

Annual Environmental Report 2016

Agglomeration Name:	Carlanstown
Licence Register No.	D0488-01



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Section 1. Executive Summary and Introduction to the 2016 AER

1.1 Summary Report on 2016

This Annual Environmental Report has been prepared for **D0488-01, Carlanstown**, in County **Meath**, in accordance with the requirements of the wastewater discharge licence for the agglomeration.

The agglomeration is served by a wastewater treatment plant with a Plant Capacity PE of 820. The treatment process includes the following:-

- Preliminary Treatment (Screening)
- Secondary Treatment (Diffused Aeration)
- Nutrient Removal (Dosing of Ferric Sulphate to achieve phosphate removal)

The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2016.

The following parameters exceeded the emission limit values in 2016:-

- Ammonia NH_3 (mg/l)
- pH

706,640kgs of sludge as liquid was removed from the wastewater treatment plant in 2016. Sludge was transferred to Farganstown Wastewater Treatment Plant.

There were no major capital or operational changes undertaken in 2016.

An Annual Statement of Measures is included in **Appendix 7.1**

Section 2. Monitoring Reports Summary

2.1 Summary report on monthly influent monitoring

Table 2.1 Influent Monitoring Summary

Monthly Influent Monitoring	BOD (mg / l)	COD (mg / l)	SS (mg / l)	TP (mg / l)	TN (mg / l)	Hydraulic Loading (m ³ /d)	Organic Loading (PE/Day)
Number of Samples	9	9	9	7	9		
Annual Max.	425	1121	9495	14.1	116.242	997	603
Annual Mean	275.26	749.53	1034.28	10.99	70.46	117.29	474.10

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 annual mean organic loading is less than the Treatment Plant Capacity as detailed further in Section 3.2.

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

2.2 Discharges from the agglomeration

Table 2.2 - Effluent Monitoring

Effluent Monitoring Summary	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Ortho P (mg/l)	Ammonia NH ₃ (mg/l)	pH
WWDL ELV (Schedule A) where applicable *	25.00	125.00	35.00	2.00	5.00	6 to 9
ELV with Condition 2 Interpretation included	50.00	250.00	87.50	2.40	6.00	
Interim % Reduction (Schedule A)						
Number of sample results	10	11	10	11	11	6
Number of sample results above WWDL ELV	1	0	1	0	4	1
Number of sample results above ELV with Condition 2 Interpretation	0	0	0	0	2	0
Annual Mean (for parameters where a mean ELV applies)	10.07	47.22	15.88	0.33	5.19	6.4
Overall Compliance (Pass/Fail)	Pass	Pass	Pass	Pass	Fail	Fail

* maximum number of samples which may exceed the ELVs is 2. No deviation in pH.

Significance of results

The WWTP was non-compliant with the ELV's set in the wastewater discharge licence in relation to pH and Ammonia. There were 2 Ammonia exceedances above the Condition 2 ELV and 1 pH exceedance (no deviation allowed in pH). These non-compliances were due to alkalinity issues in the inflowing water which is inhibiting nitrification. The impact on receiving waters is assessed further in Section 2.3.

2.3.1. Ambient Monitoring Summary

Table 2.3. Ambient Monitoring Report Summary Table

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	EPA Feature Coding Tool code	Bathing Water	Drinking Water	FWPM	Shellfish	Current WFD Status
Upstream Monitoring Point	277097, 279109	aSW-1u (IE_EA_07M030900)	N/A	N/A	N/A	N/A	Poor
Downstream Monitoring Point	276474, 279249	aSW-1d (IE_EA_07M030900)	N	N	N	N	Poor

The Irish Water results for the upstream and downstream monitoring are included in Appendix 7.2.

Significance of results

- The WWTP was non-compliant with the ELV's set in the wastewater discharge licence as detailed in Section 2.2.
- The discharge from the wastewater treatment plant maybe be having an observable negative impact on the water quality.
- A deterioration in water quality has been identified in terms of Ammonia. However, it is not known if it is or is not caused by the WWTP.
- Other potential causes of deterioration in water quality relevant to this area are agricultural inputs.
- The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status. The current WFD status both upstream and downstream of the discharge is Poor.
- It is noted that consistent achievement with the ELVs would benefit the quality of the receiving water.

2.4 Data collection and reporting requirements under the UWWTD

The electronic submission of data was completed on 15/02/2017.

