Annual Environmental Report

2018

Listowel

D0179-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0179-01, Listowel, in Kerry in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

1.1 Licence specific reporting included in AER

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

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant Listowel WWTP with a Plant Capacity PE of 12500. The treatment process includes the following:

1.2.1 Listowel WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Preliminary Screening
Primary Treatment	No	
Secondary Treatment	Yes	Diffused Aeration and Final Settlement
Nutrient Removal	No	
Tertiary Treatment	No	

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.2 Discharges from the agglomeration.

1.3 ELV Overview

1.3.1 Listowel WWTP

Compliance Status	
Were all parameters compliant for Listowel WWTP treatment plant	Yes
Where noncompliant see table 2.2.1 for details of parameters	

1.4 Sludge Removal

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

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
Listowel WWTP	Cake Sludge	1376.5	Weight (Tonnes)	13.7	ENVA
Listowel WWTP	Liquid Sludge	160	Volume (m3)	8	ENVA

Annual Statement of Measures

There were no major capital or operational changes undertaken

2 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

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

2.1.1 Influent Monitoring Summary - Listowel WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	219	121.65
Total Nitrogen mg/l	12	63.5	26.33
COD-Cr mg/l	12	569	345.83
Suspended Solids mg/l	12	484	258.1
Hydraulic Capacity	0	5765	3465.38

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

Significance of Results:

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

2.2 Discharges from the agglomeration

2.2.1 Effluent Monitoring Summary - Listowel WWTP

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedences	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
ortho-Phosphate (as P) - unspecified mg/l	2	2.4	0	12	0	0	0.03	Pass
Visual Inspection Descriptive	0	0	0	12	0	0	0	Pass
Total Phosphorus (as P) mg/l	0	0	0	1	0	0	0.03	Pass
Suspended Solids mg/l	35	87.5	0	12	0	0	7	Pass
Total Nitrogen mg/l	0	0	0	12	0	0	8.16	Pass
pH pH units	0	0	0	12	0	0	7.24	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	20	40	0	12	0	0	2.73	Pass
COD-Cr mg/l	125	250	0	12	0	0	26.19	Pass
Ammonia-Total (as N) mg/l	4	4.8	0	12	0	0	0.23	Pass
Conductivity 20 C µS/cm	0	0	0	12	0	0	438.03	Pass

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

Cause of Exceedance(s):

Not Applicable

Significance of Results:

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

2.3 Ambient monitoring summary

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

2.3.1 Ambient Monitoring Report Summary - Listowel WWTP

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

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	96131, 132867	TPEFF1300D0179SW001	No	No	No	No	Moderate
Downstream	95135, 132124	TPEFF1300D0179SW001	No	No	No	No	Moderate
Downstream	95136, 132124	TPEFF1300D0179SW001	No	No	No	No	Poor

2.3.2 Ambient Monitoring Parameter Summary - Listowel WWTP

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Alkalinity-total (as CaCO3) mg/l	RS23F010750	39.33	RS23F010800	68.14		
Nitrite (as N) µg/l	RS23F010750	7.72	RS23F010800	9.21		
Dissolved Oxygen % Saturation	RS23F010750	101.95	RS23F010800	108.44		
COD-Cr mg/l	RS23F010750	33	RS23F010800			
Conductivity 20 C µS/cm	RS23F010750	132	RS23F010800	250.15		
Iron - unfiltered µg/l	RS23F010750	591	RS23F010800			
BOD - 5 days (Total) mg/l	RS23F010750	1.13	RS23F010800	1.63	2.6	19.1
Chloride mg/l	RS23F010750	29.3	RS23F010800	59.31		
Potassium - unfiltered mg/l	RS23F010750	3	RS23F010800			
Total Nitrogen mg/l	RS23F010750	1.13	RS23F010800			
Manganese - unfiltered µg/l	RS23F010750	22.2	RS23F010800			
Magnesium - unfiltered mg/l	RS23F010750	3.1	RS23F010800			
Conductivity @25°C µS/cm	RS23F010750	194.67	RS23F010800	353.71		

