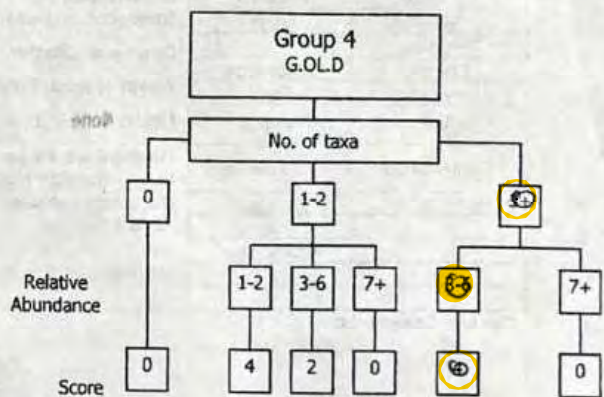
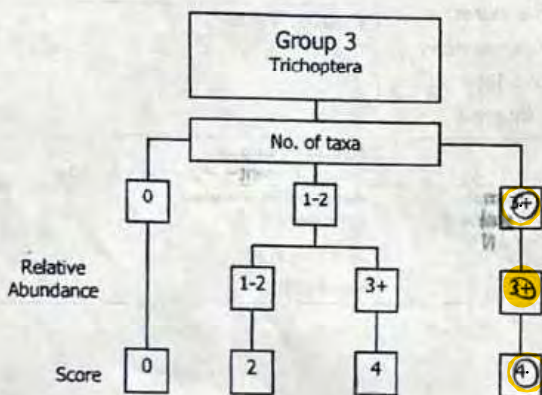
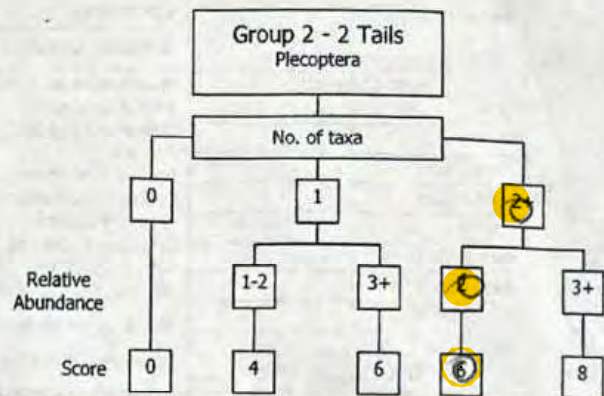
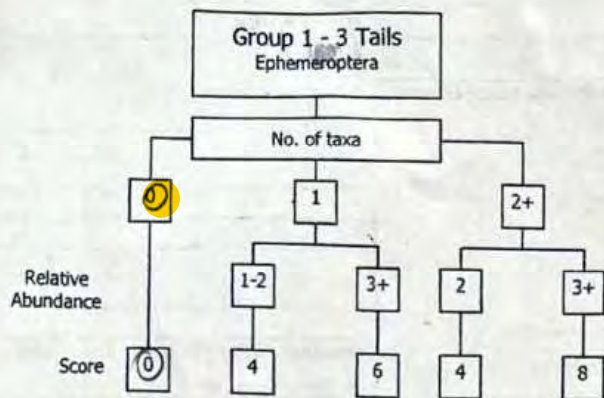
General Comments:
No sheep observed. Deer observed in this area. Adjacent, bordering + upstream of forestry + felling. Much heather + needs surrounding stream granite lined

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) — note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) — note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance — Ab)					
Ephemeroptera:		Plecoptera:			
Ecdyonurus Ab		Leuctra Ab		1	
Rhithrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab		Amphinemura Ab		1	
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
0	0	2	X 2		
Trichoptera:		G.O.L.D.:		Asellus:	
Hydropsychidae Ab		Limnæa (G) Ab		Chironomidae (D) Ab	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Chironomus (D) Ab	
Rhyacophila Ab		Planorbis (G) Ab		Simuliidae (D) Ab	
Philopotamidae Ab		Ancylus (G) Ab		Dicranota (D) Ab	
Limnephilidae Ab		Physa (G) Ab		Tipulidae (D) Ab	
Sericostomatidae Ab		Lumbriculus (OI) Ab		Ceratopogonidae (D) Ab	
Glossosomatidae Ab		Eiseniella (OI) Ab		Other GOLD Ab	
Lepidostomatidae Ab		Tubificidae (OI) Ab			
Other Trichoptera Ab					
Total no. of Taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
4	8	3	4		

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*.

No *Baetis* present

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	0
b) Index Score Group 2	6
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) **18**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **3.6**

SSR Score
(AIS x 2) **7.2**

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):

A. Shear

Name (print): *Aine O Shea*

Date: *20 / 07 / 21*

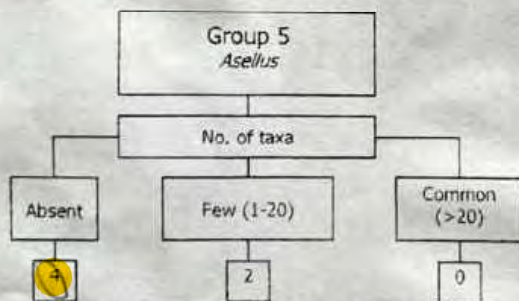
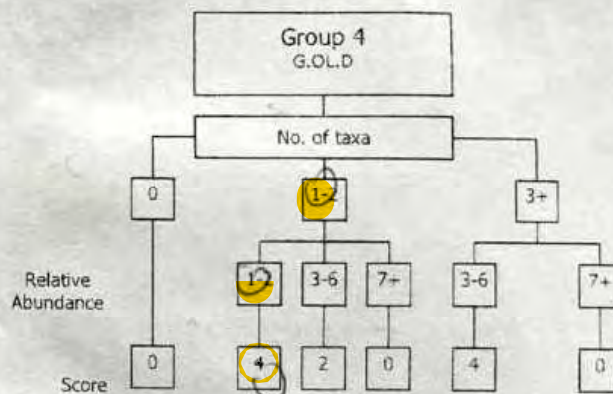
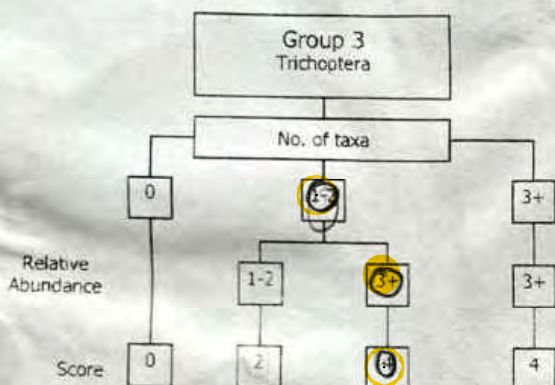
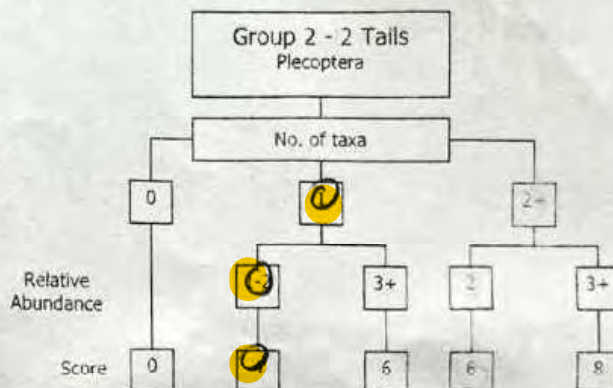
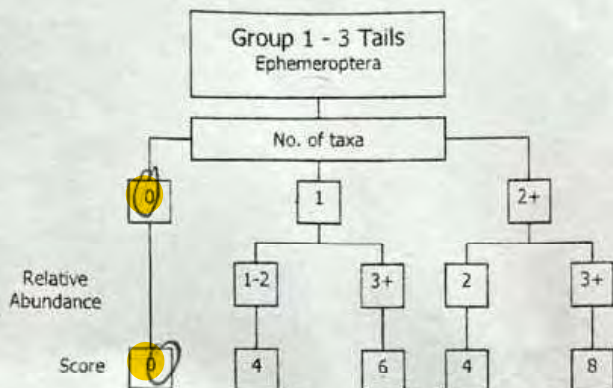
River:		Code:	Date: 30 Aug 22	Time: 18 00
Station no. Carrigrohilly 5		Location:	Grid (6 figure):	
Stream Order:		Stream flow: Riffle Rapid Slow flow		
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO%	95.4	Dominant Types:		
DO mg/l	9.67	Bedrock		
Temp (°C)	14.8	Boulder (>128mm) 20		
Conductivity	38.8	Cobble (32-128mm) 20		
pH	5.3	Gravel (8-32mm) 20		
Bank width (cm)	300	Fine Gravel (2-8mm) 20		
Wet width (cm)	150	Sand (0.25-2mm) 10		
Avg Depth (cm)	20	Silt (<0.25mm) 10		
Staff gauge		Slope: Low - Medium - High - Very High		
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		
Torrential	None	Substratum Condition: Calcareous-Compacted-Loose - Normal		
Fast	Slight	Substratum:		
Moderate	Moderate	Stony bottom-Muddy bottom-Mud over stones		
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very slow		Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm		
Clarity	Discharge	Litter: None - Present - Moderate - Abundant		
Very clear	Flood	Filamentous Algae:		
Clear	Normal	None - Present - Moderate - Abundant		
Slightly turbid	Low	Main land use u/s:		
Highly turbid	Very Low	Pasture Urban		
	Dry	Tillage		
	Recent Flood	Other		
		Sample retained: Y N		
		Sewage Fungus: None - Present - Moderate - Abundant		
		Sampled in Minutes: Pond net x 2 Stone wash x 0.5 Weed sweep x 0.5		

General Comments:
Beetle steep present

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:		Asellus:	
Ecdyonurus Ab		Leuctra Ab		Asellus	
Rhithrogena Ab		Isoperla Ab		Absent	
Heptagenia Ab		Protonemura Ab		Few/Low	
Ephemerella Ab		Amphinemura Ab		Common/Numerous	
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
Trichoptera:		G.O.L.D.:			
Hydropsychidae Ab		Limnoria (G) Ab			
Polycentropodidae Ab		Potamopyrgus (G) Ab			
Rhyacophila Ab		Planorbis (G) Ab			
Philopotamidae Ab		Ancylus (G) Ab			
Limnephilidae Ab	2	Physa (G) Ab			
Sericostomatidae Ab		Lumbriculus (OI) Ab			
Glossosomatidae Ab	1	Eisenella (OI) Ab			
Lepidostomatidae Ab		Tubificidae (OI) Ab			
Other Trichoptera Ab					
Total no. of Taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
X 2	3	1	1		

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	0
b) Index Score Group 2	4
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 × 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):

A. O'Shea

Name (print):

Aine

O'Shea

Date:

3 / 08 / 22

River:		Code:	Date: 30.8.22	Time: 15:10
Station no. Canigecnduff 6.		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	91.7	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		Riffle
DO mg/l	9.22	Dominant Types:		Riffle/Glide
Temp (°C)	15.1	Bedrock 0		Slow Flow
Conductivity	32.7	Boulder (>128mm) 10		Very slow flow. Nor flow of water
pH	5.39	Cobble (32-128mm) 20		
Bank width (cm)	120	Gravel (8-32mm) 20		
Wet width (cm)	60	Fine Gravel (2-8mm) 20		
Avg Depth (cm)	10	Sand (0.25-2mm) 20		
Staff gauge	✓	Silt (<0.25mm) 10		
Velocity	Colour	Slope: Low - Medium - High - Very High		Shading: High - Moderate - Low - None
Torrential	MOD	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - downstream or N
Fast	Slight	Substratum Condition: Calcareous-Compacted-Loose - Normal		Photo: (Y) / N
Moderate	Moderate	Substratum:		
Slow	High	Stoney Bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Cloud	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	LOW	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Pasture	Urban	Pond net x 1.5
	Recent Flood	Bag	Tillage	Stone wash x 1
		Forestry	Other	Weed sweep x 0.5

General Comments:
Rivers, gorse & heather on RHS bank. Much overhanging + shading
Sleep + deer present here. No cows observed.

Macroinvertebrate Composition		Relative Abundance
The macroinvertebrates are divided into the following 5 specific groups:		
Group 1 = Ephemeroptera (3-tails) — note that tails may be damaged during sampling		1-5 1
Group 2 = Plecoptera (2-tails) — note that tails may be damaged during sampling		6-20 2
Group 3 = Trichoptera		21-50 3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)		51-100 4
Group 5 = Asellus		101+ 5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance — Ab)		

Ephemeroptera:	<i>Ecdyonurus</i> Ab	Plecoptera:	<i>Leuctra</i> Ab
	<i>Rhythrogena</i> Ab		<i>Isonychia</i> Ab
	<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab
	<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>Ephemerella danica</i> Ab		Other Plecop Ab
	Other Ephem Ab		Other Plecop Ab

Total no. of taxa 11	Total Relative Abundance 1	Total no. of Taxa 2	Total Relative Abundance 2
Trichoptera:	G.O.L.D.:	Chironomidae (D) Ab	Asellus:
<i>Hydropsychidae</i> Ab	<i>Limnoria</i> (G) Ab	<i>Chironomus</i> (D) Ab	Absent
<i>Polycentropodidae</i> Ab	<i>Potamopyrgus</i> (G) Ab	<i>Simuliidae</i> (D) Ab	Few/Low
<i>Rhyacophila</i> Ab	<i>Planorbis</i> (G) Ab	<i>Dicranota</i> (D) Ab	Common/
<i>Philopotamidae</i> Ab	<i>Ancylus</i> (G) Ab	<i>Tipulidae</i> (D) Ab	Numerous
<i>Limnephilidae</i> Ab	<i>Physa</i> (G) Ab	<i>Ceratopogonidae</i> (D) Ab	
<i>Sericostomatidae</i> Ab	<i>Lumbriculus</i> (Ol) Ab	Other GOLD Ab	
<i>Glossosomatidae</i> Ab	<i>Eisenella</i> (Ol) Ab		
<i>Lepidostomatidae</i> Ab	<i>Tubificoides</i> (Ol) Ab		
Other Trichoptera Ab			
Total no. of Taxa 4	Total Relative Abundance 5	Total no. of Taxa 3	Total Relative Abundance 6

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.

<p>Group 1 - 3 Tails Ephemeroptera</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1</td> <td>2+</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>4</td> <td>6</td> </tr> </table>	0	1	2+	Relative Abundance	1-2	3+	Score	4	6	<p>Group 2 - 2 Tails Plecoptera</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>4</td> <td>6</td> </tr> </table>	0	1	2	Relative Abundance	1-2	3+	Score	4	6
0	1	2+																	
Relative Abundance	1-2	3+																	
Score	4	6																	
0	1	2																	
Relative Abundance	1-2	3+																	
Score	4	6																	
<p>Group 3 Trichoptera</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1-2</td> <td>3</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>2</td> <td>4</td> </tr> </table>	0	1-2	3	Relative Abundance	1-2	3+	Score	2	4	<p>Group 4 G.O.L.D</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3-6</td> </tr> <tr> <td>Score</td> <td>4</td> <td>2</td> </tr> </table>	0	1-2	3+	Relative Abundance	1-2	3-6	Score	4	2
0	1-2	3																	
Relative Abundance	1-2	3+																	
Score	2	4																	
0	1-2	3+																	
Relative Abundance	1-2	3-6																	
Score	4	2																	
<p>Group 5 Asellus</p> <p>No. of taxa</p> <table border="0"> <tr> <td>Absent</td> <td>Few (1-20)</td> <td>Common (>20)</td> </tr> <tr> <td>Score</td> <td>2</td> <td>0</td> </tr> </table>		Absent	Few (1-20)	Common (>20)	Score	2	0												
Absent	Few (1-20)	Common (>20)																	
Score	2	0																	

Step 2

a) Index Score Group 1	0
b) Index Score Group 2	6
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) **18**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **3.6**

SSR Score
(AIS x 2) **7.2**

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

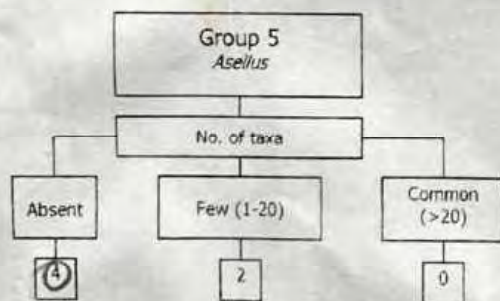
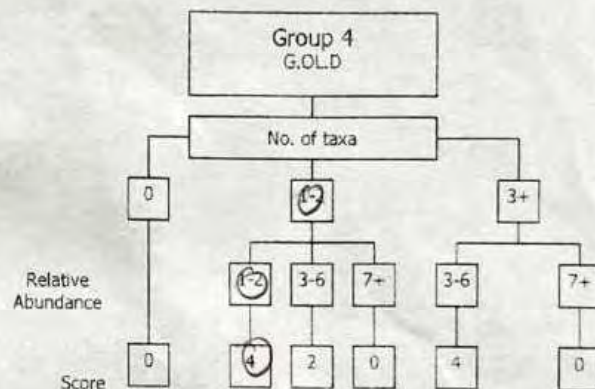
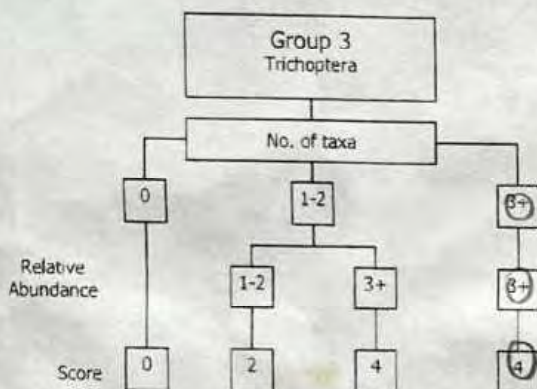
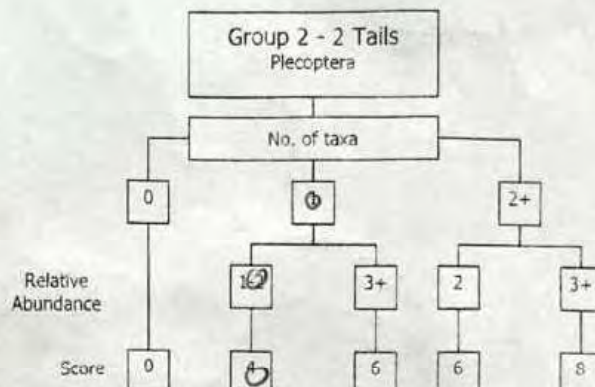
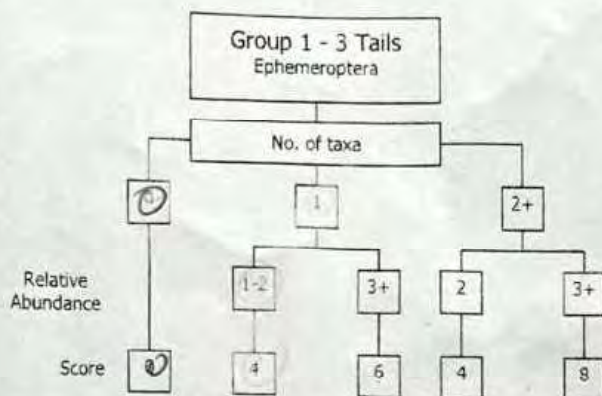
> 7.25
Probably not at risk ☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☒

