

Annual Environmental Report 2016

Agglomeration Name:	Kilmacrennan
Licence Register No.	D0513-01



Contents

Section 1. Executive Summary and Introduction to the 2016 AER	2
1.1 Summary Report on 2016	3
Section 2. Monitoring Reports Summary	4
2.1 Summary report on monthly influent monitoring	4
2.2 Discharges from the agglomeration	5
2.3.1. Ambient Monitoring Summary	7
2.4 Data collection and reporting requirements under the UWWTD	7
2.5 Pollutant Release and Transfer Register (PRTR) - report for previous year	7
Section 3. Operational Reports Summary	8
3.1 Treatment Efficiency Report	8
3.2 Treatment Capacity Report	8
3.3 Extent of Agglomeration Summary Report	8
3.4 Complaints Summary	9
3.5 Reported Incidents Summary	10
3.6 Sludge / Other inputs to the WWTP	11
Section 4. Infrastructure Assessments and Programme of Improvements	12
4.1 Storm water overflow identification and inspection report	12
4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.	13
Section 5. Licence Specific Reports	17
5.1 Priority Substances Assessment	18
Section 6. Certification and Sign Off	20
Section 7. Appendices	21
Appendix 7.1 – Statement of Measures / Improvement Programme	
Appendix 7.2 – Ambient Monitoring	
Appendix 7.3 – Storm water overflow assessment	

Section 1. Executive Summary and Introduction to the 2016 AER

1.1 Summary Report on 2016

This Annual Environmental Report has been prepared for **D0513-01, Kilmacrennan**, in County **Donegal**, in accordance with the requirements of the wastewater discharge licence for the agglomeration.

Specified assessments are included as an appendix to the AER as follows:

- Storm water overflow assessment in **Appendix 7.3**

The agglomeration is served by a wastewater treatment plant with a Plant Capacity PE of 500. The treatment process includes the following:-

- Preliminary Treatment (Coarse bar screening)
- Primary Treatment (Imhoff Tank)
- Secondary Treatment (Rotating Biological Contactors)

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

The following parameters were non-compliant with the emission limit values in 2016:-

- BOD (mg/l)
- COD (mg/l)
- TSS (mg/l)
- Ortho P (mg/l)
- Ammonia NH₃ (mg/l)

55,360kgs sludge was removed from the wastewater treatment plant in 2016 as liquid sludge. Sludge was transferred to Letterkenny WWTW Sludge Hub.

The following improvement works were undertaken in 2016:-

Protection put around treatment works to prevent flooding of the plant from the adjacent river.

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

2.1.1 Monthly Influent Monitoring	BOD (mg / l)	COD (mg / l)	SS (mg / l)	TP (mg / l)	TN (mg / l)	Hydraulic Loading (m3/d)	Organic Loading (PE/Day)
Number of Samples	6	6	6	0	0		
Annual Max.	386	892	308	0	0	475	817
Annual Mean	117.25	281.38	130.41			326.53	473.57

Other inputs in the form of sludge/leachate are added to the WWTP after the influent monitoring point and are therefore not represented by influent monitoring. Other inputs, where relevant, are detailed in Section 3.6.

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 does not allow for peak values and therefore the peak loads have impacted on compliance with Emission Limit Values.

