

# Annual Environmental Report

2021



Derrintum

D0244-01

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# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0244-01, Derrinturn, in Kildare in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

## 1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There were no capital works, significant changes or operational improvements undertaken in 2021.

## 1.2 TREATMENT SUMMARY

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

- Derrinturn WWTP with a Plant Capacity PE of 1600, the treatment type is 3P - Tertiary P removal

## 1.3 ELV OVERVIEW

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.

Discharge Point Reference	Treatment Plant	Discharge Type	Compliance Status	Parameters failing if relevant
TPEFF1400D0244SW001	Derrinturn WWTP	Treated	Compliant	N/A

## 1.4 LICENCE SPECIFIC REPORTING

Assessment / Report

**Small Stream Risk Score Assessment**

## 2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

### 2.1 DERRINTURN WWTP - TREATED DISCHARGE

#### 2.1.1 INFLUENT MONITORING SUMMARY - DERRINTURN WWTP

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

Parameters	Number of Samples	Annual Max	Annual Mean
Total Phosphorus (as P) mg/l	12	17	10
Ammonia-Total (as N) mg/l	12	142	71
Total Nitrogen mg/l	12	190	91
ortho-Phosphate (as P) - unspecified mg/l	12	12	6.29
COD-Cr mg/l	12	1619	925
Suspended Solids mg/l	12	478	309.87
pH pH units	12	8.01	7.52
BOD, 5 days with Inhibition (Carbonaceous) mg/l	12	396	219
Hydraulic Capacity	N/A	884	609

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 2.1.5 if applicable.

## Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional 'Operational Performance Summary'. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

### 2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF1400D0244SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included <sup>Note 1</sup>	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
<b>COD-Cr mg/l</b>	125	125	N/A	12	N/A	N/A	24	Pass
<b>pH pH units</b>	6.00	9.00	N/A	12	N/A	N/A	7.56	Pass
<b>Suspended Solids mg/l</b>	8.00	8.00	N/A	12	N/A	N/A	3.00	Pass
<b>BOD, 5 days with Inhibition (Carbonaceous) mg/l</b>	5.00	5.00	N/A	12	N/A	N/A	2.10	Pass
<b>Total Phosphorus (as P) mg/l</b>	0.500	0.500	N/A	12	N/A	N/A	0.350	Pass
<b>Ammonia-Total (as N) mg/l</b>	0.300	0.300	N/A	12	N/A	N/A	0.134	Pass
<b>ortho-Phosphate (as P) - unspecified mg/l</b>	0.190	0.190	N/A	12	N/A	N/A	0.145	Pass

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included <sup>Note 1</sup>	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
<b>Total Nitrogen mg/l</b>	N/A	N/A	N/A	12	N/A	N/A	3.83	
<b>Conductivity @20°C µS/cm</b>	N/A	N/A	N/A	12	N/A	N/A	824	

Notes:

1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied

2 – For pH the WWDA specifies a range of pH 6 - 9

### Cause of Exceedance(s):

Not applicable

### Significance of Results:

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

## 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1400D0244SW001

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	273020, 231285	RS14F010020	No	No	No	No	Poor
Downstream	269666, 230148	RS14F010050	No	No	No	No	Poor

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

### Significance of Results:

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

The ambient monitoring results do not meet the required EQS at the upstream and the downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in BOD and Ortho-P concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

As per the 3rd Cycle Draft Barrow Catchment Report (HA 14), the significant pressures on the At Risk Figile\_010 waterbody are Hydromorphology, Peat, Industry and Urban Waste Water. The Derrinturn WWTP is listed as a significant pressure in the Cycle 3 Catchment report. In the SSRS 2021 completed for Derrinturn, although both the u/s and d/s stations were categorised at "At Risk", the downstream station received a lower SSRS score. There was cattle access both above and below the d/s station. This is likely to have impacted the d/s score.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status. The WFD status is poor both u/s and d/s of the primary discharge point.