ortho-Phosphate (as P) - unspecified mg/l	RS23F010750	0.02	RS23F010800	0.03	0.08	16.6
Sodium - unfiltered mg/l	RS23F010750	15	RS23F010800			
Total Phosphorus (as P) mg/l	RS23F010750	0.06	RS23F010800			
Ammonia-Total (as N) mg/l	RS23F010750	0.03	RS23F010800	0.06	0.14	19.9
Copper - unfiltered mg/l	RS23F010750	0.01	RS23F010800			
Dissolved Oxygen mg/l	RS23F010750	11.68	RS23F010800	11.66		
Boron - unfiltered mg/l	RS23F010750	0.01	RS23F010800			
True Colour mg/litre Pt Co	RS23F010750	90.33	RS23F010800	65.71		
Sulphate mg/l	RS23F010750	11.6	RS23F010800			
TOC as (NPOC) mg/l	RS23F010750	17.1	RS23F010800			
MCPA µg/l	RS23F010750	0.02	RS23F010800			
pH pH units	RS23F010750	7.4	RS23F010800	7.58		
Calcium - unfiltered mg/l	RS23F010750	8.3	RS23F010800			
Nitrate (as N) mg/l	RS23F010750	0.71	RS23F010800	0.85		
Total Oxidised Nitrogen (as N) mg/l	RS23F010750	0.58	RS23F010800	0.86		
Temperature °C	RS23F010750	9.78	RS23F010800	12.88		

Suspended Solids mg/l	RS23F010750	8	RS23F010800	7		
Total Hardness (as CaCO3) mg/l	RS23F010750	38	RS23F010800	52.71		

Significance of Results:

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

The parameters which exceeded the EQS and may be causing an are: None.

Any other know impacts: Upstream catchment is moderate. The EQS assessed relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009, as amended.

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

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

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

3.1.1 Treatment Efficiency Report Summary - Listowel WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
cBOD	147402.09	3836.57	97.4	
TN	31900.5	11466.39	64.06	
TP		31.39		
SS	312755.3	9024.14	97.11	
COD	419052.97	33756.2	91.94	

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

3.2 Treatment Capacity Report Summary

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

Listowel WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	8520

DWF to the Treatment Plant (m3/day)	2840
Current Hydraulic Loading - annual max (m3/day)	5765
Average Hydraulic loading to the Treatment Plant (m3/day)	3465.38
Organic Capacity (PE) - As Constructed	12500
Organic Capacity (PE) - Collected Load (peak week)	5737
Organic Capacity (PE) - Remaining	6763
Will the capacity be exceeded in the next three years? (Yes/No)	No

3.3 Complaints Summary

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

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
5	Blocked Sewer	0	5

3.4 Reported Incidents Summary

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

A summary of reported incidents is included below.

3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Other	1	No	Yes

3.4.2 Summary of Overall Incidents

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

3.5 Sludge / Other inputs to the WWTP

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

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
Domestic /Septic Tank Sludge	536	Volume (m3)		0.04	Yes	Yes	No

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 Storm Water Overflow Identification and Inspection Report

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

No Appendix Included

4.1.1 SWO Identification

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
SW002	99543, 133911	Yes	Low	Not Meeting			Not Monitored
SW003	99124, 133386	Yes	Low	Not Meeting			Not Monitored
SW004	98117, 133764	Yes	Low	Not Meeting			Not Monitored
SW005	98615, 133835	Yes	Low	Not Meeting			Not Monitored
SW006	98730, 133832	Yes	Low	Not Meeting			Not Monitored
SW008	99236, 133411	Yes	Low	Not Meeting			Not Monitored
SW009	99586, 133303	Yes	Low	Not Meeting			Not Monitored

SW010	95408, 132299	Yes	Low	Not Meeting			Not Monitored
SW011	N/A	Yes	Low	Not Meeting			Not Monitored
SW012	N/A	Yes	Low	Not Meeting			Not Monitored

4.1.2 Inspection Summary Report

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

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

4.2.1 Specified Improvement Programme Summary

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

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoECLG "Procedures and Criteria in relation to Storm Water Overflows, 1995" SW1 to SW10	C	22/12/2015	Yes	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	Improvement Source	Expected Completion Date	Comments
There are no Improvements Programme for this Agglomeration.				

