

# Annual Environmental Report

2020



Ballymore Eustace

D0238-01

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Revision Note: Formatting Section 2.1.3 & 2.1.4 Titles. Approved 28/05/2021

# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

This Annual Environmental Report has been prepared for D0238-01, Ballymore Eustace, 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 major capital or operational changes undertaken in 2020.

## 1.2 TREATMENT SUMMARY

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

- BALLYMORE EUSTACE NEW WWTP - 2020 with a Plant Capacity PE of 2000, 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
TPEFF1400D0238SW001	BALLYMORE EUSTACE NEW WWTP - 2020	Treated	Compliant	N/A

## 1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
Small Stream Risk Score Assessment	Yes

## 2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

### 2.1 BALLYMORE EUSTACE NEW WWTP - 2020 - TREATED DISCHARGE

#### 2.1.1 INFLUENT MONITORING SUMMARY - BALLYMORE EUSTACE NEW WWTP - 2020

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
<b>BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l</b>	12	364.00	179.64
<b>COD-Cr mg/l</b>	12	1121.00	549.07
<b>Suspended Solids mg/l</b>	12	606.00	186.51
<b>Total Phosphorus (as P) mg/l</b>	12	9.35	5.03
<b>Hydraulic Capacity</b>	N/A	325	130

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 - TPEFF1400D0238SW001

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 with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	31.08	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	5.6	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	3.4	Pass
pH pH units	6-9	6-9	N/A	12	N/A	N/A	6.74	Pass
Ammonia-Total (as N) mg/l	5	6	N/A	12	N/A	N/A	0.21	Pass
Total Phosphorus (as P) mg/l	2	2.4	N/A	12	N/A	N/A	0.36	Pass
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	N/A	N/A	0.14	Pass

Notes:

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

### Cause of Exceedance(s):

Not applicable

## Significance of Results:

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

### 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF1400D0238SW001

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

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

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	292660, 209723	RS09L010400	No	No	No	No	Moderate
Downstream	292478, 209783	RS09L010500	No	No	No	No	Moderate

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

Based on ambient monitoring results a deterioration in Ammonia concentrations downstream of the effluent discharge is noted.

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

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

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

## 2.1.4 OPERATIONAL PERFORMANCE SUMMARY - BALLYMORE EUSTACE NEW WWTP - 2020

### 2.1.4.1 Treatment Efficiency Report - BALLYMORE EUSTACE NEW WWTP - 2020

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)
cBOD	8693	153	98
COD	26571	1399	95
SS	9026	252	97
TP	243	16	93

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

### 2.1.4.2 Treatment Capacity Report Summary - BALLYMORE EUSTACE NEW WWTP - 2020

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.

BALLYMORE EUSTACE NEW WWTP - 2020	
Peak Hydraulic Capacity (m <sup>3</sup> /day) - As Constructed	1350
DWF to the Treatment Plant (m <sup>3</sup> /day)	450
Current Hydraulic Loading - annual max (m <sup>3</sup> /day)	325
Average Hydraulic loading to the Treatment Plant (m <sup>3</sup> /day)	130

<b>BALLYMORE EUSTACE NEW WWTP - 2020</b>	
<b>Organic Capacity (PE) - As Constructed</b>	2000
<b>Organic Capacity (PE) - Collected Load (peak week)<sup>Note1</sup></b>	824
<b>Organic Capacity (PE) - Remaining</b>	1176
<b>Will the capacity be exceeded in the next three years? (Yes/No)</b>	No

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

## **2.1.5 SLUDGE / OTHER INPUTS - BALLYMORE EUSTACE NEW WWTP - 2020**

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

<b>Input type</b>	<b>Quantity</b>	<b>Unit</b>	<b>P.E.</b>	<b>% of load to WWTP</b>	<b>Included in Influent Monitoring (Y/N)?</b>	<b>Is there a leachate/sludge acceptance procedure for the WWTP?</b>	<b>Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)</b>
<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 is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
<b>There were no relevant environmental complaints in 2020.</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	Yes	Yes
<b>Uncontrolled release</b>	SWO exceptional rainfall and overflow expected	1	Yes	Yes
<b>Uncontrolled release</b>	SWO exceptional rainfall and overflow expected	1	Yes	Yes

