

UISCE EIREANN : IRISH WATER

MONAGHAN COUNTY COUNCIL



**WASTE WATER DISCHARGE LICENCE
REGISTER NUMBER: D0494
AGGLOMERATION: Scotstown Village
ANNUAL ENVIRONMENTAL REPORT
1st JANUARY 2013 - 31st DECEMBER 2013**

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Scotstown Waste Water Treatment Plant – Annual Environmental Report 2013

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Section 1. Executive Summary and Introduction to the 2013 AER

1.1 Summary report on 2013

This is the second Annual Environmental Report (AER) for Scotstown Village Wastewater Treatment Plant.

The Environmental Protection Agency granted a Waste Water Discharge Licence (Register No. D0435) in respect of the agglomeration named, to Monaghan County Council on the 10th May 2012.

The purpose of this Annual Environmental Report (AER) is to provide a summary of activities relevant to the discharges from 1st January 2013 to the 31st December 2013 as required under Condition 6.8 of the discharge licence. The Annual Environmental Report (AER) for the Scotstown agglomeration includes the information specified in Schedule D of the Wastewater Discharge Licence D0494.

Scotstown is a village in County Monaghan and is located approximately 10km North West of Monaghan town. The Waste Water Works comprises of a gravity collection system with a number of pumping stations at private housing developments and a Waste Water Treatment Works with a design capacity of 1,000 P.E.

The plant provides secondary treatment with nutrient removal (phosphorus reduction) for the effluent. The Waste Water Treatment Plant (WWTP) comprises of primary settlement, rotating biological contactor, bio filters, final settlement tanks, phosphorus reduction (ferric dosing), return sludge system and storm storage. Desludging of the primary settlement tanks is carried out periodically during the year and transferred by licensed haulier to Monaghan WWTP for further treatment. There is one storm water overflow (SWO) from the storm tank at the WWTP, which discharges to the Blackwater River. The SWO would only activate during periods of prolonged rainfall or storm conditions at the plant.

The primary discharge of the Waste Water Works is to the Blackwater River (at National Grid Reference 261140E, 336760N) in the town land of Teraverty, Scotstown, Co Monaghan.

The Blackwater River is not a designated Salmonid Water (under the European Communities (Quality of Salmonid Waters) Regulations, 1988) nor is it identified as sensitive water in terms of the Urban Waste Water Treatment Regulations 2001. The river is not designated as an SPA, SAC or NHA.

The Blackwater Water River is in the Neagh Bann river basin district with overall status classified as 'Good' status but deemed '1a- at risk' with overall objective to protect its status. The 'point risk source' and potential for impact from the Scotstown WWTP discharge on the river is categorised as 'not at risk', and the Blackwater Water Management Unit Action Plan (WMU) does not list the WWTP as impacting on the Blackwater River (Ref. WFD website & reports). There are no known combined sewer overflows on the Scotstown network.

The discharge from the Scotstown WWTP had two exceedances in 2013, one allowable exceedance (first failure allowable <20%, cond. 2 licence) for Ortho Phosphorus on 12/06/2013 and one exceedance for Ammonia on 17/04/2013 above the allowable limit, which was reported to the EPA under incident number INC001378. There was no obvious cause for this Ammonia exceedance at the Waste Water Treatment Plant (WWTP) and the trend prior to and after this exceedance for Ammonia is under the Emission Limit Value (ELV) for this parameter.

The ambient monitoring results for 2013 indicate that the BOD Environmental Quality Standards (Surface Water Reg's 2009) ('mean' EQS 1.5mg/l) are exceeded upstream and downstream of the WWTP, with little variation between upstream and downstream results thus indicating that there are other sources affecting the receiving water quality in terms of BOD. Ortho Phosphorus average results are under the 'mean' EQS (0.035mg/l) both upstream and downstream, total Ammonia average figures are under the 'mean' EQS (0.065mg/l) both upstream and downstream of the WWTP, one result downstream dated 12/06/2013 exceeding the 'mean' EQS limit at 0.071mg/l, which coincides with the reported incident exceedance in the effluent of this parameter from the WWTP, the impact on the receiving water would have been minimal as it is only slightly over the 'mean' EQS and under the 95% EQS (<0.14mg/l) limit for ammonia and the following results were under the EQS.

There are no specified improvement works for the Scotstown WWTP under schedule C of the discharge licence.

Section 2. Monitoring Reports Summary

2.1 Summary report on monthly influent monitoring

Monaghan County Council's summary on influent monitoring for Scotstown WWTP is tabulated in tables 1, 1.1 and 2.2 attached in appendix 1. As required under condition 4.14 of the licence, bi-monthly monitoring of the influent stream to the WWTP for BOD, COD, Suspended Solids, Total Nitrogen and Total Phosphorus measuring mass loadings and removal efficiencies has been calculated and tabulated in table 1. A summary of the removal efficiencies for the WWTP is as follows:

BOD – range 90 -99%, average 98%

COD – range 77 – 96%, average 92%

SS – range 86 – 98%, average 97%

TP – range 41 – 86%, average 72%

Total Nitrogen results vary with one result dated 17/04/2013 detailing lower influent Total Nitrogen figures than effluent, thus giving a negative removal efficiency result. The remaining results give a TN range 12 – 78%, average removal efficiency of 45%. There is no specific removal facility at the WWTP for the removal of nitrogen such as an anoxic tank.

