Annual Environmental Report

2019

Waterford City

D0022-01

CONTENTS

7.1 AMBIENT MONITORING SUMMARY

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2019 AER

This Annual Environmental Report has been prepared for D0022-01, Waterford City, in Waterford 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.

Works on the Drainage Area Plan will continue in 2020.

1.2 TREATMENT SUMMARY

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

- WATERFORD CITY WWTP with a Plant Capacity PE of 190600, the treatment type is 2 - Secondary treatment

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
TPEFF3000D0022SW001	WATERFORD CITY WWTP	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
There are no Licence Specific Reports included in the AER.	

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 WATERFORD CITY WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - WATERFORD CITY 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
COD-Cr mg/l	24	467	230.83
Total Phosphorus (as P) mg/l	24	6.2	3.59
Suspended Solids mg/l	24	244	125.98
Total Nitrogen mg/l	24	48.4	25.39
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	24	172	88.92
Hydraulic Capacity	N/A	81731	37509

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 tretament 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 - TPEFF3000D0022SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	24	N/A	N/A	29.42	Pass
Total Oxidised Nitrogen (as N) mg/l	35	42	N/A	24	N/A	N/A	6.26	Pass
Total Nitrogen mg/l	35	42	N/A	24	N/A	N/A	12.28	Pass
Suspended Solids mg/l	35	87.5	N/A	24	N/A	N/A	9.42	Pass
Ammonia-Total (as N) mg/l	25	30	N/A	24	N/A	N/A	4.09	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	24	N/A	N/A	5.36	Pass
pH pH units	9	9	N/A	26	N/A	N/A	7.63	Pass
Benzo(k)fluoranthene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Acenaphthene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Atrazine µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Antimony - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Benzo(a)anthracene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Benzo(a)pyrene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
1,2,3-Trichlorobenzene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Benzo(g,h,i)perylene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
1,1,1-Trichloroethane µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Boron - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Carbon Tetrachloride µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Cyanide µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Cobalt - filtered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
beta-BHC /BETA-HCH µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Copper - unfiltered mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Chromium - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Calcium - filtered mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Mecoprop µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Molybdenum - filtered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Linuron µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Magnesium - filtered mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Fluoride µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Lead - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Isodrin µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Hexachlorobenzene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
MCPA µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Fluorene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Zinc - filtered mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Toluene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Pyrene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Phenanthrene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
ortho-Xylene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Simazine µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
2,6-Dichlorobenzamidec µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Benzo(b)fluoranthene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
1,2,4-Trichlorobenzene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
1,1-Dichloroethane µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Anthracene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Arsenic - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
alpha BHC / Alpha-HCH µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Barium - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
1,2,4-Trimethylbenzene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Acenaphthylene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Benzene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Dichlobenil µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Diuron µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Dieldrin µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Conductivity 20 C µS/cm	N/A	N/A	N/A	26	N/A	N/A	1457.28	
Chrysene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Chloromethane µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Chloride mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Chloroform µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Dibenzo(a,h)anthracene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Cadmium - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Fluoranthene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Isoproturon µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
meta + para-Xylene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Glyphosate µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Mercury - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Indeno(1,2,3-c,d)pyrene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Ethylbenzene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Fats, Oils & Greases mg/l	N/A	N/A	N/A	4	N/A	N/A	3.38	
gamma-BHC / HCH (Lindane) µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Hexachlorobutadiene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	24	N/A	N/A	0.95	
ortho-Phosphate (as P) - unspecified mg/l	N/A	N/A	N/A	24	N/A	N/A	0.51	
Naphthalene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Vanadium - filtered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Tetrachloroethene µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Nickel - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Total Hardness (as CaCO3) mg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Selenium - unfiltered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Polyaromatic Hydrocarbons (PAH) - Sum µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
2,4 D µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	
Tin - filtered µg/l	N/A	N/A	N/A	2	N/A	N/A	N/A	

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 TPEFF3000D0022SW001

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	264720, 112043	TW30002102SR4002	No	No	No	Yes	Good
Downstream	266200, 113186	TW30002102SR4004	No	No	No	Yes	Good

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 meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

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

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - WATERFORD CITY WWTP

2.1.4.1 Treatment Efficiency Report - WATERFORD CITY 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)
cBOD	1221744	69604	94
SS	1730948	122241	93

