Annual Environmental Report

2018

Westport

D0055-01

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

1.1 Licence Specific Reporting Included in AER

1.2 Treatment Type

1.2.1 WESTPORT WWTP

1.3 ELV Overview

1.3.1 WESTPORT WWTP

1.4 Sludge Removal

2 MONITORING REPORTS SUMMARY

2.1 Summary Report on Monthly Influent Monitoring

2.1.1 Influent Monitoring Summary - WESTPORT WWTP

2.2 Discharges From The Agglomeration

2.2.1 Effluent Monitoring Summary - WESTPORT WWTP

2.3 Ambient Monitoring Summary

2.3.1 Ambient Monitoring Report Summary - WESTPORT WWTP

2.3.2 Ambient Monitoring Parameter Mean (mg/l) - WESTPORT WWTP

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

3.1.1 Treatment Efficiency Report Summary - WESTPORT WWTP

3.2 Treatment Capacity Report Summary

3.3 Complaints Summary

3.4 Reported Incidents Summary

3.4.1 Summary of Incidents

3.4.2 Summary of Overall Incidents

3.5 Sludge / Other Inputs to The WWTP

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 Storm Water Overflow Identification and Inspection Report

4.1.1 SWO Identification

4.1.2 Inspection Summary Report

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

4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY
4.2.2 IMPROVEMENT PROGRAMME SUMMARY
4.2.3 SEWER INTEGRITY RISK ASSESSMENT SUMMARY
5 LICENCE SPECIFIC REPORTS
5.1 SHELLFISH IMPACT ASSESSMENT
5.2 TOXICITY OF FINAL EFFLUENT
6 CERTIFICATION AND SIGN OFF
6.1 SUMMARY OF AER CONTENTS
6.2 DECLARATION BY IRISH WATER
7 APPENDIX
7.1 AMBIENT MONITORING SUMMARY

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0055-01, Westport, in Mayo 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

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant WESTPORT WWTP with a Plant Capacity PE of 15042. The treatment process includes the following:

1.2.1 WESTPORT WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Including Screening & Grit Removal
Primary Treatment	No	
Secondary Treatment	Yes	Activated Sludge- Extended Aeration
Nutrient Removal	Yes	Anoxic zones
Tertiary Treatment	Yes	UV Disinfection

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 WESTPORT WWTP

Compliance Status	
Were all parameters compliant for WESTPORT 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
WESTPORT WWTP	Cake Sludge	212.78	Weight (Tonnes)	16.9	Laragan, Elphin, Co. Roscommon
WESTPORT WWTP	Cake Sludge	99.98	Weight (Tonnes)	16.9	Tibohine, Ballaghadereen, Co. Roscommon

Annual Statement of Measures

None

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 - WESTPORT WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
Total Nitrogen mg/l	13	57	18.75
COD-Cr mg/l	13	1099	330.32
Suspended Solids mg/l	13	215	132.07
Total Phosphorus (as P) mg/l	13	6.6	1.49
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	13	229	115.7
Hydraulic Capacity	0	23462	5687

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 greater than the peak Treatment Plant Capacity as detailed further in Section 3.2.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.

2.2 Discharges from the agglomeration

2.2.1 Effluent Monitoring Summary - WESTPORT 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 exceedances	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Suspended Solids mg/l	35	87.5	0	13	0	0	5.27	Pass
COD-Cr mg/l	125	250	0	13	0	0	23	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	0	13	0	0	2.33	Pass
Mercury - unfiltered µg/l	40	48	0	1	0	0	0.06	Pass
Salinity ppt	0	0	0	12	0	0	4.98	Pass
pH pH units	0	0	0	13	0	0	7.38	Pass
Visual Inspection Descriptive	0	0	0	6	0	0	0	Pass
Silver - unspecified mg/l	1	1.2	0	1	0	0	0	Pass
ortho-Phosphate (as P) - unspecified mg/l	0	0	0	13	0	0	0.68	Pass