< 6.5
Stream at risk ☐

Surveyor (signed): AO Sen Name (print): Aine O Shea Date: 30 Aug 22

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	0
b) Index Score Group 2	4
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): Golden Name (print): Aine O'Shea Date: 29/08/22

River:		Code:	Date: 29 Aug. 22	Time: 13:00
Station no. Corrasillaigh 2.		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	12.9	Modifications: <input checked="" type="checkbox"/> Canalised-widened-bank erosion-arterial drainage		<input checked="" type="checkbox"/> Riffle
DO mg/l	12.26	Dominant Types:		<input checked="" type="checkbox"/> Riffle/Glide
Temp (°C)	15.4	Bedrock <input checked="" type="checkbox"/>		<input type="checkbox"/> Slow flow
Conductivity	33.6	Boulder (>128mm) 10		
pH	5.91	Cobble (32-128mm) 10		
Bank width (cm)	220	Gravel (8-32mm) 20		
Wet width (cm)	190	Fine Gravel (2-8mm) 20		
Avg Depth (cm)	50	Sand (0.25-2mm) 20		
Staff gauge		Silt (<0.25mm) 20		
Velocity	Colour	Slope: Low - Medium - High - Very High		Shading: High - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Cattle access: <input checked="" type="checkbox"/> Upstream - <input checked="" type="checkbox"/> Downstream or N
Fast	Slut	Substratum Condition: Calcareous-Compacted-Loose - Normal		Photo: <input checked="" type="checkbox"/> Y / N
Moderate	Moderate	Substratum:		
Slow	High	Stony bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None, <10m: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
<input checked="" type="checkbox"/> Clear	<input checked="" type="checkbox"/> Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Pasture	Urban	Y / N
	Recent Flood	Bog	Tillage	
		Forestry	Other	
				Sampled in Minutes:
				Pond net x 2
				Stone wash x 0.5
				Weed sweep x 0.5

General Comments: cattle + sheep present downstream + upstream
cattle forestry present uphill of site.
banks covered in grass, leather with minimal overhang.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
Ecdyonurus Ab		Leuctra Ab			
Rhythrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab	1	Amphinemura Ab			
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	1	Total Relative Abundance	1	Total no. of Taxa	1
Trichoptera:		G.O.L.D.:		Chironomidae (D) Ab	
Hydropsychidae Ab	1	Lymnaea (G) Ab		Asellus:	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Absent	<input checked="" type="checkbox"/>
Rhyacophila Ab		Planorbis (G) Ab		Few/Low	
Philopotamidae Ab		Ancylus (G) Ab	1	Common/	
Limnephilidae Ab		Physa (G) Ab	1	Numerous	
Sericostomatidae Ab	1	Lumbriculus (Ol) Ab			
Glossosomatidae Ab		Eiseniella (Ol) Ab			
Lepidostomatidae Ab		Tubificidae (Ol) Ab			
Other Trichoptera Ab					
Total no. of Taxa	2	Total Relative Abundance	2	Total no. of Taxa	2
				Total Relative Abundance	2

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.

Baetis present.

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.

<p>Group 1 - 3 Tails Ephemeroptera</p> <p>No. of taxa</p> <p>0 1 2+</p> <p>Relative Abundance</p> <p>Score</p> <p>0 4 6 4 8</p>	<p>Group 2 - 2 Tails Plecoptera</p> <p>No. of taxa</p> <p>0 1 2+</p> <p>Relative Abundance</p> <p>Score</p> <p>0 4 6 6 8</p>
<p>Group 3 Trichoptera</p> <p>No. of taxa</p> <p>0 1-2 3+</p> <p>Relative Abundance</p> <p>Score</p> <p>0 4 4 4</p>	<p>Group 4 G.O.L.D</p> <p>No. of taxa</p> <p>0 1-2 3+</p> <p>Relative Abundance</p> <p>Score</p> <p>0 4 2 0 4 0</p>
<p>Group 5 Asellus</p> <p>No. of taxa</p> <p>Absent Few (1-20) Common (>20)</p> <p>Score</p> <p>4 2 0</p>	

Step 2

a) Index Score Group 1	4
b) Index Score Group 2	4
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) **18**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **3.6**

SSR Score
(AIS x 2) **7.2**

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

<p>> 7.25 Probably not at risk</p> <input type="checkbox"/>	<p>> 6.5 - 7.25 Indeterminate Stream may be at risk</p> <input checked="" type="checkbox"/>	<p>< 6.5 Stream at risk</p> <input type="checkbox"/>
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Surveyor (signed): A. Sen. Name (print): Aine O Shea Date: 29 / 08 / 22

River:	Code:	Date: 29 Aug 22	Time: 16:00
Station no. Carasillagh 3	Location:	Grid (6 figure):	
Field Chemistry	Stream Order:	Stream flow: Riffle Rifle/cade Slow flow	
DO%	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO mg/l	Dominant Types:		
Temp (°C)	Bedrock		
Conductivity	Boulder (>128mm) 10		
pH	Cobble (32-128mm) 10		
Bank width (cm)	Gravel (8-32mm) 20		
Wet width (cm)	Fine Gravel (2-8mm) 20		
Avg Depth (cm)	Sand (0.25-2mm) 20		
Staff gauge	Silt (<0.25mm) 20		
Velocity	Slope: Low - Medium - High - Very High		
Torrential	Geology: Calcareous-Siliceous mixed	Shading: High - Moderate - Low - None	
Fast	Substratum Condition: Calcareous-Compacted-Loose - Normal	Cattle access: X upstream - downstream or N	
Moderate	Substratum:	Photo: Q / N	
Slow	Stoney/Bottom-Muddy bottom-Mud over stones		
Very slow	Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Litter: None - Present - Moderate - Abundant		
Clear	Filamentous Algae:	Sewage Fungus:	
Slightly turbid	None - Present - Moderate - Abundant	None - Present - Moderate - Abundant	
Highly turbid	Main land use u/s:	Sample retained:	
	Pasture Urban	Pond net x 2	
	Bog Tillage	Stone wash x 0.5	
	Forestry Other	Weed sweep x 0.5	

General Comments:

Cattle, sheep + deer present upstream.
Large boulders + rocks LHS bank, grass, ferns + trees on both banks
with much shading (90%) + overhanging

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)

Ephemeroptera:		Plecoptera:	
<i>Ecdyonurus</i> Ab		<i>Leuctra</i> Ab	
<i>Rhythrogena</i> Ab		<i>Isoperla</i> Ab	
<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab	
<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	1	Total Relative Abundance	1
Trichoptera:		G.O.L.D.:	
Hydropsychidae Ab		<i>Limnæa</i> (G) Ab	
Polycentropodidae Ab		<i>Potamopyrgus</i> (G) Ab	
/// <i>Rhyacophila</i> Ab	1	<i>Planorbis</i> (G) Ab	///
Philopotamidae Ab	1	<i>Ancylus</i> (G) Ab	
Limnephilidae Ab	///	<i>Physa</i> (G) Ab	
Senecostomatidae Ab		<i>Lumbriculus</i> (OI) Ab	
/// <i>Glossosomatidae</i> Ab	1	<i>Eiseniella</i> (OI) Ab	
<i>Lepidostomatidae</i> Ab		<i>Tubificidae</i> (OI) Ab	2
Other Trichoptera Ab			
Total no. of Taxa	3	Total Relative Abundance	3
		Total no. of Taxa	
		Total Relative Abundance	

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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa

0 1 2+

Relative Abundance

Score

0 4 6 4 8

Group 2 - 2 Tails
Plecoptera

No. of taxa

0 1 2+

Relative Abundance

Score

0 4 6 6 8

Group 3
Trichoptera

No. of taxa

0 1-2 3+

Relative Abundance

Score

0 2 4 0

Group 4
G.O.L.D

No. of taxa

0 1-2 3+

Relative Abundance

Score

0 4 2 0 4 0

Group 5
Asellus

No. of taxa

Absent Few (1-20) Common (>20)

Score

0 2 0

Step 2

a) Index Score Group 1	4
b) Index Score Group 2	4
c) Index Score Group 3	4
d) Index Score Group 4	2
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) **18**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **3.6**

SSR Score
(AIS x 2) **7.2**

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): [Signature]

Name (print): Lucy O Shea

Date: 27 / 08 / 22

OKP.
111.0

River:		Code:	Date: 21.07.22	Time: 12.45
Station no. GLASSAUNILLAN 1		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	93.2	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		Riffle
DO mg/l	9.68	Dominant Types:		Riffle slide
Temp (°C)	13.8	Bedrock 20		Slow flow
Conductivity	50.3	Boulder (>128mm) 20		
pH	7.39	Cobble (32-128mm) 20		
Bank width (cm)	800	Gravel (8-32mm) 20		
Wet width (cm)	400	Fine Gravel (2-8mm) 20		
Avg Depth (cm)	90	Sand (0.25-2mm)		
Staff gauge		Silt (<0.25mm)		
Velocity	Colour	Slope: Low - Medium - <u>High</u> - Very High		Shading: <u>High</u> - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - down <u>stream</u> or N
Fast	Slight	Substratum Condition: Calcareous-Compacted-Loose - Normal		Photo: 1 / N
Moderate	Moderate	Substratum:		
Slow	High	Stone bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Pasture	Urban	✓ / N
	Recent Flood	Bag	Tillage	
		Forestry	Other	
				Sampled in Minutes:
				Pond net x 1
				Stone wash x 1
				Weed sweep x 1

General Comments: sheep grazing + deer present in this area
banks covered with Bracken
Very steep-sided banks. Deer poaching present on banks

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:				1-5	1
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				6-20	2
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				21-50	3
Group 3 = Trichoptera				51-100	4
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				101+	5
Group 5 = Asellus					
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
Ecdyonurus Ab		Leuctra Ab		X 2	
Rhithrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab		Amphinemura Ab			
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	0	Total Relative Abundance	0	Total no. of Taxa	1
Trichoptera:		G.O.L.D.:		Total Relative Abundance	2
Hydropsychidae Ab		Lymnaea (G) Ab		Chironomidae (D) Ab	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Chironomus (D) Ab	
Rhyacophila Ab		Planorbis (G) Ab		Simuliidae (D) Ab	1
Philopotamidae Ab		Ancylus (G) Ab		Dicranota (D) Ab	
Limnephilidae Ab	X 1	Physa (G) Ab		Tipulidae (D) Ab	1
Sericostomatidae Ab	X 1	Lumbriculus (Ol) Ab		Ceratopogonidae (D) Ab	
Glossosomatidae Ab	X 2	Eiseniella (Ol) Ab		Other GOLD Ab	
Lepidostomatidae Ab		Tubificidae (Ol) Ab			
Other Trichoptera Ab					
Total no. of Taxa	3	Total Relative Abundance	X 4	Total no. of Taxa	2
				Total Relative Abundance	X 2
				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.

Baetis present: 5.

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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa: ☒ 0, 1, 2+

Relative Abundance: 1-2, 3+, 2, 3+

Score: ☒ 0, 4, 6, 4, 8

Group 2 - 2 Tails
Plecoptera

No. of taxa: 0, ☒ 1, 2+

Relative Abundance: ☒ 1-2, 3+, 2, 3+

Score: 0, ☒ 4, 6, 6, 8

Group 3
Trichoptera

No. of taxa: 0, 1-2, ☒ 3+

Relative Abundance: 1-2, 3+, ☒ 3+

Score: 0, 2, 4, ☒ 4

Group 4
G.O.L.D

No. of taxa: 0, ☒ 1-2, 3+

Relative Abundance: ☒ 1-2, 3-6, 7+, 3-6, 7+

Score: 0, ☒ 4, 2, 0, 4, 0

Group 5
Asellus

No. of taxa: Absent, Few (1-20), Common (>20)

Score: ☒ 4, 2, 0

Step 2

a) Index Score Group 1	<input checked="" type="radio"/> 0
b) Index Score Group 2	<input checked="" type="radio"/> 4
c) Index Score Group 3	<input checked="" type="radio"/> 4
d) Index Score Group 4	<input checked="" type="radio"/> 4
e) Index Score Group 5	<input checked="" type="radio"/> 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)

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
Probably not at risk

☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk

☐

< 6.5
Stream at risk

☒

Surveyor (signed):

Jo Shea

Name (print):

Aine O Shea

Date:

21, 07, 22

River:		Code:	Date: 21 July 22	Time: 10:45
Station no. GLASSAVULLANN 2		Location:		Grid (6 figure):
Stream Order:		Stream flow: Riffle Riffle/Glide Slow flow		
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO%	99.6	Dominant Types:		
DO mg/l	10.57	Bedrock 30		
Temp (°C)	12.7	Boulder (>128mm) 20		
Conductivity	52.5	Cobble (32-128mm) 20		
pH	6.99	Gravel (8-32mm) 20		
Bank width (cm)	350	Fine Gravel (2-8mm) 5		
Wet width (cm)	250	Sand (0.25-2mm) 5		
Avg Depth (cm)	60	Silt (<0.25mm) —		
Staff gauge		Slope: Low — Medium — High — Very High		
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		
Torrential	None	Substratum Conditions: Calcareous-Compacted		
Fast	Slight	Loose - Normal		
Moderate	Moderate	Substratum:		
Slow	High	Stoney Bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None — Present — Moderate — Abundant		
Clear	Normal	Filamentous Algae:		
Slightly turbid	Low	None — Present — Moderate — Abundant		
Highly turbid	Very Low	Main land use u/s:		
	Dry	Pasture	Urban	Sample retained: Y/N
	Recent Flood	BB	Tillage	
		Forestry	Other	
		Sewage Fungus:		
		None — Present — Moderate — Abundant		
		Sampled in Minutes:		
		Pond net x 1		
		Stone wash x 1		
		Weed sweep x 1		

General Comments: Sheep grazing along stream. Cows + deer present in fields adjacent to stream. Heather, bracken, blanket bog growing on land surrounding stream.

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)			
Ephemeroptera:		Plecoptera:	
Ecdyonurus Ab		Leuctra Ab	X 2
Rhythrogena Ab		Isoperla Ab	
Heptagenia Ab		Protonemura Ab	
Ephemerella Ab		Amphinemura Ab	X 1
Caenis Ab		Perla Ab	
Paraleptophlebia Ab		Dinocras Ab	
Ephemera danica Ab		Other Plecop Ab	
Other Ephem Ab		Other Plecop Ab	
Total no. of taxa 0	Total Relative Abundance 0	Total no. of Taxa 2	Total Relative Abundance X 3
Trichoptera:		G.O.L.D.:	
Hydropsychidae Ab		Lymnaea (G) Ab	
Polycentropodidae Ab		Potamopyrgus (G) Ab	
Rhyacophila Ab		Planorbis (G) Ab	
Philopotamidae Ab		Ancylus (G) Ab	
Umnephilidae Ab	X 1	Physa (G) Ab	III
Sericostomatidae Ab	X 1	Lumbriculus (Ol) Ab	III
Glossosomatidae Ab	X 2	Eiseniella (Ol) Ab	III
Lepidostomatidae Ab		Tubificidae (Ol) Ab	
Other Trichoptera Ab			
Total no. of Taxa 3	Total Relative Abundance X 4	Total no. of Taxa 2	Total Relative Abundance 2
		Chironomidae (D) Ab	
		Chironomus (D) Ab	
		Simuliidae (D) Ab	
		Dicranota (D) Ab	
		Tipulidae (D) Ab	
		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*.

Baetis present: 10.

