SOUTH TIPPERARY COUNTY COUNCIL



KILSHEELAN WASTEWATER DISCHARGE LICENCE REGISTER NUMBER D0452-01

ANNUAL ENVIRONMENTAL REPORT

1st JANUARY 2013 to DECEMBER 31ST 2013

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Introduction

The Environmental Protection Agency on October 12th 2011 granted South Tipperary County Council Waste Water Discharge Licence (Register No. D0452-01) in respect of the agglomeration named Kilsheelan. One of the provisions of that licence is that the Council submit to the Agency on an annual basis an 'Annual Environmental Report' (AER) to provide a summary of activities relevant to the discharges for that year. This is the third Annual Environmental Report (AER) for Kilsheelan Wastewater Treatment Plant and includes the information specified in Schedule D of the Wastewater Discharge Licence D0452-01.

This AER has been prepared in accordance with the Environmental Protection Agency (EPA) document: -"Guidance on the Preparation & Submission of the Annual Environmental Report (AER) for Waste Water Discharge Licences for 2013".

The Kilsheelan Waste Water Treatment Plant is located at Kilsheelan Co. Tipperary. (National Grid reference of E229186, N123271. The sewer network is generally a combined system with part of the system having a separate foul and surface water system installed since the early 80's and on recent housing developments. The sewerage generally flows by gravity to a pumping station located within the site of the wastewater treatment plant. The Kilsheelan wastewater treatment plant is operated under a Design Build Operate Contract (DBO) by AECOM Ltd who was awarded the contract in December 2002. The plant at Kilsheelan consists of an FM Environmental package activated sludge process plant and is designed to treat a population equivalent of 1,000pe.

A number of required upgrades were installed into the existing Kilsheelan WWTP as part of the Design Build contract and during the operational stage. The most significant were modifications to the plant control, installation of emergency standby generator, installation of RAS pumps, fine screens, flow meter and sampling equipment, new inlet pumps and pipe work and phosphorus removal facility. The inlet pumping station provides for screened storm discharge when the volume of influent exceeds the capacity to the forward feed pumps to treatment.

The treated effluent from the plant gravitates through an open pipe to a tributary of the Suir River (SW1), which immediately discharges directly into the River Suir.

1.2 Executive Summary

The Kilsheelan wastewater treatment plant has continued to operate effectively in this reporting period. The treatment plant is operated and managed on behalf of South Tipperary County Council by AECOM Ltd under a 20 year DBO contract agreement.

A review of the final effluent results and compliance with the Emission Limit Values set out in licence shows that there was no exceedence of the ELV for BOD which had an average effluent value of 2.75 mg/l against an ELV of 20 mg/l while Suspended Solids and COD had effluent values of 5.5 mg/l and 16 mg/l against ELV's of 30 mg/l and 125 mg/l respectively. The average effluent value for Ammonia was 2.92 mg/l against an ELV of 10mg/l.

The total flow for the year was 107,453 m3 while the current flow weighted average influent BOD to the plant is 134.6 mg/l giving a current pe loading of the plant of 660 pe. This compares with a plant design of 1,000 pe.

The average daily flow for the year was 294 m3 /day against a plant design of 775 m3/day (at 3dwf) which indicates that the plant is operating within it's hydraulic and treatment capacities.

A review of the ambient monitoring results for upstream and downstream of SW1 indicates that the discharge is having no adverse impact on the quality of the receiving waters.

The percentage reductions shown in the treatment efficiency report summary (Section 3) show that reductions of 98.2%, 95.1% and 97% were achieved in BOD, COD and Suspended Solids respectively.

A reduction of 86% was achieved in the Ammonia levels while nutrient removal efficiencies for TP and TN were 89% and 60 % respectively.

An interpretation and analysis of the final effluent results is given in Section 2.2 of this report.

2.0 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

Table 1 below is a tabular presentation of the wastewater treatment plant influent monthly monitoring results for BOD, COD, Suspended Solids, Total Nitrogen, Total Phosphorus, Ammonia and pH. Also set out below is the calculation of the pe equivalent load and the flow weighted Average BOD load for the WWTP.