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)
PCBs (Total) µg/l	0	0	0	2	0	0	0.05	Pass
Total Phosphorus (as P) mg/l	0	0	0	13	0	0	0.9	Pass
Zinc - unspecified µg/l	100	120	0	1	0	0	20	Pass
Ammonia-Total (as N) mg/l	5	6	0	13	0	0	0.33	Pass
Temperature °C	25	0	0	7	0	0	6.72	Pass
Cadmium - unfiltered µg/l	5	6	0	1	0	0	0.25	Pass
Chromium - unfiltered µg/l	30	36	0	1	0	0	0.25	Pass
Nitrite (as N) mg/l	0	0	0	13	0	0	0.1	Pass
Nickel - unfiltered µg/l	50	60	0	1	0	0	1	Pass
Arsenic - unfiltered µg/l	40	48	0	1	0	0	0.9	Pass
Nitrate (as N) mg/l	0	0	0	13	0	0	3.96	Pass
Fats, Oils & Greases mg/l	0	0	0	4	0	0	3.92	Pass

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)
Lead - unfiltered µg/l	20	24	0	1	0	0	0.25	Pass
Copper - unspecified µg/l	10	12	0	1	0	0	3	Pass
Conductivity 20 C µS/cm	0	0	0	13	0	0	1429.18	Pass
True Colour PtCo Units	0	0	0	6	0	0	22.58	Pass
Total Nitrogen mg/l	0	0	0	13	0	0	7.63	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 - WESTPORT 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	97738, 285114	TPEFF2200D0055SW001	No	No	No	No	High

2.3.2 Ambient Monitoring Parameter Summary - WESTPORT WWTP

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 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.

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 - WESTPORT WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
COD	649916	38238.55	94.12	
cBOD	227639.33	3880.68	98.3	
SS	259848.47	8764.2	96.63	
TN	36892.53	12688.2	65.61	
TP	2924.23	1489.35	49.07	

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.

WESTPORT WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	13650

WESTPORT WWTP	
DWF to the Treatment Plant (m3/day)	4550
Current Hydraulic Loading - annual max (m3/day)	23462
Average Hydraulic loading to the Treatment Plant (m3/day)	5687
Organic Capacity (PE) - As Constructed	15042
Organic Capacity (PE) - Collected Load (peak week)	9646
Organic Capacity (PE) - Remaining	5396
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
There is no Complaint data included in the AER.			

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	EO caused by power failure	1	No	Yes
Uncontrolled release	EO caused by ragging or blocking	1	No	Yes

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	2
Number of Incidents reported to the EPA via EDEN in 2018	2
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)?	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	939.34	Volume (m3)	11.44	0.05	Yes	Yes	No
Other	106.4	Volume (m3)	1.3	0.01	Yes	Yes	No

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?[2](Y/N)
Other	16.4	Volume (m3)	0.2	0	Yes	Yes	No
Other	24.6	Volume (m3)	0.3	0	No	Yes	No
Other	73.7	Volume (m3)	0.89	0	Yes	Yes	No
Other	1022	Volume (m3)	12.44	0.05	Yes	Yes	No
Other	468	Volume (m3)	5.7	0.02	Yes	Yes	No
Domestic /Septic Tank Sludge	21.4	Volume (m3)	0.25	0	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
SW2	97738, 285114	Yes	Low	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?	Yes
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
There are no Specified Improvement Programmes for this Agglomeration.						

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).
Shellfish Impact Assessment	Yes	2011	No	
Toxicity of Final Effluent	Yes	2017	No	

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	N/A

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

Signed: Date: 28/02/2019

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

Appendix
Appendix 7.1 - Ambient monitoring summary

2018/19
List of Classified Bivalve Mollusc Production Areas in Ireland
(26 June 2018)

I	II	III	IV	V	VI
Production Area	**Boundaries**	**Bed Name**	**Species**	**Class**	**Notes**
Clew Bay Classified Production Areas	Area within a one nautical mile (1,852 M) radius of Roskeen Point (53° 53.46'N, 09° 40.10' W)	Tieranaur Bay Inisquirk	Oysters	A*	*Seasonal Classification 01 Oct – 01 July reverts to Class B at other times (Note 1).
	Area bounded to the west by a line from Mulranny Pier to Old Head and to the south east by 09° 35.37' W and to the north east by a line due north and east respectively from the point at which 09° 37' W and 53° 52.60 N intersect	Corrie Channel	Mussels	A	
			Oysters	A	
		Rosslaher	Mussels	A	
			Oysters	A	
		Mynah	Oysters	A	
		Inishlaughil	Mussels	A	
		Carrowholly	Oysters	B	
		Murrisk	Oysters	A	
			Mussels	B*	* Dormant Fishery. Contact SFPA if Re-activating (Note 3)

Notes:

Note 1 Seasonal classifications

Where the data shows a clear seasonal trend over a number of seasons, different classification categories apply for different seasons. Details, where applicable, are given in column VI above.