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

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	5
Number of Incidents reported to the EPA via EDEN in 2020	5
Explanation of any discrepancies between the two numbers above	N/A

## 4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

### 4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

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

#### 4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2020 (No. of events)	Total volume discharged in 2020 (m <sup>3</sup> )	Monitoring Status
NEW SW2	292496, 209667	Yes	Low	Meeting	7	438	Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m <sup>3</sup> )?	438
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?	No

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

### 4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

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

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/N/A/Y)	Status of Works	Timeframe for Completing the Work	Comments
<b>D0238-SIP:01</b>	Discharges from SW1-P (existing WWTP discharge) to cease	A	31/12/2012	Yes	Works Completed		
<b>D0238-SIP:02</b>	SW2 - Upgrading of SWO to comply with the criteria outlined in the DoEHLG "Procedures and Criteria in relation to Storm Water Overflows, 1995".	C	31/12/2012	Yes	Works Completed		
<b>D0238-SIP:03</b>	SW3 - Upgrading of SWO to comply with the criteria outlined in the DoEHLG "Procedures and Criteria in relation to Storm Water Overflows, 1995".	C	31/12/2012	Yes	Works Completed		
<b>D0238-SIP:04</b>	Waste Water treatment plant and ancillary works	C	31/12/2012	Yes	Works Completed		

A summary of the status of any improvements identified by under Condition 5.2 is included below.

## 4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
<b>There are no Improvements Programme for this Agglomeration.</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 Table.

## 5 LICENCE SPECIFIC REPORTS

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

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Priority Substances Assessment	Yes	2011	No	N/A
Small Stream Risk Score Assessment	Yes	2017	Yes	Appendix 7.2

### 5.1 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2011.

### 5.2 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
Condition 5 Improvement Programme Reference	N/A

Parameter	Value
Does SSRS indicate discharges are posing a pollution risk?	No
Downstream SSRS Water Quality Risk	Probably Not At Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	Probably Not At Risk
What is Downstream SSRS?	8.8
What is Upstream SSRS?	8
Does improvement programme include any procedural and/or infrastructural works?	N/A

## 6 CERTIFICATION AND SIGN OFF

### 6.1 SUMMARY OF AER CONTENTS

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

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

Date: 28/02/2021

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

<b>Appendix</b>
<b>Appendix 7.1 - Ambient Monitoring Summary</b>
<b>Appendix 7.2 - Small Stream Risk Score Assessment</b>

## Ballymore Eustace Ambient Monitoring Summary 2020

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	292660, 209723	RS09L010400	No	No	No	No	Moderate	1.000	0.016	0.211
Downstream Monitoring Point	292478, 209783	RS09L010500	No	No	No	No	Moderate	1.000	0.015	0.216
<i>Difference</i>								0.000	-0.001	0.005
EQS								1.500	0.035	0.065
% of EQS								0.000%	-2.857%	7.692%

## Ballymore Eustace Ambient Monitoring Summary 2020

Upstream Results					
Date		Ammonia (mg/l)	Ortho P (mg/l)	BOD (mg/l)	pH (pH Units)
27/01/2020	U/S	0.23	0.02	1	7.72
20/03/2020	U/S	0.29	0.01	1	7.66
16/04/2020	U/S	0.18	0.01	1	7.42
13/05/2020	U/S	0.18	0.01	1	7.18
10/06/2020	U/S	0.18	0.01	1	7.06
15/07/2020	U/S	0.17	0.01	1	7.15
27/08/2020	U/S	0.23	0.01	1	6.79
09/09/2020	U/S	0.25	0.02	1	7.08
14/10/2020	U/S	0.17	0.02	1	6.91
11/11/2020	U/S	0.23	0.04	1	7.55
<b>Mean</b>		<b>0.211</b>	<b>0.016</b>	<b>1.000</b>	<b>7.25</b>
<b>95%ile</b>		<b>0.272</b>	<b>0.031</b>	<b>1.000</b>	<b>7.69</b>