4.2.3 Sewer Integrity Risk Assessment

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

5 LICENCE SPECIFIC REPORTS

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

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER (e.g. Appendix X).
There is no Licence Specific Report Required in this AER Annual Review.				

6 CERTIFICATION AND SIGN OFF

6.1 Summary of AER Contents

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

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

Signed: Date: 25/02/2019

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

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

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

Appendix
Appendix 7.1 - Ambient monitoring summary

								005A_TEMP_FIELD Temperature	006_PH pH		007A_CONDUCTIVITY20C Conductivity	013C_BOD B.O.D.		022K_AMMONIA Ammonia		025_PHOSPHATE_SRP Phosphorus (MRP)		026D_TOTAL P Phosphorus (Total)	035_DO_PCT_SAT Dissolved Oxygen	036_DO_MG_L Dissolved Oxygen	082_VIS_INSPECTION Visual Inspection
										4.5 9.0		0 5		0 0.1		0 0.05				
Sampling Point	SP EPA Code	Sample No.	Sampled Date	Sampled Time	Sampled By	Comments	Sample Status	DEG_C	PH	PH	USCM	BOD	BOD	MGLN	MGLN	MGL	MGL	MGLP	PERCENT_SA	MGL	NONE
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/0004	04-Jan-18	9:30	EX_GC		Authorised		7.1		133	1.3		0.07		0.02					Slight Colour
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/0496	21-Feb-18	12:20	EX_KL	DO - 10.89, % O2 87.2, Temp - 6.5, Clear	Authorised		7.1		138	<1.3		<0.05		0.02					Clear
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/0667	07-Mar-18	15:20	EX_KL		Authorised		7.2		126	2.1		0.06		0.01					Not recorded
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/0946	04-Apr-18	10:50	EX_GC		Authorised		7.3		112	1.8		0.15		0.02					clear
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/1238	02-May-18	9:10	EX_GC	Visual Slightly coloured, 10.02 DO, 10.60C, 90.5% sat	Authorised		7.2		107	1.4		0.06		0.01					slightly coloured
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/1538	06-Jun-18	9:40	EX_GC		Authorised		7.2		137	1.3		0.11		0.03					Clear with mid colour
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/1930	04-Jul-18	12:20	EX_KL		Authorised		8.2		169	2.2		0.10		0.01					clear
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/2296	08-Aug-18	10:20	EX_GC		Authorised		7.4		166	2.6		<0.05		0.01					not recorded
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/2689	05-Sep-18	9:30	EX_GC	DO 10.30mg/l, 99.3 % sat, Temp 14.4 0C	Authorised	14.4	7.2		138	<1.3		0.05		0.01			99.3	10.3	Clear
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/2985	03-Oct-18	9:30	EX_GC	Visual clear, DO 9.82, Temp 13.5 0C, % sat 92.7%	Authorised		7.4		138	2.2		<0.05		0.01					clear
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/3344	07-Nov-18	9:30	EX_GC	DO 10.44, 9.5 0C, 92.3% sat, high colour	Authorised			7.2	121		1.7		0.07		0.02				high and coloured
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/3372	08-Nov-18	11:10	EX_GC	High colour	Authorised			7.2	112		1.5		<0.05		0.02				high and coloured
Feale 0.1 km ds Racecourse Footbrg_LISTOWEL_US_DISCHARGE_2	RS23F010725	2018/3641	05-Dec-18	9:30	EX_GC	High colour flood, 11.09DO, 8.5 0C, 94.7% sat	Authorised			6.7	88		1.8		<0.05		0.04				High Colour-Flood
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/0005	04-Jan-18	9:15	EX_GC		Authorised		7.0		137	1.3		0.09		0.02					Slight Colour
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/0494	21-Feb-18	11:30	EX_KL	DO - 10.97, % O2 88.5, Temp - 6.9, Clear	Authorised		7.3		140	<1.3		0.08		0.02					Clear