Table 1: Waste water treatment plant influent monitoring results for 2013

	Flow	BOD	COD	SS	TN	TP	Ammonia	рH
ELV		20 mg/l	125 mg/l	30 mg/l	n/a	n/a	10 mg/l	6 to 9
08/01/2013	491	82	189	101	18.9	2.63	6.6	7.7
05/02/2013	456	78	175	105	16.1	2,10	6,1	7.7
05/03/2013	296	107	262	108	27.4	4.05	16.3	7.9
09/04/2013	382	80	177	83	21.2	2.34	18.9	7.8
08/05/2013	346	160	304	204	26.5	6.54	14.5	7.8
11/06/2013	249	290	522	337	36.3	6.44	20.8	7.7
02/07/2013	175	215	551	289	46.7	6.7	33.9	7.8
13/08/2013	151	210	493	241	38.2	6.17	32,9	7.8
03/09/2013	186	190	410	254	41.4	6.31	31.7	7.8
08/10/2013	192	170	365	195	40.9	5.81	30.3	7.9
05/11/2013	325	86	154	86	23.2	2.79	14.9	7.9
03/12/2013	212	165	346	200	33.8	4.87	26.7	7.9
No of Samples	12	12	12	12	12	12	12	12
Annual Max	491	290	551	337	46.7	6.54	33.9	7.9
Annual Mean	288	153	329	184	30.9	4.73	21.1	7.8

Calculation of the Population Equivalent load to the WWTP

The total influent for the year 2013 was 107,453. The average daily influent flow was 294m3.

The flow weighted averaged influent BOD as calculated in Table 2 below is 134.6 mg/l

Kilsheelan population equivalent was determined by the following formula:

Total Influent Flow for 2013 x flow-weighted averaged influent BOD divided by (0.06x366x1000).

Therefore the pe = $(107,453 \times 134.6) / (0.06 \times 365 \times 1000) = 660$

Table 2: Calculation of the flow weighted average BOD for 2013

	Flow (m3/day)	BOD (mg/l)	BOD (Kg)
08/01/2013	491	82	40.3
05/02/2013	456	78	35.6
05/03/2013	296	107	31.7
09/04/2013	382	80	30.6
08/05/2013	346	160	55.4
11/06/2013	249	290	72.2
02/07/2013	175	215	37.6
13/08/2013	151	210	31.7
03/09/2013	186	190	35.3
08/10/2013	192	170	32.6
05/11/2013	325	86	28.0
03/12/2013	212	165	35.0
Totals	3461		466

The flow weighted average BOD is 466 Kg \times 1000 / 3461 m3 = 134.6 mg/l

2.2 Discharges from the agglomeration

Presented below in Tables 3 and 4 are the primary discharge point monitoring results for the parameters as set out in Schedule B of the licence and a summary of the effluent monitoring and overall compliance with the licence Emission Limit Values (ELV's).

Table 3: Tabular presentation of the wastewater treatment plant effluent monitoring results with the associated Emission Limit Values (ELV's).

Sample Date	Flow m3/day	cBOD (mg/l)	COD (mg/l)	SS (mg/l)	Total Nitrogen as N (mg/l)	Total P as (mg/l)	Ortho P (mg/l)	Ammonia mg/l as N	pH (unit)
ELV's		20 mg/l	125 mg/l	30 mg/l	mg/l	mg/l	3 mg/l	10 mg /I	6 to 9
08/01/2013	491	2	16	7	12.5	0.4	0.25	0.1	7.9
05/02/2013	456	2	15	5	11.2	0.31	nt	0.2	8
05/03/2013	296	4	15	6	15.6	0.41	0.31	0.2	7.9
09/04/2013	382	4	15	6	14.5	0.27	nt	0.2	8
08/05/2013	346	5	22	6	11	0.7	0.58	4.6	8
11/06/2013	249	4	16	7	12.7	0.55	nt	8.9	8
02/07/2013	175	2	17	4	7.3	0.37	0.29	4.3	8.1
13/08/2013	151	2	15	6	12.5	0.89	nt	1.3	8.1
03/09/2013	186	2	15	3	6.6	0.86	0.79	2.1	8.1
08/10/2013	192	2	15	7	20.6	0.3	nt	10	8.1
05/11/2013	325	2	15	3	11.6	0.28	0.22	1.8	8
03/12/2013	212	2	16	6	11.3	0.61	nt	1.3	8
No of Samples	12	12	12	12	12	12	6	12	12
Annual Max	491	5	22	7	20.6	0.89	0.79	8.9	8.1
Annual mean	288	2.75	16	5.5	12.3	0.50	0.41	2.92	8

Table 4: Summary of the Effluent Monitoring and Compliance

	BOD	COD	SS	TN	TP	Ammonia	Ortho P	pН
WWDL ELV	20 mg/l	125 mg/l	30 mg/l	n/a	n/a	10 mg/l	3 mg/l	6 TO 9
No of sample results	12	12	12	12	12	12	12	12
No of sample results above ELV	0	0	0	0	0	0	0	0
No of sample results above ELV with Condition 2 interpretation	0	0	0	0	0	0	0	0
Overall Compliance	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Interpretation of results:

The Kilsheelan WWTP has continued to operate effectively in this reporting period.