Table 1.1							
Influent monitoring summary table							
	BOD mg/l	COD mg/l	SS mg/l	Total P mg/l P	Total N mg/l N	Volumetric Loading m3/day	Organic Loading PE/day
Number of samples	6	6	6	6	6	n/a	n/a
Maximum result	514.00	787.00	546.00	6.29	49.94	245	
Annual Mean	231.50	562.50	385.33	3.179	27.07	155	598

Table 1.2	
Remaining Hydraulic & Organic treatment capacities summary table:	
Hydraulic Capacity - Design (M ³ /day)	180
Hydraulic Capacity - Current loading (M ³ /day)	155
Hydraulic Capacity - Remaining (M ³ /day)	25
Organic Capacity - Design (PE)	1000
Organic Capacity - Current loading (PE)	598
Organic Capacity - Remaining (PE)	402
Will the capacity be exceeded in the next 3 years?	no

The influent monitoring summary table 1.1 above details the number of influent samples taken, the maximum and mean results for each parameter and the organic and hydraulic loading for the WWTP in 2013. The design capacity of the Scotstown WWTP is detailed in table 1.2 above, there is adequate hydraulic and organic capacity available at the WWTP from average flow/load figures for 2013. The hydraulic capacity was exceeded using the maximum flow figures from the WWTP, the Scotstown sewerage network is a combined collection system thus experiences high inflows to the WWTP during prolonged periods of rainfall, however, there is a storm tank at the WWTP to contain excess inflows and return to the inlet works when flow conditions revert to normal.

2.2 Discharges from the agglomeration

A summary presentation of monitoring results for the primary discharge (National Grid Reference 261140E, 336760N) are tabulated in table 2.1 attached in appendix 1. The Emission Limit Value's (ELVs) where applicable are included in the heading columns in red text in accordance with schedule A.1 of the licence. Six samples are required under schedule B of the licence, eight samples were collected. pH monitoring is required daily for the effluent, this is recorded daily on site by the caretaker along with flow figures and visual inspection details. All pH values recorded for 2013 ranged between 6 and 9, the lowest figure recorded 6.13 and the highest figure 8.42.

The discharge from the Scotstown WWTP had two exceedances in 2013, one allowable exceedance (first failure under 20% allowable, condition 2 licence) for Ortho Phosphorus at 1.005mg/l on 12/06/2013 which was slightly above the ELV of 1mg/l, no obvious cause was identified at the WWTP and following result was under ELV. The other exceedance was for Ammonia at 3.090mg/l on 17/04/2013 which was above the allowable limit (cond. 2 licence) and therefore reported to the EPA under incident number INC001378. There was no obvious cause for this Ammonia exceedance at the Waste Water Treatment Plant (WWTP) and the trend prior to and after this exceedance for Ammonia is under the Emission Limit Value (ELV) for this parameter. This incident is closed

The removal efficiencies for the WWTP for BOD, COD, SS, TN and TP are tabulated in table 1 attached in appendix 1 and summarised in section 2.1 of this document.

Priority Substance Assessment

Under Schedule B.1 of the licence, there is a requirement that, *Priority Substances that are identified by the licensee in the effluent after undertaking a 'risk based assessment in accordance with the Guidance on the screening for Priority Substances for Waste Water Discharge Licences'*, should be monitored at least annually, by the licensee. A desktop study is undertaken as follows:

The Scotstown WWTP catchment area serves a small rural village comprising primarily of domestic dwellings, along with a school, church and local shops. There are no industrial inputs to the waste water works or section 16 licenced

companies discharging to the WWTP, or disposal of same at the waste water works. It can therefore be concluded from this desktop overview that there is no further screening necessary or required for organic compounds or metals. Furthermore, in 2009 when the initial discharge licence application for Scotstown was compiled, monitoring of the influent and effluent discharges and upstream and downstream locations in the receiving Blackwater River was undertaken and analysed for dangerous substances and submitted with the application. There were no elevated levels of these compounds in the discharge as reported. It is therefore concluded that no further screening is required for Scotstown WWTP with regard to priority substances.

2.3 Ambient monitoring summary

A summary presentation of the ambient monitoring results for the upstream (National grid reference 261094E 336873N) and downstream (National grid reference 261648E 336210N) receiving waters are tabulated in tables 2.3 and 2.4 attached in appendix 1.