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/0668	07-Mar-18	13:20	EX_KL		Authorised		7.2		120	<1.3		0.05		0.02					Not recorded
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/0948	04-Apr-18	8:50	EX_GC		Authorised		7.1		136	<1.3		<0.05		<0.005		<0.007			clear
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/1239	02-May-18	9:00	EX_GC	Visual Slightly coloured, 9.75 DO, 11.5 0C, 88.9% sat	Authorised		7.2		141	<1.3		<0.05		0.09					slightly coloured
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/1539	06-Jun-18	9:50	EX_GC		Authorised		7.6		300	1.3		0.08		0.04					Clear with mid colour
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/1928	04-Jul-18	11:40	EX_KL		Authorised		8.7		688	2.1		<0.05		<0.005					clear
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/2297	08-Aug-18	9:30	EX_GC		Authorised		7.7		579	2.2		0.08		0.04					not recorded
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/2690	05-Sep-18	9:10	EX_GC	DO 10.28 mg/l, 99.5% sat, Temp 14.4 0C	Authorised	14.4	7.5		404	<1.3		<0.05		0.02			99.5	10.3	Clear
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/2986	03-Oct-18	9:00	EX_GC	Visual clear, DO 9.91, Temp 13.3 0C, % sat 91.3%	Authorised		7.5		197	1.9		<0.05		0.02					clear
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/3345	07-Nov-18	9:10	EX_GC	DO 10.34, 10.1 0C, 93.6% sat, high colour	Authorised			7.2	140		<1.3		0.05		0.02				high and coloured
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/3373	08-Nov-18	11:20	EX_GC	High colour	Authorised			7.2	180		2.3		0.11		0.03				high and coloured
Feale Finuge brg - Listowel DS_DISC_PT	RS23F010800	2018/3642	05-Dec-18	9:10	EX_GC	High colour flood, 10.89 DO, 8.8 0C, 94.3% sat	Authorised			6.6	90		2.4		<0.05		0.04				High Colour-Flood
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/0003	04-Jan-18	9:40	EX_GC		Authorised		7.2		133	1.4		0.23		0.02					Slight Colour
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/0495	21-Feb-18	12:00	EX_KL	DO - 11.09, % O2 89.5, Temp - 6.8, Clear	Authorised		7.2		126	<1.3		0.05		0.01					Clear
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/0666	07-Mar-18	15:30	EX_KL		Authorised		7.4		108	1.8		<0.05		0.01					Not recorded
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/0947	04-Apr-18	10:40	EX_GC		Authorised		7.1		110	1.8		0.15		0.02		0.049			clear
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/1237	02-May-18	9:20	EX_GC	Visual Slightly coloured, 10.08 DO, 10.60C, 91.2% sat	Authorised		7.2		120	<1.3		<0.05		0.01					slightly coloured
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/1537	06-Jun-18	9:15	EX_GC		Authorised		7.3		137	1.5		0.12		0.03					Clear with mid colour
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/1929	05-Jul-18	12:00	EX_KL		Authorised		8.0		152	1.5		<0.05		<0.005					clear
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/2295	08-Aug-18	10:30	EX_GC		Authorised		7.5		141	2.6		<0.05		0.02					not recorded
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/2688	05-Sep-18	9:45	EX_GC	DO 9.45 mg/l, 92.2%, Temp 15.0 0C	Authorised	15.0	7.2		144	<1.3		<0.05		<0.005			92.2	9.4	Clear
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/2984	03-Oct-18	9:45	EX_GC	Visual clear, DO 9.71, Temp 14.0 0C, % sat 94.7%	Authorised			7.5	133		<1.3		<0.05		0.01				clear
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/3371	08-Nov-18	11:00	EX_GC	High colour	Authorised			7.4	113		1.6		0.05		0.02				high and coloured
Feale Listowel brg-Listowel US_DISC_PT_1	RS23F010600	2018/3640	05-Dec-18	9:40	EX_GC	High colour flood, 11.06 DO, 8.4 0C, 94.4% sat	Authorised			6.7	86		2.3		<0.05		0.04				High Colour-Flood