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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa

Relative Abundance

Score

Group 2 - 2 Tails
Plecoptera

No. of taxa

Relative Abundance

Score

Group 3
Trichoptera

No. of taxa

Relative Abundance

Score

Group 4
G.O.L.D

No. of taxa

Relative Abundance

Score

Group 5
Asellus

No. of taxa

Absent

Few (1-20)

Common (>20)

Step 2

a) Index Score Group 1

b) Index Score Group 2

c) Index Score Group 3

d) Index Score Group 4

e) Index Score Group 5

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)

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
Probably not at risk

☒

> 6.5 – 7.25
Indeterminate
Stream may be at risk

☒

< 6.5
Stream at risk

☐

Surveyor (signed): [Signature] Name (print): Aine O'Shea Date: 21/07/22

River:		Code:	Date: 21 July 22	Time: 15:15
Station no.		Location:		Grid (6 figure):
GASSAM/Ann 3		Stream Order:		Stream flow:
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		Riffle
DO%	76.7	Dominant Types:		Riffle
DO mg/l	8.09	Bedrock		Slow flow
Temp (°C)	13.1	Boulder (>128mm) 35		
Conductivity	44.5	Cobble (32-128mm) 35		
pH	7.03	Gravel (8-32mm) 10		
Bank width (cm)	420	Fine Gravel (2-8mm) 10		
Wet width (cm)	280	Sand (0.25-2mm) 10		
Avg Depth (cm)	15	Silt (<0.25mm)		
Staff gauge		Slope: Low - Medium - High - Very High		
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		Shading: High - Moderate - Low - None
Torrential	None	Substratum Condition: Calcareous-Compacted-		Cattle access Upstream - downstream or N
Fast	Slippery	Loose - Normal		@ SSRS location + d/s
Moderate	Moderate	Substratum:		Photo: N
Slow	High	Stoney bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None - <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:	Sample retained:	Sampled in Minutes:
	Dry	Pasture	Urban	Pond net x
	Recent Flood	Reo	Tillage	Stone wash x
		Forestry	Other	Weed sweep x

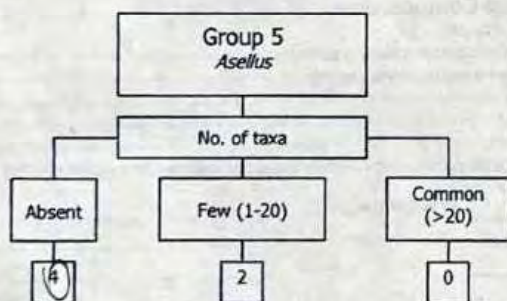
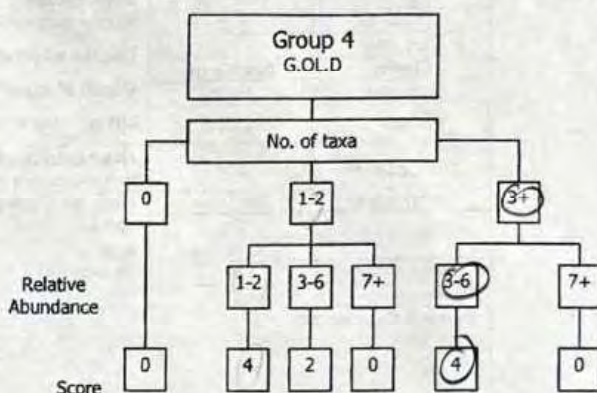
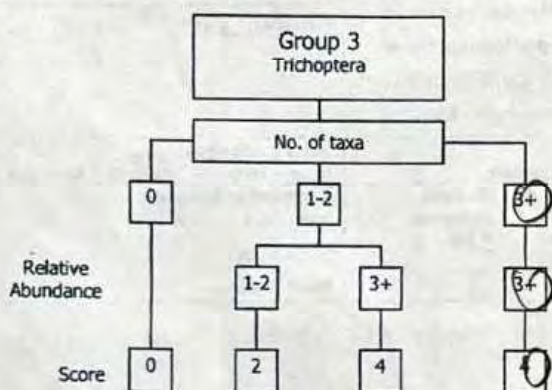
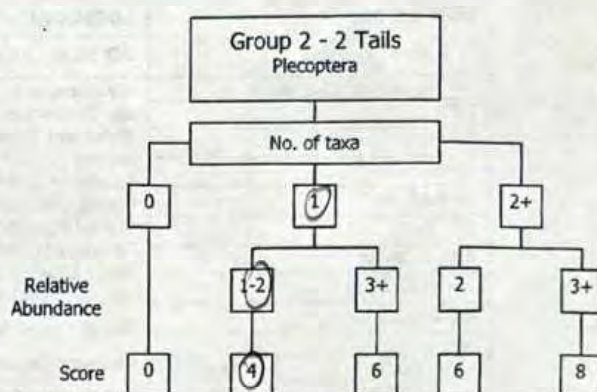
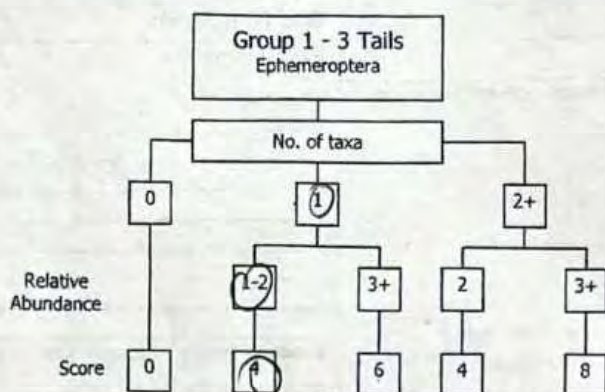
General Comments: Path leads to stream sleep, cows + deer likely accessing, drinking + crossing here. A lot of bracken on both banks.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:				1-5	1
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				6-20	2
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				21-50	3
Group 3 = Trichoptera				51-100	4
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				101+	5
Group 5 = Asellus					
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
	<i>Ecdyonurus</i> Ab		<i>Leuctra</i> Ab		
1	<i>Rhythrogena</i> Ab	1	<i>Isoperla</i> Ab		
	<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab		
	<i>Ephemerella</i> Ab		<i>Amphinemura</i> Ab	1	
	<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	1	Total Relative Abundance	1	Total no. of Taxa	1
Trichoptera:		G.O.L.D.:		Asellus:	
	<i>Hydropsychidae</i> Ab		<i>Lymnaea</i> (G) Ab		<i>Chironomidae</i> (D) Ab
	<i>Polycentropodidae</i> Ab		<i>Potamopyrgus</i> (G) Ab		<i>Chironomus</i> (D) Ab
	<i>Rhyacophila</i> Ab		<i>Planorbis</i> (G) Ab	50	<i>Simuliidae</i> (D) Ab
	<i>Philopotamidae</i> Ab		<i>Ancylus</i> (G) Ab		<i>Dicranota</i> (D) Ab
11	<i>Limnephilidae</i> Ab	X 1	<i>Physa</i> (G) Ab		<i>Tipulidae</i> (D) Ab
	<i>Sericostomatidae</i> Ab		<i>Lumbriculus</i> (O) Ab	1	<i>Ceratopogonidae</i> (D) Ab
7	<i>Glossosomatidae</i> Ab	X 1	<i>Eiseniella</i> (O) Ab		Other GOLD Ab
11	<i>Lepidostomatidae</i> Ab		<i>Tubificidae</i> (O) Ab	1	
	Other Trichoptera Ab	X 1			
Total no. of Taxa	3	Total Relative Abundance	3	Total no. of Taxa	3
				Total Relative Abundance	5

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*.

Baetis present: 10

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
b) Index Score Group 2
c) Index Score Group 3
d) Index Score Group 4
e) Index Score Group 5

4
4
4
4
4

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

Total Index Score (TIS)
sum (a+b+c+d+e)

20

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

4

SSR Score
(AIS x 2)

8

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

> 7.25
Probably not at risk

☒

> 6.5 - 7.25
Indeterminate
Stream may be at risk

☐

< 6.5
Stream at risk

☐

Surveyor (signed):

Aine O'Shea

Name (print):

Aine O'Shea

Date:

21/07/22

River:		Code:	Date: 11.08.22	Time:
Station no. GLASSNA MULLEN 1		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow: Riffle Riffle/Glide Slow flow
DO%	95.2	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO mg/l	9.07	Dominant Types:		
Temp (°C)	17.7	Bedrock 60		
Conductivity	43.9	Boulder (>128mm) 20		
pH	5.74	Cobble (32-128mm) -		
Bank width (cm)	320	Gravel (8-32mm) 5		
Wet width (cm)	290	Fine Gravel (2-8mm) 5		
Avg Depth (cm)	50	Sand (0.25-2mm) 5		
Staff gauge	-	Silt (<0.25mm) 5		
Velocity	Colour	Slope: Low - Medium - High - Very High		Shading: High - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - downstream or N
Fast	Slight	Substratum Condition: Calcareous-Compacted-Loose - Normal		Photo: Y / N
Moderate	Moderate	Substratum:		
Slow	High	Stoney Bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None <1cm; 1-5cm; 5-10cm; >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Pasture Urban		Y / N
	Recent Flood	Forestry Tillage		
		Other		
				Sampled in Minutes:
				Pond net x 2
				Stone wash x 1
				Weed sweep x 1

General Comments: Many deer + sheep.
Banks comprising: grass, reeds, ferns, hawthorn + moss.
Many Baetis present.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) — note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) — note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance — Ab)					
Ephemeroptera:		Plecoptera:			
Ecdyonurus Ab		Leuctra Ab		1	
Rhithrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab		Amphinemura Ab		1	
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa 4		Total no. of Taxa 2		Total Relative Abundance 2	
Trichoptera:		G.O.L.D.:		Asellus:	
Hydropsychidae Ab		Lymnaea (G) Ab		Chironomidae (D) Ab	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Chironomus (D) Ab	
Rhyacophila Ab		Planorbis (G) Ab		Simuliidae (D) Ab	
Philopotamidae Ab		Ancylus (G) Ab		Dicranota (D) Ab	
Limnephilidae Ab		Physa (G) Ab		Tipulidae (D) Ab	
Sericostomatidae Ab		Lumbriculus (Ol) Ab		Ceratopogonidae (D) Ab	
Glossosomatidae Ab		Eisenella (Ol) Ab		Other GOLD Ab	
Lepidostomatidae Ab		Tubificidae (Ol) Ab			
Other Trichoptera Ab					
Total no. of Taxa 4		Total no. of Taxa 1		Total Relative Abundance 1	
Total Relative Abundance 4				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.

Stream comprises a series of pools (ca. 7m); with water then flowing over rocks between pools.

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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa: 0 (circled), 1, 2+

Relative Abundance: 0 (circled), 1-2, 3+, 2, 3+

Score: 0 (circled), 4, 6, 4, 8

Group 2 - 2 Tails
Plecoptera

No. of taxa: 0, 0 (circled), 2+ (circled)

Relative Abundance: 0 (circled), 3+, 2 (circled), 3+

Score: 0, 4 (circled), 6, 6 (circled), 8

Group 3
Trichoptera

No. of taxa: 0, 1-2, 3+ (circled)

Relative Abundance: 0, 1-2, 3+, 3+ (circled)

Score: 0, 2, 4, 4 (circled)

Group 4
G.O.L.D

No. of taxa: 0, 1-2 (circled), 3+

Relative Abundance: 0 (circled), 3-6, 7+, 3-6, 7+

Score: 0, 4 (circled), 2, 0, 4, 0

Group 5
Asellus

No. of taxa: Absent (circled), Few (1-20), Common (>20)

Score: 4 (circled), 2, 0

Step 2

a) Index Score Group 1	0
b) Index Score Group 2	4 6
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) ~~10~~ 18
sum (a+b+c+d+e)

Average Index Score (AIS) ~~3.6~~ 3.6
TIS/5 (5 for 5 groups)

SSR Score ~~6.5~~ 7.2
(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 ☐ Probably not at risk

> 6.5 - 7.25 ☒ Indeterminate Stream may be at risk

< 6.5 ☒ Stream at risk

Surveyor (signed): A. O'Slea Name (print): Aine O'Slea Date: 11 / 08 / 22

River:		Code:	Date: 11 Aug. 22	Time: 11.00 AM
Station no.		Location:		Grid (6 figure):
GLASSNAMULLEN 2		Stream Order:		Stream flow:
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		Riffle
DO%	92.6	Dominant Types:		Riffle/Side
DO mg/l	9.57	Bedrock		Slow flow
Temp (°C)	13.8	Boulder (>128mm)		
Conductivity	39.5	Cobble (32-128mm)		Riffle slide where SSRS undertaken
pH	5.22	Gravel (8-32mm)		
Bank width (cm)	120	Fine Gravel (2-8mm)		Riffle d/s + u/s
Wet width (cm)	100	Sand (0.25-2mm)		
Avg Depth (cm)	15	Silt (<0.25mm)		
Staff gauge	/	Slope: Low - Medium - High - Very High		Shading: High - Moderate - Low - None
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - downstream or N
Torrential	None	Substratum Condition: Calcareous-Compacted-Loose - Normal		
Fast	Slight	Substratum:		Photo: Y / N
Moderate	Moderate	Stony Bottom-Muddy bottom-Mud over stones		
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very slow		Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm		
Clarity	Discharge	Litter: None - Present - Moderate - Abundant		
Very clear	Flood			
	Normal			
Slightly turbid	Low	Filamentous Algae:		Sewage Fungus:
Highly turbid	Very Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
	Dry	Main land use u/s:		Sample retained:
	Recent Flood	Pasture Urban Tillage Other		Y / N
		Forestry		Sampled in Minutes:
				Pond net x 2
				Stone wash x 1
				Weed sweep x 1

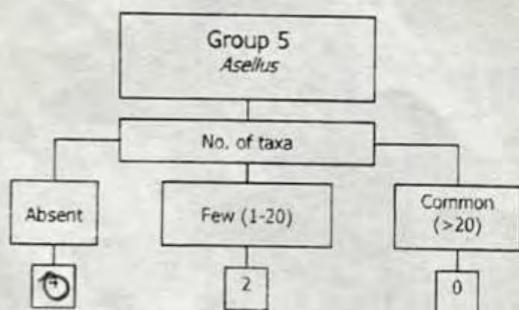
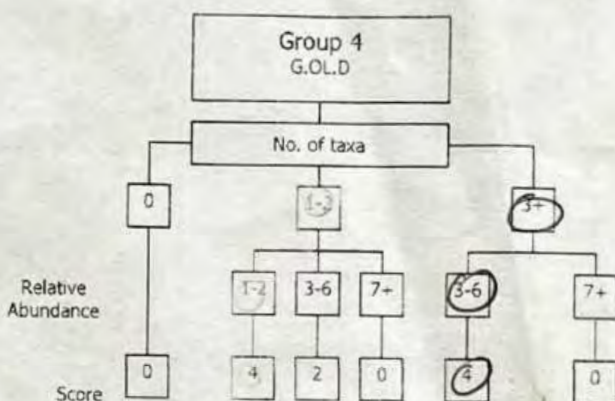
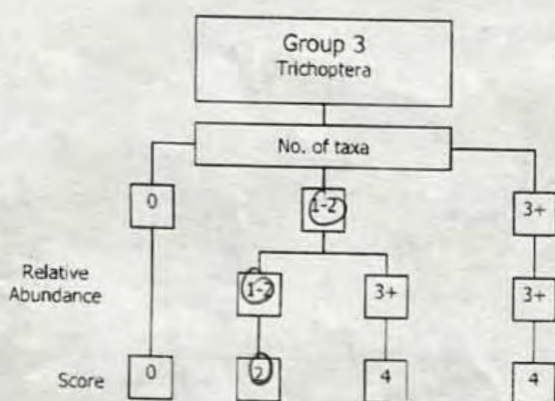
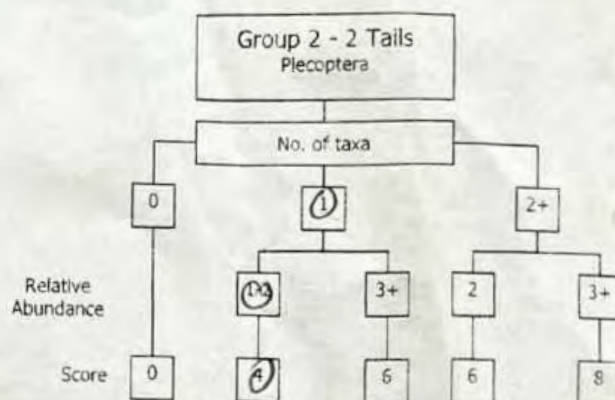
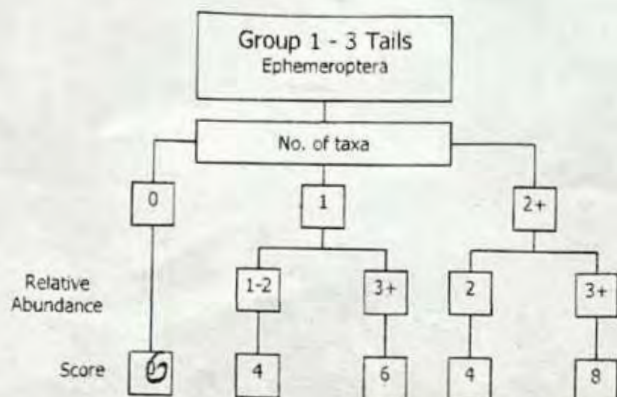
General Comments: Many deer + sheep present in this area. Land surrounding stream, comprises bog, heath, rushes. Stream banks comprise heath, grass + reeds/rushes, + some moss.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
Ecdyonurus Ab		Leuctra Ab			
Rhithrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab		Amphinemura Ab			
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
Trichoptera:		G.O.L.D.:		Asellus:	
Hydropsychidae Ab		Lymnaea (G) Ab		Chironomidae (D) Ab	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Chironomus (D) Ab	
Rhyacophila Ab		Planorbis (G) Ab		Simuliidae (D) Ab	
Philopotamidae Ab		Ancylus (G) Ab		Dicranota (D) Ab	
Limnephilidae Ab		Physa (G) Ab		Tipulidae (D) Ab	
Sericostomatidae Ab		Lumbriculus (OI) Ab		Ceratopogonidae (D) Ab	
Glossosomatidae Ab		Eisenella (OI) Ab		Other GOLD Ab	
Lepidostomatidae Ab		Tubificidae (OI) Ab			
Other Trichoptera Ab					
Total no. of Taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
1	1	3	3		
				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.

Many baetis present.

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	0
b) Index Score Group 2	4
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) **14**

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

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

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

> 7.25
Probably not at risk ☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): *Aine O'Shea*

Name (print): **AINE O'SHEA**

Date: **11** / **08** / **22**

River: <u>Dargle, Douglas</u>		Code:	Date: <u>14 July 02</u>	Time: <u>10:15</u>
Station no. <u>Granamore 1</u>		Location: <u>Granamore, Wicklow</u>		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	<u>76.1</u>	Modifications: <input checked="" type="checkbox"/> Canalised-widened-bank erosion-arterial drainage		Riffle
DO mg/l	<u>7.74</u>	Dominant Types:		Riffle/Glide
Temp (°C)	<u>14.6</u>	Bedrock <u>10</u>		<u>Slow flow</u>
Conductivity	<u>38.4</u>	Boulder (>128mm) <u>10</u>		<u>Water appears stagnant</u>
pH	<u>4.71</u>	Cobble (32-128mm) <u>20</u>		
Bank width (cm)	<u>700</u>	Gravel (8-32mm) <u>20</u>		<u>Water pooling in areas</u>
Wet width (cm)	<u>75</u>	Fine Gravel (2-8mm) <u>20</u>		
Avg Depth (cm)	<u>30</u>	Sand (0.25-2mm) <u>10</u>		
Staff gauge		Silt (<0.25mm) <u>10</u>		
Velocity	Colour	Slope: Low - Medium - <u>High</u> - Very High		Shading: <u>High</u> - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous- <u>Mixed</u>		Cattle access Y: upstream - downstream of <u>(1)</u>
Fast	<u>Slight</u>	Substratum Condition: Calcareous-Compacted-Loose - Normal		Photo <u>Y</u> / N
Moderate	Moderate	Substratum: Stony bottom-Muddy bottom-Mud over stones		
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very slow	Discharge	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
Clarity	Flood	Litter: None - Present - Moderate - Abundant		
Very clear	Normal	Filamentous Algae: None - Present - Moderate - Abundant		Sewage Fungus: <u>None</u> - Present - Moderate - Abundant
<u>Clear</u>		Main land use u/s: Pasture Urban Bog Forestry		Sample retained: <u>Y</u> / N
Slightly turbid	Low			Sampled in Minutes: Pond net x <u>5</u>
Highly turbid	Very Low			Stone wash x <u>2</u>
	<u>10</u>			Weed sweep x <u>2</u>
	Recent Flood			

General Comments: Grille forestry (coniferous) ca. 20m from stream. Area surrounded by blanket bog; much heather + reeds present.

While fish sampling, a rock dislodged which resulted in most of the water out of the pool.