The primary discharge from the WWTP is to the Blackwater Monaghan River (at National Grid Reference 261140E, 336760N) in the town land of Teraverty, Scotstown, Co Monaghan

The Blackwater River is not a designated Salmonid Water (under the European Communities (Quality of Salmonid Waters) Regulations, 1988) nor is it identified as sensitive water in terms of the Urban Waste Water Treatment Regulations 2001. The river is not designated as an SPA, SAC or NHA.

The Blackwater Water River is in the Neagh Bann river basin district with overall status classified as 'Good' but deemed '1a- at risk' with overall objective to protect its status. The 'point risk source' and potential for impact from the Scotstown WWTP discharge on the river is categorised as 'not at risk', and the Blackwater Water Management Unit Action Plan (WMU) does not list the WWTP as impacting on the Blackwater River (Ref. WFD website & reports).

Six samples per year are required under schedule B.4 of the discharge licence, six sample analyses carried out in 2013 for the ambient monitoring, both upstream and downstream of the primary discharge. Dissolved Oxygen (DO) results recorded were all above 9mg/l and pH results between 6 and 9 in the receiving waters. The results are assessed against the Surface Water Quality Regulations 2009, Environmental Quality Standards (EQS) for BOD, Total Ammonia and MRP (Ortho P) for Good Status Rivers at 'mean' flows. BOD Environmental Quality Standards (EQS) (1.5mg/l) (Surface Water Reg's 2009) are exceeded upstream and downstream of the WWTP, with little variation between upstream and downstream results thus indicating that there are other sources affecting the receiving water quality in terms of BOD. Ortho Phosphorus average results are under the 'mean' EQS (0.035mg/l) both upstream and downstream, total Ammonia average figures are under the 'mean' EQS both upstream and downstream of the WWTP, one result downstream dated 12/06/2013 exceeding the 'mean' EQS (0.065mg/l) limit at 0.071mg/l, which coincides with the reported incident exceedance in the effluent of this parameter from the WWTP, the impact on the receiving water

would have been minimal as it is only slightly over the 'mean' EQS and under the 95% EQS (<0.14mg/l) limit for ammonia and the following downstream results were under the EQS. From this assessment, it is concluded that there is no significant impact from the discharge of the Scotstown agglomeration on the receiving water quality.

2.4 Data Collection and reporting requirements under the UWWT Directive.

This information will be submitted separately to the EPA through EDEN.

2.5 Pollutant Release and Transfer Register (PRTR).

The PRTR is not required for the Scotstown agglomeration as the p.e. is less than 2,000.

Section 3. Operational Reports Summary

3.1 Treatment Efficiency Report

	cBOD mg/l (kg/day)	COD mg/l (kg/day)	SS mg/l (kg/day)	TP mg/l (kg/day)	TN mg/l (kg/day)	Comment
Influent mass loading (kg/day)	209	516	341	3	18	
Effluent mass emission (kg/day)	4.71	39.03	10.24	0.81	12.59	
% Efficiency (% reduction of Influent load)	97.75	92.44	97.00	71.75	31.74	

The Scotstown WWTP is generally considered to be operating efficiently as effluent results are compliant for 2013 with the exception of one reported incident for ammonia. The WWTP is achieving adequate removal efficiencies (average over 90%, ref. Table 1.3) for BOD, COD and TSS. TP average removal efficiency figure is lower at 72%, however, the inflow and outflow results for 12/06/2013 are very similar, giving a very low removal efficiency figure of 2.55%, which lowers the average removal figure for the year. There was an ammonia reported exceedance on this date also, with no obvious cause at the WWTP at the time identified, it is therefore concluded that dosing facilities at the WWTP for the removal of Phosphorus are adequate. Removal efficiencies for the parameter TN vary greatly throughout the year from 12% to 78%, averaging 32% over the year. There is no specific removal facility at the WWTP for nitrogen removal such as an anoxic tank.

3.2 Treatment Capacity Report

This assessment has been completed in section 2.1(table 1.2) of this report.

3.3 Complaints Summary

There were no complaints of an environmental nature related to the discharge to waters from the Scotstown WWTP in 2013.

3.4 Reported Incidents Summary

The discharge from the Scotstown WWTP had two exceedances in 2013, one allowable exceedance (first failure under 20% allowable, condition 2 licence) for Ortho Phosphorus at 1.005mg/l on 12/06/2013 which was slightly above the ELV of 1mg/l, no obvious cause was identified at the WWTP and following result was under ELV. The other exceedance was for Ammonia at 3.090mg/l on 17/04/2013 which was above the allowable limit (cond. 2 licence) and therefore reported to the EPA under incident number INC001378. There was

no obvious cause for this Ammonia exceedance at the Waste Water Treatment Plant (WWTP) and the trend prior to and after this exceedance for Ammonia is under the Emission Limit Value (ELV) for this parameter. This incident is closed

Summary of Incidents tables:

Incident Type	Incident description	Cause	No. of incidents	Corrective Action	Authorities Contacted	Reported to EPA	Closed
ELV exceedance	Ammonia ELV exceedance 3.090mg/l	No cause identified, normal WWTP activities	1	None, trend under ELV prior to and after exceedance	No	Yes	Yes

Number of Incidents in 2013	1
No. Incidents reported to EPA via EDEN in 2013	1
Explanation of any discrepancies between the two numbers above	N/A

Section 4. Infrastructural Assessment & Programme of Improvements

4.1 Storm water overflow identification and inspection report

As per condition 4.11 of the licence, a report on the investigation for the identification and assessment of storm water overflows is required to be submitted as part of the second AER, including a determination of compliance with the criteria for storm water overflows as set out in the DoECLG document '*procedures and Criteria in Relation to Storm Water Overflows*,' 1995.