Note 2 Preliminary classifications

Classifications are described as preliminary when an area is being classified for the first time or after a period in suspension. The term may also be used where an incomplete dataset of results was to hand.

Note 3 Dormant Fisheries

Fishery has been dormant for at least 12 months, and limited monitoring data is available. Sites that remain dormant are in danger of their Classification becoming lapsed due to a lack of monitoring data. Producers should contact their local SFPA office if Re-activating in order that monthly classification monitoring sampling may resume.

Classification process brief:
The SFPA classifies shellfish production areas for the commercial harvesting of bivalve shellfish annually, based on data obtained from a microbiological sampling programme for Live Bivalve Mollusc production areas in Ireland. The annual classification process employed by Ireland entails the review of micro results from a 3 x year dataset of monthly micro results obtained from some 147 sample locations located around the coast.

Shellfish Classification based on E. coli monitoring

Category	Microbiological Standard (MPN $100g^{-1}$ shellfish flesh)	Treatment required
Class A	<230 *E.coli*	May go direct for human consumption
Class B	<4,600 *E.coli* (90% compliance)	Must be depurated, heat treated or relayed to meet class A requirements
Class C	<46,000 *E.coli*	**Must be relayed for 2 months to meet class A or B requirements or may also be heat treated**

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37385	INISQUIRK	17-Jan-18	POY	0.18
CLEW BAY	37579	INISQUIRK	25-Feb-18	POY	0.2
CLEW BAY	37727	INISQUIRK	26-Mar-18	POY	0.18
CLEW BAY	37852	INISQUIRK	25-Apr-18	POY	0.18
CLEW BAY	37943	INISQUIRK	13-May-18	POY	0.18
CLEW BAY	38104	INISQUIRK	19-Jun-18	POY	0.18
CLEW BAY	38173	INISQUIRK	2-Jul-18	POY	0.18
CLEW BAY	38370	INISQUIRK	14-Aug-18	POY	0.18
CLEW BAY	38441	INISQUIRK	2-Sep-18	POY	0.18
CLEW BAY	38639	INISQUIRK	16-Oct-18	POY	0.45
CLEW BAY	38889	INISQUIRK	7-Nov-18	POY	0.18
CLEW BAY	38933	INISQUIRK	9-Dec-18	POY	0.2

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37336	CORRIE CHANNEL	10-Jan-18	MUS	0.18
CLEW BAY	37488	CORRIE CHANNEL	14-Feb-18	MUS	0.18
CLEW BAY	37639	CORRIE CHANNEL	14-Mar-18	MUS	0.18
CLEW BAY	37778	CORRIE CHANNEL	16-Apr-18	MUS	0.18
CLEW BAY	37939	CORRIE CHANNEL	13-May-18	MUS	0.18
CLEW BAY	38022	CORRIE CHANNEL	5-Jun-18	MUS	0.18
CLEW BAY	38175	CORRIE CHANNEL	2-Jul-18	MUS	0.45
CLEW BAY	38365	CORRIE CHANNEL	14-Aug-18	MUS	0.45
CLEW BAY	38452	CORRIE CHANNEL	6-Sep-18	MUS	2.3
CLEW BAY	38568	CORRIE CHANNEL	1-Oct-18	MUS	0.2
CLEW BAY	38899	CORRIE CHANNEL	7-Nov-18	MUS	0.18
CLEW BAY	**38914**	**CORRIE CHANNEL**	**9-Dec-18**	**MUS**	**3.3**
CLEW BAY	37335	CORRIE CHANNEL	10-Jan-18	POY	0.18
CLEW BAY	37487	CORRIE CHANNEL	14-Feb-18	POY	0.18
CLEW BAY	37638	CORRIE CHANNEL	14-Mar-18	POY	0.18
CLEW BAY	37777	CORRIE CHANNEL	16-Apr-18	POY	0.18
CLEW BAY	37938	CORRIE CHANNEL	13-May-18	POY	0.18
CLEW BAY	38021	CORRIE CHANNEL	5-Jun-18	POY	0.18
CLEW BAY	38174	CORRIE CHANNEL	2-Jul-18	POY	0.18
CLEW BAY	38364	CORRIE CHANNEL	14-Aug-18	POY	0.4
CLEW BAY	38451	CORRIE CHANNEL	6-Sep-18	POY	0.18