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
TN	348780	159384	54
COD	3171479	381733	88
TP	49345	12269	75

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

2.1.4.2 Treatment Capacity Report Summary - WATERFORD CITY 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.

WATERFORD CITY WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	82598
DWF to the Treatment Plant (m^3/day)	82598
Current Hydraulic Loading - annual max (m^3/day)	81731
Average Hydraulic loading to the Treatment Plant (m^3/day)	37509
Organic Capacity (PE) - As Constructed	190600
Organic Capacity (PE) - Collected Load (peak week)[Note1]	116576
Organic Capacity (PE) - Remaining	74024
Will the capacity be exceeded in the next three years? (Yes/No)	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 - WATERFORD CITY WWTP

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

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

3 COMPLAINTS AND INCIDENTS

3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
217	Blocked Sewer	0	217

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)
Spillage	Tank Overflow	1	No	Yes
Uncontrolled release	Adverse Weather	1	No	Yes
Uncontrolled release	Adverse Weather	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2019	3
Number of Incidents reported to the EPA via EDEN in 2019	3
Explanation of any discrepancies between the two numbers above	N/A

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

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

4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW11	262700, 111403	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW22	260501.3, 112718.6	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW23	260588, 112686	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW24	260762, 112650.2	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW4	261077, 112775	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW7A	263551, 112256	Yes	Low	Meeting	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW8	263924, 112245	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	257803.2, 110078.9	No	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	258447, 111341	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	258455, 111187	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	258660, 112275	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	258951, 110611	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	259252, 110486	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	259927.92, 111072.49	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	260204, 109819	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	260731, 111912	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
TBC	260951.6, 112405.8	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	322852, 246228	No	Low	Not Meeting	Unknown	Unknown	Unknown
SW1	261619, 111853	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW12	263258.88, 111765.67	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW19	264457.34, 110271.63	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW20	260329, 112787	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW21	260379, 112742	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW25	260886.1, 112570.7	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW26	260989.5, 112555.8	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
SW27	260154.4, 112819.8	Yes	Low	Not yet Assessed	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
SW6	261499, 112575	Yes	Low	Not Meeting	Unknown	Unknown	Not Monitored
SW9	262238, 111332	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
TBC	258982.4, 110906.9	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	259012.6, 111409.76	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	260262, 111378	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	260510, 111733	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	260541.59, 111610.58	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	260553, 109947	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	261505.9, 111785.4	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	261530, 111571	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2019 (No. of events)	Total volume discharged in 2019 (m3)	Monitoring Status
TBC	261530, 111571	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	261750.4, 112656.3	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	264457.34, 110271.63	No	Low	Not yet Assessed	Unknown	Unknown	Not Monitored
TBC	TBC	No	Low	Not yet Assessed	Unknown	Unknown	Unknown
TBC	TBC	No	Low	Not yet Assessed	Unknown	Unknown	Unknown
TBC	261617, 111853	No	Low	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	N/A
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/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0022-SIP:01	Waterford North West City Sewerage Scheme	C	31/12/2020	No	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis

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

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
D0022-IP:13	The Drainage Area Plan commenced onsite in 2019. Works will be ongoing throughout 2020.	Other	31/12/2021	

4.2.3 SEWER INTEGRITY RISK ASSESSMENT

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

5 LICENCE SPECIFIC REPORTS

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

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER
Shellfish Impact Assessment	Yes	2015	No	

5.1 SHELLFISH IMPACT ASSESSMENT

The Shellfish Impact Assessment Report has been included in the AER 2015

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?	Yes
List reason e.g. additional SWO identified	Specified Improvement requirements under the licence to be updated in relation to Waterford North West City Sewerage Scheme.
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	Change to Ambient monitoring locations: Upstream & Downstream
Have these processes commenced?	No
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:

Signed: Date: 30/04/2020

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

Katherine Walshe

Acting Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient monitoring summary

			Receiving Waters Designation (Yes/No)					Mean (mg/l)	
Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Bathing Water	Drinking Water	FWPM	Shellfish	Current WFD Status	cBOD	o-Phosphate (as P)
Upstream Monitoring Point	TW30002102SR4002	264720.15, 112043.12					Good	0.500	0.042
Downstream Monitoring Point	TW30002102SR4004	266200.35, 113186.62	No	No	No	Yes	Good	0.500	0.040
Difference								0.000	-0.003
EQS								4.000	0.040
% of EQS								0.000%	-6.500%