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

2.2 Discharges from the agglomeration

Table 2.2 - Effluent Monitoring

2.2.1 Effluent Monitoring Summary	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Ortho P (mg/l)	Ammonia NH3 (mg/l)	pH	Comment
WWDL ELV (Schedule A) where applicable	10.00	125.00	10.00	0.50	1.00	6 to 9	ELVs for cBOD, COD, pH, SS, Ammonia and Orthophosphate apply from 01/01/2016
ELV with Condition 2 Interpretation included	20.00	250.00	15.00	0.60	1.20	6 to 9	
Interim % Reduction (Schedule A)	n/a	n/a	n/a				
Number of sample results	6	6	6	6	6	0	
Number of sample results above WWDL ELV	5	3	6	5	6	0	Based on six samples taken over the year, there were: 5 instances BOD, 3 instances COD, 6 instances TSS, 5 instances Orthophosphate and 6 instances Ammonia, which exceeded the ELV.
Number of sample results above ELV with Condition 2 Interpretation	5	0	6	5	6	0	Based on six samples taken over the year, there were: 5 instances BOD, 0 instances COD, 6 instances TSS, 5 instances Orthophosphate and 6 instances Ammonia, which exceeded the ELV with condition 2 interpretation.
Annual Mean (for parameters where a mean ELV applies)	n/a	n/a	n/a	n/a	n/a	n/a	
Overall Compliance (Pass/Fail)	Fail	Fail	Fail	Fail	Fail	Pass	

Significance of results

The WWTP was non-compliant with the ELV's set in the wastewater discharge licence. The following parameters were non-compliant with the emission limit values in 2016: BOD mg/l, COD mg/l, TSS mg/l, Ortho-P mg/l and Ammonia mg/l. The non-compliance is due to shock load to WWTP and WWTP upgrade required to meet ELV's. 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 WDDL (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	E214107 N420471	RS39L020270					Moderate
Downstream Monitoring Point	E214107 N420471		No	No	Yes	No	Moderate

The results for the upstream and downstream monitoring and/or additional monitoring data sets from Irish Water/DCC lab are included in the **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 receiving waters do not meet the EQS for FWPM.
- The discharge from the wastewater treatment plant does have an observable negative impact on the water quality.
- A deterioration in water quality has been identified however it is not known if it is or is not caused by the WWTP.
- The discharge from the WWTP doesn't have an observable negative impact on the Water Framework Directive status.
- Other potential causes of deterioration in water quality relevant to this area are unknown.

2.4 Data collection and reporting requirements under the UWWTD

The electronic submission of data was completed on 28/02/2017.

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)
Influent mass loading (kg/year)	10,371	24,888	11,535
Effluent mass emission (kg/year)	1,803	8,114	2,696
% Efficiency (% reduction of influent load)	83%	67%	77%

3.2 Treatment Capacity Report

Table 3.2 - Treatment Capacity Report Summary

Hydraulic Capacity – Design / As Constructed (dry weather flow) (m3/day)	110
Hydraulic Capacity – Design / As Constructed (peak flow) (m3/day)	330
Hydraulic Capacity – Current loading (m3/day)	327
Hydraulic Capacity – Remaining (m3/day)	3
Organic Capacity - Design / As Constructed (PE)	500
Organic Capacity - Current loading (PE)	474
Organic Capacity – Remaining (PE)	26
Will the capacity be exceeded in the next three years? (Yes / No)	Yes
Is an upgrade or expansion of the WWTP proposed? (i.e. if on Minor Programme or CIP) (Yes/No)	Yes

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	Unknown	Estimated
Load collected in the sewer network but discharges without treatment (includes SWO, EO, and any discharges that are not treated)	Unknown	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

No complaints were reported in 2016.

3.5 Reported Incidents Summary

A summary of reported incidents is included below.

Table 3.5.1 - Summary of Incidents

3.5.1 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)
Non-compliance	Breach of ELV	Shock load to WWTP	1	No			Yes	Yes
Non-compliance	Breach of ELV	WWTP upgrade required to meet ELV	3	Yes			Yes	No
Non-compliance	Breach of ELV	WWTP upgrade required to meet ELV	1	No			Yes	Yes
Non-compliance	Breach of ELV	WWTP upgrade required to meet ELV	1	No			Yes	Yes

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	6
Number of Incidents reported to the EPA via EDEN in 2016	6
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	m3/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	n/a	n/a	No	No	No
Industrial / Commercial Sludge	0	n/a	n/a	No	No	No
Landfill Leachate (delivered by tanker)	0	n/a	n/a	No	No	No
Landfill Leachate (delivered by sewer network)	0	n/a	n/a	No	No	No
Other (specify)	0	n/a	n/a	No	No	No