There are no known storm water overflows (SWO) within the sewerage network of the Scotstown agglomeration. There is one SWO from a storm tank at the Scotstown WWTP that discharges to the Blackwater River, this SWO is listed in Schedule A.4 of the discharge licence.

The existing storm tank at the Scotstown WWTP was a primary settlement tank until upgrade works at the WWTP were completed in 2008 and it was modified with pumps fitted to work as a storm tank at the WWTP. In storm conditions excess flow from the inlet works flow into the storm tank until storm conditions subside, the stored storm water is pumped back to the inlet works when storm conditions subside. In extreme storm conditions whereby the storm tank fills to capacity and the treatment works is still operating at full capacity, the SWO will discharge to the Blackwater River from the tank. The storm water overflow was therefore not designed to the criteria in the aforementioned DoECLG document, as it was an existing tank at the WWTP. An assessment of this SWO in relation to the '*Procedures and criteria in relation to Storm Water Overflows*', 1995 document is undertaken under the relevant sections as follows:

Section 4. 'Assessment Criteria for Existing SWO's':

- (1) It does not cause visual/aesthetic impact or public complaints.
- (2) No analyses have been carried out on this SWO as it activates rarely, only in prolonged or severe storm conditions and there is no monitoring device on it. However, it is concluded that there would be minimal deterioration in water quality in the receiving water when it operates, as discharge would be diluted due to storm water inflows coinciding with high river flows, thus maximising the assimilative capacity of the receiving water.
- (3) It does not give rise to failure in meeting the requirements of national Regulations on foot of EU Directives as it is not a bathing water, nor a designated River.
- (4) It does not operate in dry weather.

Section 5, 'Options following Assessment'

The 'use of storage' option is considered under this document as the SWO is from a storm tank.

Section 7, 'Use of Storage'

The existing storm tank was not designed or sized for any specific storm return period or duration, as it is a modified primary settlement tank. The storm tank volume equates to approximately 84m³, the WWTP average flow figure for 2013 is 161m³, with a Dry Weather Flow (DFW) of 76m³. The capacity of the storm tank is 1.1 times the DWF of the plant.

Appendix 1, Table 2:

A. 'Low Significance SWOs'

The Scotstown SWO is in the 'Low significance SWO' category.

Appendix 2, A. 'Low Significance SWOs'

The volume of the storm tank is assessed using Appendix 2, Table 3 of the DoECLG document as follows:

The dilution factor is the river at 95 percentile river flows relative to the dry weather flow to the plant calculated as follows:

$$\begin{aligned} \text{WWTP DWF} &= 76\text{m}^3/\text{day} = 0.000880\text{m}^3/\text{s} \\ \text{Blackwater River 95\% flow} &= 0.09\text{m}^3/\text{s} \\ \text{Dilution Factor} &= (0.09/0.000880) = 102 \end{aligned}$$

The storm tank volume required based on a dilution factor > 8 is 'None' (ref Table 3, Appendix 2, DoECLG document). As there is a storage tank employed at the WWTP, it is deemed to comply with this part of the document.

From the assessment of this SWO in relation to the 'Procedures and criteria in relation to Storm Water Overflows', 1995 document, it is concluded that the SWO complies with the document as assessed under section 4.1 of this document.

SWO Identification and Inspection Summary Report Table A:

WWDL Name/Code for Storm Water Overflow	SWO
IGR	261135E, 336742N
Included in Schedule A4 of the WWDL	Yes
Compliance with DoEHLG Criteria	Complies as assessed in Section 4.1 of this document
No. of times activated in 2013	0
Total volume discharged (m ³)	Unknown
Total volume discharged in 2013 (P.E.)	Unknown
Estimated/Measured Data	Estimated

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

As per condition 5.1 of the licence, a programme of infrastructural improvements to maximise the efficiency and effectiveness of the waste water works shall be prepared and submitted:

The treatment capacity and removal efficiencies of the Scotstown WWTP are addressed in section 2.1 and 3.1 of this report.

In the Scotstown discharge licence, under schedule C, there are no specified improvements. There are no planned improvement works for the Scotstown WWTP.

Under condition 5.2 (a) of the licence, the programme of infrastructural improvements shall include an assessment of the waste water treatment plant having regard to the effectiveness of the treatment provided by reference to the following:

(i) The existing level of treatment, capacity of treatment plant and associated equipment:

As addressed in section 2.1 and 3.1 of this report the existing level of treatment at the plant is considered generally adequate based on ELV compliance and removal efficiencies. There is adequate capacity at the treatment plant (ref section 2.1, Table 1.2).