## 2.1.4 OPERATIONAL PERFORMANCE SUMMARY - DERRINTURN WWTP

### 2.1.4.1 Treatment Efficiency Report - Derrinturn WWTP

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
<b>SS</b>	64213	541	99
<b>cBOD</b>	45479	379	99
<b>TP</b>	2115	63	97
<b>TN</b>	18775	691	96
<b>COD</b>	191691	4376	98

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

### 2.1.4.2 Treatment Capacity Report Summary - Derrinturn WWTP

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

Derrinturn WWTP	
<b>Peak Hydraulic Capacity (m<sup>3</sup>/day) - As Constructed</b>	1080
<b>DWF to the Treatment Plant (m<sup>3</sup>/day)</b>	360
<b>Current Hydraulic Loading - annual max (m<sup>3</sup>/day)</b>	884

Derrinturn WWTP	
Average Hydraulic loading to the Treatment Plant (m <sup>3</sup> /day)	609
Organic Capacity (PE) - As Constructed	1600
Organic Capacity (PE) - Collected Load (peak week) <sup>Note1</sup>	1729
Organic Capacity (PE) - Remaining	0
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

## 2.1.5 SLUDGE / OTHER INPUTS - DERRINTURN WWTP

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

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

## 3 COMPLAINTS AND INCIDENTS

### 3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature related to the discharge(s) to water from the WWTP and network is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
<b>There were no relevant environmental complaints in 2021.</b>			

### 3.2 REPORTED INCIDENTS SUMMARY

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

#### 3.2.1 SUMMARY OF INCIDENTS

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
<b>Uncontrolled release</b>	SWO exceptional rainfall and overflow expected	1	No	Yes

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	1
Number of Incidents reported to the EPA via EDEN in 2021	1
Explanation of any discrepancies between the two numbers above	N/A

## 4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

### 4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

A summary of the operation of the storm water overflows and their significance where known is included below:

#### 4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	Total volume discharged in 2021 (m <sup>3</sup> )	Monitoring Status
SW-2	270591.062, 232156.526	Yes	Low	Meeting	0	Monitored

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m <sup>3</sup> )?	0
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	N/A

## 4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS

### 4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

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

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
<b>There are no Specified Improvement Programmes for this Agglomeration.</b>							

A summary of the status of any other improvements identified by under Condition 5 assessments- is included below.

### 4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
<b>No additional improvements planned at this time.</b>				

### 4.2.3 SEWER INTEGRITY RISK ASSESSMENT

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Tables 4.2.1 and 4.2.2.

## 5 LICENCE SPECIFIC REPORTS

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

Licence Specific Report	Required by licence	Year included in AER	Included in this AER
<b>Small Stream Risk Score Assessment</b>	Yes	2018	Yes

### 5.1 SMALL STREAM RISK SCORE ASSESSMENT

The Small Stream Risk Score Assessment Report is included in Appendix 7.2 - Small Stream Risk Score Assessment. A summary of the findings of this report is included below.

Parameter	Value
<b>Condition 5 Improvement Programme Reference</b>	N/A
<b>Does SSRS indicate discharges are posing a pollution risk?</b>	No*
<b>Does improvement programme include any procedural and/or infrastructural works?</b>	No
<b>Downstream SSRS Water Quality Risk</b>	At Risk
<b>SSRS Required?</b>	Yes
<b>Upstream SSRS Water Quality Risk</b>	At Risk
<b>What is Downstream SSRS?</b>	0.8

Parameter	Value
What is Upstream SSRS?	2.4

*\* In the SSRS 2021 Assessment, although both the u/s and d/s stations were categorised at "At Risk", the downstream station received a lower SSRS score. There was cattle access both above and below the d/s station. This is likely to have impacted the d/s SSRS score.*



## 6 CERTIFICATION AND SIGN OFF

### 6.1 SUMMARY OF AER CONTENTS

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Has a Technical amendment/licence review application been submitted to the Agency by IW?	No
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	Yes
List reason e.g. changes to monitoring requirements	Ambient Monitoring Location Changes
Have these processes commenced?	No
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	N/A

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

Date: 18/02/2022

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of,

Katherine Walshe

Acting Head of Environmental Regulation.