MonitoringStationCode	MonitoringStationName	SampleDate	SampleMethod	ParameterName	ParameterUnitShortCo	ParameterUnitName	Result	TextResult
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.062	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.06	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.057	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.047	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.085	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.088	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.085	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.088	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Chlorophyll	µg/l	Micrommes per Litr	3.7	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Chlorophyll	µg/l	Micrommes per Litr	4.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Chlorophyll	µg/l	Micrommes per Litre		<2
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Chlorophyll	µg/l	Micrommes per Litr	3.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Chlorophyll	µg/l	Micrommes per Litr	5.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Chlorophyll	µg/l	Micrommes per Litr	8.9	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Chlorophyll	µg/l	Micrommes per Litr	5.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Chlorophyll	µg/l	Micrommes per Litr	8.9	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Depth	m	Metres	7.5	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Depth	m	Metres	0	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Depth	m	Metres	0	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Depth	m	Metres	5.1	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Depth	m	Metres	0.3	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Depth	m	Metres	7.3	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Depth	m	Metres	0.3	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Depth	m	Metres	7.3	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	91	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	90	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	105	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	101	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	87	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	86	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	87	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	86	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.036	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.033	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.045	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.023	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.047	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.053	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.047	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.053	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	pH	pH units	pH Units	8	

TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	pH	pH units	pH Units	8
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	pH	pH units	pH Units	8.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	pH	pH units	pH Units	8.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	pH	pH units	pH Units	7.9
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	pH	pH units	pH Units	7.9
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	pH	pH units	pH Units	7.9
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	pH	pH units	pH Units	7.9
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Salinity	PSU	Practical salinity units	1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Salinity	PSU	Practical salinity units	2.3
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Salinity	PSU	Practical salinity units	13.8
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Salinity	PSU	Practical salinity units	19.4
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Salinity	PSU	Practical salinity units	19.8
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Salinity	PSU	Practical salinity units	20.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Salinity	PSU	Practical salinity units	19.8
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Salinity	PSU	Practical salinity units	20.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Salinity(Lab)	0/oo	0/oo	2
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	2.3
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Salinity(Lab)	0/oo	0/oo	17.6
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	17.4
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Salinity(Lab)	0/oo	0/oo	19.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	19.7
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Salinity(Lab)	0/oo	0/oo	19.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	19.7
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	4.7
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	4.7
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	0.45
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	0.43
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	2.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	2.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	2.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	2.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	StationDepth	m	Metres	8.4
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	StationDepth	m	Metres	8.4
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	StationDepth	m	Metres	5.3
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	StationDepth	m	Metres	5.3
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	StationDepth	m	Metres	7.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	StationDepth	m	Metres	7.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	StationDepth	m	Metres	7.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	StationDepth	m	Metres	7.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Temperature	°C	Degrees centrigrade	7.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Temperature	°C	Degrees centrigrade	7.1
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Temperature	°C	Degrees centrigrade	17.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Temperature	°C	Degrees centrigrade	16.5
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Temperature	°C	Degrees centrigrade	16.6
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Temperature	°C	Degrees centrigrade	16.6
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Temperature	°C	Degrees centrigrade	16.6
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Temperature	°C	Degrees centrigrade	16.6
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	3.3
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	3.2
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.2

TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.1	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.1	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.1	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.1	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Bottom	Transparency	m	Metres	0.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	11/02/2019 14:14	TRaC Surface	Transparency	m	Metres	0.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Surface	Transparency	m	Metres	1.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	27/06/2019 10:58	TRaC Bottom	Transparency	m	Metres	1.2	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:16	TRaC Surface	Transparency	m	Metres	0.6	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	10/09/2019 13:18	TRaC Bottom	Transparency	m	Metres	0.6	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:16	TRaC Surface	Transparency	m	Metres	0.6	
TW30002102SR4002	SR460 - Suir Estuary at Little Island	17/09/2019 13:18	TRaC Bottom	Transparency	m	Metres	0.6	