Section 4. Infrastructure Assessments and Programme of Improvements

4.1 Storm water overflow identification and inspection report

The Storm Water Overflow Identification & Inspection report is included in **Appendix 7.3**. 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 (m3)	Total volume discharged in 2016 (P.E.)	Estimated / Measured data
TPEFF0600D 0513SW002	E214133 N420503	Yes	High	Non-Compliant	Unknown	Unknown	Unknown	Estimated

Table 4.1.2 - SWO Identification and Inspection Summary Report

How much sewage was discharged via SWOs in the agglomeration in the year (m3/yr)?	Unknown
How much sewage was discharged via SWOs in the agglomeration in the year (p.e.)?	Unknown
What % of the total volume of sewage generated in the agglomeration was discharged via SWOs in the agglomeration in 2016?	Unknown
Is each SWO identified as non-compliant with DoEHLG Guidance included in the Programme of Improvements?	Yes
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.

The Improvement Programme report included in **Appendix 7.1: Specified Improvement Programme** addresses the **Specified Improvement Programmes** as detailed in Schedules A3 and C of the WWDL. It should detail other improvements identified through assessments required under the 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
Treatment Plant - Replacement of malfunctioning Rotating Biological Contactor	C	30/06/2014	N/A	Completed	100%		Rotating Biological Contactor repaired in 2015
Network - Infiltration programme - diversion of storm water from the collection network	C	30/06/2014	Yes	At planning stage	0%	Unknown	
Treatment Plant - Upgrade of Kilmacrennan WWTP to	C	31/12/2015	Yes	At planning stage	0%	Unknown	

provide tertiary treatment							
Storm Water Overflow - Cessation or upgrade of storm water overflow (SW002) to comply with the criteria outlined in the DoECLG "Procedures and Criteria in relation to Storm Water Overflows" (1995)	C	31/12/2015	Yes	At planning stage	0%	Unknown	
Network - Upgrade of waste water collection network	C	31/12/2015	Yes	Not started	0%	Unknown	

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
1	New WW Treatment Plant	Capital Investment Programme (CIP)	0%	Unknown	Preliminary Report with IW - Included in IW Capital Investment Programme
2	Network assessment (CIP)	Sewer Integrity Tool (Condition 5.2)	Ongoing	Unknown	Preliminary Report with IW - Included in IW Capital Investment Programme
3	SWO Assessment	SWO assessment (Condition 4 & 5.2)	0%	Unknown	Preliminary Report with IW - Included in IW Capital Investment Programme
4	Process control	improved operational Control	Ongoing	Unknown	Storm tank required at WWTW

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	Low	45	2014 AER		
Environmental Risk Assessment Score	Low	200	2014 AER		
Structural Risk Assessment Score	High	117	2014 AER		
Operation & Maintenance Risk Assessment Score	Low	60	2014 AER		
Overall Risk Score for the agglomeration	Low	422	2014 AER		

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	AER 2015
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	Required	No	No	2016 prior to AER
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	Yes	Provide an appropriate sampling and monitoring programme for Benzo[a]pyrene in consultation with the EPA.
Drinking Water Abstraction Point Risk Assessment	No	
Shellfish Impact Assessment	No	
Pearl Mussel Report	No	
Toxicity/Leachate Management	No	
Toxicity of Final Effluent Report	No	
Small Stream Risk Score Assessment	Yes	
Habitats Impact Assessment	No	

5.1 Priority Substances Assessment

The Priority Substances Assessment was submitted previously in AER 2015 and is summarised below:

Priority Substance Assessment Summary Report	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 and Screening Analysis
Does the assessment include a review of Trade inputs to the works?	Yes
Does the assessment include a review of other inputs to the works?	Yes
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)	Yes
Does the assessment identify that priority substances may be impacting the receiving water?	Yes
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	Provide an appropriate sampling and monitoring programme for Benzo[a]pyrene in consultation with the EPA.
Status of any improvement measures required	National Priority Substances Monitoring Programme

Small Stream Risk Score Assessment Summary

A Small Stream Risk Score Assessment Summary was carried out and submitted separately to the EPA in 2016. A summary of the significance and operation is included below.