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

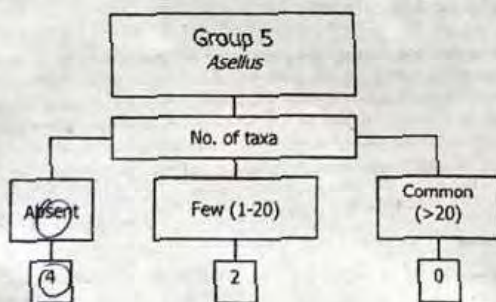
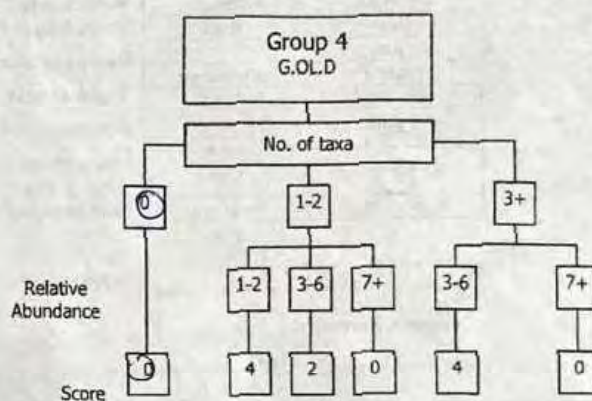
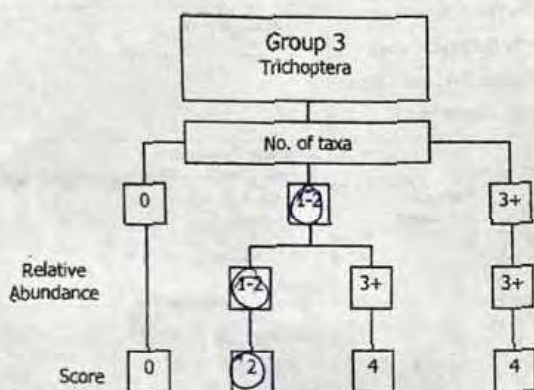
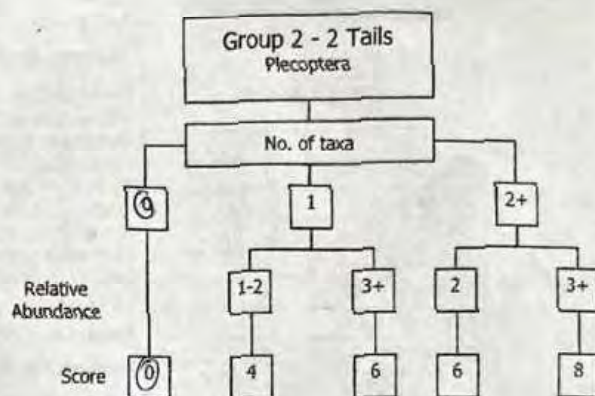
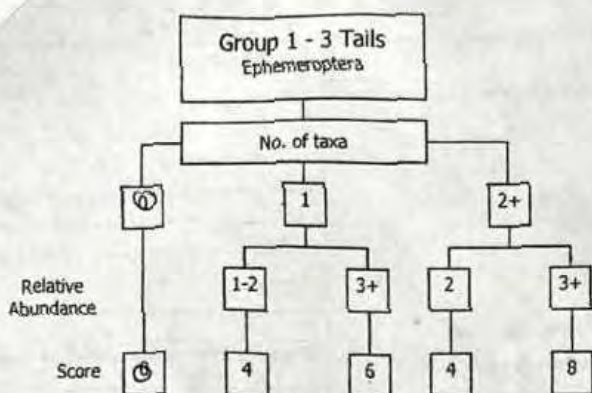
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)

Ephemeroptera:		Plecoptera:	
<u>Ecdyonurus</u> Ab		<u>Leuctra</u> Ab	
<u>Rhythrogena</u> Ab		<u>Isoperla</u> Ab	
<u>Heptagenia</u> Ab		<u>Protonemura</u> Ab	
<u>Ephemerella</u> Ab		<u>Amphinemura</u> Ab	
<u>Caenis</u> Ab		<u>Perla</u> Ab	
<u>Paraleptophlebia</u> Ab		<u>Dinocras</u> Ab	
<u>Ephemera danica</u> Ab		<u>Other Plecop</u> Ab	
<u>Other Ephem</u> Ab		<u>Other Plecop</u> Ab	
Total no. of taxa	<u>0</u>	Total no. of taxa	<u>0</u>
Total Relative Abundance	<u>0</u>	Total Relative Abundance	<u>0</u>
Trichoptera:		G.O.L.D.:	
<u>Hydropsychidae</u> Ab		<u>Lymnaea</u> (G) Ab	
<u>Polycentropodidae</u> Ab	<u>2</u>	<u>Potamopyrgus</u> (G) Ab	
<u>Rhyacophila</u> Ab		<u>Planorbis</u> (G) Ab	
<u>Philopotamidae</u> Ab		<u>Ancylus</u> (G) Ab	
<u>Limnephilidae</u> Ab		<u>Physa</u> (G) Ab	
<u>Sericostomatidae</u> Ab		<u>Lumbriculus</u> (Ol) Ab	
<u>Glossosomatidae</u> Ab		<u>Eiseniella</u> (Ol) Ab	
<u>Lepidostomatidae</u> Ab		<u>Tubificidae</u> (Ol) Ab	
<u>Other Trichoptera</u> Ab			
Total no. of Taxa	<u>1</u>	Total no. of Taxa	<u>0</u>
Total Relative Abundance	<u>2</u>	Total Relative Abundance	<u>0</u>
		Chironomidae (D) Ab	
		<u>Chironomus</u> (D) Ab	
		<u>Simuliidae</u> (D) Ab	
		<u>Dicranota</u> (D) Ab	
		<u>Tipulidae</u> (D) Ab	
		<u>Ceratopogonidae</u> (D) Ab	
		<u>Other GOLD</u> Ab	
		Asellus:	
		<u>Absent</u>	
		<u>Few/Low</u>	
		<u>Common/Numerous</u>	
		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*.

No Baetis present.

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	0
b) Index Score Group 2	0
c) Index Score Group 3	2
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) **6**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **1.2**

SSR Score
(AIS x 2) **2.4**

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): Shea Name (print): AINE O SHEA Date: 19 / 07 / 2022

River: <u>Dargle</u>		Code:	Date: <u>19 July 2027</u>	Time: <u>12:00</u>
Station no.: <u>Gnamone 2.</u>		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow: Riffle Riffle/Glide <u>Slow flow</u> <u>Very slow flow</u>
DO%	<u>62.0</u>	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO mg/l	<u>6.35</u>	Dominant Types:		
Temp (°C)	<u>14.3</u>	Bedrock <u>5</u>		
Conductivity	<u>37.5</u>	Boulder (>128mm) <u>5</u>		
pH	<u>5.62</u>	Cobble (32-128mm) <u>40</u>		
Bank width (cm)	<u>400</u>	Gravel (8-32mm) <u>30</u>		
Wet width (cm)	<u>70</u>	Fine Gravel (2-8mm) <u>10</u>		
Avg Depth (cm)	<u>30</u>	Sand (0.25-2mm) <u>5</u>		
Staff gauge	<u>✓</u>	Silt (<0.25mm) <u>5</u>		
Velocity	Colour	Slope: Low - Medium - <u>High</u> - Very High		Shading: <u>High</u> - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Cattle access Y: upstream - downstream or N
Fast	Slight	Substratum Condition: Calcareous-Compacted- <u>Loose</u> - Normal		
Moderate	Moderate	Substratum:		
Slow	<u>High</u>	Stoney bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate- <u>Heavy</u>		Photo: <u>Y</u> / N
Clarity	Discharge	Depth of mud: None: <1cm: 1-5cm: <u>5-10</u> cm: >10cm		
Very clear	Flood	Litter: <u>None</u> - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		<u>None</u> - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sampled in Minutes:
	Dry	Pasture	Urban	Pond net x <u>5</u>
	Recent Flood	Forestry	Tillage	Stone wash x <u>2</u>
			Other	Weed sweep x <u>2</u>

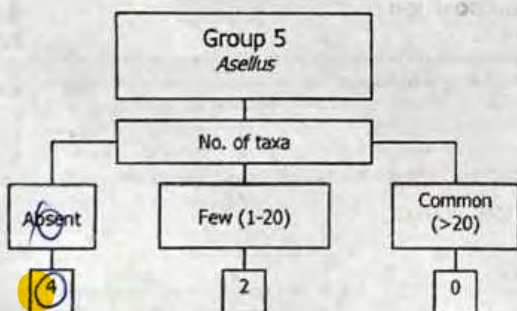
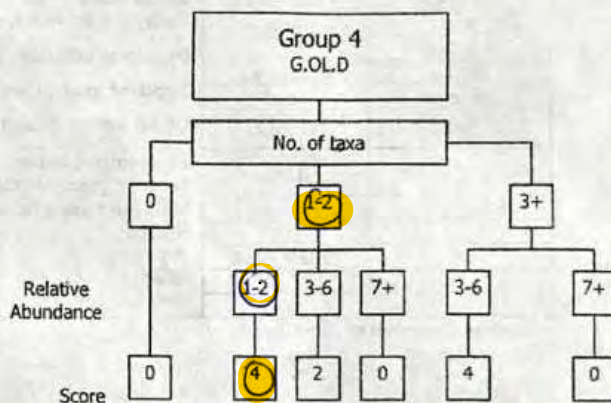
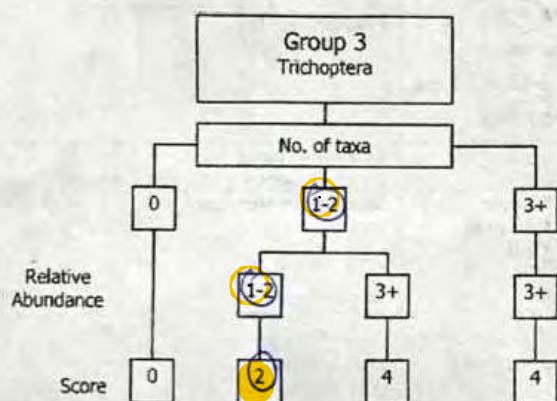
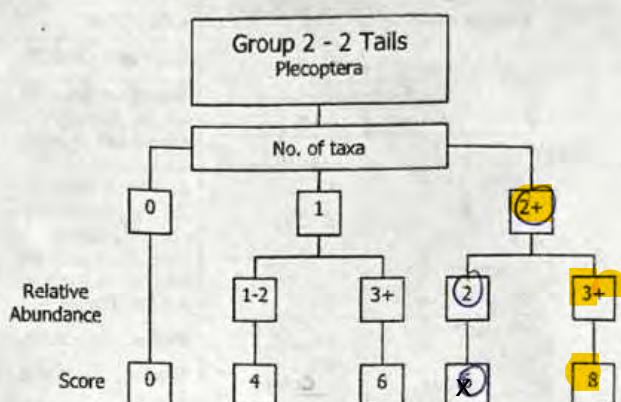
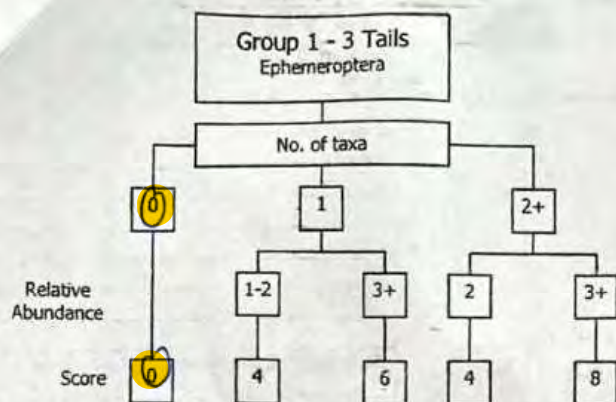
General Comments: Gnamone 2 location is dry. SSRS take place downstream. Many reeds growing in stream channel. Stream banks are marshy. Adjacent to cattle coniferous forestry. Much tree felling in adjacent land. Deer droppings + sheep droppings present. Blanket bog with leather in surrounding area.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:				1-5	1
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				6-20	2
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				21-50	3
Group 3 = Trichoptera				51-100	4
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				101+	5
Group 5 = Asellus					
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
<u>Ecdyonurus</u> Ab		<u>Leuctra</u> Ab			
<u>Rhythrogena</u> Ab		<u>Isoperla</u> Ab			
<u>Heptagenia</u> Ab		<u>Protonemura</u> Ab	<u>X 2</u>		
<u>Ephemerella</u> Ab		<u>Amphinemura</u> Ab	<u>X 1</u>		
<u>Caenis</u> Ab		<u>Perla</u> Ab			
<u>Paraleptophlebia</u> Ab		<u>Dinocras</u> Ab			
<u>Ephemera danica</u> Ab		<u>Other Plecop</u> Ab			
<u>Other Ephem</u> Ab		<u>Other Plecop</u> Ab			
Total no. of taxa <u>0</u>	Total Relative Abundance <u>0</u>	Total no. of Taxa <u>2</u>	Total Relative Abundance <u>X 3</u>		
Trichoptera:		G.O.L.D.:		Asellus:	
<u>Hydropsychidae</u> Ab		<u>Lymnaea</u> (G) Ab		<u>Chironomidae</u> (D) Ab	<u>Absent</u> <u>✓</u>
<u>Polycentropodidae</u> Ab	<u>5</u>	<u>Potamopyrgus</u> (G) Ab		<u>Chironomus</u> (D) Ab	
<u>Rhyacophila</u> Ab		<u>Planorbis</u> (G) Ab	<u>III</u>	<u>Simuliidae</u> (D) Ab	<u>3</u>
<u>Philopotamidae</u> Ab		<u>Ancyclus</u> (G) Ab		<u>Dicranota</u> (D) Ab	
<u>Limnephilidae</u> Ab		<u>Physa</u> (G) Ab		<u>Tipulidae</u> (D) Ab	
<u>Sericostomatidae</u> Ab		<u>Lumbriculus</u> (O) Ab		<u>Ceratopogonidae</u> (D) Ab	
<u>Glossosomatidae</u> Ab		<u>Eiseniella</u> (O) Ab		<u>Other GOLD</u> Ab	
<u>Lepidostomatidae</u> Ab		<u>Tubificidae</u> (O) Ab		NOTE: Asellus must be recorded as absent if none are found	
<u>Other Trichoptera</u> Ab					
Total no. of Taxa <u>1</u>	Total Relative Abundance <u>1</u>	Total no. of Taxa <u>1</u>	Total Relative Abundance <u>1</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.

No Baetis present.

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
- b) Index Score Group 2
- c) Index Score Group 3
- d) Index Score Group 4
- e) Index Score Group 5

0
8
2
4
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) **XX** 18

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **XXX** 3.6

SSR Score
(AIS x 2) **XXX** 7.2

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): [Signature] Name (print): Aine O SHEA Date: 19/07/22

River:		Code:	Date: 19 July 22	Time: 15:00
Station no. Granmore 3		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow: Riffle Riffle/Slide Slow flow
DO%	93.5	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO mg/l	9.5	Dominant Types:		
Temp (°C)	14.7	Bedrock		
Conductivity	117.2	Boulder (>128mm)		
pH	7.72	Cobble (32-128mm)		
Bank width (cm)	160	Gravel (8-32mm)		
Wet width (cm)	80	Fine Gravel (2-8mm)		
Avg Depth (cm)	40	Sand (0.25-2mm)		
Staff gauge		Silt (<0.25mm)		
Velocity		Slope: Low - Medium - High - Very High		
Torrential	None	Geology: Calcareous-Siliceous-Mixed		Shading: High - Moderate - Low - None
Fast	Slight	Substratum Condition: Calcareous-Compacted-Lose - Normal		Cattle access Y: upstream - downstream of N
Moderate	Moderate	Substratum:		Photo: Y/N
Slow	High	Stoney bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None: <4cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Urban		Pond net x 5
	Recent Flood	Tillage		Stone wash x 2
		Other		Weed sweep x 2

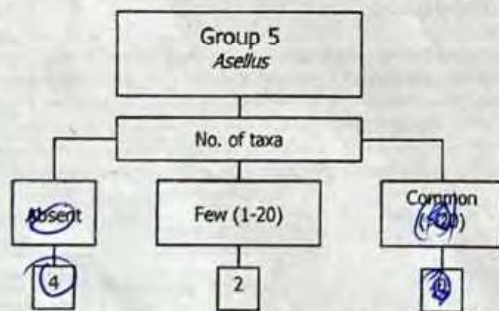
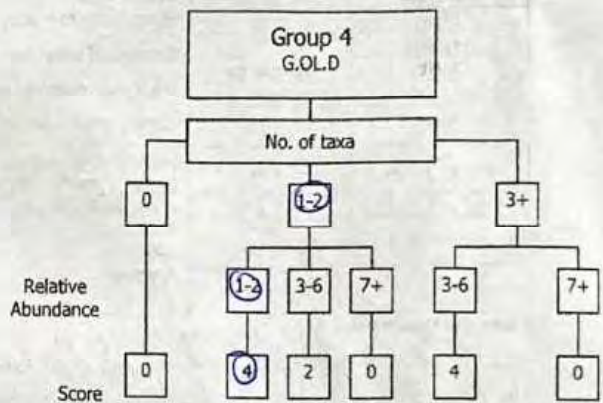
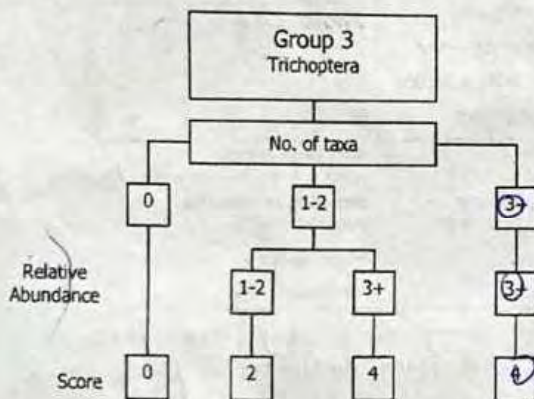
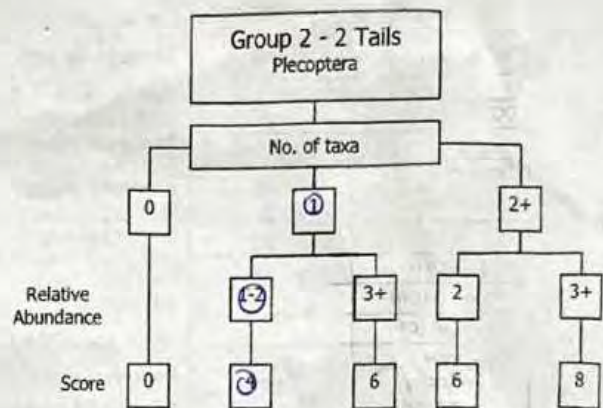
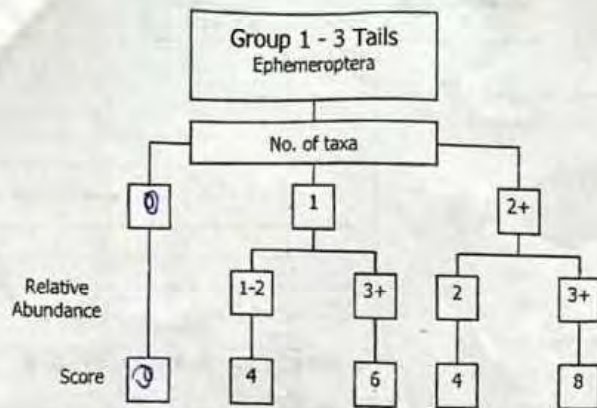
General Comments: Bees + sheep droppings in this area. Many reeds along stream banks. Reeds overhanging. Surrounding area is blanket bog, with many reeds. Coillte forestry south-west + downstream. Many thistles growing here.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
Ecdyonurus Ab		Leuctra Ab			
Rhithrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab		Amphinemura Ab		1	
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa	0	Total Relative Abundance	0	Total no. of Taxa	1
Trichoptera:		G.O.L.D.:		Asellus:	
Hydropsychidae Ab		Lymnaea (G) Ab		Chironomidae (D) Ab	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Chironomus (D) Ab	
Rhyacophila Ab		Planorbis (G) Ab		Simuliidae (D) Ab	
Philopotamidae Ab		Ancylus (G) Ab		Dicranota (D) Ab	
Limnephilidae Ab		Physa (G) Ab		Tipulidae (D) Ab	
Sericosomatidae Ab		Lumbriculus (Ol) Ab		Ceratopogonidae (D) Ab	
Glossosomatidae Ab		Eiseniella (Ol) Ab		Other GOLD Ab	
Lepidostomatidae Ab		Tubificidae (Ol) Ab			
Other Trichoptera Ab					
Total no. of Taxa	3	Total Relative Abundance	2.4	Total no. of Taxa	2
				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.