There were no exceedences recorded in the ELV's for parameters set out in the discharge licence. A reduction of 86% was achieved in the Ammonia levels while nutrient removal efficiencies for TP and TN were 89% and 60 % respectively.

Table 5: Kilsheelan WWTP Primary point daily flow recordings (m3/day) for 2013 as required under Scheule B (Monitoring) of the Discharge licence.

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	502	461	311	471	251	253	138	267	204	254	339	233
2	402	459	329	407	247	255	200	201	128	314	384	173
3	464	461	331	492	257	199	160	190	161	316	384	207
4	475	421	214	430	268	197	181	192	163	294	253	199
5	466	362	281	476	266	180	179	169	157	214	315	201
6	468	508	278	398	267	192	184	171	168	216	351	215
7	467	450	315	398	197	212	182	164	206	129	265	197
8	461	281	416	364	332	195	168	153	208	188	286	190
9	454	283	395	391	283	210	194	175	70	175	296	198
10	453	282	395	367	251	212	189	191	228	172	296	190
11	432	307	314	359	247	252	167	193	178	122	330	19
12	465	402	339	361	245	260	178	142	139	203	302	21
13	465	402	365	447	238	200	195	137	198	205	282	29
14	308	430	302	447	232	197	197	170	136	204	296	26
15	386	346	350	275	136	274	138	154	145	175	275	26
16	396	381	319	334	311	274	177	176	145	232	303	25
17	369	383	344	375	235	236	76	165	160	223	305	22
18	469	340	344	410	220	206	226	167	187	215	218	26
19	519	375	304	417	222	224	143	148	157	371	288	29
20	517	319	269	370	207	215	155	154	163	373	241	24
21	518	341	350	368	224	155	156	168	182	223	281	39
22	481	345	618	206	222	204	154	182	184	352	232	37
23	445	333	726	296	223	206	150	143	125	322	236	22
24	424	334	726	288	222	208	158	174	168	251	236	40
25	564	335	435	282	226	192	174	176	99	484	217	38
26	546	315	609	275	246	169	144	123	225	406	210	39
27	546	315	598	280	246	182	179	172	162	408	211	38
28	393	311	565	278	242	236	181	161	169	442	213	37
29	511		635	254	241	100	122	155	167	289	214	38
30	480		556	249	225	201	157	163	285	367	238	46
31	446		558		203		174	187		332		60

2.3 Ambient monitoring summary

The ambient monitoring results for the parameters as set out in Schedule B of the licence is presented in Table 6 (Upstream) and Table 7 (Downstream) below. Also presented in Table 8 is a summary of the ambient monitoring. The monitoring results indicate that the discharge is not having any significant impact on the quality of the receiving waters.

Table 6: Ambient monitoring at aSW-IU upstream of SW1 (E229138, N123062)

Sample Date	Ammonia	BOD	DO	Ortho P	pH	Temp	TN
08/05/2013	BLD	2.1	10.93	BLD	8.122	13.9	2
28/08/2013	0.01	1.22	10.26	BLD	8.1	15.6	2
Max Value	0.01	2.1	10.93	BLD	8.122	15.6	2
Average Value	0.01	1.66	10.6	BLD	8.11	14.75	2

Table 7: Ambient monitoring at aSW-ID downstream of SW1 (E229303, N123029)

Sample Date	Ammonia	BOD	DO	Ortho P	рН	Temp	TN
08/05/2013	BLD	2.1	10.01	BLD	8.045	13.8	2.3
28/08/2013	0	0.87	9.64	0.002	8.08	15.7	2.4
Max Value	0	2.1	10.01	0.002	8.08	15.7	2.4
Average Value	0	1.49	9.83	0.001	8.06	14.75	2.35

Table 8: Ambient Monitoring Summary Table

Ambient Monitoring Point from WWDL	Irish Grid Reference	EPA Feature Coding	Is discharge impacting on water quality
aSW-IU upstream of	229138E, 123062N	TBC	No
aSW-ID downstream of SW1	229303E, 123029N	TBC	No

Small Stream Risk Score (SSRS):

An SSRS was carried out in 2013, the results of which are presented below.