Is an SSRS assessment required in the 2016 AER (includes outstanding assessments from previous years)?	Yes
What is the upstream SSRS?	Q3
Upstream SSRS Water Quality Risk	Moderate
What is the downstream SSRS?	Q3
Downstream SSRS Water Quality Risk	Moderate
Does the SSRS indicate the discharges from the agglomeration are posing a pollution risk to the receiving water ?	No
Where the SSRS indicates that discharge are posing a pollution risk to the receiving water, does the Improvement Programme include any procedural and/or infrastructural works to reduce the risk score associated with discharges from the agglomeration?	N/A
List Condition 5 Improvement Programme reference	N/A

* Please note this assessment uses the Biological Quality Value Rating method and not the SSRS method

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.)	No
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
Ensure the following reports are included	Storm water overflow assessment

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: 01/03/2017

Elizabeth Arnett
Head of Corporate Affairs and Environmental Regulation

Section 7. Appendices

Appendix 7.1 Statement of Measures / Improvement Programme

The following measures were taken during 2016: Protection put around treatment works to prevent flooding of the plant from the adjacent river.

No additional measures have been taken in 2016 in relation to prevention of environmental damage. The need for measures to prevent environmental damage will be reviewed on an annual basis.

Appendix 7.2 Ambient Monitoring Results

Kilmacrennan Quality Results 2016

Entity	Location	Lab. Ref	Date	pH pH units	Temp °C	DO	BOD	SS	Total Ammonia	Ortho P	SSRS	Visual Inspection
						%	(mg/l)	(mg/l)	(mg/l)	(mg/l)	Annually	Quarterly
Lurgy	Kilmacrennan - Upstream	162500296	04/Feb/2016	7.2	8	100.5	1.04	<6	<0.04	<0.01		
Lurgy	Kilmacrennan - Upstream	162501190	18-Apr-2016	7.5	9.1	100.1	< 1	< 6	< 0.04	< 0.01		Nothing Observed
Lurgy	Kilmacrennan - Upstream	162501715	3-June-2016	8.1	13.4	90.1	< 1	< 6	< 0.04	< 0.01		Nothing Observed
Lurgy	Kilmacrennan - Upstream	162502759	18-Aug-2016	7.8	14.7	96.9	1.24	< 6	< 0.04	< 0.01		Nothing Observed
Lurgy	Kilmacrennan - Upstream	162503333	11-Oct-2016	7.6	7.7	100.5	< 1	<6	< 0.04	< 0.01	13/11/2016	Nothing Observed
Lurgy	Kilmacrennan - Downstream	162500299	04/Feb/2016	7.7	8	98.7	<1	<6	<0.04	<0.01		Nothing Observed
Lurgy	Kilmacrennan - Downstream	162501193	18-Apr-2016	7.6	9.1	100	< 1	< 6	0.076	< 0.01		Nothing Observed
Lurgy	Kilmacrennan - Downstream	162501718	3-June-2016	7.8	13.5	88.5	< 1	< 6	0.099	0.02		Nothing Observed
Lurgy	Kilmacrennan - Downstream	162502762	18-Aug-2016	7.8	14.7	92.7	< 1	< 6	0.056	< 0.01		Nothing Observed
Lurgy	Kilmacrennan - Downstream	162503336	11-Oct-2016	7.6	8.2	94	1	<6	0.093	< 0.01	13/11/2016	Nothing Observed