## 7 APPENDIX

Appendix
Appendix 7.1 - Ambient Monitoring Summary
Appendix 7.2 - Small Stream Risk Score Assessment

## Derrinturn Ambient Monitoring Summary 2021

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Receiving Waters Designation (Yes/No)				Current WFD Status	Mean (mg/l)		
			Bathing Water	Drinking Water	FWPM	Shellfish		cBOD	o-Phosphate (as P)	Ammonia (as N)
Upstream Monitoring Point	273020, 231285	RS14F010020	No	No	No	No	Poor	1.000	0.097	0.378
Downstream Monitoring Point	269666, 230148	RS14F010050	No	No	No	No	Poor	1.500	0.124	0.328
<i>Difference</i>								<i>0.500</i>	<i>0.027</i>	<i>-0.050</i>
EQS								1.500	0.035	0.065
% of EQS								33.333%	77.143%	-76.923%

## Derrinturn Ambient Monitoring Summary 2021

Upstream Results											
Date		Biological Oxygen Demand	COD Chemical Oxygen Demand	Suspended Solids	pH	Total Ammonia N	Total Nitrogen N	Ortho-Phosphate P	Total Phosphorus P	Dissolved Oxygen	Temperature
		mg/l	mg/l	mg/l	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	Degrees C
16-Feb-2021	U/S	1	27	3	7.71	0.12	5	0.2	0.29	8	14.6
7-Apr-2021	U/S	1	38	2	7.81	0.66	2	0.06	0.12	8.63	13.7
5-May-2021	U/S	1	77	3	7.85	0.51	1	0.05	0.07	8.12	19.1
29-June-2021	U/S	1	27	1	7.72	0.39	3.1	0.05	0.11	7.27	19.1
28-July-2021	U/S	1	28	1	7.68	0.29	5.4	0.03	0.18	8.58	9.6
4-Aug-2021	U/S	1	12	1	7.47	0.2	2.9	0.29	0.32	6.85	20.1
21-Sep-2021	U/S	1	28	1	7.9	0.34	1.2	0.05	0.1	8.16	17.2
20-Oct-2021	U/S	1	40	1	7.65	0.36	1.1	0.06	0.14	7.72	20.2
19-Nov-2021	U/S	1	47	1	7.71	0.47	1.3	0.09	0.11	8.07	17.1
14-Dec-2021	U/S	1	16	1	7.11	0.44	2.5	0.09	0.16	9.32	15.6
Mean		1.000	34.000	1.500	7.661	0.378	2.550	0.097	0.160	8.072	16.630
95%ile		1.000	63.500	3.000	7.878	0.593	5.220	0.250	0.307	9.010	20.155

Downstream Results											
Date		Biological Oxygen Demand	COD Chemical Oxygen Demand	Suspended Solids	pH	Total Ammonia N	Total Nitrogen N	Ortho-Phosphate P	Total Phosphorus P	Dissolved Oxygen	Temperature
		mg/l	mg/l	mg/l	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	Degrees C
16-Feb-2021	D/S	2	37	5	7.77	0.08	4	0.18	0.26	8.39	14.9
7-Apr-2021	D/S	1	40	1	7.84	0.44	2	0.06	0.09	10.08	14
5-May-2021	D/S	1	57	1	7.77	0.43	3	0.07	0.13	8.21	19.2
29-June-2021	D/S	1	17	1	7.61	0.21	2.9	0.07	0.16	7.14	19.3
28-July-2021	D/S	5	26	6	7.59	0.34	4.4	0.34	0.9	8.19	9
4-Aug-2021	D/S	1	12	4	7.49	0.24	3.1	0.2	0.26	6.58	20.1
21-Sep-2021	D/S	1	30	1	7.96	0.3	0.8	0.04	0.1	8.01	17.1
20-Oct-2021	D/S	1	24	3	7.46	0.46	2.6	0.14	0.37	8.01	20.1
19-Nov-2021	D/S	1	41	1	7.69	0.37	1.1	0.06	0.09	8.66	17.2
14-Dec-2021	D/S	1	35	1	7.16	0.41	2.7	0.08	0.15	9.44	16
Mean		1.500	31.900	2.400	7.634	0.328	2.660	0.124	0.251	8.271	16.690
95%ile		3.650	49.800	5.550	7.906	0.451	4.220	0.277	0.661	9.792	20.100