WaterbodyName	WaterbodyCode	Waterbodytype	MonitoringStationCode	SampleDate	Parameter Name	Parameter Unit	ReportResult	ReportTextResult
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Ammonia-Total (as N)	mg/l	0.076	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Chlorophyll	µg/l	0.5	<1
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Dissolved Oxygen	% Saturation	96	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Salinity	PSU	0.05	<0.1
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Depth	m	0.1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Salinity(Lab)	0/oo	0.05	<0.1
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Silica (as SiO2)	mg/l	2.7	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	StationDepth	m	1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	pH	pH units	7.2	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	BOD - 5 days (Total)	mg/l	1.4	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	ortho-Phosphate (as P) - u	mg/l	0.02	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Temperature	°C	5.4	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	TOC (as NPOC)	mg/l	8.9	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Total Oxidised Nitrogen (a	mg/l	0.34	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	08/03/2018 19:37	Transparency	m		vob
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Ammonia-Total (as N)	mg/l	0.014	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	BOD - 5 days (Total)	mg/l	7.4	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Depth	m	0.3	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Dissolved Oxygen	% Saturation	92	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	ortho-Phosphate (as P) - u	mg/l	0.018	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Chlorophyll	µg/l	4	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Salinity(Lab)	0/oo	0.05	<0.1
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Silica (as SiO2)	mg/l	0.78	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	StationDepth	m	0.5	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Suspended Solids	mg/l	2	<4
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Temperature	°C	13.8	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	TOC (as NPOC)	mg/l	9.1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Total Oxidised Nitrogen (a	mg/l	0.14	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Transparency	m		vob
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	Salinity	PSU	0.1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	True Colour	mg/litre Pt Co	94	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	15/05/2018 08:13	pH	pH units	7.6	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Ammonia-Total (as N)	mg/l	0.05	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	BOD - 5 days (Total)	mg/l	2.6	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Salinity	PSU	0.2	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Depth	m	0.1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Silica (as SiO2)	mg/l	0.19	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Temperature	°C	18.2	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Dissolved Oxygen	% Saturation	84	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	TOC (as NPOC)	mg/l	8.1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Total Oxidised Nitrogen (a	mg/l	0.87	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	ortho-Phosphate (as P) - u	mg/l	0.011	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	pH	pH units	8.1	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Salinity(Lab)	0/oo	0.2	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	StationDepth	m	0.2	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	05/07/2018 09:47	Transparency	m		vob
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	BOD - 5 days (Total)	mg/l	1.2	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Depth	m	0.3	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	ortho-Phosphate (as P) - u	mg/l	0.03	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Chlorophyll	µg/l	23	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Salinity	PSU	0.3	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Silica (as SiO2)	mg/l	1.4	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	StationDepth	m	0.5	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Dissolved Oxygen	% Saturation	104	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	TOC (as NPOC)	mg/l	9.5	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Total Oxidised Nitrogen (a	mg/l	0.78	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	pH	pH units	7.9	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Temperature	°C	19.3	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Ammonia-Total (as N)	mg/l	0.053	
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Salinity(Lab)	0/oo	0.05	<0.1
Upper Feale Estuary	IE_SH_060_0200	Transitional	TW13004122CF1001	02/08/2018 13:09	Transparency	m		vob