(ii) The emission limit values specified in Schedule A: Discharges, of this licence:

There were two exceedances of ELVs in 2013 with one of them a reportable incident to the EPA with no identified cause and following results under ELV. No improvements are deemed necessary with regard to ELVs.

(iii) The designations of the receiving water body:

The receiving Blackwater River is not a designated Salmonid Water (under the European Communities (Quality of Salmonid Waters) Regulations, 1988) nor is it identified as sensitive water in terms of the Urban Waste Water Treatment Regulations 2001. The river is not designated as an SPA, SAC or NHA. The Blackwater Water River is in the Neagh Bann river basin district with overall status classified as 'Good' but deemed '1a- at risk' with overall objective to protect its status. The 'point risk source' and potential for impact from the Scotstown WWTP discharge on the river is categorised as 'not at risk', and the Blackwater Water Management Unit Action Plan (WMU) does not list the WWTP as impacting on the Blackwater River (Ref. WFD website & reports). Ambient monitoring results were assessed in section 2.3 of this report and it is concluded that there is no significant impact from the discharge of the Scotstown agglomeration on the receiving water quality.

(iv) Water quality objective for the receiving water body:

This item is addressed in point no. 4.2 (iii) above.

(v) The standards and volumetric limitations applied to any industrial waste water that is licensed to discharge to the waste water works:

There are no industries licensed to discharge to the waste water works.

Under condition 5.2 (b) of the licence, the programme of infrastructural improvements shall include an assessment of the integrity of the waste water works having regard to:

(i) Capacity of the waste water works:

There is adequate capacity at the treatment plant (ref section 2.1, Table 1.2).

(ii) Leaks from the waste water works:

There are no known leaks at the WWTP site.

(iii) Misconnections between foul sewers and surface water drainage network:

There are no known misconnections on the Scotstown network.

(iv) (v) Infiltration by surface water/ground water:

Scotstown network is a combined system, during storm conditions/periods of extensive rainfall, inflows into the Scotstown WWTP increase greatly. It is unknown if there is infiltration by surface/ground water into the network. A CCTV survey of the network would identify any defects in the network and any remedial works required.

Under condition 5.2 (c) of the licence, the programme of infrastructural improvements shall include an assessment of all storm water overflows associated with the waste water works to determine the effectiveness of their operation and in particular identify improvements necessary to comply with the requirements of this licence:

There are no specified improvement works in the Scotstown discharge licence and no planned improvement works for the WWTP.

An assessment of the SWO from a storm tank at the WWTP in relation to the 'Procedures and criteria in relation to Storm Water Overflows', 1995 document, was addressed in section 4.1 of this report, it is concluded that the SWO complies with the document as assessed under section 4.1.

Condition 5.3 (a) and (b) of the licence, the programme of infrastructural improvements shall include a plan for implantation for each individual improvement identified:

There is no specified improvement works under schedule C of the discharge licence. One individual improvement identified for the Scotstown sewer network is to carry out a CCTV survey of the network to identify and carry out remedial works necessary on the network.

Improvement Summary Table

Improvement Identifier	Improvement Description	Improvement Source	Progress (% completed)	Expected Completion Date
High inflows into the Scotstown WWTP during storm conditions/periods of heavy rainfall	CCTV survey of network & remedial measures identified carried out	WWTP assessment (Condition 5.3)	0%	Dependant on Irish Water Funding
No record of SWO activating or measurement or flows.	Install SWO measurement/recorder device to measure flows/record no. times it activates	Cond. 4.1 of this report	0%	Dependant on Irish Water Funding

Section 5. Licence Specific Reports

Licence Specific Reports Summary Table

Licence Specific Report	Required in 2013 AER or outstanding from previous AER	Included in 2013 AER	Reference to relevant section of AER
Priority Substance Assessment	Yes	Yes	Section 2.2
Drinking Water Abstraction Point Risk Assessment	No	No	N/A
Habitats Impact Assessment	No	No	N/A
Shellfish Impact Assessment	No	No	N/A
Pearl Mussel Report	No	No	N/A
Toxicity/Leachate Management	No	No	N/A
Toxicity of Final Effluent Report	No	No	N/A

Section 6. Certification and Sign Off

Annual Statement of measures

Annual Statement of Measures

Risk /Description of issue	Risk Score	Mitigation Measure to be taken	Outcome	Action	Date for Completion	Owner/ Contact Person
High inflows into the Scotstown WWTP during storm conditions/periods of heavy rainfall		CCTV survey of network & remedial measures identified carried out			Dependant on Irish Water Funding	C McCrossan
No record of SWO activating or measurement or flows.		Install SWO measurement/recorder device to measure flows/record no. times it activates			Dependant on Irish Water Funding	C McCrossan

The above identified improvement measures will be undertaken subject to Irish Water approval and funding.