See full report 13/11/16

Appendix 7.3 – Storm water overflow assessment

Storm Water Overflow Assessment

Agglomeration Name:	Kilmacrennan
Licence Register No.	D0513-01



Table of Contents

1	Introduction	3
2	Storm Water Overflow Assessment	4
2.1	Description of SWOs	4
2.2	Assessment of Operating Criteria of SWOs	4
2.3	Assessment of Design Criteria of SWOs	5
2.3.1	Compliance with Formula A.....	5
2.3.2	Significance of Spill.....	6
3	Remedial Measures to Ensure Compliance	6
3.1	Specified Improvement and Improvement Programme Works	6
3.2	Additional Measures	6

1 Introduction

This report has been prepared for D0513-01, Kilmacrennan in County Donegal in accordance with the requirements of Condition 4.12 of the wastewater discharge licence for the agglomeration. This report identifies storm water overflows within the agglomeration and assesses the compliance of the storm water overflows with the criteria set out in the DoEHLG document on *'Procedures and Criteria in Relation to Storm Water Overflows'* (1995).

There is 1 no. SWO within the agglomeration, listed in **Table A.3**.

Table 1: Storm Water Overflows in the Agglomeration

Licence Code	Discharge Location		Receiving Water Name and WFD Code	WFD Status of Receiving Water	Other designation of receiving water
	Easting	Northing			
SW002	214133	420503	River Lurgy IE-NW-39-388	At Risk, Poor	Salmonoid Freshwater Pearl Mussel

A storm water overflow assessment is required to comply with the requirements of the wastewater discharge licence condition 4.12, as detailed below.

Condition 4.12 – Storm Water Overflows

4.12.1 The licensee shall, prior to the date for submission of the second AER (required under Condition 6.8), carry out an investigation for the identification and assessment of storm water overflows. A report on the storm water overflows shall be submitted to the Agency as part of the second AER. All storm water overflows shall be in compliance with the criteria for storm water overflows, as set out in the DoECLG *'Procedures and Criteria in Relation to Storm Water Overflows'*, 1995 and any other guidance as may be specified by the Agency.

4.12.2 The licensee shall carry out an assessment of storm water overflows at least once every three years thereafter and report to the Agency on each occasion as part of the AER. The assessment shall include a determination of compliance with the criteria for storm water overflows, as set out in the DoECLG *'Procedures and Criteria in Relation to Storm Water Overflows'*, 1995 and any other guidance as may be specified by the Agency. The licensee shall maintain a written record of all assessments and remedial measures arising from the assessment.

2 Storm Water Overflow Assessment

2.1 Description of SWOs

The storm water overflow (SW002) is located at the inlet to the existing WWTP. Excess flow discharges escape over a double-sided, weir set approximately 125mm above the incoming invert level. These excess flows bypass the WWTP and the overflow combines downstream of the treatment process, with the treated effluent and discharges through a combined outfall.



Fig 4.2 – Storm Overflow at WWTP

2.2 Assessment of Operating Criteria of SWOs

The following criteria for each SWO on the network have been examined in accordance with the assessment criteria set out in *Procedures and Criteria in Relation to Storm Water Overflows* in order to determine possible capacity constraints.

1. Does the SWO cause significant visual or aesthetic impact and public complaints.
2. Does the SWO cause deterioration in water quality in the receiving water (i.e. is there deterioration in ecological quality status attributable to the SWO).
3. Does the SWO gives rise to failure in meeting the requirements of national regulations on foot of EU Directives (e.g. bathing water quality standards, shellfish water quality standards, Water Framework Directive status etc.).
4. Does the SWO operate in dry weather.

The assessment of operating criteria for SW002 are summarised in **Table 2**.

Table 2: Assessment of Operating Criteria

CSO Ref	Causes significant visual or aesthetic impact and public complaints.	Causes deterioration in water quality in the receiving water	Gives rise to failure in meeting the requirements of national Regulations on foot of EU Directives.	Operates in dry weather	Compliant / Non-Compliant
SW002	No	Unknown	Unknown	No	Non-compliant

2.3 Assessment of Design Criteria of SWOs

2.3.1 Compliance with Formula A

In accordance with the Irish Water inlet works specification an inlet works and storm tank must be provided at all WWTPs with a design loading of greater than 500PE. Inlet works are to be designed for a hydraulic loading equivalent to 'Formula A' and a storm tank is sized to store Formula A less the hydraulic capacity of the WWTP for two hours.