Downstream Results					
Date		Ammonia (mg/l)	Ortho P (mg/l)	BOD (mg/l)	pH (pH Units)
27/01/2020	D/S	0.24	0.02	1	7.8
20/03/2020	D/S	0.3	0.01	1	7.83
16/04/2020	D/S	0.2	0.01	1	8.04
13/05/2020	D/S	0.16	0.01	1	7.38
10/06/2020	D/S	0.21	0.01	1	7.17
15/07/2020	D/S	0.18	0.01	1	7.08
27/08/2020	D/S	0.23	0.01	1	6.83
09/09/2020	D/S	0.24	0.02	1	7.16
14/10/2020	D/S	0.18	0.02	1	6.89
11/11/2020	D/S	0.22	0.03	1	7.67
<b>Mean</b>		<b>0.216</b>	<b>0.015</b>	<b>1.000</b>	<b>7.385</b>
<b>95%ile</b>		<b>0.273</b>	<b>0.026</b>	<b>1.000</b>	<b>7.946</b>

Note: Where the concentration in the result is less than the limit of detection (LOD), a value of  $LOD/\sqrt{2}$  was used in calculating the mean and 95%ile concentrations.

# Small Stream Risk Score (SSRS) Assessment

## BALLYMORE EUSTACE WASTEWATER AGGLOMERATION

Co. Kildare

October 2020



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Document Control:

Version	Date	Author	Signature
1	04/11/2020	L. Williams	

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## 1 INTRODUCTION

This report sets out findings of Small Stream Risk Score (SSRS) assessments at sites upstream and downstream of Ballymore Eustace Waste Water Treatment Plant (WWTP), Co. Kildare. The discharge is to the upper Liffey River.

Assessments were carried out on October 14<sup>th</sup> 2020, in good weather conditions during average flow conditions. There has been flood flow in the morning, just prior to sampling as ESB (Poulaphuca – Golden Falls) flood gates had been open for a period of time. A new “downstream” sampling site was selected owing to the previous site being altered by river channel works. The new site is located approximately 500m downstream of the discharge, as this was the only safely accessible position.

SSRS is a biological risk assessment system for detecting potential sources of diffuse pollution in 1<sup>st</sup> and 2<sup>nd</sup> order streams that may be causing main channel sites to fail in reaching Good Ecological Status (Anon., 2009). Sites are evaluated based on their macroinvertebrate assemblage and are assigned to one of 3 risk categories: “At risk”, “May be at risk” and “Probably not at risk”. “Risk” refers to the risk of the watercourse causing water quality problems in larger waterbodies downstream as a result of being polluted.

## 2 METHODOLOGY

### 2.1 SSRS

Samples were collected according to the EPA Standard Operating Procedure for River Monitoring adhering to ISO Standard for kick sampling. Under this system, standard 2-minute, travelling, kick-samples are taken in the fast flowing (riffle) areas of the rivers using a long-handled sampling net (250 mm width, mesh size 0.25mm). Riffle areas of streams receive preference in sampling, as the fauna of riffles tends to be more sensitive to pollution impacts. Stone washing is employed to ensure that “clinging” species, e.g. leeches and gastropods, are adequately collected.

Samples were washed and placed in a large, white plastic tray on the bankside and covered in stream water. Samples were then carefully examined and identified in the field, recording absolute abundance of faunal groups for SSRS assessment purposes. Where necessary, and for quality control purposes, some samples were preserved in situ with 70% IMS alcohol; placed in labelled plastic bags and brought back to the laboratory to check identification.

Scores are calculated by examining the relative abundance of faunal groups and through use of standard SSRS fieldsheets and score calculator (Anon., 2009). Scores can range between 0 (lowest; poor water quality) and 11.2 (highest; good water quality). Risk category is assigned based on the individual site score as follows: >7.25 = Probably not at risk; >6.5 – 7.25 = Indeterminant, stream may be at risk; <6.5 = Stream at risk.