2.5 Pollutant Release and Transfer Register (PRTR) - report for previous year

A PRTR is not required as the PE is < 2000.

Section 3. Operational Reports Summary

3.1 Treatment Efficiency Report

	cBOD (kg/yr)	COD (kg/yr)	SS (kg/yr)	Total P (kg/yr)	Total N (kg/yr)
Influent mass loading (kg/year)	10,383	28,272	39,013	374	2,658
Effluent mass emission (kg/year)	352	1,646	541	21	964
% Efficiency (% reduction of influent load)	97%	94%	99%	94%	64%

3.2 Treatment Capacity Report

Table 3.2 - Treatment Capacity Report Summary

Hydraulic Capacity – Design / As Constructed (dry weather flow) (m ³ /day)	100
Hydraulic Capacity – Design / As Constructed (peak flow) (m ³ /day)	300
Hydraulic Capacity – Current loading (m ³ /day)	117.287
Hydraulic Capacity – Remaining (m ³ /day)	182.713
Organic Capacity - Design / As Constructed (PE)	820
Organic Capacity - Current loading (PE)	474
Organic Capacity – Remaining (PE)	346
Will the capacity be exceeded in the next three years? (Yes / No)	No
Is an upgrade or expansion of the WWTP proposed? (i.e. if on Minor Programme or CIP) (Yes/No)	No

3.3 Extent of Agglomeration Summary Report

In this section Irish Water is required to report on the amount of urban waste water generated within the agglomeration. It does not include any waste water collected and created in a private system and discharged to water under a Section 4 Licence issued under the Water Pollution Acts 1977 (as amended).

Table 3.3 - Extent of Agglomeration Summary Report

	% of P.E. load generated in the agglomeration	Estimated / Measured
Load generated in the agglomeration that is collected in the sewer network	100	Estimated
Load collected in the agglomerations that enters treatment plant	100	Estimated
Load collected in the sewer network but discharges without treatment (includes SWO, EO, and any discharges that are not treated)	0	Estimated

Load generated in the agglomeration that is collected in the sewer network is the total load generated and collected in the municipal network within the boundary of the agglomeration.

Load collected in the agglomerations that enters treatment plant is that portion of the previous figure which enters the waste water treatment plant.

Load collected but discharged without treatment is that portion of the first figure which is discharged without treatment.

3.4 Complaints Summary

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

Table 3.4 - Complaints Summary Table

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
4617978011	Investigation Sewage Flooding - Below Ground Waste Water	0	1

3.5 Reported Incidents Summary

A summary of reported incidents is included below.

Table 3.5.1 - Summary of Incidents

Incident Type (e.g. Non-compliance, Emission, spillage, pollution incident)	Incident Description	Cause	No. of Incidents	Recurring Incident (Yes/No)	Corrective Action	Authorities Contacted. Note 1	Reported to EPA (Yes/No)	Closed (Yes/No)
ELV Exceedance	This exceedance report relates to an ammonia exceedance which has a reportable incident level of 6 mg/l. On 08/03/2016, an ammonia concentration of 24.5 mg/l was recorded in the Carlanstown WWTP final effluent.	Low alkalinity in influent material results in the degradation of the nitrification process.	1	Yes	Adjustments were made to the aeration process in attempt to re-introduce alkalinity into the system.	IW, EPA, IFI	Yes	Yes
ELV Exceedance	This exceedance report relates to an ammonia exceedance which has a reportable incident level of 6 mg/l and also a pH	Low alkalinity in influent material results in the degradation of the nitrification process.	2	Yes	Fine tuning of the aeration system and the introduction of caustic soda dosing at the drinking water plant in an effort to stabilise the alkalinity.	IW, EPA, IFI	Yes	Yes

Incident Type (e.g. Non-compliance, Emission, spillage, pollution incident)	Incident Description	Cause	No. of Incidents	Recurring Incident (Yes/No)	Corrective Action	Authorities Contacted. Note 1	Reported to EPA (Yes/No)	Closed (Yes/No)
	exceedance below 6. On 06/09/2016, an ammonia concentration of 9.61mg/l and pH of 5.1 were recorded in the Carlanstown WWTP final effluent.							

Note 1: For shellfish waters notify the Marine Institute (MI) Sea Fisheries Protection Authority (SFPA) Food Safety Authority (FSAI) and An Bord Iascaigh Mhara (BIM). This should also include any other authorities that should be contacted arising from the findings of any Licence Specific Reports also e.g. Drinking Water Abstraction Impact Risk Assessment, Fresh Water Pearl Mussel Impact Assessments etc.