CLEW BAY	38567	CORRIE CHANNEL	1-Oct-18	POY	0.18
CLEW BAY	38898	CORRIE CHANNEL	7-Nov-18	POY	0.18
CLEW BAY	38913	CORRIE CHANNEL	9-Dec-18	POY	0.2

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37338	ROSSLAHER	10-Jan-18	MUS	0.18
CLEW BAY	37490	ROSSLAHER	14-Feb-18	MUS	0.18
CLEW BAY	37641	ROSSLAHER	14-Mar-18	MUS	0.18
CLEW BAY	37780	ROSSLAHER	16-Apr-18	MUS	0.18
CLEW BAY	37941	ROSSLAHER	13-May-18	MUS	0.18
CLEW BAY	38024	ROSSLAHER	5-Jun-18	MUS	0.18
CLEW BAY	38177	ROSSLAHER	2-Jul-18	MUS	0.18
CLEW BAY	38367	ROSSLAHER	14-Aug-18	MUS	0.2
CLEW BAY	**38454**	**ROSSLAHER**	**6-Sep-18**	**MUS**	**17**
CLEW BAY	38479	ROSSLAHER	12-Sep-18	MUS	1.3
CLEW BAY	38566	ROSSLAHER	1-Oct-18	MUS	0.18
CLEW BAY	38896	ROSSLAHER	7-Nov-18	MUS	0.18
CLEW BAY	38915	ROSSLAHER	9-Dec-18	MUS	0.2
CLEW BAY	37337	ROSSLAHER	10-Jan-18	POY	0.18
CLEW BAY	37489	ROSSLAHER	14-Feb-18	POY	0.18
CLEW BAY	37640	ROSSLAHER	14-Mar-18	POY	0.18
CLEW BAY	37779	ROSSLAHER	16-Apr-18	POY	0.18
CLEW BAY	37940	ROSSLAHER	13-May-18	POY	0.18
CLEW BAY	38023	ROSSLAHER	5-Jun-18	POY	0.18
CLEW BAY	38176	ROSSLAHER	2-Jul-18	POY	0.18
CLEW BAY	38366	ROSSLAHER	14-Aug-18	POY	0.2
CLEW BAY	38453	ROSSLAHER	6-Sep-18	POY	0.18
CLEW BAY	38565	ROSSLAHER	1-Oct-18	POY	0.18
CLEW BAY	38897	ROSSLAHER	7-Nov-18	POY	0.18
CLEW BAY	38916	ROSSLAHER	9-Dec-18	POY	0.2

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37387	MYNAH	17-Jan-18	POY	0.18
CLEW BAY	37491	MYNAH	15-Feb-18	POY	0.18
CLEW BAY	37618	MYNAH	7-Mar-18	POY	0.2
CLEW BAY	37814	MYNAH	19-Apr-18	POY	0.45
CLEW BAY	37956	MYNAH	17-May-18	POY	0.4
CLEW BAY	38085	MYNAH	19-Jun-18	POY	0.18
CLEW BAY	38183	MYNAH	4-Jul-18	POY	0.18
CLEW BAY	38368	MYNAH	14-Aug-18	POY	0.18
CLEW BAY	38492	MYNAH	20-Sep-18	POY	0.78
CLEW BAY	38662	MYNAH	23-Oct-18	POY	0.18
CLEW BAY	38894	MYNAH	7-Nov-18	POY	0.18
CLEW BAY	38917	MYNAH	10-Dec-18	POY	0.45