Signed: *Con M. Crossan*

Job Title: *A/SE*

Name: *CON M. CROSSAN*

Date: *27/2/2014*

Certification and Sign Off

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/EQS)	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? (ref. cond. 1.7 & cond. 4)	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
List outstanding reports	N/A

Signed by: Con A. Crossel

Date: 27/2/2014

Position in Organisation: A/SE

Appendix 1

Table 1 & 1.1	Influent monthly monitoring summary tables
Table 1.2	Remaining Hydraulic & Organic treatment capacities
Table 1.3	Treatment Efficiency Report Summary Table
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Table 1
Scotstown Influent monthly monitoring template - as per condition 4.14 of licence.

Location	Daily Flow (M ³)	Influent/ Effluent	Date of Sampling	Sample Type (C or G)	CrBOD mg/l	CrBOD Loading (Kg/day)	CrBOD Removal Efficiency %	COD mg/l	COD Loading (Kg/day)	COD Removal Efficiency %	SS mg/l	SS Loading (Kg/day)	SS Removal Efficiency %	Total P mg/l P	Total P Loading (Kg/day)	Total P Removal Efficiency %	Total N mg/l N	Total N Loading (Kg/day)	Total N Removal Efficiency %
Scotstown	133.00	Influent	20/02/2013	C	143.00	19.02		572.00	76.08		545.00	72.62		2.655	0.36		28.32	3.50	
Scotstown	133.00	Effluent	20/02/2013	C	3.80	0.51	97.34	24.00	3.19	95.80	9.00	1.20	98.35	0.455	0.06	83.06	22.91	3.05	12.58
Scotstown	121.00	Influent	17/04/2013	C	85.00	10.29		193.00	23.96		133.00	16.70		2.150	0.28		9.10	1.10	
Scotstown	121.00	Effluent	17/04/2013	C	8.00	0.97	90.59	45.00	5.45	77.27	20.00	2.42	85.51	1.260	0.15	40.47	20.93	2.53	-130.00
Scotstown	161.00	Influent	12/06/2013	C	170.00	27.37		592.00	95.31		520.00	83.72		1.570	0.25		34.40	5.54	
Scotstown	161.00	Effluent	12/06/2013	C	9.00	1.45	94.71	66.00	10.63	88.85	7.00	1.13	98.65	1.530	0.25	2.55	25.85	4.16	24.85
Scotstown	122.00	Influent	06/08/2013	C	514.00	62.71		787.00	96.01		715.00	87.23		3.990	0.49		49.94	6.09	
Scotstown	122.00	Effluent	06/08/2013	C	3.00	0.37	99.42	38.00	4.64	95.17	10.00	1.22	98.60	1.150	0.14	71.11	10.82	1.32	78.33
Scotstown	143.00	Influent	11/09/2013	C	281.00	41.59		778.00	115.14		163.00	24.12		6.290	0.93		27.81	4.12	
Scotstown	143.00	Effluent	11/09/2013	C	3.00	0.44	98.93	36.00	5.33	95.37	9.00	1.33	94.48	0.873	0.13	66.12	12.83	1.90	53.87
Scotstown	245.00	Influent	22/10/2013	C	199.00	48.02		448.00	109.76		230.00	56.35		2.400	0.59		14.84	3.64	
Scotstown	245.00	Effluent	22/10/2013	C	4.00	0.65	97.96	40.00	9.80	91.07	12.00	2.94	94.76	0.330	0.08	66.25	8.83	2.16	40.51

Table 1.1
Influent monitoring summary table

	BOD mg/l	COD mg/l	SS mg/l	Total P mg/l P	Total N mg/l N	Volumetric Loading m ³ /day	Organic Loading PE/day
Number of samples	6	6	6	6	6	n/a	n/a
Maximum result	514.00	787.00	545.00	6.29	49.94	245	
Annual Mean	231.50	562.50	385.33	3.179	27.07	155	598

Table 1.2
Remaining Hydraulic & Organic treatment capacities summary table:

Hydraulic Capacity - Design (M ³ /day)	180
Hydraulic Capacity - Current loading (M ³ /day)	155
Hydraulic Capacity - Remaining (M ³ /day)	25
Organic Capacity - Design (PE)	1000
Organic Capacity - Current loading (PE)	598
Organic Capacity - Remaining (PE)	402
Will the capacity be exceeded in the next 3 years?	no

Table 1.3
Treatment Efficiency Report Summary Table

	CrBOD mg/l (kg/day)	COD mg/l (kg/day)	SS mg/l (kg/day)	TP mg/l (kg/day)	TN mg/l (kg/day)	Comment
Influent mass loading (kg/day)	209	516	341	3	23	
Effluent mass emission (kg/day)	4.71	39.03	10.24	0.81	12.59	
% Efficiency (% reduction of influent load)	97.75	92.44	97.00	71.75	44.98	