Table 3.5.2 - Summary of Overall Incidents

Number of Incidents in 2016	3
Number of Incidents reported to the EPA via EDEN in 2016	3
Explanation of any discrepancies between the two numbers above	N/A

3.6 Sludge / Other inputs to the WWTP

Other inputs to the waste water treatment plant are summarised in Table 3.6 below.

Table 3.6 - Other Inputs

Input Type	m ³ /year	P.E.	% of load to WWTP	Included in Influent Monitoring? (Y/N)	Is there a leachate/sludge acceptance procedure for the WWTP? (Y/N)	Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)
Domestic /Septic Tank Sludge	0	0	0	No	No	No
Industrial / Commercial Sludge	0	0	0	No	No	No
Landfill Leachate (delivered by tanker)	0	0	0	No	No	No
Landfill Leachate (delivered by sewer network)	0	0	0	No	No	No
Other (specify)	0	0	0	No	No	No

Section 4. Infrastructure Assessments and Programme of Improvements

4.1 Storm water overflow identification and inspection report

The Storm Water Overflow Assessment was submitted previously in AER 2015. A summary of the significance and operation is included below.

Table 4.1.1 - SWO Identification and Inspection Summary Report

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow (High/Med/Low)	Compliance with DoEHLG criteria	No. of times activated in 2016 (No. of events)	Total volume discharged in 2016 (m ³)	Total volume discharged in 2016 (P.E.)	Estimated / Measured data
SW002	276742, 279164	Yes	Low	Compliant	0	0	0	Estimated

Table 4.1.2 - SWO Identification and Inspection Summary Report

How much sewage was discharged via SWOs in the agglomeration in the year (m ³ /yr)?	0
How much sewage was discharged via SWOs in the agglomeration in the year (p.e.)?	0
What % of the total volume of sewage generated in the agglomeration was discharged via SWOs in the agglomeration in 2016?	0%
Is each SWO identified as non-compliant with DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO assessment includes the requirements of relevant WWDL Schedules (Yes/No)	Yes
Have the EPA been advised of any additional SWOs / changes to Schedules A/C under Condition 1?	N/A

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

There is no Specified Improvement Programme required as per the Carlanstown Waste Water Discharge licence.

Table 4.2.1 - Specified Improvement Programme Summary

Specified Improvement Programmes	Licence Schedule	Licence Completion Date	Date Expired	Status of Works	% Construction Work Completed	Licensee Timeframe for Completing the Work	Comments
No specified improvement programme contained in licence.							

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

Table 4.2.2 - Improvement Programme Summary

Improvement Identifier / Name	Improvement Description	Improvement Source	Progress (% complete)	Expected Completion Date	Comments
D0488_01	Adjustments to the aeration process in attempt to re-introduce alkalinity into the system.	Incident Reduction	100%	N/A	Improvement required to deal with the low alkalinity in influent material which was resulting in the degradation of the nitrification process.

Table 4.2.3 - Sewer Integrity Risk Assessment Tool Summary

The Improvement Programme should include an assessment of the integrity of the existing wastewater works for the following:	Risk Assessment Rating (High, Medium, Low)	Risk Assessment Score	Reference to relevant section of AER (e.g. Appendix 2 Section 4).	Specified improvements	Comment
Hydraulic Risk Assessment Score	Medium	87	AER 2015 – Appendix 7.3	N/A	N/A
Environmental Risk Assessment Score	Low	65	AER 2015 – Appendix 7.3	N/A	N/A
Structural Risk Assessment Score	High	115	AER 2015 – Appendix 7.3	N/A	N/A
Operation & Maintenance Risk Assessment Score	Low	26	AER 2015 – Appendix 7.3	N/A	N/A
Overall Risk Score for the agglomeration	Low	293	AER 2015 – Appendix 7.3	N/A	N/A

Section 5. Licence Specific Reports

Licence Specific Reports Summary Table

Licence Specific Report	Never required by condition 5 in Licence	Required in this AER or outstanding from previous AER	Included in this AER / Remains outstanding	Reference to previous AER containing report or relevant section of this AER
Priority Substances Assessment	Required	No	No	Appendix 7.6 of 2014 AER
Drinking Water Abstraction Point Risk Assessment	Not Required	No	No	N/A
Shellfish Impact Assessment	Not Required	No	No	N/A
Pearl Mussel Report	Not Required	No	No	N/A
Toxicity/Leachate Management	Not Required	No	No	N/A
Toxicity of Final Effluent Report	Not Required	No	No	N/A
Small Stream Risk Score Assessment	Not Required	No	No	N/A
Habitats Impact Assessment	Not Required	No	No	N/A