Kilsheelan WWTP SSRS Scoring	SSRS Score
Upstream	5.6
Downstream	4.8

The results above show that there is a slight deterioration to the SSRS score downstream from the effluent discharge point.

2.4 Data collection and reporting requirements under the Urban Waste Water Treatment Directive.

It is confirmed that the annual urban waste water information for agglomerations and treatment plants with a population equivalent greater than 500 for the year 2013 was submitted to the EPA in electronic form in the first quarter of 2014.

2.5 Pollutant Release and Transfer Register (PRTR)

The PRTR Emissions Data information (i.e all relevant worksheets including the Facility ID and Activities sheet) is not required in this reporting period as the Kilsheelan agglomeration has a pe less than 2,000.

3.0 OPERATIONAL REPORTS SUMMARY

3.1Treatment Efficiency Report

Presented below is a summary of the efficiency of the treatment process including information for all the parameters specified in the licence.

Table 9: Treatment Efficiency Report Summary Table

	cBOD	COD	SS	TN	Ammonia	TP
Influent Mass Loading (Kg/day)	45	96.7	54.1	9.1	6.2	1.39
Effluent Mass Loading (Kg/day)	0.81	4.7	1.6	3.6	0.86	0.15
% Efficiency (% reduction of influent load)	98.2%	95.1%	97%	60%	86%	89%

3.2 Treatment Capacity Report

Presented below is a summary of the current and remaining treatment capacity of the treatment process.

Table 10: Treatment Capacity Report Summary Table

Hydraulic Capacity – Design	675 m3 /day @ 3DWF
Hydraulic Capacity – Current Loading	294 m3 /day
Hydraulic Capacity – Remaining	381m3/day
Organic Capacity – Design (pe)	1,000 pe
Organic Capacity – Current Loading (pe)	660 pe
Organic Capacity – Remaining (pe)	340 pe
Will the capacity be exceeded in the next 3 years	No

3.3 Complaints summary

There were no complaints of an environmental nature related to the discharge to water from the Kilsheelan Wastewater Treatment plant in 2013.

Table 11: Complaints

Number	Date and Time	Nature of Complaint	Cause of Complaint	Actions taken to resolve issue	Closed (Y/N)
None	None	None	None	N/A	N/A

3.4 Reported Incidents Summary

There was no recorded incident in relation to the Kilsheelan Wastewater Treatment facility in 2013.

Table 12: Incidents Summary

Date and Time	Incident	Authorities	Corrective	Closed
	Description	Contacted	Action	(Y/N)
None	None	None	None	N/A

Table 13: A summary of the incident details as required by the EPA reporting guidelines is set out below

No of Incidents	None	
Number of Incidents reported to EPA via EDEN in 2013	None	
Explanation of any discrepancies between the two numbers above	N/A	

4.0 INFRASTRUCTURAL ASSESSMENT & PROGRAMME OF IMPROVEMENTS

4.1 Report on Storm Water overflow identification and inspection.

The following storm water overflows for the Kilsheelan Agglomeration have been identified and are set out in Schedule A.4 of the discharge licence.

Storm Water Overflows

Discharge Point Code	Location - Grid Ref	Name of Receiving Water	
SW 2 (discharge via primary discharge point SW1)	229206E, 123047N	River Suir	
SW3 (discharge via primary discharge point SW1)	229206E, 123047N	River Suir	
SW4 (Overflow from original septic tank in the village)	228824E, 123193N	River Suir	
SW5 (Overflow to the River Suir on western side of Kilsheelan bridge)	228633E, 123244N	River Suir	
SW6 (Overflow from pumping Station at Cloghcarrigeen	228144E, 123467N	River Suir	

The operation of the storm water overflows (SWOs) was assessed in 2012 under the criteria set out in Section 4 of the Urban Waste Water Treatment Directive (91/271/EEC) – Procedures and Criteria in relation to Storm Water Overflows. The overflows were observed and assessed during both dry and wet weather conditions. The following criteria were assessed.

1. Causes significant visual or aesthetic impact and public complaints

The storm water overflows SW 2 (overflow from pump station at the WWTP) and SW3 (overflow from chamber outside the plant) is a mix of screened overflow from the WWTP and dilute storm water from the network and does not cause any visual or aesthetic impact or lead to any public complaints.