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37413	INISHLAUGHIL	23-Jan-18	MUS	0.18
CLEW BAY	37578	INISHLAUGHIL	26-Feb-18	MUS	0.18
CLEW BAY	37728	INISHLAUGHIL	26-Mar-18	MUS	0.18
CLEW BAY	37851	INISHLAUGHIL	26-Apr-18	MUS	0.18
CLEW BAY	37971	INISHLAUGHIL	22-May-18	MUS	0.18
CLEW BAY	38105	INISHLAUGHIL	19-Jun-18	MUS	0.2
CLEW BAY	**38178**	**INISHLAUGHIL**	**2-Jul-18**	**MUS**	**4.9**
CLEW BAY	38211	INISHLAUGHIL	11-Jul-18	MUS	0.18
CLEW BAY	38369	INISHLAUGHIL	14-Aug-18	MUS	1.7
CLEW BAY	38493	INISHLAUGHIL	20-Sep-18	MUS	1.3
CLEW BAY	38666	INISHLAUGHIL	23-Oct-18	MUS	2.3
CLEW BAY	38930	INISHLAUGHIL	22-Nov-18	MUS	1.3

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37554	CARROWHALLY/ROSMALLEY	26-Feb-18	POY	0.18
CLEW BAY	37437	CARROWHOLLY/ROSMALLEY POINT	25-Jan-18	POY	0.18
CLEW BAY	37815	CARROWHOLLY/ROSMALLEY POINT	19-Apr-18	POY	0.78
CLEW BAY	37958	CARROWHOLLY/ROSMALLEY POINT	17-May-18	POY	0.18
CLEW BAY	38107	CARROWHOLLY/ROSMALLEY POINT	19-Jun-18	POY	0.18
CLEW BAY	38182	CARROWHOLLY/ROSMALLEY POINT	3-Jul-18	POY	0.18
CLEW BAY	38425	CARROWHOLLY/ROSMALLEY POINT	29-Aug-18	POY	0.18
CLEW BAY	38448	CARROWHOLLY/ROSMALLEY POINT	5-Sep-18	POY	0.18
CLEW BAY	38664	CARROWHOLLY/ROSMALLEY POINT	23-Oct-18	POY	0.18
CLEW BAY	38770	CARROWHOLLY/ROSMALLEY POINT	21-Nov-18	POY	0.18
CLEW BAY	38912	CARROWHOLLY/ROSMALLEY POINT	9-Dec-18	POY	0.78
CLEW BAY	37617	CARROWHOLLY/ROSMALLEY PT	8-Mar-18	POY	0.18

Area	Result Number	Sample Position	Sampling Date	Sample Type	ECShell
CLEW BAY	37388	MURRISK	17-Jan-18	POY	0.18
CLEW BAY	37553	MURRISK	26-Feb-18	POY	0.18
CLEW BAY	37616	MURRISK	8-Mar-18	POY	0.18
CLEW BAY	37813	MURRISK	19-Apr-18	POY	2.3
CLEW BAY	37957	MURRISK	17-May-18	POY	0.18
CLEW BAY	38106	MURRISK	19-Jun-18	POY	0.18
CLEW BAY	38181	MURRISK	3-Jul-18	POY	0.18
CLEW BAY	38426	MURRISK	29-Aug-18	POY	0.18
CLEW BAY	38447	MURRISK	5-Sep-18	POY	0.18
CLEW BAY	38663	MURRISK	23-Oct-18	POY	0.18
CLEW BAY	38769	MURRISK	21-Nov-18	POY	0.18
CLEW BAY	38911	MURRISK	9-Dec-18	POY	0.18