Kilmacrennan WWTP has an estimated population loading of 782 PE. There is no storm water storage provided at the plant, so the SWO is therefore non-compliant. The following calculations will size the storage necessary at the plant according to the population loading in the Preliminary Report County Donegal Towns & Villages Sewerage Schemes.

Formula A is used in the *Procedures and Criteria in Relation to Storm Water Overflows* as follows:-

$$\text{Formula A} = \text{DWF} + 1.36P + 2E \quad (\text{m}^3/\text{day})$$

P = design domestic population contributing to SWO (to be estimated)

E = design industrial effluent flow (estimated to be 20% of domestic PE unless otherwise by LA)

DWF = Dry weather flow m^3/day (dry weather flow of total PE, based on **0.175** $\text{m}^3/\text{PE}/\text{day}$)

According to the Preliminary Report County Donegal Towns & Villages Sewerage Schemes, Kilmacrennan Sewerage Scheme prepared in 2013, the estimated population loading is:

- 683 PE from domestic inputs for an estimated residential housing stock of 253,
- 99 PE from non-domestic inputs.

PE	782	3DWF	410.550 m ³ /day
P	683	Formula A	1263.730 m ³ /day
E	99	Formula A - 3DWF	853.180 m ³ /day
DWF	0.175 m ³ /PE/day	2hour storage	71.098 m ³
DWF	136.850 m ³ /day		

Storm water storage of at least 71.1 m³ is required for a storage time of 2 hours.

The actual overflow setting of the weir was found using the gravity flow pipe design charts devised using the Colebrook-White flow equation. The required overflow setting (Formula A) is calculated in the table above. As indicated in Section 2.1, the weir of the overflow is set approximately 125mm above the invert of the incoming pipe. The slope of the channel has been assumed to be approximately 1:100 and the diameter of the downstream pipe is 150mm.

Table 3 – Stormwater Storage at the WWTP

Dilution Factor ¹	Required Overflow Setting (l/s)	Actual Overflow Setting (l/s)	Required Storage Tank Volume (m ³)	Actual Storage Tank Volume (m ³)	Compliant / Non-Compliant
0.05	14.63	15	71.1	0	Non-compliant

2.3.2 Significance of Spill

Monitoring information in relation to frequency and duration of overflows is not available.

The significance of overflows to the river Lurgy has been assessed as follows:

<p>Low Significance: Estuarial and coastal waters not containing EC identified bathing waters or shellfish waters</p>
<p>Medium Significance - only if all these criteria apply. Population equivalent 2,000 - 10,000 Affects identified in bathing waters or shellfish waters</p>
<p>High Significance - only if all these criteria apply. Population equivalent > 10,000 Affects identified in bathing waters or shellfish waters</p>

Table 4: Assessment of Significance

CSO Ref	Dilution	PE Range	Designation of Receiving Water	Significance
SW002	0.05m ³ /s	< 2,000	Salmonoid Pearl mussel	High

The 95 percentile flow for the River Lurgy is calculated as 0.05m³/s by the EPA, based on data from OPW

3 Remedial Measures to Ensure Compliance

3.1 Specified Improvement and Improvement Programme Works

TPEFF0600D0513SW002.

Cessation or upgrade of storm water overflow (SW002) to comply with the criteria outlined in the DoELG 'procedures and Criteria in relation to Storm Water Overflows' (1995)

3.2 Additional Measures

The additional measures required, identified in this report, are as follows:

- Construct Storm overflow tank with min capacity 71m³ (3DWF for a 2 hour retention period)
- Minimise spills to 12 per annum
- Discharge flows to be screened to at least 10mm where the frequency of spill is greater than once per year.
- 80% of volume should be screened to 6mm.