### 3 RESULTS

#### 3.1 SSRS Summary

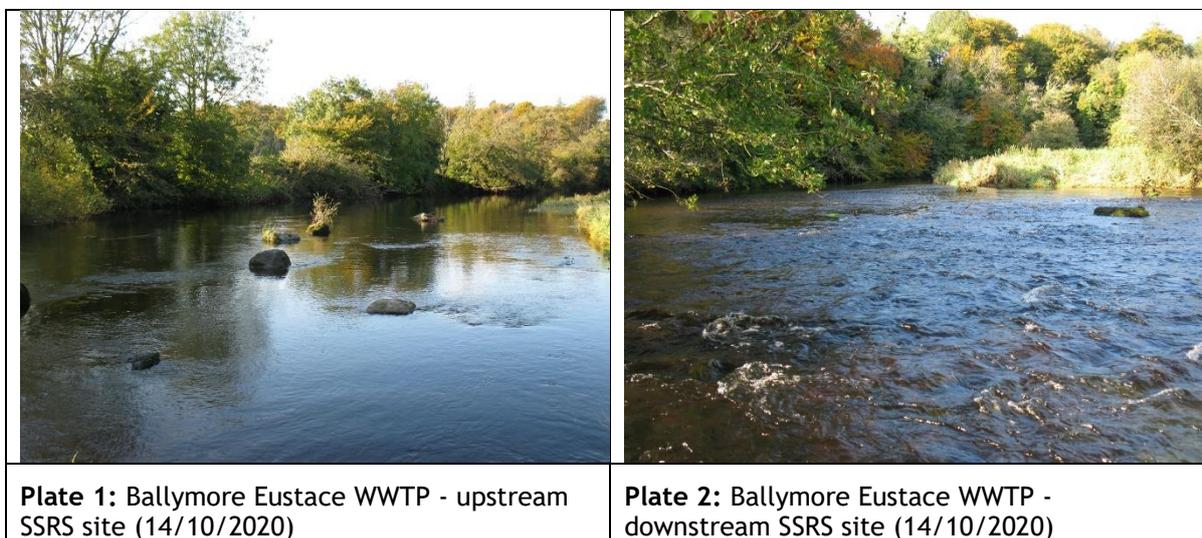
**Table 1:** SSRS summary - Ballymore Eustace WWTP

Site	Location (X, Y)	SSRS	SSRS Risk Category
Upstream	292167 210342	8.0	Probably not at risk
Downstream	291307 209946	8.8	Probably not at risk

#### 3.2 Water Quality

Both sites were “Probably Not At Risk” according to the SSRS. Water quality was reasonable at both sites. The downstream site was slightly better than the upstream site in 2020. This is despite the serious morphological alterations and construction works that occurred upstream during 2019. Both sites had a similar species assemblage. Both sites recorded a range of sensitive mayfly species. Healthy native white clawed crayfish (*Austropotamobius pallipes*) were recorded at both sites. Flow conditions were good for sampling in 2020, once the ESB flood levels had reduced.

#### 3.3 Site Photographs



**Plate 1:** Ballymore Eustace WWTP - upstream SSRS site (14/10/2020)

**Plate 2:** Ballymore Eustace WWTP - downstream SSRS site (14/10/2020)

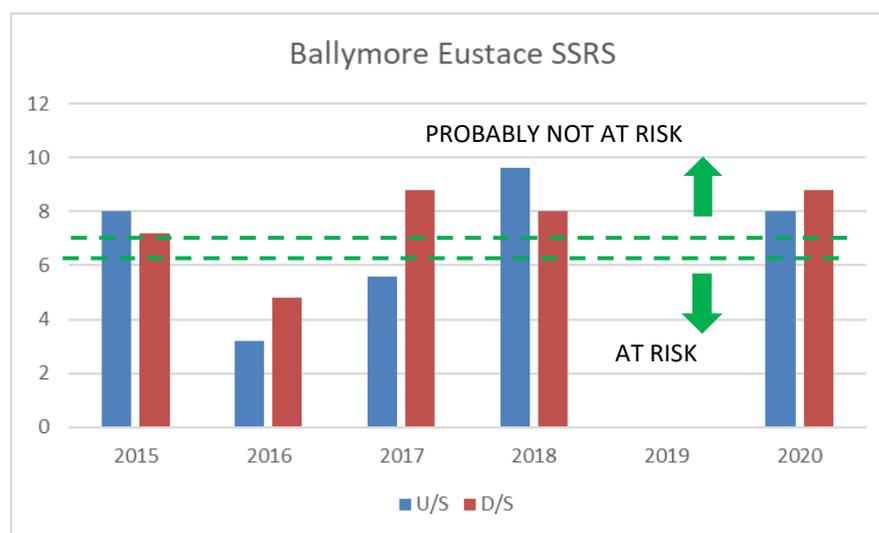
### 3.4 SSRS Comparison 2015 - 2020

**Table 2** compares SSRS results for sampling for the years 2015 to 2020. Similar to 2017 and 2018, there was no evidence of negative impact in relation to the discharge in 2020 according to SSRS.