## **Kildare Small Stream Risk Score 2021**

Produced by

**AQUAFACT International Services Ltd**

For

**Kildare County Council**

**November 2021**

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### Report Approval Sheet

Client	Kildare County Council
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## 1. Introduction

AQUAFAC was contracted by Kildare County Council to carry out an SSRS assessment of discharges belonging to four wastewater treatment plants at Castledermot, Ballymore Eustace, Coill Dubh and Derrinturn respectively. A sample was taken upstream and downstream of each discharge point. The sampling was carried on the 12<sup>th</sup> of November 2021.

## 2. Methodology

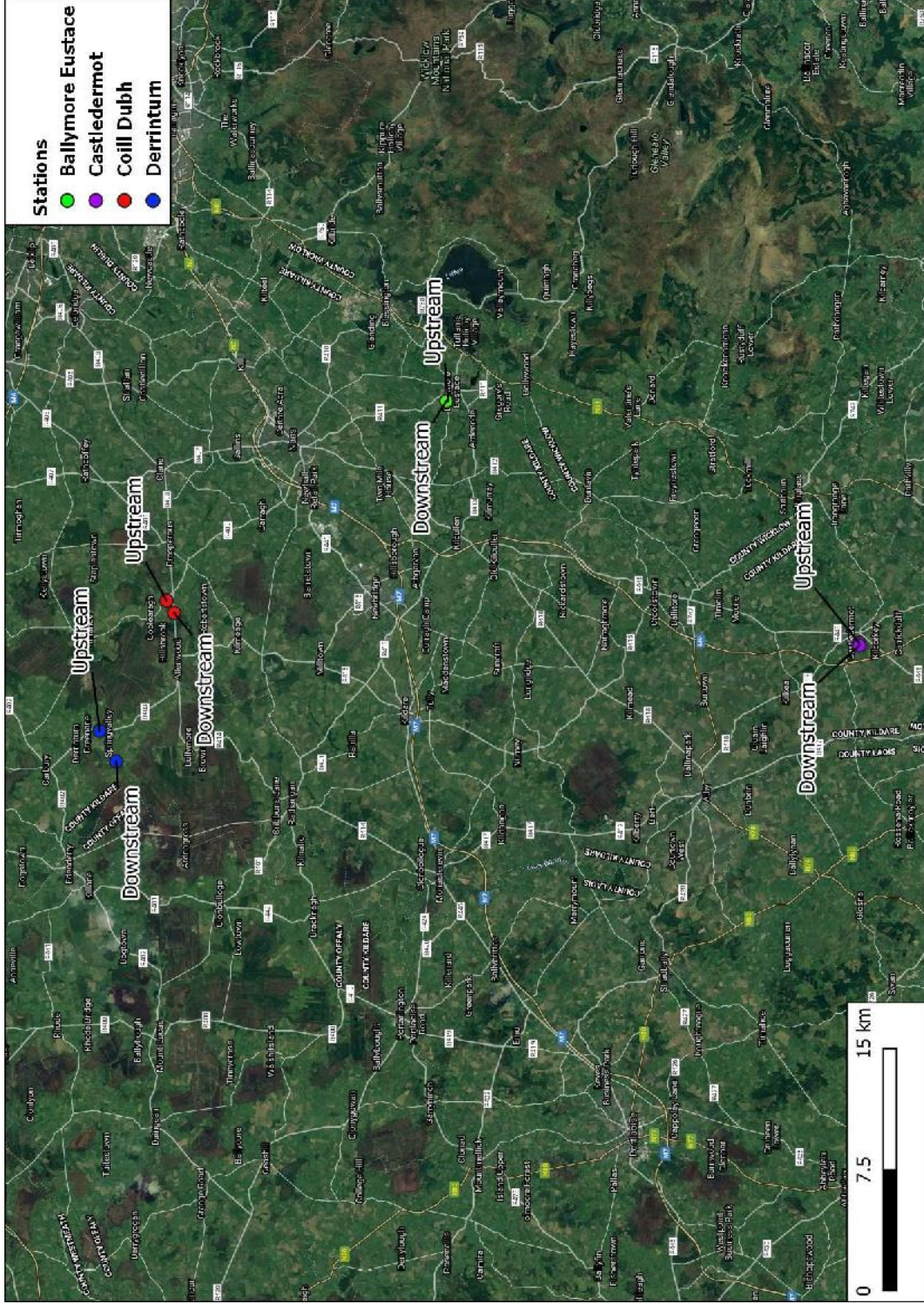
### 2.1. Sampling

Eight kick samples were taken (See Figure 2.1 and Table 2.1). The two-minute kick and one minute stone wash sampling method was employed to collect samples of macroinvertebrates for analysis. This involved placing a standard hand net of pore size 500µm in the river, facing upstream and disturbing the riverbed in front of the net mouth. The surveyor then moved in a diagonal direction upstream to ensure that different micro-habitats were included in the sample. The kick method dislodges macroinvertebrates from the substrates and submerged plant material. This was continued for approximately two minutes and followed by one minute of stone washing (Lucey *et al.*, 1999).

The macroinvertebrate assemblages of each sample were identified and counted on the riverbank. The details of the macroinvertebrate assemblages were recorded on data sheets. The resulting species list was then used to assign the SSRS score to the sampled streams.

The IFI's 2010 Biosecurity Protocol for Field Survey Work document was followed during sampling. Nets and all other equipment were thoroughly disinfected between stations.