MonitoringStationCode	MonitoringStationName	SampleDate	SampleMethod	ParameterName	ParameterUnitShortCo	ParameterUnitName	Result	TextResult
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.064	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.071	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.052	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.062	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.086	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.079	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Ammonia-Total (as N)	mg/l	milligrams per litre	0.086	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Ammonia-Total (as N)	mg/l	milligrams per litre	0.079	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	BOD - 5 days (Total)	mg/l	milligrams per litre		<1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Chlorophyll	µg/l	Micrognammes per Litr	3.4	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Chlorophyll	µg/l	Micrognammes per Litr	7.3	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Chlorophyll	µg/l	Micrognammes per Litr	4.6	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Chlorophyll	µg/l	Micrognammes per Litr	4.3	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Chlorophyll	µg/l	Micrognammes per Litr	6.3	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Chlorophyll	µg/l	Micrognammes per Litr	7.7	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Chlorophyll	µg/l	Micrognammes per Litr	6.3	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Chlorophyll	µg/l	Micrognammes per Litr	7.7	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Depth	m	Metres	0	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Depth	m	Metres	10.3	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Depth	m	Metres	0	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Depth	m	Metres	9	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Depth	m	Metres	0.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Depth	m	Metres	8.1	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Depth	m	Metres	0.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Depth	m	Metres	8.1	

TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	91
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	93
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	103
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	103
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	87
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	87
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Dissolved Oxygen	% Saturation	Percentage Saturation	87
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Dissolved Oxygen	% Saturation	Percentage Saturation	87
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.035
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.04
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.023
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.018
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.049
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.051
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.049
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	ortho-Phosphate (as P)	mg/l	milligrams per litre	0.051
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	pH	pH units	pH Units	8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	pH	pH units	pH Units	8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	pH	pH units	pH Units	8.1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	pH	pH units	pH Units	8.1
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	pH	pH units	pH Units	7.9
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	pH	pH units	pH Units	7.9
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	pH	pH units	pH Units	7.9
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	pH	pH units	pH Units	7.9
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Salinity	PSU	Practical salinity units	10
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Salinity	PSU	Practical salinity units	3.6
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Salinity	PSU	Practical salinity units	19.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Salinity	PSU	Practical salinity units	26.2
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Salinity	PSU	Practical salinity units	21
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Salinity	PSU	Practical salinity units	22.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Salinity	PSU	Practical salinity units	21
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Salinity	PSU	Practical salinity units	22.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Salinity(Lab)	0/oo	0/oo	3.5
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	6.6
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	26
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Salinity(Lab)	0/oo	0/oo	19.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Salinity(Lab)	0/oo	0/oo	20.7
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	21.6
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Salinity(Lab)	0/oo	0/oo	20.7
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Salinity(Lab)	0/oo	0/oo	21.6
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	4.6
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	4.3
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	0.31
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	0.65
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	1.9
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	1.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Silica (as SiO2)	mg/l	milligrams per litre	1.9
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Silica (as SiO2)	mg/l	milligrams per litre	1.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	StationDepth	m	Metres	10.8
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	StationDepth	m	Metres	10.8

TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	StationDepth	m	Metres		nm
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	StationDepth	m	Metres		nm
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	StationDepth	m	Metres	8.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	StationDepth	m	Metres	8.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	StationDepth	m	Metres	8.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	StationDepth	m	Metres	8.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Temperature	°C	Degrees centrigrade	7.3	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Temperature	°C	Degrees centrigrade	7.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Temperature	°C	Degrees centrigrade	16.8	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Temperature	°C	Degrees centrigrade	15.7	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Temperature	°C	Degrees centrigrade	16.6	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Temperature	°C	Degrees centrigrade	16.6	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Temperature	°C	Degrees centrigrade	16.6	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Temperature	°C	Degrees centrigrade	16.6	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	2.9	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	2.9	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	0.66	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	1.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	0.93	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	0.87	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Total Oxidised Nitrogen	mg/l	milligrams per litre	0.93	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Total Oxidised Nitrogen	mg/l	milligrams per litre	0.87	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Surface	Transparency	m	Metres	0.4	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	11/02/2019 14:38	TRaC Bottom	Transparency	m	Metres	0.4	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Surface	Transparency	m	Metres	1.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	27/06/2019 11:14	TRaC Bottom	Transparency	m	Metres	1.2	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:35	TRaC Surface	Transparency	m	Metres	0.5	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	10/09/2019 13:38	TRaC Bottom	Transparency	m	Metres	0.5	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:35	TRaC Surface	Transparency	m	Metres	0.5	
TW30002102SR4004	SR480 - Suir Estuary at Glass House Qu	17/09/2019 13:38	TRaC Bottom	Transparency	m	Metres	0.5	