**Table 2: SSRS Comparison 2015 - 2020 Ballymore Eustace WWTP**

Site	SSRS						SSRS Risk Category					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
U/S	8.0	3.2	5.6	9.6	n/a	8.0	PNAR	AR	AR	PNAR	n/a	PNAR
D/S	7.2	4.8	8.8	8.0	n/a	8.8	Indet.	AR	PNAR	PNAR	n/a	PNAR

AR = At Risk; PNAR = Probably Not At Risk; Indet. = Indeterminant



**Figure 1 – SSRS Comparison 2015 – 2020 Ballymore Eustace WWTP**

## 4 REFERENCES

Anon. (2009) Small Streams Risk Score (SSRS) Training Manual. A pollution investigation tool for use in the field. White Young Green, Apex Business Centre, Blackthorn Road, Sandyford, Dublin.

## APPENDIX 1 SSRS Sheets

River	Liffey	SITE:		UPSTREAM		Date:	14/10/2020
WWTP Code:		Agglomeration name:	Ballymore Eustace	Location	Upstream		
<b>SSRS Score:</b>	<b>8.0</b>	<b>Stream Assessment:</b>	<b>Probably not At Risk</b>				
DO (%):	-	Bedrock:	-	Stream Flow:	Riffle / Run		
DO (mg/l):	-	Boulder (>128mm):	+	Clarity:	Good		
Temp (°C):	-	Cobble (32-128mm):	+++	Colour:	Slight		
Conductivity (µS/cm):	-	Gravel (8-32mm):	++	Discharge:	Average		
pH:	-	Fine Gravel (2-8mm):	-	Slope:	Mod		
Bank width (cm):	1800cm	Sand (0.25-2mm):	++	Sewage Fungus:	0		
Wet width (cm):	2000cm	Silt (<0.25mm):		Filamentous Algae:	0		
Avg depth (cm):	40cm	Main land use US:	Small urban	Shading:	Low		
Depth mud (cm):	-	Cattle Access US/DS:	None observed				
<b>Comments:</b>	Good instream habitat. Salmonids obs. Crayfish present.						
<b>Invertebrate Groups</b>			<b>Number of specimens</b>		<b>Relative Abundance</b>		
Group 1: Ephemeroptera			1-5		1		
Group 2: Plecoptera			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			>100		5		
<b>Ephemeroptera</b>	<b>Ab</b>	<b>Plecoptera</b>	<b>Ab</b>	<b>Trichoptera</b>	<b>Ab</b>		
Ecdyonurus:	2	Leuctra:	2	Hydropsyche:	4		
Rhitrogena:	2	Isoperla:		Polycentropus:	2		
Heptagenia:	3	Protonemura:		Rhyacophila:	1		
Ephemerella:	2	Amphinemura:		Philopotamus:			
Caenis:		Perla:		Limnephilidae:			
Paraleptophlebia:		Dinocras:		Sericostomatidae:			
Ephemera danica:		Other Plecoptera:		Glossosomatidae:			
Other Ephemeroptera:				Leptostomatidae:			
				Other Trichoptera:			
<b>Total No. of Taxa</b>	<b>4</b>	<b>Total No. of Taxa</b>	<b>1</b>	<b>Total No. of Taxa</b>	<b>3</b>		
<b>Total Relative Abundance</b>	<b>9</b>	<b>Total Relative Abundance</b>	<b>2</b>	<b>Total Relative Abundance</b>	<b>7</b>		
<b>GOLD (Gastropoda; Oligochaeta and Diptera)</b>							
Lymnaea:		Lumbriculus:		Simulium:			
Potamopyrgus:		Eiseniella:		Dicronata:			
Planorbis:		Tubificidae:	2	Tipula:			
Ancylus:	3	Chironomidae:		Ceratopogonidae:			
Physa:		Chironomus:		Other GOLD			
<b>Total No. of Taxa</b>	<b>2</b>						
<b>Total Relative Abundance</b>	<b>5</b>						
<b>Asellus</b>							
<b>Absent:</b>		<b>Few (1-20):</b>	Yes	<b>Common (&gt;20):</b>			
<b>SSRS Calculation</b>							
Group 1	8						
Group 2	4						
Group 3	4				<b>Total Index Score</b>	20	
Group 4	2				<b>Average Index Score</b>	4	
Group 5	2				<b>SSRS</b>	8.0	