Figure 2.1: Kildare SSRS sampling sites.



**Table 2.1: Kildare SSRS station coordinates.**

<b>Station</b>	<b>Easting</b>	<b>Northing</b>
Coill Dubh aSW1-PU	279586	227222
Coill Dubh aSW1-PD	278840	226750
Derrinturn aSW1-PU	271514	231178
Derrinturn aSW1-PD	269657	230144
Castledermot aSW1-PU	277669	184624
Castledermot aSW1-PD	277507	184609
Ballymore Eustace aSW1-PU	292154	210202
Ballymore Eustace aSW1-PD	292148	210304

## **2.2. Small Stream Risk Score**

The Small Streams Risk Score (SSRS) is a biological risk assessment system for identifying rivers that are 'at risk' of failing to achieve the 'good' water quality status goals of the Water Framework Directive (WFD). It was developed by the Environmental Protection Agency (EPA) in association with the Western River Basin District (WRBD) in 2006 and revised in 2009.

The SSRS method is a rapid field methodology for risk assessment that is based solely on macroinvertebrate indicators of water quality and their well-understood response to pollution. Importantly, the SSRS score indicates whether or not the stream is at risk from pollution and not the ecological health of the stream. The SSRS score ranges from 0-11.2.

**Table 2.2: SSRS Categories.**

<b>SSRS range</b>	<b>Category</b>
<6.5	Stream at Risk
>6.5-7.25	Indeterminate stream may be at risk
>7.25	Probably not at risk

### 3. Results

#### 3.1. *Coill Dubh*

Based on the SSRS score both the upstream and downstream stations were categorised as “Stream at risk” of not meeting Good status (See Table 3.2). Although the downstream station received a slightly higher score. The morphological characteristics of both stations were the same. The substrate was a mixture of cobbles and gravels with moderate levels of silt. The dominant land use in the area is pasture. The velocity was higher at the downstream station and there was less shading which may account for the slightly higher SSRS score.