Table 2 Monitoring Results for Scotstown WWTP

Location	Flow M3/day	Location	Date of Sampling	Sample Type (C or G)	Temp	pH	cBOD mg/l	COD mg/l	Suspended Solids mg/l	Ortho Phosphorus (as P) mg/l	Ammonia (as N)	Total Nitrogen mg/l (as N)	Total Phosphorus mg/l (as P)	Dissolved Oxygen (DO)
Scotstown		Influent	20/02/2013	C			143.00	572.00	546.00	1.773	17.630	26.32	2.686	
Scotstown		Effluent	20/02/2013	C	6.8	8.31	3.80	24.00	9.00	0.224	0.182	22.91	0.455	
Scotstown		Up Stream Of Works	20/02/2013	G	6.6	8.1	1.20			0.016	0.041			11.350
Scotstown		Down Stream of Works	20/02/2013	G	6.4	8.06	1.30			0.016	0.050			11.400
Scotstown		Influent	17/04/2013	C			85.00	198.00	138.00			9.10	2.150	
Scotstown		Effluent	17/04/2013	C	8.6	7.52	8.00	45.00	20.00	0.512	3.090	20.93	1.280	
Scotstown		Up Stream Of Works	17/04/2013	G	9.7	7.21	6.00			0.050	0.045			10.300
Scotstown		Down Stream of Works	17/04/2013	G	9.5	7.3	3.00			0.022	0.061			10.100
Scotstown		Influent	01/05/2013	C										
Scotstown		Effluent	01/05/2013	C			4.00	34.00	2.00	0.383	0.624	24.15	0.591	
Scotstown		Up Stream Of Works	01/05/2013	G										
Scotstown		Down Stream of Works	01/05/2013	G										
Scotstown		Influent	28/05/2013	C										
Scotstown		Effluent	28/05/2013	C			8.00	33.00	14.00	0.431	1.251	15.61	1.130	
Scotstown		Up Stream Of Works	28/05/2013	G										
Scotstown		Down Stream of Works	28/05/2013	G										
Scotstown		Influent	12/06/2013	C			170.00	592.00	520.00			34.40	1.570	
Scotstown		Effluent	12/06/2013	C	14.6	7.29	9.00	66.00	7.00	1.005	0.956	25.85	1.530	
Scotstown		Up Stream Of Works	12/06/2013	G	13.0	8.47	4.00			0.027	0.045			9.810
Scotstown		Down Stream of Works	12/06/2013	G	13.1	8.42	3.00			0.015	0.071			9.760
Scotstown		Influent	06/08/2013	C			514.00	787.00	715.00			49.94	3.980	
Scotstown		Effluent	06/08/2013	C	12.9	7.62	3.00	38.00	10.00	0.239	0.211	10.82	1.150	
Scotstown		Up Stream Of Works	06/08/2013	G	13.9	7.82	0.90			0.015	0.022			9.420
Scotstown		Down Stream of Works	06/08/2013	G	13.8	7.74	0.90			0.022	0.028			9.610
Scotstown		Influent	11/09/2013	C			281.00	778.00	163.00			27.81	6.290	
Scotstown		Effluent	11/09/2013	C	15.5	7.45	3.00	36.00	9.00	0.614	0.187	12.83	0.873	
Scotstown		Up Stream Of Works	11/09/2013	G	14.0	7.99	0.90			0.018	0.023			9.970
Scotstown		Down Stream of Works	11/09/2013	G	14.0	7.97	0.90			0.017	0.021			9.870
Scotstown		Influent	22/10/2013	C			196.00	448.00	230.00			14.84	2.400	
Scotstown		Effluent	22/10/2013	C	14.7	7.97	4.00	40.00	12.00	0.114	0.261	8.83	0.330	
Scotstown		Up Stream Of Works	22/10/2013	G	13.5	6.9	2.00			0.008	0.014			10.140
Scotstown		Down Stream of Works	22/10/2013	G	13.0	6.91	2.00			0.007	0.018			14.700