Many Baetis present

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	0
b) Index Score Group 2	4
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): AOIS Name (print): Aine O SHEA Date: 19/07/22

River: <u>Dunglas</u>		Code:	Date: <u>19 July 22</u>	Time: <u>13:30</u>
Station no. <u>Granamore 4</u>		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	<u>88.6</u>	Modifications: Y/ <u>N</u> Canalised-widened-bank erosion-arterial drainage		Riffle
DO mg/l	<u>8.45</u>	Dominant Types:		Riffle/Glide
Temp (°C)	<u>14.4</u>	Bedrock <u>5</u>		Slow flow
Conductivity	<u>61.5</u>	Boulder (>128mm) <u>10</u>		<u>Slow</u> <u>Shallow</u> <u>decline in</u> <u>direction of flow</u>
pH	<u>7.39</u>	Cobble (32-128mm) <u>35</u>		
Bank width (cm)	<u>350</u>	Gravel (8-32mm) <u>10</u>		
Wet width (cm)	<u>100</u>	Fine Gravel (2-8mm) <u>35</u>		
Avg Depth (cm)	<u>60</u>	Sand (0.25-2mm) <u>10</u>		
Staff gauge		Silt (<0.25mm) <u>2</u>		
Velocity	Colour	Slope: Low - Medium - <u>High</u> - Very High		Shading: <u>High</u> - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous- <u>Mixed</u>		Cattle access Y: upstream - downstream of <u>N</u>
Fast	Slight	Substratum Condition: Calcareous-Compacted- <u>Loose</u> - Normal		Photo: <u>Y</u> / <u>N</u>
Moderate	Moderate	Substratum:		
<u>Slow</u>	High	Stony bottom-Muddy bottom-Mud over stones		
Very slow	Discharge	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very clear	Flood	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
<u>Clear</u>	Normal	Litter: <u>None</u> - Present - Moderate - Abundant		
Slightly turbid		Filamentous Algae:		Sewage Fungus:
Highly turbid	Very Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
	Dry	Main land use u/s:	Sample retained:	Sampled in Minutes:
	Recent Flood	Pasture	Urban	Pond net x <u>5</u>
		Forest	Tillage	Stone wash x <u>2</u>
			Other	Weed sweep x <u>2</u>

General Comments:

Many large sachs here. Much sleep + deer droppings here. Many sleep in this area. Many reeds growing adjacent to stream. Blanket bog + leather on land surrounding stream. Cattle forestry + felling downstream, and west/south west of SSRS location.

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

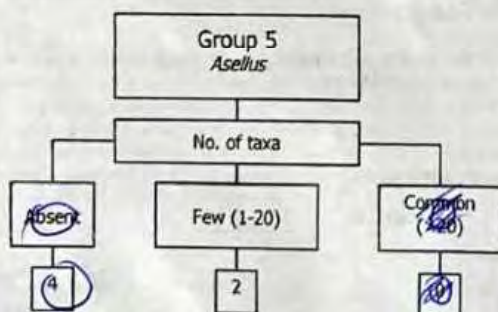
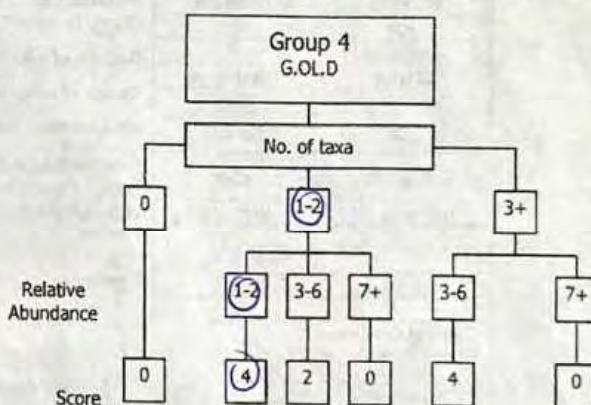
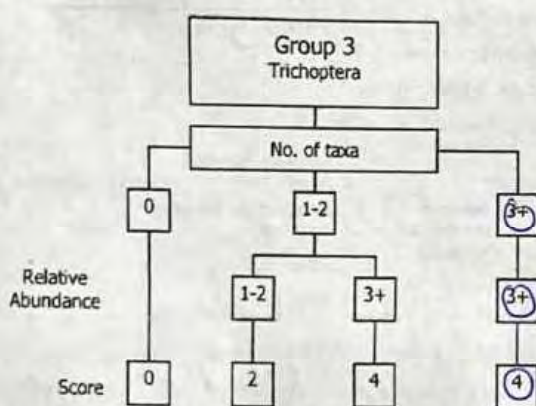
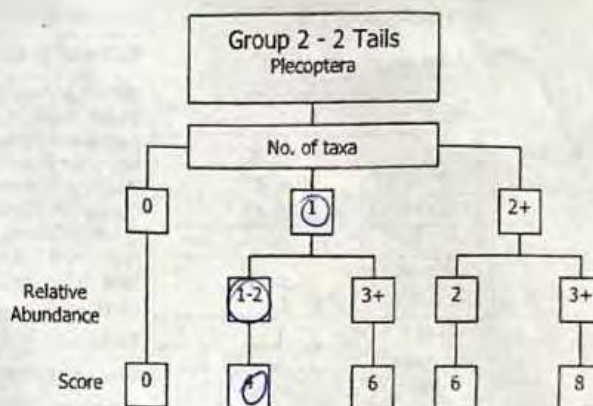
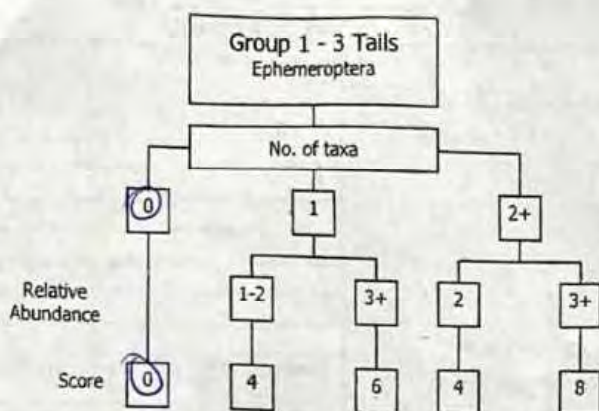
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)

Ephemeroptera:		Plecoptera:	
Ecdyonurus Ab		Leuctra Ab	
Rhythrogena Ab		Isoperla Ab	
Heptagenia Ab		<u>11</u> Protonemura Ab	<u>2</u>
Ephemerella Ab		Amphinemura Ab	
Caenis Ab		Perla Ab	
Paraleptophlebia Ab		Dinocras Ab	
Ephemera danica Ab		Other Plecop Ab	
Other Ephem Ab		Other Plecop Ab	
Total no. of taxa	<u>0</u>	Total Relative Abundance	<u>0</u>
Trichoptera:		G.O.L.D.:	
Hydropsychidae Ab		Lymnaea (G) Ab	<u>11</u>
<u>11</u> Polycentropodidae Ab	<u>2</u>	Potamopyrgus (G) Ab	<u>1</u>
Rhyacophila Ab		Chironomus (D) Ab	<u>1</u>
Philopotamidae Ab		Simuliidae (D) Ab	
<u>11</u> Umnephilidae Ab	<u>1</u>	Dicranota (D) Ab	
Sericostomatidae Ab		Tipulidae (D) Ab	
<u>11</u> Glossosomatidae Ab	<u>1</u>	Ceratopogonidae (D) Ab	
<u>11</u> Lepidostomatidae Ab	<u>1</u>	Other GOLD Ab	
Other Trichoptera Ab			
Total no. of Taxa	<u>4</u>	Total Relative Abundance	<u>5</u>
Asellus:		NOTE: Asellus must be recorded as absent if none are found	
Total no. of Taxa		Total Relative Abundance	
<u>4</u>		<u>1</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.

Baetis present

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	0
b) Index Score Group 2	4
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): Aine O'Shea Name (print): Aine O SHEA Date: 17 / 07 / 22

River:	Code:	Date: 01.07.22	Time: 14:45
Station no. Granamore 5.	Location:	Grid (6 figure):	
Field Chemistry	Stream Order:	Stream flow: Riffle Run/Slide Slow flow	
DO%	Modifications: Y/ <input checked="" type="checkbox"/> Canals/widened-bank erosion-arterial drainage		
DO mg/l	Dominant Types:		
Temp (°C)	Bedrock		
Conductivity	Boulder (>128mm) 10		
pH	Cobble (32-128mm) 20		
Bank width (cm)	Gravel (8-32mm) 20		
Wet width (cm)	Fine Gravel (2-8mm) 20		
Avg Depth (cm)	Sand (0.25-2mm) 20		
Staff gauge	Silt (<0.25mm) 10		
Velocity	Slope: Low - Medium - High - Very High		
Torrential	Geology: Calcareous-Siliceous-Mixed		
Fast	Substratum Condition: Calcareous-Compacted-Loose - Normal		
Moderate	Substratum:		
Slow	Stoney bottom-Muddy bottom-Mud over stones		
Very slow	Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Litter: None - Present - Moderate - Abundant		
Clean	Filamentous Algae:		
Slightly turbid	None - Present - Moderate - Abundant		
Highly turbid	Main land use u/s:	Sample retained:	Sewage Fungus:
	Pasture Urban	<input checked="" type="checkbox"/> N	None - Present - Moderate - Abundant
	Dry Tillage		Sampled in Minutes:
	Recent Flood Other		Pond net x 2
			Stone wash x 0.5
			Weed sweep x 0.5

General Comments:
Banks comprise: grass, reeds, + heather
Sleep present in surrounding area. Blanked by upstream of location

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:				1-5	1
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				6-20	2
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				21-50	3
Group 3 = Trichoptera				51-100	4
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				101+	5
Group 5 = Asellus					
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:		Asellus:	
Ecdyonurus Ab		Leuctra Ab		Absent	
Rhithrogena Ab		Isoperla Ab			
Heptagenia Ab		Protonemura Ab			
Ephemerella Ab		Amphinemura Ab			
Caenis Ab		Perla Ab			
Paraleptophlebia Ab		Dinocras Ab			
Ephemera danica Ab		Other Plecop Ab			
Other Ephem Ab		Other Plecop Ab			
Total no. of taxa		Total no. of Taxa		Total Relative Abundance	
3		2		2	
Trichoptera:		G.O.L.D.:		Asellus:	
Hydropsychidae Ab		Lymnaea (G) Ab		Absent	
Polycentropodidae Ab		Potamopyrgus (G) Ab		Few/Low	
Rhyacophila Ab		Planorbis (G) Ab		Common/Numerous	
Philopotamidae Ab		Ancylus (G) Ab			
Limnephilidae Ab		Physa (G) Ab			
Sericostomatidae Ab		Lumbriculus (OI) Ab			
Glossosomatidae Ab		Eiseniella (OI) Ab			
Lepidostomatidae Ab		Tubificidae (OI) Ab			
Other Trichoptera Ab					
Total no. of Taxa		Total no. of Taxa		Total Relative Abundance	
3		3		4	

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*.

Baetis present

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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa

Relative Abundance

Score

0 (circled) 1 2+ (circled)

1-2 3+ 2 3+

4 6 4 8

Group 2 - 2 Tails
Plecoptera

No. of taxa

Relative Abundance

Score

0 1 2+ (circled)

1-2 3+ 2 (circled) 3+

4 6 6 (circled) 8

Group 3
Trichoptera

No. of taxa

Relative Abundance

Score

0 1-2 3+ (circled)

1-2 3+

2 4 2 (circled)

Group 4
G.O.L.D

No. of taxa

Relative Abundance

Score

0 1-2 3 (circled)

1-2 3-6 7+ 3-6 (circled) 7+

4 2 0 2 (circled) 0

Group 5
Asellus

No. of taxa

Relative Abundance

Score

Abundant (circled) Few (1-20) Common (>20)

3 2 0

Step 2

- a) Index Score Group 1 **0**
- b) Index Score Group 2 **6**
- 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) **18**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **3.6**

SSR Score
(AIS x 2) **7.2**

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): A. Shea Name (print): Aine O'Shea Date: 01 / 09 / 22

River:		Code:	Date: 01.07.22	Time: 16:00
Station no. Glanamore 6		Location:		Grid (6 figure):
Field Chemistry		Stream Order:		Stream flow:
DO%	98.6	Modifications: Y/D Canalised-widened-bank erosion-arterial drainage		Riffle
DO mg/l	7.77	Dominant Types:		Riffle
Temp (°C)	15.2	Bedrock		Slow flow
Conductivity	52.1	Boulder (>128mm) 10		
pH	6.55	Cobble (32-128mm) 20		
Bank width (cm)	500	Gravel (8-32mm) 20		
Wet width (cm)	450	Fine Gravel (2-8mm) 20		
Avg Depth (cm)	20	Sand (0.25-2mm) 20		
Staff gauge		Silt (<0.25mm) 10		
Velocity	Colour	Slope: Low - Medium - High - Very High		Shading: High - Moderate - Low - None
Torrential	None	Geology: Calcareous-Siliceous-Mixed		CA 5%
Fast	Slight	Substratum Condition: Calcareous-Compacted-Loose - Normal		Cattle access Y: upstream - downstream or N
Moderate	Moderate	Substratum:		Photo Y/N
Slow	High	Stoney bottom-Muddy bottom-Mud over stones		
Very slow		Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Discharge	Depth of mud: None <1cm: 1-5cm: 5-10cm: >10cm		
Very clear	Flood	Litter: None - Present - Moderate - Abundant		
Clear	Normal	Filamentous Algae:		Sewage Fungus:
Slightly turbid	Low	None - Present - Moderate - Abundant		None - Present - Moderate - Abundant
Highly turbid	Very Low	Main land use u/s:		Sample retained:
	Dry	Pasture	Urban	Y/N
	Recent Flood	Forest	Tillage	
			Other	
				Sampled in Minutes:
				Pond net x 2
				Stone wash x 0.5
				Weed sweep x 0.5

General Comments: Sleep + deer present + grazing here. Banks comprise grass, reeds, leather-forestry + blanket bog upstream of site.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) — note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) — note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance — Ab)					
Ephemeroptera:		Plecoptera:			
	Ecdyonurus Ab		Leuctra Ab		
	Rhythrogena Ab		Isoperla Ab		
	Heptagenia Ab		Protonemura Ab		
	Ephemerella Ab		Amphinemura Ab		
	Caenis Ab		Perla Ab		
	Paraleptophlebia Ab		Dinocras Ab		
	Ephemera danica Ab		Other Plecop Ab		
	Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	1	Total no. of Taxa	2	Total Relative Abundance	2
Trichoptera:		G.O.L.D.:		Asellus:	
	Hydropsychidae Ab		Lymnaea (G) Ab		Chironomidae (D) Ab
	Polycentropodidae Ab		Potamopyrgus (G) Ab		Chironomus (D) Ab
	Rhyacophila Ab		Pisania (G) Ab	15	Simuliidae (D) Ab
	Philopotamidae Ab		Ancylus (G) Ab		Dicranota (D) Ab
	Limnephilidae Ab		Physa (G) Ab		Tipulidae (D) Ab
	Sericostomatidae Ab	X 2	Lumbriculus (Ol) Ab		Ceratopogonidae (D) Ab
	Glossosomatidae Ab		Eiseniella (Ol) Ab		Other GOLD Ab
	Lepidostomatidae Ab		Tubificidae (Ol) Ab		
	Other Trichoptera Ab				
Total no. of Taxa	2	Total Relative Abundance	X 3	Total no. of Taxa	1
				Total Relative Abundance	X 2
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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa

0 ☒ 2+ ☒

Relative Abundance

Score: 0 ☒ 6 ☒ 4 ☒ 8

Group 2 - 2 Tails
Plecoptera

No. of taxa

0 ☐ 1 ☐ 2+ ☒

Relative Abundance

Score: 0 ☐ 4 ☐ 6 ☒ 8

Group 3
Trichoptera

No. of taxa

0 ☐ 1 ☒ 3+ ☒

Relative Abundance

Score: 0 ☐ 4 ☒ 4

Group 4
G.O.L.D

No. of taxa

0 ☐ 1 ☒ 3+ ☐

Relative Abundance

Score: 0 ☒ 2 ☐ 0 ☐ 4 ☐ 0

Group 5
Asellus

No. of taxa

Absent ☒ Few (1-20) ☐ Common (>20) ☐

Score: 4 ☒ 2 ☐ 0

Step 2

a) Index Score Group 1	<input checked="" type="text" value="4"/>
b) Index Score Group 2	<input checked="" type="text" value="6"/>
c) Index Score Group 3	<input checked="" type="text" value="4"/>
d) Index Score Group 4	<input checked="" type="text" value="4"/>
e) Index Score Group 5	<input checked="" type="text" value="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)

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
Probably not at risk ☒

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☐

Surveyor (signed): Aine O'Slea Name (print): Aine O'Slea Date: 01 / 07 / 22

River:	Code:	Date: 01 Sept 22	Time: 17:15
Station no. Granamore 7.	Location:	Grid (6 figure):	
Field Chemistry	Stream Order:	Stream flow: Riffle Rapid/Cascade Slow flow	
DO% 100.7	Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO mg/l 9.92	Dominant Types:		
Temp (°C) 15.8	Bedrock 0		
Conductivity 52.7	Boulder (>128mm) 10		
pH 6.18	Cobble (32-128mm) 20		
Bank width (cm) 850	Gravel (8-32mm) 20		
Wet width (cm) 700	Fine Gravel (2-8mm) 20		
Avg Depth (cm) 40	Sand (0.25-2mm) 20		
Staff gauge	Silt (<0.25mm) 10		
Velocity	Slope: Low - Medium - High - Very High	Shading: High - Moderate - Low - None	
Torrential	Geology: Calcareous-Siliceous-Mixed	Cattle access Y: upstream - downstream or N	
Fast	Substratum Condition: Calcareous-Compacted-Loose - Normal	? No cattle observed.	
Moderate	Substratum:	Photo: Y / N	
Slow	Stony bottom-Muddy bottom-Mud over stones		
Very slow	Degree of siltation: Clean-Slight-Moderate-Heavy		
Clarity	Depth of mud: None < 1cm 1-5cm 5-10cm > 10cm		
Very clear	Litter: None - Present - Moderate - Abundant		
Clear	Filamentous Algae:	Sewage Fungus:	
Slightly turbid	None - Present - Moderate - Abundant	None - Present - Moderate - Abundant	
Highly turbid	Main land use u/s:	Sample retained:	
	Pasture Urban	Y / N	
	Bog Tillage		
	Forestry Other		
		Sampled in Minutes:	
		Pond net x	
		Stone wash x	
		Weed sweep x	

General Comments: Deep & steep present here banks covered in grass, moss, leather, reeds, moss covering stones.