Counter	Station No	Sample Label	Survey Date	Time Clock	Depth Bed	Sample Depth S	Salinity S ‰	Temp S °C	pH	Secchi m	SS mg/l	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	PO4 µg/l P	Chlorophyll a mg/m		Si_est µg/l Si	Lab. Number	DIN	Free NH3 mg/l N	TON:NH3	DIN:PO4 µMol	DO mg/l	Season	Cond	BOD_LOD	TON_LOD	NH3_LOD	PO4_LOD	Chl_a_LOD	Si_est_LOD	Lab	din:si	P:si	colour_lod	sal_lod	colour	WB	
131786	CW110	CW110B	15/02/2017	0.522222222	21	20.16	34.21	7.36	8	6.5		97	0.5	0.075	0.013	24	0.5		180	17-02818	0.088	0.00024	5.77	8.11	9.3	Winter		<1				<1		EPA Monaghan	2.1	0.26		34.4	IE_WE_340_0000		
131785	CW110	CW110S	15/02/2017	0.522222222	21	0	34.19	7.36	8	6.5		97.3	0.5	0.07	0.005	11	0.5		180	17-02817	0.075	0.00009	14	15.08	9.4	Winter		<1		<0.01		<1		EPA Monaghan	1.79	0.12		34.3	IE_WE_340_0000		
131784	CW120	CW120C	15/02/2017	0.507638889	22	21.4	34.35	7.68	8	6.0		97.4		0.048	0.005	11	0.5		180	17-02816	0.053	0.00009	9.6	10.65	9.3	Winter				<0.01		<1		EPA Monaghan	1.26	0.12		34.4	IE_WE_340_0000		
131784	CW120	CW120C	15/02/2017	0.507638889	22	0	34.28	7.62	8	6.0		97.6		0.048	0.005	11	0.5		180	17-02816	0.053	0.00009	9.6	10.65	9.3	Winter				<0.01		<1		EPA Monaghan	1.26	0.12		34.4	IE_WE_340_0000		
133309	CW120	CW120C	18/07/2017	0.511111111	23.5	23.4	33.87	14.48	8.1	8.0		95.5		0.005	0.022	5	1.1		50	17-12900	0.027	0.00086	0.23	11.94	7.9	Summer			<0.01				<0.1	EPA Monaghan	2.32	0.19		34.7		IE_WE_340_0000	Clew Bay
133309	CW120	CW120C	18/07/2017	0.511111111	23.5	0	33.57	16.39	8.1	8.0		109.9		0.005	0.022	5	1.1		50	17-12900	0.027	0.00098	0.23	11.94	8.8	Summer			<0.01				<0.1	EPA Monaghan	2.32	0.19		34.7		IE_WE_340_0000	Clew Bay
133310	CW140	CW140C	18/07/2017	0.521527778	28	27.2	33.97	14.11	8.1	8.5		93.8	0.5	0.005	0.03	2.5	0.5		50	17-12901	0.035	0.00114	0.17	30.96	7.8	Summer	<1	<0.01			<0.005	<1	<0.1	EPA Monaghan	3	0.1		37.8		IE_WE_340_0000	Clew Bay
133310	CW140	CW140C	18/07/2017	0.521527778	28	0	33.77	16.37	8.1	8.5		110	0.5	0.005	0.03	2.5	0.5		50	17-12901	0.035	0.00134	0.17	30.96	8.8	Summer	<1	<0.01			<0.005	<1	<0.1	EPA Monaghan	3	0.1		37.8		IE_WE_340_0000	Clew Bay
133311	CW160	CW160S	18/07/2017	0.536805556	15	0	33.92	15.72	8.1	6.5		112.7	0.5	0.005	0.027	2.5	0.5		50	17-12902	0.032	0.00115	0.19	28.31	9.1	Summer	<1	<0.01			<0.005	<1	<0.1	EPA Monaghan	2.75	0.1		34.9		IE_WE_340_0000	Clew Bay
133312	CW160	CW160B	18/07/2017	0.536805556	15	14.6	33.91	14.77	8.1	6.5		105.6	0.5	0.005	0.027	2.5	1.1		50	17-12903	0.032	0.00107	0.19	28.31	8.7	Summer	<1	<0.01			<0.005		<0.1	EPA Monaghan	2.75	0.1		34.9		IE_WE_340_0000	Clew Bay
133313	CW150	CW150C	18/07/2017	0.548611111	28	0	34.49	15.7	8.1	7.50		115.3	0.5	0.005	0.028	2.5	0.5		50	17-12904	0.033	0.00119	0.18	29.19	9.3	Summer	<1	<0.01			<0.005	<1	<0.1	EPA Monaghan	2.83	0.1		34.9		IE_WE_340_0000	Clew Bay