River	Liffey	SITE:	DOWNSTREAM	Date:	14/10/2020
WWTP Code:	-	Agglomeration name:	Ballymore Eustace	Location	Downstream
<b>SSRS Score:</b>	<b>8.8</b>	<b>Stream Assessment:</b>	<b>Probably not At Risk</b>		
DO (%):	-	Bedrock:	-	Stream Flow:	Riffle / Run
DO (mg/l):	-	Boulder (>128mm):	+	Clarity:	Good
Temp (°C):	-	Cobble (32-128mm):	+++	Colour:	None
Conductivity (µS/cm):	-	Gravel (8-32mm):	++	Discharge:	Average
pH:	-	Fine Gravel (2-8mm):	-	Slope:	Mod
Bank width (cm):	2000cm	Sand (0.25-2mm):	++	Sewage Fungus:	0
Wet width (cm):	2000cm	Silt (<0.25mm):		Filamentous Algae:	0
Avg depth (cm):	30cm	Main land use US:	Small urban	Shading:	Mod
Depth mud (cm):	-	Cattle Access US/DS:	None observed		
<b>Comments:</b>	Good instream habitat. Salmonids obs. Crayfish numerous.				
<b>Invertebrate Groups</b>			<b>Number of specimens</b>	<b>Relative Abundance</b>	
Group 1: Ephemeroptera			1-5	1	
Group 2: Plecoptera			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			>100	5	
<b>Ephemeroptera</b>	<b>Ab</b>	<b>Plecoptera</b>	<b>Ab</b>	<b>Trichoptera</b>	<b>Ab</b>
Ecdyonurus:	5	Leuctra:	1	Hydropsyche:	3
Rhithrogena:	1	Isoperla:		Polycentropus:	1
Heptagenia:	2	Protonemura:		Rhyacophila:	1
Ephemerella:		Amphinemura:		Philopotamus:	
Caenis:		Perla:		Limnephilidae:	
Paraleptophlebia:		Dinocras:		Sericostomatidae:	1
Emphepera danica:	1	Other Plecoptera:		Glossosomatidae:	
Other Ephemeroptera:				Leptostomatidae:	
				Other Trichoptera:	
<b>Total No. of Taxa</b>	<b>4</b>	<b>Total No. of Taxa</b>	<b>1</b>	<b>Total No. of Taxa</b>	<b>4</b>
<b>Total Relative Abundance</b>	<b>9</b>	<b>Total Relative Abundance</b>	<b>1</b>	<b>Total Relative Abundance</b>	<b>6</b>
<b>GOLD (Gastropoda; Oligochaeta and Diptera)</b>					
Lymnaea:		Lumbriculus:		Simulium:	
Potamopyrgus:		Eiseniella:		Dicronata:	
Planorbis:		Tubificidae:	1	Tipula:	
Ancylus:		Chironomidae:		Ceratopogonidae:	
Physa:		Chironomus:		Other GOLD	
<b>Total No. of Taxa</b>	<b>1</b>				
<b>Total Relative Abundance</b>	<b>1</b>				
<b>Asellus</b>					
<b>Absent:</b>		<b>Few (1-20):</b>	Yes	<b>Common (&gt;20):</b>	
<b>SSRS Calculation</b>					
Group 1	8			<b>Total Index Score</b>	22
Group 2	4			<b>Average Index Score</b>	4.4
Group 3	4			<b>SSRS</b>	8.8
Group 4	4				
Group 5	2				