Macroinvertebrate Composition				Relative Abundance	
The macroinvertebrates are divided into the following 5 specific groups:					
Group 1 = Ephemeroptera (3-tails) - note that tails may be damaged during sampling				1-5	1
Group 2 = Plecoptera (2-tails) - note that tails may be damaged during sampling				6-20	2
Group 3 = Trichoptera				21-50	3
Group 4 = G.O.L.D. (Gastropoda, Oligochaeta and Diptera)				51-100	4
Group 5 = Asellus				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:	<i>Ecdyonurus</i> Ab	Plecoptera:	<i>Leuctra</i> Ab		
	<i>Rhythrogena</i> Ab		<i>Isoperla</i> Ab		
	<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab		
	<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>Ephemerella danica</i> Ab		Other Plecop Ab		
	Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance		
Trichoptera:	<i>Hydropsychidae</i> Ab	G.O.L.D.:	<i>Lymnaea</i> (G) Ab	<i>Chironomidae</i> (D) Ab	Asellus:
	<i>Polycentropodidae</i> Ab		<i>Potamopyrgus</i> (G) Ab	<i>Chironomus</i> (D) Ab	Absent
	<i>Rhyacophila</i> Ab		<i>Planorbis</i> (G) Ab	<i>Simuliidae</i> (D) Ab	Few/Low
	<i>Philopotamidae</i> Ab		<i>Ancylus</i> (G) Ab	<i>Dicranota</i> (D) Ab	Common
	<i>Limnephilidae</i> Ab		<i>Physa</i> (G) Ab	<i>Tipulidae</i> (D) Ab	Numerous
	<i>Sericostomatidae</i> Ab		<i>Lumbriculus</i> (Ol) Ab	<i>Ceratopogonidae</i> (D) Ab	
	<i>Glossosomatidae</i> Ab		<i>Eisenella</i> (Ol) Ab	Other GOLD Ab	
	<i>Lepidostomatidae</i> Ab		<i>Tubificidae</i> (Ol) Ab		
	Other Trichoptera Ab				
Total no. of Taxa 3	Total Relative Abundance 8	Total no. of Taxa 3	Total Relative Abundance 3	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*.

Baetis present.

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.

Group 1 - 3 Tails
Ephemeroptera

No. of taxa

Relative Abundance

Score

0 1 2+

1-2 3+ 2 3+

4 6 4 8

Group 2 - 2 Tails
Plecoptera

No. of taxa

Relative Abundance

Score

0 1 2+

1-2 3+ 2 3+

4 6 6 8

Group 3
Trichoptera

No. of taxa

Relative Abundance

Score

0 1-2 3+

2 4

Group 4
G.O.L.D

No. of taxa

Relative Abundance

Score

0 1-2 3-6 7+

4 2 0 0

Group 5
Asellus

No. of taxa

Relative Abundance

Score

0 1-2 3+

2 4

Step 2

- a) Index Score Group 1
- b) Index Score Group 2
- c) Index Score Group 3
- d) Index Score Group 4
- e) Index Score Group 5

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)

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
Probably not at risk ☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): [Signature] Name (print): Aine O'Shea Date: 01 / 09 / 20

River: **Station no.** Powdermill 1 **Code:** Powdermill **Date:** 18 July 22 **Time:** 16:00

Location: Powdermill **Grid (6 figure):**

Stream Order: **Stream flow:**
 Riffle
 Riffle/Glide
 Slow flow

Field Chemistry
 DO% 82.0
 DO mg/l 7.78
 Temp (°C) 17.9
 Conductivity 40.2
 pH 6.48
 Bank width (cm) 110
 Wet width (cm) 100
 Avg Depth (cm) 50
 Staff gauge

Modifications: ☒ 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: 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

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 6
 Stone wash x 4
 Weed sweep x ✓

Velocity **Colour**
 Torrential None
 Fast Slight
 Moderate Moderate
Slow High
 Very slow
Clarity **Discharge**
 Very clear Flood
Clear Normal

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

Sample retained: ☒ Y / N

General Comments:
 Slightly turbid Low
 Highly turbid Very Low
 Dry
 Recent Flood

Deer + sheep present. Stream quite narrow. Much Brown Algae on rocks + cobbles.
 Much deer/sheep poaching observed on banks here.

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)

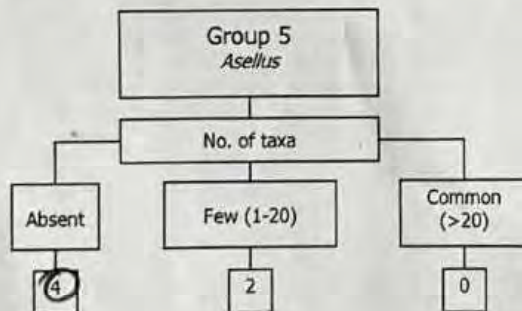
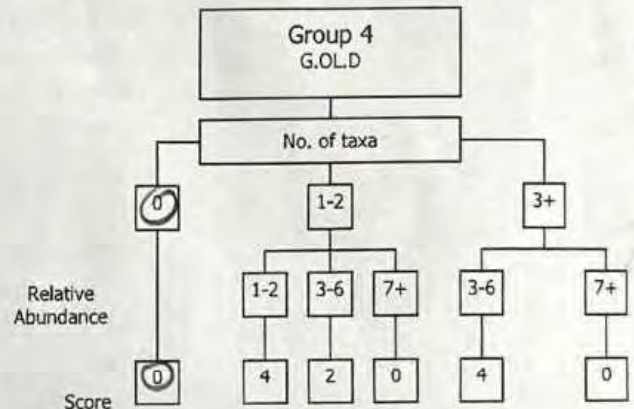
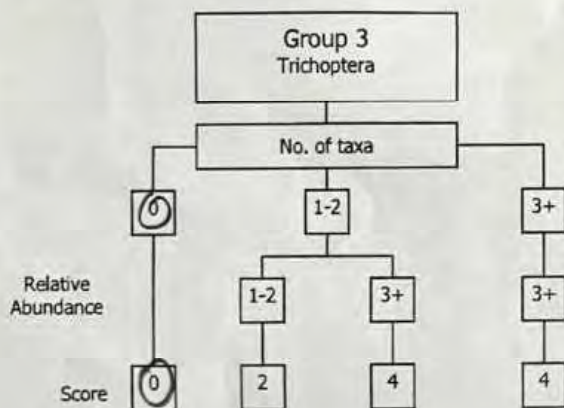
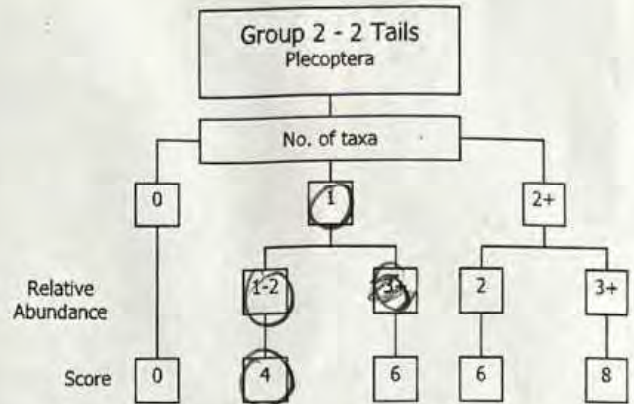
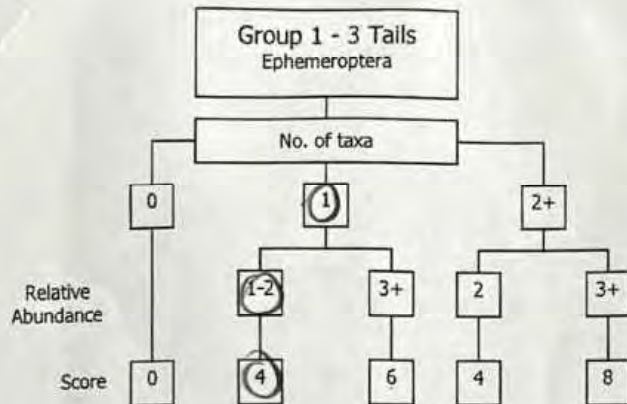
Ephemeroptera:		Plecoptera:	
<u>11</u> <i>Ecdyonurus</i> Ab	<u>1</u>	<u>1</u> <i>Leuctra</i> Ab	
<i>Rhythrogena</i> Ab		<i>Isoperla</i> Ab	
<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab	
<i>Ephemerella</i> Ab		<i>Amphinemura</i> Ab	
<i>Caenis</i> Ab		<i>Perla</i> Ab	
<i>Paraleptophlebia</i> Ab		<i>Dinocras</i> Ab	
<i>Ephemera danica</i> Ab		<i>Taenio</i> <u>11</u> Other Plecop Ab	<u>1</u>
Other Ephem Ab		Other Plecop Ab	
Total no. of taxa <u>1</u>	Total Relative Abundance <u>1</u>	Total no. of Taxa <u>1</u>	Total Relative Abundance <u>1</u>

Trichoptera:		G.O.L.D.:		Chironomidae (D) Ab		Asellus:	
<i>Hydropsychidae</i> Ab		<i>Limnoria</i> (G) Ab		<i>Chironomus</i> (D) Ab		<i>Asellus</i>	
<i>Polycentropodidae</i> Ab		<i>Potamopyrgus</i> (G) Ab		<i>Simuliidae</i> (D) Ab		Absent	<input checked="" type="checkbox"/>
<i>Rhyacophila</i> Ab		<i>Planorbis</i> (G) Ab		<i>Dicranota</i> (D) Ab		Few/Low	
<i>Philopotamidae</i> Ab		<i>Ancylus</i> (G) Ab		<i>Tipulidae</i> (D) Ab		Common/ Numerous	
<i>Limnephilidae</i> Ab		<i>Physa</i> (G) Ab		<i>Ceratopogonidae</i> (D) Ab			
<i>Sericostomatidae</i> Ab		<i>Lumbriculus</i> (OI) Ab		Other GOLD Ab			
<i>Glossosomatidae</i> Ab		<i>Eiseniella</i> (OI) Ab					
<i>Lepidostomatidae</i> Ab		<i>Tubificidae</i> (OI) Ab					
Other Trichoptera Ab							
Total no. of Taxa <u>0</u>	Total Relative Abundance <u>0</u>	Total no. of Taxa <u>0</u>	Total Relative Abundance <u>0</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*.

No *Baetis* present: 0

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
b) Index Score Group 2
c) Index Score Group 3
d) Index Score Group 4
e) Index Score Group 5

4
4
0
0
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) **12**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **2.4**

SSR Score
(AIS x 2) **4.8**

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

> 7.25
Probably not at risk ☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): A. Shea Name (print): Aine O SHEA Date: 18 / 07 / 22

River:	Code:	Date: 18 July 22	Time: 14:00
Station no. Powerscourt 2	Location: Powerscourt Paddock	Grid (6 figure):	
Stream Order:		Stream flow: Riffle Riffle/Glide Slow flow	
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage	
DO%	66.5	Dominant Types:	
DO mg/l	6.51	Bedrock	
Temp (°C)	16.2	Boulder (>128mm)	
Conductivity	45.2	Cobble (32-128mm)	
pH	5.56	Gravel (8-32mm)	
Bank width (cm)	220	Fine Gravel (2-8mm)	
Wet width (cm)	170	Sand (0.25-2mm)	
Avg Depth (cm)	20	Silt (<0.25mm)	
Staff gauge		Slope: Low - Medium - High - Very High	
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed	
Torrential	None	Substratum Condition: Calcareous-Compacted-Loose - Normal	
Fast	Slight	Substratum:	
Moderate	Moderate	Stony bottom-Muddy bottom-Mud over stones	
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy	
Very slow		Depth of mud: None: <1cm: 1-5cm: 5-10cm: >10cm	
Clarity	Discharge	Litter: None - Present - Moderate - Abundant	
Very clear	Flood	Filamentous Algae:	
Cloudy	Normal	None - Present - Moderate - Abundant	
Slightly turbid	Low	Main land use u/s:	
Highly turbid	Very Low	Pasture	Urban
	Dry	Bar	Tillage
	Recent Flood	Forestry	Other
		Sample retained:	Sewage Fungus:
		Y/N	None - Present - Moderate - Abundant
			Sampled in Minutes:
			Pond net x 3
			Stone wash x 2
			Weed sweep x 1

General Comments:

No sleep observed Low Deer present
Many weeds + leather along bank

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 (Gastropode, Oligochaeta and Diptera)

Group 5 = Asellus

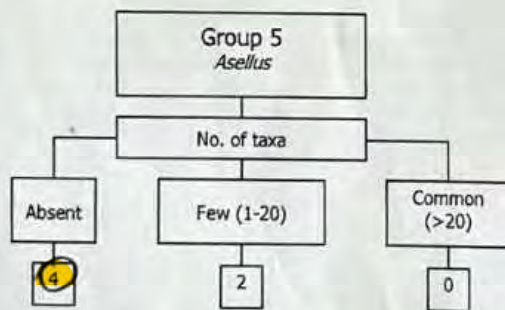
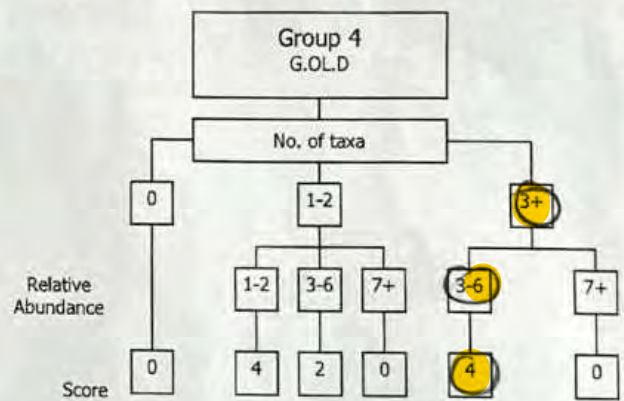
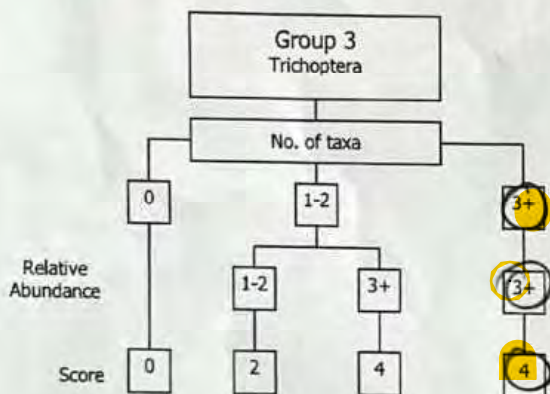
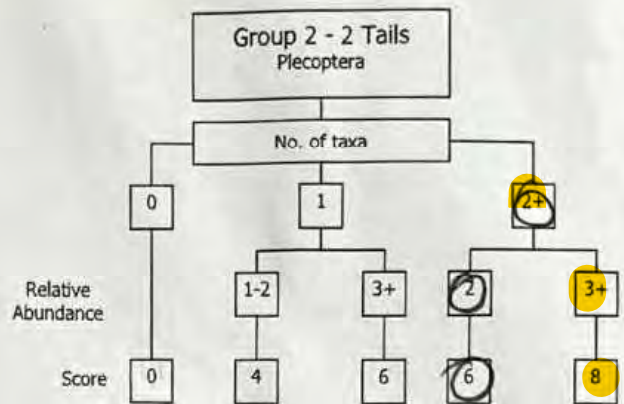
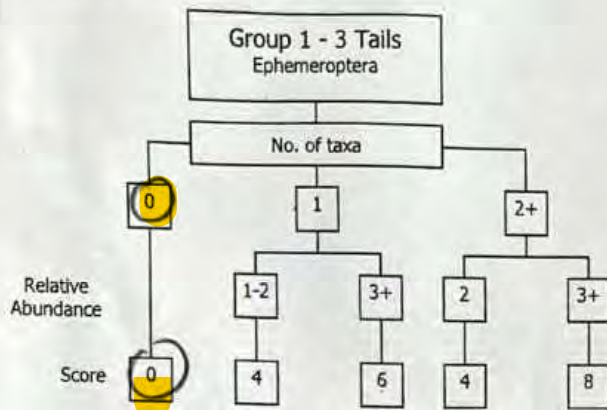
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)

				Relative Abundance	
				1-5	1
				6-20	2
				21-50	3
				51-100	4
				101+	5
Calculate the total number of taxa and relative abundance of each macroinvertebrate group below: (Abundance - Ab)					
Ephemeroptera:		Plecoptera:			
	<i>Ecdyonurus</i> Ab		<i>Leuctra</i> Ab		X 1
	<i>Rhythrogena</i> Ab		<i>Isoperla</i> Ab		X 2
	<i>Heptagenia</i> Ab		<i>Protonemura</i> Ab		
	<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>Ephemera danica</i> Ab		Other Plecop Ab		1
	Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	0	Total Relative Abundance	0	Total no. of Taxa	3
Trichoptera:		G.O.L.D:		Total Relative Abundance	
	<i>Hydropsychidae</i> Ab		<i>Lymnaea</i> (G) Ab		X 4
	<i>Polycentropodidae</i> Ab		<i>Potamopyrgus</i> (G) Ab		
	<i>Rhyacophila</i> Ab		<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> (Ol) Ab		1
	<i>Glossosomatidae</i> Ab		<i>Eiseniella</i> (Ol) Ab		1
	<i>Lepidostomatidae</i> Ab		<i>Tubificidae</i> (Ol) Ab		1
	Other Trichoptera Ab				
Total no. of Taxa	3	Total Relative Abundance	X 3	Total no. of Taxa	3
				Total Relative Abundance	X 3
				Chironomidae (D) Ab	
				<i>Chironomus</i> (D) Ab	
				<i>Simuliidae</i> (D) Ab	
				<i>Dicranota</i> (D) Ab	
				<i>Tipulidae</i> (D) Ab	
				<i>Ceratopogonidae</i> (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*.