133313	CW150	CW150C	18/07/2017	0.548611111	28	26	35.1	14.6	8.1	7.50		94.5	0.5	0.005	0.028	2.5	0.5		50	17-12904	0.033	0.0011	0.18	29.19	7.7	Summer	<1	<0.01			<0.005	<1	<0.1	EPA Monaghan	2.83	0.1		34.9		IE_WE_340_0000	Clew Bay
133314	CW130	CW130C	18/07/2017	0.567361111	30.6	28	34.81	14.3	8.1	7.0		92.8	0.5	0.005	0.028	2.5	1		50	17-12905	0.033	0.00108	0.18	29.19	7.7	Summer	<1	<0.01			<0.005		<0.1	EPA Monaghan	2.83	0.1		34.8		IE_WE_340_0000	Clew Bay
133314	CW130	CW130C	18/07/2017	0.567361111	30.6	0	34.5	15.9	8.1	7.0		112	0.5	0.005	0.028	2.5	1		50	17-12905	0.033	0.00121	0.18	29.19	9	Summer	<1	<0.01			<0.005		<0.1	EPA Monaghan	2.83	0.1		34.8		IE_WE_340_0000	Clew Bay
133315	CW110	CW110C	18/07/2017	0.579861111	24	0	32.34	16.3	8.1	8.50		113.8		0.005	0.027	2.5	1.1		50	17-12906	0.032	0.0012	0.19	28.31	9.2	Summer			<0.01		<0.005		<0.1	EPA Monaghan	2.75	0.1		34.7		IE_WE_340_0000	Clew Bay
133315	CW110	CW110C	18/07/2017	0.579861111	24	23.8	34.64	15.1	8.1	8.50		95.7		0.005	0.027	2.5	1.1		50	17-12906	0.032	0.0011	0.19	28.31	7.8	Summer			<0.01		<0.005		<0.1	EPA Monaghan	2.75	0.1		34.7		IE_WE_340_0000	Clew Bay
134219	CW120	CW120C	20/09/2017	0.447916667	20.1	19.22	35.06	14.08	8.1	5.5		90.8		0.005	0.016	2.5	2.5		50	17-16454	0.021	0.00061	0.31	18.58	7.5	Summer			<0.01		<0.005		<0.1	EPA Monaghan	1.8	0.1		34.3		IE_WE_340_0000	Clew Bay
134219	CW120	CW120C	20/09/2017	0.447916667	20.1	0	34	14.55	8.1	5.5		99		0.005	0.016	2.5	2.5		50	17-16454	0.021	0.00063	0.31	18.58	8.2	Summer			<0.01		<0.005		<0.1	EPA Monaghan	1.8	0.1		34.3		IE_WE_340_0000	Clew Bay
134220	CW140	CW140C	20/09/2017	0.468055556	24.5	23.89	35	13.92	8.1	7.0		91.6	0.5	0.021	0.025	18	1.1		50	17-16455	0.046	0.00093	0.84	5.65	7.6	Summer	<1						<0.1	EPA Monaghan	3.95	0.7		34.6		IE_WE_340_0000	Clew Bay
134220	CW140	CW140C	20/09/2017	0.468055556	24.5	0	33.9	14.4	8.1	7.0		99.8	0.5	0.021	0.025	18	1.1		50	17-16455	0.046	0.00097	0.84	5.65	8.3	Summer	<1						<0.1	EPA Monaghan	3.95	0.7		34.6		IE_WE_340_0000	Clew Bay
134221	CW130	CW130C	20/09/2017	0.504861111	25.1	0	33.9	14.38	8.1	7.5		101.2	0.5	0.019	0.017	5.8	1.5		120	17-16456	0.036	0.00066	1.12	13.73	8.4	Summer	<1							EPA Monaghan	1.29	0.09		34.5		IE_WE_340_0000	Clew Bay
134221	CW130	CW130C	20/09/2017	0.504861111	25.1	24.26	35	13.89	8.1	7.5		90.4	0.5	0.019	0.017	5.8	1.5		120	17-16456	0.036	0.00063	1.12	13.73	7.5	Summer	<1							EPA Monaghan	1.29	0.09		34.5		IE_WE_340_0000	Clew Bay
134222	CW110	CW110C	20/09/2017	0.511805556	21.1	20.11	35	14.09	8.1	5.0		89.4	0.5	0.022	0.11	230	1.7		50	17-16457	0.132	0.00416	0.2	1.27	7.4	Summer	<1						<0.1	EPA Monaghan	11.32	8.92		34.4		IE_WE_340_0000	Clew Bay
134222	CW110	CW110C	20/09/2017	0.511805556	21.1	0	33.9	14.53	8.1	5.0		97.1	0.5	0.022	0.11	230	1.7		50	17-16457	0.132	0.0043	0.2	1.27	8	Summer	<1						<0.1	EPA Monaghan	11.32	8.92		34.4		IE_WE_340_0000	Clew Bay