#### 3.2. *Derrinturn*

The downstream station recorded a slightly lower SSRS score. However, both the upstream and downstream stations were categorised as “Stream at risk” of not meeting Good status. The substrate at the upstream station was cobbles with a thick layer of silt (5-10cm) and leaf litter was abundant. The velocity of the stream was very slow with little perceivable flow. The downstream station substrate was a mix of cobbles and gravel with some sand. The velocity was moderate. There was cattle access both above and below the downstream station. The downstream station recorded the gastropod *Lymnaea*, while it was not recorded upstream. The oligochaete *Lumbriculus* was present in a higher abundance downstream.

#### 3.3. *Castledermot*

Base on the SSRS score both the upstream and downstream stations were categorised as “Stream at risk” of not meeting Good status, although the downstream station received a higher score. The stream substrate was the same at both stations with a mix of cobbles and gravel. The velocity was fast at both stations. The downstream station was mostly riffle while the upstream station was mostly glide. Significant levels of calcification were present on the substrate at both upstream and downstream. This is likely due to eutrophication.

### 3.4. Ballymore Eustace

The downstream SSRS score was higher than the upstream station. As such the downstream station was characterised as “Probably not at risk” while the upstream station was “Stream at risk”. The river substrate was the same at both stations with a mix of boulders, cobbles and gravel. The flow in the river was torrential. There was no siltation present. One female white-clawed crayfish was recorded at the upstream station. It appeared to be health with no sign of infection.

Table 3.1: Species list

Relative abundance of macroinvertebrates 1 = 1-5, 2 = 6-20, 3 = 21-50, 4 = 51-100 and 5 = 101+								
Taxa	Coill Dubh		Derrintum		Castledermot		Ballymore Eustace	
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
<b>Ephemeroptera</b>								
<i>Heptagenia</i>					3	1		2
<i>Caenis</i>								1
<i>Ephemera danica</i>							1	
<b>Trichoptera</b>								
Limnephilidae	1	2	1	1	1			
Hydropsychidae	1				1	2	1	3
Sericostomatidae		2						
Glossosomatidae								1
<i>Rhyacophila</i>						1		
<i>Philopotamidae</i>						1		
<b>Gastropoda</b>								
<i>Lymnaea</i>				2			2	
<i>Potamopyrgus</i>	2							
<i>Ancylus</i>								1
<b>Oligochaeta</b>								
<i>Lumbriculus</i>			2	3				
<b>Diptera</b>								
Chironomidae		2	3	3	3	1		
Simuliidae					4	4	1	
Dicranota					1	1		

**Table 3.2: Biological sampling results.**

Station	SSRS score	SSRS category
Coill Dubh aSW1-PU	3.2	Stream at risk
Coill Dubh aSW1-PD	4.8	Stream at risk
Derrinturn aSW1-PU	2.4	Stream at risk
Derrinturn aSW1-PD	0.8	Stream at risk
Castledermot aSW1-PU	4.8	Stream at risk
Castledermot aSW1-PD	6.4	Stream at risk
Ballymore Eustace aSW1-PU	4	Stream at risk
Ballymore Eustace aSW1-PD	8	Probably not at risk

## 4. Discussion

There was no evidence of impact on the streams due to the discharges at Castledermot, Ballymore Eustace and Coill Dubh with all downstream stations receiving a higher SSRS score than upstream. Although both the upstream and downstream stations for Derrinturn were categorised as “At risk” the downstream station received a lower SSRS score. There was cattle access both above and below the downstream station. This may have impacted on the downstream SSRS score.

All stations except Ballymore Eustace downstream were categorised as “Stream at risk” of not meeting Good status. The Ballymore Eustace downstream station was categorised as “Probably not at risk”.

## 5. References

EPA. 2015. Guidance on Application and Use of the SSRS in Enforcement of Urban Waste Water Discharge Authorisations in Ireland.

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## **Appendix 1**

### **Photo log**



Coill Dubh upstream



Coill Dubh Downstream





Derrinturn upstream



Derrinturn downstream



Ballymore Eustace upstream



Ballymore Eustace downstream



Castledermot upstream



Castledermot downstream