Licence Specific Reports Summary of Findings

Licence Specific Report	Recommendations in Report	Summary of Recommendations in Report
Priority Substances Assessment	No	N/A
Drinking Water Abstraction Point Risk Assessment	N/A	
Shellfish Impact Assessment	N/A	
Pearl Mussel Report	N/A	
Toxicity/Leachate Management	N/A	
Toxicity of Final Effluent Report	N/A	
Small Stream Risk Score Assessment	N/A	
Habitats Impact Assessment	N/A	

5.1 Priority Substances Assessment

The Priority Substances Assessment report was submitted in the 2014 AER. A summary of the findings of this report is included below.

	Licensee self- assessment checks to determine whether all relevant information is included in the Assessment.
Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance	Desktop Study Method
Does the assessment include a review of Trade inputs to the works?	No
Does the assessment include a review of other inputs to the works?	No
Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water)	No
Does the assessment identify that priority substances may be impacting the receiving water?	No
Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality?	No
Recommendations	N/A
Status of any improvement measures required	N/A

Section 6. Certification and Sign Off

Table 6.1 - Summary of AER Contents

Does the AER include an executive summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Is there a need to advise the EPA for consideration of a technical amendment / review of the licence?	No
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modifications to the existing WWDL? Refer to Condition 1.7 (changes to works/discharges) & Condition 4 (changes to monitoring location, frequency etc.)	N/A
List reason e.g. failure to complete specified works within dates specified in the licence, changes to monitoring requirements	N/A
Have these processes commenced? (i.e. Request for Technical Amendment / Licence Review / Change Request)	N/A
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER?	N/A

Declaration by Irish Water

The AER contains the following:

- Introduction and background to 2016 AER.
- Monitoring Reports Summary.
- Operational Reports Summary.
- Infrastructural Assessment and Programme of Improvements.
- Licence specific reports
- Certification and Sign Off
- Appendices

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

Signed:  Date:31/01/2017.....

Elizabeth Arnett
Head of Corporate Affairs and Environmental Regulation

Section 7. Appendices

Appendix 7.1 - Annual Statement of Measures

Appendix 7.2 - Ambient Monitoring Summary

Appendix 7.1 Statement of Measures / Improvement Programme

There will be the continued monitoring of MLSS, Alkalinity and DO to identify the most appropriate set points for efficient treatment.

Appendix 7.2 Ambient Monitoring

Carlanstown Ambient Monitoring		NH ₄ (mg/l)	Ortho P (mg/l)	D.O (% Sat)	D.O (mg/l)	BOD (mg/l)	Total N (mg/l)	pH
05/07/2016	U/S	0.037	0.107	89.60%	9.04	2.13	2.06	8.22
25/08/2016	U/S	0.036	0.109	115.30%	10.22	9.74	2.42	7.55
06/09/2016	U/S	0.034	0.101	102.10%	9.65	1.69	2.64	7.75
02/12/2016	U/S	0.118	0.057	101.00%	13.3	2.03	2.33	7.86
Mean		0.0563	0.0935	1.02	10.553	3.8975	2.3625	7.845
95%ile		0.1059	0.1087	1.1332	12.838	8.5985	2.607	8.166

Carlanstown Ambient Monitoring		NH ₄ (mg/l)	Ortho P (mg/l)	D.O (% Sat)	D.O (mg/l)	BOD (mg/l)	Total N (mg/l)	pH
05/07/2016	D/S	0.053	0.07	82.80%	8.28	1.73	2.04	8.07
25/08/2016	D/S	0.062	0.092	110.20%	9.59	1.16	2.43	7.57
06/09/2016	D/S	0.07	0.089	86.80%	8.42	1.78	2.47	7.7
02/12/2016	D/S	0.025	0.052	102.00%	12.4	1.77	2.03	7.94
Mean		0.0525	0.0758	0.9545	9.6725	1.61	2.2425	7.82
95%ile		0.0688	0.0916	1.0897	11.979	1.7785	2.464	8.0505