Table 2.1

Effluent monitoring results: Note ELV's in red text

Location	Daily Flow M3/day	Effluent	Date of Sampling	Sample Type (C or G)	Temp	pH 6 - 9	cBOD mg/l 20mg/l	COD mg/l 125mg/l	Suspended Solids mg/l 35mg/l	Ortho Phosphate (as P) mg/l 1.0mg/l	Ammonia (as N) 2.0mg/l	Total Nitrogen mg/l (as N)	Total Phosphorus mg/l (as N)	Dissolved Oxygen (DO)	
Scotstown	133	Effluent	20/02/2013	C	6.8	8.31	3.80	24.00	9.00	0.224	0.182	22.91	0.455		
Scotstown	121	Effluent	17/04/2013	C	8.6	7.52	8.00	45.00	20.00	0.512	3.090	20.93	1.280		
Scotstown	76	Effluent	01/05/2013	C			4.00	34.00	2.00	0.383	0.624	24.15	0.591		
Scotstown	283	Effluent	28/05/2013	C			8.00	33.00	14.00	0.431	1.251	15.61	1.130		
Scotstown	161	Effluent	12/06/2013	C	14.6	7.29	9.00	66.00	7.00	1.005	0.956	25.85	1.530		
Scotstown	122	Effluent	06/08/2013	C	12.9	7.62	3.00	38.00	10.00	0.239	0.211	10.82	1.150		
Scotstown	148	Effluent	11/09/2013	C	15.5	7.45	3.00	36.00	9.00	0.614	0.187	12.83	0.873		
Scotstown	245	Effluent	22/10/2013	C	14.7	7.97	4.00	40.00	12.00	0.114	0.261	8.83	0.330		
Average	161						5.35	39.50	10.38	0.440	0.845	17.74	0.917		
Condition 2 Licence: Interpretation										1.000 = 1% allowable exceedance (<20%) (Cond 2)	3.09 - Reported INC091378				
Condition 2 Licence: Interpretation							No allowable failures. No deviation allowed	1 allowable failure provided under 100% of ELV (40mg/l)	1 allowable failure provided under 100% of ELV (250mg/l)	1 allowable failure provided under 150% of ELV (87.5mg/l)	Eight out of ten consecutive samples shall not exceed ELV. No individual result shall exceed ELV by more than 20% = (Ortho P 1.20mg/l & Ammonia 2.4mg/l)				
Total Incidents:							0	0	0	0	1				

Table 2.2

Influent monitoring results

Location	Flow M3/day	Location	Date of Sampling	Sample Type (C or G)	Temp	pH	cBOD mg/l	COD mg/l	Suspended Solids mg/l	Ortho Phosphorus (as P) mg/l	Ammonia (as N)	Total Nitrogen mg/l (as N)	Total Phosphorus mg/l (as P)	Dissolved Oxygen (DO)
Scotstown	133	Influent	20/02/2013	C			143.00	572.00	546.00	1.773	17.630	26.32	2.686	
Scotstown	121	Influent	17/04/2013	C			85.00	198.00	138.00			9.10	2.150	
Scotstown	161	Influent	12/06/2013	C			170.00	592.00	520.00			34.40	1.570	
Scotstown	122	Influent	06/08/2013	C			514.00	787.00	715.00			49.94	3.980	
Scotstown	148	Influent	11/09/2013	C			281.00	778.00	163.00			27.81	6.290	
Scotstown	245	Influent	22/10/2013	C			196.00	448.00	230.00			14.84	2.400	
Average	155						231.50	562.50	385.33			27.07	3.179	

Table 2.3

Upstream monitoring results

Location	Flow M3/day	Location	Date of Sampling	Sample Type (C or G)	Temp	pH	cBOD mg/l	COD mg/l	Suspended Solids mg/l	Ortho Phosphorus (as P) mg/l	Ammonia (as N)	Total Nitrogen mg/l (as N)	Total Phosphorus mg/l (as P)	Dissolved Oxygen (DO)
Scotstoun		Up Stream Of Works	20/02/2013	G	6.6	8.1	1.20			0.016	0.041			11.350
Scotstoun		Up Stream Of Works	17/04/2013	G	9.7	7.21	6.00			0.050	0.045			10.300
Scotstoun		Up Stream Of Works	12/06/2013	G	13.0	8.47	4.00			0.027	0.045			9.810
Scotstoun		Up Stream Of Works	06/08/2013	G	13.9	7.82	0.90			0.015	0.022			9.420
Scotstoun		Up Stream Of Works	11/09/2013	G	14.0	7.99	0.90			0.018	0.023			9.970
Scotstoun		Up Stream Of Works	22/10/2013	G	13.5	6.9	2.00			0.008	0.014			10.140
Average							2.50			0.022	0.032			

Table 2.4

Downstream monitoring results

Location	Flow M3/day	Location	Date of Sampling	Sample Type (C or G)	Temp	pH	cBOD mg/l	COD mg/l	Suspended Solids mg/l	Ortho Phosphorus (as P) mg/l	Ammonia (as N)	Total Nitrogen mg/l (as N)	Total Phosphorus mg/l (as P)	Dissolved Oxygen (DO)
Scotstoun		Down Stream of Works	20/02/2013	G	6.4	8.06	1.30			0.016	0.050			11.400
Scotstoun		Down Stream of Works	17/04/2013	G	9.5	7.3	3.00			0.022	0.061			10.100
Scotstoun		Down Stream of Works	12/06/2013	G	13.1	8.42	3.00			0.015	0.071			9.760
Scotstoun		Down Stream of Works	06/08/2013	G	13.8	7.74	0.90			0.022	0.028			9.610
Scotstoun		Down Stream of Works	11/09/2013	G	14.0	7.97	0.90			0.017	0.021			9.870
Scotstoun		Down Stream of Works	22/10/2013	G	13.0	6.91	2.00			0.007	0.018			14.700
Average							1.85			0.017	0.042			