Baetis - plus 20.

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
b) Index Score Group 2
c) Index Score Group 3
d) Index Score Group 4
e) Index Score Group 5

0
X 8
4
4
4

Step 3. Calculate the Total Index Score, the Average Index Score and the SSR Score using the boxes below 8

Total Index Score (TIS)
sum (a+b+c+d+e) ~~18~~ 20

Average Index Score (AIS)
TIS/5 (5 for 5 groups) ~~3.6~~ 4

SSR Score
(AIS x 2) ~~7.2~~ 8

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

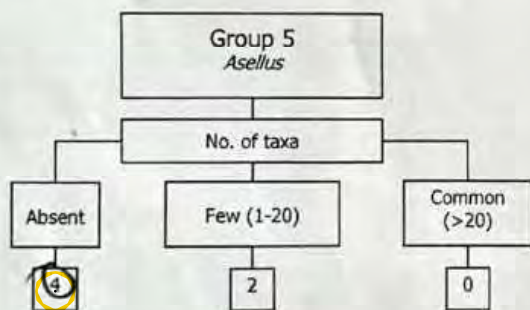
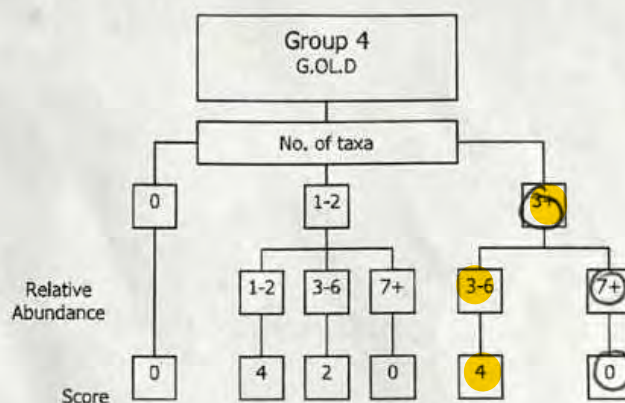
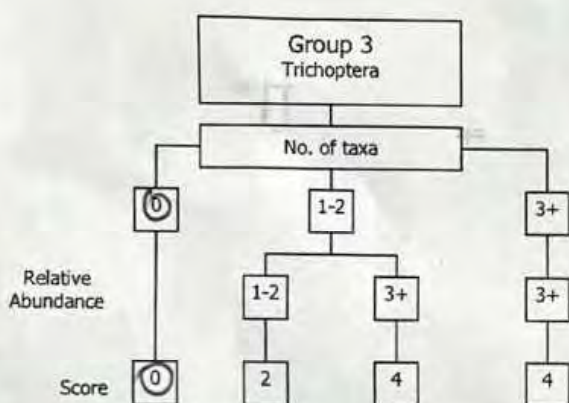
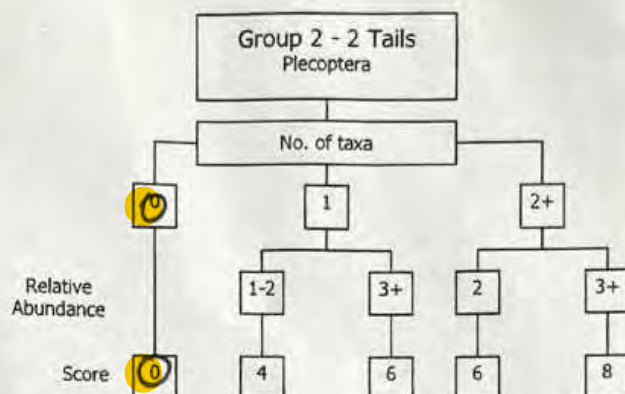
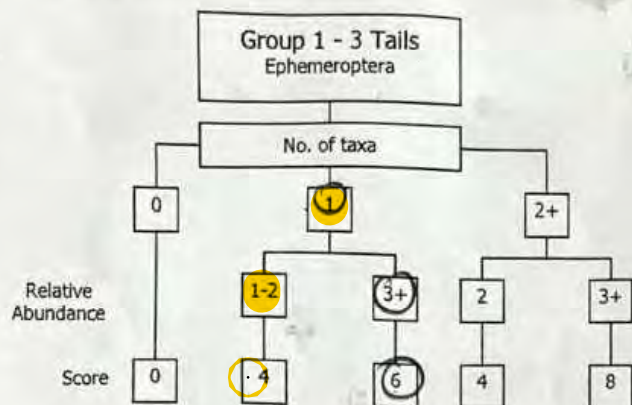
> 7.25
Probably not at risk ☒

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☒

< 6.5
Stream at risk ☐

Surveyor (signed): Aslan Name (print): Aine O SNEA Date: 18 / 07 / 22

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 ~~X~~ 4
- b) Index Score Group 2 0
- c) Index Score Group 3 0
- d) Index Score Group 4 ~~X~~ 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) ~~XX~~ 12

Average Index Score (AIS)
TIS/5 (5 for 5 groups) ~~XX~~ 2.4

SSR Score
(AIS x 2) 4.8

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

> 7.25
Probably not at risk ☐

> 6.5 – 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): AShea Name (print): ANNE O SHEA Date: 18 July 2022

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.

Group 1 - 3 Tails Ephemeroptera

No. of taxa

0 (circled) 1 2+

Relative Abundance

Score: 0 (circled) 4 6 4 8

Group 2 - 2 Tails Plecoptera

No. of taxa

0 1 (circled) 2+

Relative Abundance

Score: 0 4 (circled) 6 6 8

Group 3 Trichoptera

No. of taxa

0 (circled) 1-2 3+

Relative Abundance

Score: 0 (circled) 2 4 4

Group 4 G.O.L.D

No. of taxa

0 1-2 3+ (circled)

Relative Abundance

Score: 0 4 2 0 4 (circled) 0

Group 5 Asellus

No. of taxa

Absent Few (1-20) Common (>20)

Score: 4 (circled) 2 0

Step 2

a) Index Score Group 1: 0

b) Index Score Group 2: 4

c) Index Score Group 3: 0

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) **12**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **2.4**

SSR Score
(AIS x 2) **4.8**

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

> 7.25
Probably not at risk ☐

> 6.5 – 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): [Signature] Name (print): ANNE O'SHEA Date: 18 July 2022

River:		Code:	Date: 10 Aug 22	Time: 12:30
Station no. Slieveveel 1		Location:		Grid (6 figure):
Stream Order:		Stream flow: Riffle Riffle/Glide Slow flow Very slow flow		
Field Chemistry		Modifications: Y/N Canalised-widened-bank erosion-arterial drainage		
DO%	91.2	Dominant Types:		
DO mg/l	9.24	Bedrock		
Temp (°C)	14.9	Boulder (>128mm)		
Conductivity	57.2	Cobble (32-128mm)		
pH	5.83	Gravel (8-32mm) 50		
Bank width (cm)	25	Fine Gravel (2-8mm) 10		
Wet width (cm)	20	Sand (0.25-2mm) 20		
Avg Depth (cm)	10	Silt (<0.25mm) 20		
Staff gauge		Slope: Low - Medium - High - Very High		
Velocity	Colour	Geology: Calcareous-Siliceous-Mixed		
Torrential	None	Substratum Condition: Calcareous-Compacted-Ladde - Normal		
Fast	Slight	Substratum:		
Moderate	Moderate	Stoney bottom-Muddy bottom-Mud over stones		
Slow	High	Degree of siltation: Clean-Slight-Moderate-Heavy		
Very slow		Depth of mud: None: <0cm: 1-5cm: 5-10cm: >10cm		
Clarity	Discharge	Litter: None - Present - Moderate - Abundant		
Very clear	Flood	Filamentous Algae:		
Clear	Normal	None - Present - Moderate - Abundant		
Slightly turbid	Low	Main land use u/s:		
Highly turbid	Very low	Urban		
	Very low	Tillage		
	Recent Flood	Other		
		Sample retained:		
		Y/N		
		Sewage Fungus:		
		None - Present - Moderate - Abundant		
		Sampled in Minutes:		
		Pond net x 1		
		Stone wash x 1		
		Weed sweep x 1		
General Comments: * Not possible to kick sample @ this location; due to channel width, and extremely dense overgrowth. Used jug to scoop + disturb stream bed: Sleepicous + dead present in fields surrounding stream.				
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)				
Ephemeroptera:		Plecoptera:		Relative Abundance
Ecdyonurus Ab		Leuctra Ab		1-5
Rhithrogena Ab		Isoperla Ab		6-20
Heptagenia Ab		Protonemura Ab		21-50
Ephemerella Ab		Amphinemura Ab		51-100
Caenis Ab		Perla Ab		101+
Paraleptophlebia Ab		Dinocras Ab		
Ephemera danica Ab		Other Plecop Ab		
Other Ephem Ab		Other Plecop Ab		
Total no. of taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance	
Trichoptera:		G.O.L.D.:		
Hydropsychidae Ab		Lymnaea (G) Ab	Chironomidae (D) Ab	Asellus:
Polycentropodidae Ab		Potamopyrgus (G) Ab	Chironomus (D) Ab	Absent
Rhyacophila Ab		Planorbis (G) Ab	Simuliidae (D) Ab	Few/Low
Philopotamidae Ab		Ancylus (G) Ab	Dicranota (D) Ab	Common/Numerous
Umnephilidae Ab	1	Physa (G) Ab	Tipulidae (D) Ab	
Sericostomatidae Ab	2	Lumbriculus (OI) Ab	Ceratopogonidae (D) Ab	
Glossosomatidae Ab		Eiseniella (OI) Ab	Other GOLD Ab	
Lepidostomatidae Ab		Tubificidae (OI) Ab		
Other Trichoptera Ab				
Total no. of Taxa	Total Relative Abundance	Total no. of Taxa	Total Relative Abundance	NOTE: Asellus must be recorded as absent if none are found
XX 2	3	1	1	

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*.

ORP:
-312.7

Day @
SSRS
location;
and dry
further
downstream
of actual
SSRS location

Cable &
Sleep
Access
@ Stream

(Poor access to stream + flow @ this location
Stream is dry u/s + d/s of actual SSRS location)

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.

<p>Group 1 - 3 Tails Ephemeroptera</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1</td> <td>2+</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>4</td> <td>6</td> </tr> </table>	0	1	2+	Relative Abundance	1-2	3+	Score	4	6	<p>Group 2 - 2 Tails Plecoptera</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1</td> <td>2+</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>4</td> <td>6</td> </tr> </table>	0	1	2+	Relative Abundance	1-2	3+	Score	4	6
0	1	2+																	
Relative Abundance	1-2	3+																	
Score	4	6																	
0	1	2+																	
Relative Abundance	1-2	3+																	
Score	4	6																	
<p>Group 3 Trichoptera</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>2</td> <td>4</td> </tr> </table>	0	1-2	3+	Relative Abundance	1-2	3+	Score	2	4	<p>Group 4 G.O.L.D</p> <p>No. of taxa</p> <table border="0"> <tr> <td>0</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Relative Abundance</td> <td>1-2</td> <td>3+</td> </tr> <tr> <td>Score</td> <td>4</td> <td>0</td> </tr> </table>	0	1-2	3+	Relative Abundance	1-2	3+	Score	4	0
0	1-2	3+																	
Relative Abundance	1-2	3+																	
Score	2	4																	
0	1-2	3+																	
Relative Abundance	1-2	3+																	
Score	4	0																	
<p>Group 5 Asellus</p> <p>No. of taxa</p> <table border="0"> <tr> <td>Absent</td> <td>Few (1-20)</td> <td>Common (>20)</td> </tr> <tr> <td>Score</td> <td>2</td> <td>0</td> </tr> </table>		Absent	Few (1-20)	Common (>20)	Score	2	0												
Absent	Few (1-20)	Common (>20)																	
Score	2	0																	

Step 2

a) Index Score Group 1	0
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) **12**

Average Index Score (AIS)
TIS/5 (5 for 5 groups) **2.4**

SSR Score
(AIS x 2) **4.8**

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

> 7.25
Probably not at risk ☐

> 6.5 - 7.25
Indeterminate
Stream may be at risk ☐

< 6.5
Stream at risk ☒

Surveyor (signed): [Signature]

Name (print): Aine O SHEA

Date: 10 / 08 / 22



ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

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F: +44 (0)24 7685 6575
www.alsenvironmental.co.uk

**Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2**

26 July 2022

Test Report: COV/2347278/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 20 July 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).


An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: 

Name: P. Patel

Title: Inorganics Chemistry Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **26 July 2022**

Report Number: **COV/2347278/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Number of Samples
included in this report **4**

Job Received: **20 July 2022**

Number of Test Results
included in this report **12**

Analysis Commenced: **23 July 2022**

Signed:

Name: **P. Patel**

Date: **26 July 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

This communication has been sent to you by ALS Environmental Ltd. Registered in England and Wales. Registration No. 02148934. Registered Office: ALS Environmental Limited, Torrington Avenue, Coventry, CV4 9GU.

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ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel: +44 (0)24 7642 1213 Fax: +44 (0)24 7685 6575

Page 1 of 8

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2347278/2022**
Laboratory Number: **21846422**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Powerscourt 1**
Sample Matrix: **Surface Water**
Sample Date/Time: **18 July 2022**
Sample Received: **20 July 2022**
Analysis Complete: **26 July 2022**

Issue **1**
Sample **1** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	25/07/2022	Y Cov	WAS022

Analyst Comments for 21846422: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **26 July 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2347278/2022**
Laboratory Number: **21846423**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Powerscourt 2**
Sample Matrix: **Surface Water**
Sample Date/Time: **18 July 2022**
Sample Received: **20 July 2022**
Analysis Complete: **26 July 2022**

Issue **1**
Sample **2** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	25/07/2022	Y Cov	WAS022

Analyst Comments for 21846423: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **26 July 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2347278/2022**
Laboratory Number: **21846424**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Powerscourt 3**
Sample Matrix: **Surface Water**
Sample Date/Time: **18 July 2022**
Sample Received: **20 July 2022**
Analysis Complete: **26 July 2022**

Issue **1**
Sample **3** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	25/07/2022	Y Cov	WAS022

Analyst Comments for 21846424: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **26 July 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2347278/2022**
Laboratory Number: **21846425**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Powerscourt 4**
Sample Matrix: **Surface Water**
Sample Date/Time: **18 July 2022**
Sample Received: **20 July 2022**
Analysis Complete: **26 July 2022**

Issue **1**
Sample **4** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	25/07/2022	Y Cov	WAS022

Analyst Comments for 21846425: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **26 July 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
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ANALYST COMMENTS FOR REPORT COV/2347278/2022

Issue 1

This issue replaces
all previous issues

Date of Issue: **26 July 2022**

Sample No

Analysis Comments

21846422

21846423

21846424

21846425

Signed:

Name: **P. Patel**

Date: **26 July 2022**

Title: **Inorganics Chemistry Manager**

**DETERMINAND COMMENTS FOR REPORT COV/2347278/2022****ISSUE 1****Date of Issue: 26 July 2022**This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed:

Name: **P. Patel**Date: **26 July 2022**Title: **Inorganics Chemistry Manager**

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Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2

27 July 2022

Test Report: COV/2348071/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 21 July 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name:

D. Lewis

Title:

Technical Inorganic Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **27 July 2022**

Report Number: **COV/2348071/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Job Location: Wicklow Uplands

Number of Samples
included in this report **4**

Job Received: **21 July 2022**

Number of Test Results
included in this report **12**

Analysis Commenced: **23 July 2022**

Signed:

Name: **D. Lewis**

Date: **27 July 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

This communication has been sent to you by ALS Environmental Ltd. Registered in England and Wales. Registration No. 02148934. Registered Office: ALS Environmental Limited, Torrington Avenue, Coventry, CV4 9GU.

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Page 1 of 8

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348071/2022**
Laboratory Number: **21851407**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Granmore 1**
Sample Matrix: **Surface Water**
Sample Date/Time: **19 July 2022**
Sample Received: **21 July 2022**
Analysis Complete: **27 July 2022**

Issue **1**
Sample **1** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	0.6	mg/l	26/07/2022	Y Cov	WAS022

Analyst Comments for 21851407: {/}*}Sample filtered through 0.45um filter prior to Nitrogen analysis.{*/}

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **27 July 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348071/2022**
Laboratory Number: **21851408**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Granmore 2**
Sample Matrix: **Surface Water**
Sample Date/Time: **19 July 2022**
Sample Received: **21 July 2022**
Analysis Complete: **27 July 2022**

Issue **1**
Sample **2** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	0.24	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	1.1	mg/l	26/07/2022	Y Cov	WAS022

Analyst Comments for 21851408: {/}*}Sample filtered through 0.45um filter prior to Nitrogen analysis.{*/}

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **27 July 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348071/2022**
Laboratory Number: **21851409**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Granmore 3**
Sample Matrix: **Surface Water**
Sample Date/Time: **19 July 2022**
Sample Received: **21 July 2022**
Analysis Complete: **27 July 2022**

Issue **1**
Sample **3** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	26/07/2022	Y Cov	WAS022

Analyst Comments for 21851409: {/}*}Sample filtered through 0.45um filter prior to Nitrogen analysis.{*/}

This issue replaces all previous issues

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For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **27 July 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348071/2022**
Laboratory Number: **21851410**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Granmore 4**
Sample Matrix: **Surface Water**
Sample Date/Time: **19 July 2022**
Sample Received: **21 July 2022**
Analysis Complete: **27 July 2022**

Issue **1**
Sample **4** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	23/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	23/07/2022	N Cov	WAS067
Nitrogen, Total as N	0.6	mg/l	26/07/2022	Y Cov	WAS022

Analyst Comments for 21851410: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **27 July 2022**

Title: **Technical Inorganic Manager**

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ANALYST COMMENTS FOR REPORT COV/2348071/2022

Issue 1

This issue replaces all previous issues

Date of Issue: 27 July 2022

Sample No	Analysis Comments
21851407	{/*}Sample filtered through 0.45um filter prior to Nitrogen analysis.{*/}
21851408	{/*}Sample filtered through 0.45um filter prior to Nitrogen analysis.{*/}
21851409	{/*}Sample filtered through 0.45um filter prior to Nitrogen analysis.{*/}
21851410	

Signed:

Name: D. Lewis

Date: 27 July 2022

Title: Technical Inorganic Manager



DETERMINAND COMMENTS FOR REPORT COV/2348071/2022

Date of Issue: 27 July 2022

ISSUE 1

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed: *D. Lewis*

Name: **D. Lewis**

Date: **27 July 2022**

Title: **Technical Inorganic Manager**

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ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

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Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2

28 July 2022

Test Report: COV/2348823/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 22 July 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name:

D. Lewis

Title:

Technical Inorganic Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **28 July 2022**

Report Number: **COV/2348823/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Job Location: Wicklow Uplands

Number of Samples
included in this report **4**

Job Received: **22 July 2022**

Number of Test Results
included in this report **12**

Analysis Commenced: **25 July 2022**

Signed:

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

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Page 1 of 8

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348823/2022**
Laboratory Number: **21856117**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Duff 1**
Sample Matrix: **Surface Water**
Sample Date/Time: **20 July 2022**
Sample Received: **22 July 2022**
Analysis Complete: **28 July 2022**

Issue **1**
Sample **1** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	25/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	25/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	27/07/2022	Y Cov	WAS022

Analyst Comments for 21856117: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348823/2022**
Laboratory Number: **21856118**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Duff 2**
Sample Matrix: **Surface Water**
Sample Date/Time: **20 July 2022**
Sample Received: **22 July 2022**
Analysis Complete: **28 July 2022**

Issue **1**
Sample **2** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	25/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	25/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	26/07/2022	Y Cov	WAS022

Analyst Comments for 21856118: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348823/2022**
Laboratory Number: **21856119**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Duff 3**
Sample Matrix: **Surface Water**
Sample Date/Time: **20 July 2022**
Sample Received: **22 July 2022**
Analysis Complete: **28 July 2022**

Issue **1**
Sample **3** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	25/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	25/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	27/07/2022	Y Cov	WAS022

Analyst Comments for 21856119: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2348823/2022**
Laboratory Number: **21856120**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Duff 4**
Sample Matrix: **Surface Water**
Sample Date/Time: **20 July 2022**
Sample Received: **22 July 2022**
Analysis Complete: **28 July 2022**

Issue **1**
Sample **4** of **4**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	25/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	25/07/2022	N Cov	WAS067
Nitrogen, Total as N	4.1	mg/l	26/07/2022	Y Cov	WAS022

Analyst Comments for 21856120: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd

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Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575



ANALYST COMMENTS FOR REPORT COV/2348823/2022

Issue 1

This issue replaces
all previous issues

Date of Issue: **28 July 2022**

Sample No

Analysis Comments

21856117

21856118

21856119

21856120

Signed:

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**



DETERMINAND COMMENTS FOR REPORT COV/2348823/2022

Date of Issue: 28 July 2022

ISSUE 1

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed: *D. Lewis*

Name: **D. Lewis**

Date: **28 July 2022**

Title: **Technical Inorganic Manager**

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**Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2**

02 August 2022

Test Report: COV/2349520/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 25 July 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name:

D. Lewis

Title:

Technical Inorganic Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **02 August 2022**

Report Number: **COV/2349520/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Job Location: Wicklow Uplands

Number of Samples
included in this report **3**

Job Received: **25 July 2022**

Number of Test Results
included in this report **9**

Analysis Commenced: **26 July 2022**

Signed:

Name: **D. Lewis**

Date: **02 August 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

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This test report is not a statement of conformity to any specification or standard.

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Page 1 of 7

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2349520/2022**
Laboratory Number: **21861605**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **GV1**
Sample Matrix: **Surface Water**
Sample Date/Time: **21 July 2022**
Sample Received: **25 July 2022**
Analysis Complete: **02 August 2022**

Issue **1**
Sample **1** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	27/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	27/07/2022	N Cov	WAS067
Nitrogen, Total as N	1.0	mg/l	27/07/2022	Y Cov	WAS022

Analyst Comments for 21861605: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **02 August 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2349520/2022**
Laboratory Number: **21861606**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **GV 2**
Sample Matrix: **Surface Water**
Sample Date/Time: **21 July 2022**
Sample Received: **25 July 2022**
Analysis Complete: **02 August 2022**

Issue **1**
Sample **2** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	26/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	26/07/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	01/08/2022	Y Cov	WAS022

Analyst Comments for 21861606:

This sample has been analysed for Nitrogen, Total as N outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **02 August 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2349520/2022**
Laboratory Number: **21861607**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **GV 3**
Sample Matrix: **Surface Water**
Sample Date/Time: **21 July 2022**
Sample Received: **25 July 2022**
Analysis Complete: **02 August 2022**

Issue **1**
Sample **3** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	27/07/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	27/07/2022	N Cov	WAS067
Nitrogen, Total as N	2.8	mg/l	27/07/2022	Y Cov	WAS022

Analyst Comments for 21861607: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **02 August 2022**

Title: **Technical Inorganic Manager**

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ANALYST COMMENTS FOR REPORT COV/2349520/2022

Issue 1

This issue replaces all previous issues

Date of Issue: **02 August 2022**

Sample No	Analysis Comments
21861605	
21861606	This sample has been analysed for Nitrogen, Total as N outside recommended stability times. It is therefore possible that the results provided may be compromised.
21861607	

Signed:

Name: **D. Lewis**

Date: **02 August 2022**

Title: **Technical Inorganic Manager**



DETERMINAND COMMENTS FOR REPORT COV/2349520/2022

Date of Issue: 02 August 2022

ISSUE 1

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed: *D. Lewis*

Name: **D. Lewis**

Date: **02 August 2022**

Title: **Technical Inorganic Manager**

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**Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2**

16 August 2022

Test Report: COV/2358399/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 12 August 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name:

D. Lewis

Title:

Technical Inorganic Manager



1314



ISO 14001
Environmental
Management

CERTIFIED

ISO 45001
Occupational
Health and Safety
Management

CERTIFIED

EMS675527

OHS 542058



THE ENVIRONMENT AGENCY'S
MONITORING CERTIFICATION SCHEME

Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **16 August 2022**

Report Number: **COV/2358399/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Job Location: Wicklow Uplands

Number of Samples
included in this report **2**

Job Received: **12 August 2022**

Number of Test Results
included in this report **6**

Analysis Commenced: **15 August 2022**

Signed:

Name: **D. Lewis**

Date: **16 August 2022**

Title: **Technical Inorganic Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

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Page 1 of 6

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2358399/2022**
Laboratory Number: **21926436**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Slieve 1**
Sample Matrix: **Surface Water**
Sample Date/Time: **10 August 2022**
Sample Received: **12 August 2022**
Analysis Complete: **16 August 2022**

Issue **1**
Sample **1** of **2**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	15/08/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	15/08/2022	N Cov	WAS067
Nitrogen, Total as N	0.6	mg/l	15/08/2022	Y Cov	WAS022

Analyst Comments for 21926436: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **16 August 2022**

Title: **Technical Inorganic Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2358399/2022**
Laboratory Number: **21926437**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Ballybeg**
Sample Matrix: **Surface Water**
Sample Date/Time: **10 August 2022**
Sample Received: **12 August 2022**
Analysis Complete: **16 August 2022**

Issue **1**
Sample **2** of **2**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	15/08/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	15/08/2022	N Cov	WAS067
Nitrogen, Total as N	0.8	mg/l	15/08/2022	Y Cov	WAS022

Analyst Comments for 21926437: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **D. Lewis**

Date: **16 August 2022**

Title: **Technical Inorganic Manager**

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ANALYST COMMENTS FOR REPORT COV/2358399/2022

Issue 1

This issue replaces
all previous issues

Date of Issue: **16 August 2022**

Sample No

Analysis Comments

21926436

21926437

Signed:

Name: **D. Lewis**

Date: **16 August 2022**

Title: **Technical Inorganic Manager**



DETERMINAND COMMENTS FOR REPORT COV/2358399/2022

Date of Issue: 16 August 2022

ISSUE 1

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed: *D. Lewis*

Name: **D. Lewis**

Date: **16 August 2022**

Title: **Technical Inorganic Manager**

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Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2

31 August 2022

Test Report: COV/2359188/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 15 August 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).


An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: 

Name: P. Patel

Title: Inorganics Chemistry Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **31 August 2022**

Report Number: **COV/2359188/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Number of Samples
included in this report **2**

Job Received: **15 August 2022**

Number of Test Results
included in this report **6**

Analysis Commenced: **16 August 2022**

Signed:

Name: **P. Patel**

Date: **31 August 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2359188/2022**
Laboratory Number: **21932598**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Glass 1**
Sample Matrix: **Surface Water**
Sample Date/Time: **11 August 2022**
Sample Received: **15 August 2022**
Analysis Complete: **31 August 2022**

Issue **1**
Sample **1** of **2**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	16/08/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	16/08/2022	N Cov	WAS067
Nitrogen, Total as N	1.2	mg/l	25/08/2022	Y Cov	WAS022

Analyst Comments for 21932598:

This sample has been analysed for Nitrogen, Total as N outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **31 August 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2359188/2022**
Laboratory Number: **21932599**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Glass 2**
Sample Matrix: **Surface Water**
Sample Date/Time: **11 August 2022**
Sample Received: **15 August 2022**
Analysis Complete: **31 August 2022**

Issue **1**
Sample **2** of **2**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	16/08/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	16/08/2022	N Cov	WAS067
Nitrogen, Total as N	0.9	mg/l	17/08/2022	Y Cov	WAS022

Analyst Comments for 21932599: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **31 August 2022**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575



ANALYST COMMENTS FOR REPORT COV/2359188/2022

Issue 1

This issue replaces all previous issues

Date of Issue: **31 August 2022**

Sample No	Analysis Comments
21932598	This sample has been analysed for Nitrogen, Total as N outside recommended stability times. It is therefore possible that the results provided may be compromised.
21932599	

Signed:

Name: **P. Patel**

Date: **31 August 2022**

Title: **Inorganics Chemistry Manager**



DETERMINAND COMMENTS FOR REPORT COV/2359188/2022

Date of Issue: 31 August 2022

ISSUE 1

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed:

Name: **P. Patel**

Date: **31 August 2022**

Title: **Inorganics Chemistry Manager**

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**Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2**

09 September 2022

Test Report: COV/2366130/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 31 August 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: A. Zunzunegui

Title: Organics Chemistry Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **09 September 2022**

Report Number: **COV/2366130/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Job Location: Wicklow Uplands

Number of Samples
included in this report **3**

Job Received: **31 August 2022**

Number of Test Results
included in this report **9**

Analysis Commenced: **05 September 2022**

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

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Page 1 of 7

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2366130/2022**
Laboratory Number: **21983966**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Cor 1**
Sample Matrix: **Surface Water**
Sample Date/Time: **29 August 2022**
Sample Received: **31 August 2022**
Analysis Complete: **09 September 2022**

Issue **1**
Sample **1** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	05/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	05/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	07/09/2022	Y Cov	WAS022

Analyst Comments for 21983966:

This sample has been analysed for Ammoniacal Nitrogen as N (LL) outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2366130/2022**
Laboratory Number: **21983967**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Cor 2**
Sample Matrix: **Surface Water**
Sample Date/Time: **29 August 2022**
Sample Received: **31 August 2022**
Analysis Complete: **09 September 2022**

Issue **1**
Sample **2** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	05/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	05/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	07/09/2022	Y Cov	WAS022

Analyst Comments for 21983967:

This sample has been analysed for Ammoniacal Nitrogen as N (LL) outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2366130/2022**
Laboratory Number: **21983968**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Cor 3**
Sample Matrix: **Surface Water**
Sample Date/Time: **29 August 2022**
Sample Received: **31 August 2022**
Analysis Complete: **09 September 2022**

Issue **1**
Sample **3** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	05/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	05/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	07/09/2022	Y Cov	WAS022

Analyst Comments for 21983968:

This sample has been analysed for Ammoniacal Nitrogen as N (LL) outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

**ANALYST COMMENTS FOR REPORT COV/2366130/2022****Issue 1**This issue replaces
all previous issuesDate of Issue: **09 September 2022**

Sample No	Analysis Comments
21983966	This sample has been analysed for Ammoniacal Nitrogen as N (LL) outside recommended stability times. It is therefore possible that the results provided may be compromised.
21983967	This sample has been analysed for Ammoniacal Nitrogen as N (LL) outside recommended stability times. It is therefore possible that the results provided may be compromised.
21983968	This sample has been analysed for Ammoniacal Nitrogen as N (LL) outside recommended stability times. It is therefore possible that the results provided may be compromised.

Signed:

Name: **A. Zunzunegui**Date: **09 September 2022**Title: **Organics Chemistry Manager**

**DETERMINAND COMMENTS FOR REPORT COV/2366130/2022****ISSUE 1****Date of Issue: 09 September 2022**This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed:

Name: **A. Zunzunegui**Date: **09 September 2022**Title: **Organics Chemistry Manager**

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www.alsenvironmental.co.uk

Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2

09 September 2022

Test Report: COV/2366822/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 01 September 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name:

A. Zunzunegui

Title:

Organics Chemistry Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

**Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2**



Date of Issue: **09 September 2022**

Report Number: **COV/2366822/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Number of Samples
included in this report **3**

Job Received: **01 September 2022**

Number of Test Results
included in this report **9**

Analysis Commenced: **05 September 2022**

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

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Page 1 of 7

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2366822/2022**
Laboratory Number: **21988941**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Mulla1**
Sample Matrix: **Surface Water**
Sample Date/Time: **30 August 2022**
Sample Received: **01 September 2022**
Analysis Complete: **09 September 2022**

Issue **1**
Sample **1** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	05/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	05/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	07/09/2022	Y Cov	WAS022

Analyst Comments for 21988941: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2366822/2022**
Laboratory Number: **21988942**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Carrig 5**
Sample Matrix: **Surface Water**
Sample Date/Time: **30 August 2022**
Sample Received: **01 September 2022**
Analysis Complete: **09 September 2022**

Issue **1**
Sample **2** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	05/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	05/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	07/09/2022	Y Cov	WAS022

Analyst Comments for 21988942: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2366822/2022**
Laboratory Number: **21988943**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Carrig 6**
Sample Matrix: **Surface Water**
Sample Date/Time: **30 August 2022**
Sample Received: **01 September 2022**
Analysis Complete: **09 September 2022**

Issue **1**
Sample **3** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	05/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	05/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	07/09/2022	Y Cov	WAS022

Analyst Comments for 21988943: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

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ANALYST COMMENTS FOR REPORT COV/2366822/2022

Issue 1

This issue replaces
all previous issues

Date of Issue: **09 September 2022**

Sample No

Analysis Comments

21988941

21988942

21988943

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**



DETERMINAND COMMENTS FOR REPORT COV/2366822/2022

ISSUE 1

Date of Issue: 09 September 2022

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed:

Name: **A. Zunzunegui**

Date: **09 September 2022**

Title: **Organics Chemistry Manager**

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**Ms O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2**

12 September 2022

Test Report: COV/2368316/2022

Dear Ms O Shea

Analysis of your sample(s) submitted on 05 September 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name:

A. Zunzunegui

Title:

Organics Chemistry Manager



1314



EMS675527

OHS 542058



Report Summary

ANALYSED BY

Ms Aine O Shea
CDM Smith
15 Wentworth
Eblana Villas
Dublin 2



Date of Issue: **12 September 2022**

Report Number: **COV/2368316/2022**

Issue **1**

This issue replaces
all previous issues

Job Description: Surface Water Analysis

Job Location: Wicklow Uplands

Number of Samples
included in this report **3**

Job Received: **05 September 2022**

Number of Test Results
included in this report **9**

Analysis Commenced: **07 September 2022**

Signed:

Name: **A. Zunzunegui**

Date: **12 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

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Page 1 of 7

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2368316/2022**
Laboratory Number: **21999046**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Gran 5**
Sample Matrix: **Surface Water**
Sample Date/Time: **01 September 2022**
Sample Received: **05 September 2022**
Analysis Complete: **12 September 2022**

Issue **1**
Sample **1** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	07/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	07/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	08/09/2022	Y Cov	WAS022

Analyst Comments for 21999046: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **12 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2368316/2022**
Laboratory Number: **21999047**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Gran 6**
Sample Matrix: **Surface Water**
Sample Date/Time: **01 September 2022**
Sample Received: **05 September 2022**
Analysis Complete: **12 September 2022**

Issue **1**
Sample **2** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	07/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	07/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	08/09/2022	Y Cov	WAS022

Analyst Comments for 21999047: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **12 September 2022**

Title: **Organics Chemistry Manager**

ALS Environmental Ltd

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2368316/2022**
Laboratory Number: **21999048**
Sample Source: **CDM Smith**
Sample Point Description:
Sample Description: **Gran 7**
Sample Matrix: **Surface Water**
Sample Date/Time: **01 September 2022**
Sample Received: **05 September 2022**
Analysis Complete: **12 September 2022**

Issue **1**
Sample **3** of **3**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Phosphate, Ortho as P LL	<0.02	mg/l	07/09/2022	N Cov	WAS067
Ammoniacal Nitrogen as N (LL)	<0.06	mg/l	07/09/2022	N Cov	WAS067
Nitrogen, Total as N	<0.5	mg/l	08/09/2022	Y Cov	WAS022

Analyst Comments for 21999048: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **A. Zunzunegui**

Date: **12 September 2022**

Title: **Organics Chemistry Manager**

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ANALYST COMMENTS FOR REPORT COV/2368316/2022

Issue 1

This issue replaces
all previous issues

Date of Issue: **12 September 2022**

Sample No

Analysis Comments

21999046

21999047

21999048

Signed:

Name: **A. Zunzunegui**

Date: **12 September 2022**

Title: **Organics Chemistry Manager**



DETERMINAND COMMENTS FOR REPORT COV/2368316/2022

ISSUE 1

Date of Issue: 12 September 2022

This issue replaces
all previous issues

Sample No	Description	Determinand	Comments

Signed:

Name: **A. Zunzunegui**

Date: **12 September 2022**

Title: **Organics Chemistry Manager**

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