SW4 is the overflow from the original septic tank in the village and has a submerged outlet

to the River Suir. The septic tank is receiving minimal load at present and potential for overflow is low. Consequently it does not cause any significant visual, aesthetic impact or lead to public complaint.

Similarly SW5 (storm overflow to the western side of Kilsheelan Bridge) and SW6 (overflow from the pumping station at Cloghcarrigeen) and do not cause any visual or aesthetic impact or lead to public complaint. The operation of pumping station is monitored and maintained as part of the overall network management in the village.

2. Causes deterioration in water quality in the receiving water

The storm water overflows identified above do not cause any deterioration of water quality in the receiving waters (River Suir).

3. Gives rise to failure in meeting the requirements of National Regulations on foot of EU Directives (Bathing Water etc):

The receiving waters are not designated bathing areas.

4. Operates in dry weather

The storm water overflows do not operate in dry weather flow conditions.

Presented below in Table 14 is the SWO Identification and Inspection Summary Report.

Table 14: SWO Identification and Inspection Summary Report Table

Is each SWO Identified as non complaint with DoEHLG	No SWO Identified as non-complaint		
included in the Programme of Improvements			
Does the SWO assessment include the requirements	No Improvement works specified in the		
of Schedule C3	Licence for storm water overflows		
Has the EPA been advised of any additional SWO's / changes	No additional SWO's / changes to Schedule C3		
to Schediule C and A4 under the licence conditions.	and A4 under the licence required or identified.		

4.2 Report on progress made and proposals to meet the Improvement Programme Requirements

There are two Improvement Programme Works specified in Schedule C1 and C2 of the Discharge Licence. Schedule C1 identified that the primary discharge point SW1 was to be relocated to the main course of the River Suir. The licensee can confirm that these works were undertaken and completed in 2012. Schedule C2 identified that the SW7 discharge was to be discontinued. The licensee can confirm that it is presently seeking an alternative outlet for this discharge to the main WWTP via an adjoining housing estate. Implementation of the works are dependant on the taking in charge of the adjoining housing estate by the Council (which is now complete) and the securing of a wayleave through private property for an alternative pipe route (to be commenced). The licensee can report that progress has been made in receiving consent in principle from the landowner concerned and it is hoped have this Improvement Programme Work item can be undertaken in 2014 when ground conditions dry up and an access date agreed with the owner.

4.3 Sewer Integrity Risk Assessment

The Sewer Integrity Risk Assessment for the Kilsheelan Agglomeration was carried out in 2012.

The assessment was carried out based on information available from sewer layout maps (both paper and electronic copies) for the village and on a visual inspection of the network.

funding is been sought through budget submissions for 2014 for funding to allow for survey works in a number of agglomerations (including Kilsheelan), that will provide additional detail on the network condition and allow for assessment of the network to the standards and specification as set out in the Sewer Integrity Risk Assessment Tool facility.

A summary of the Risk Assessment is presented in Table 15 below.

Table 15: Summary of the Sewer Risk Assessment for Kilsheelan

Element	Risk Ass Score	Risk Category	% Risk Score	Max Risk Score
Section 2.1 Hydraulic Risk Assessment	115	High Risk	77 %	150
Section 3.1 Env Risk Assessment	335	Medium Risk	67 %	500
Section 4.1 Structural Risk Assessment	135	High Risk	90 %	150
Section 5.1 O and M Risk Assessment	68	Low Risk	34 %	200
Total RAS for Network	653	High Risk	65 %	1000

5.0 LICENCE SPECIFIC REPORTS

5.1 Drinking Water Abstraction Point Risk Assessment

Following a review by the Environment Section of the Local Authority, it is satisfied that there is no drinking water abstractions point located downstream of the agglomeration and therefore the potential to impact on such an abstraction does not arise.

5.2 Outstanding Reporting Requirements (previous AER's)

5.2.1 Monitoring of the Secondary Discharge

It has not been possible to provide discharge monitoring at this location as the discharge is a submerged discharge to the River Suir. However measures to progress the Improvement works needed that will eliminate this discharge have been elaborated upon in Section 4.2 above.

5.2.2 Sewer Integrity Risk Assessment (associated improvement works)

The Sewer Integrity Risk Assessment for the Kilsheelan Agglomeration was carried out in 2012.

It would have indicated a High risk for the hydraulic and structural elements of the assessment.

However this result is based on the fact that assessment of the network to the standards set out in the assessment tool was not possible. The assessment was based only on a visual assessment and a review of existing sewer layout maps and data.

Funding is being sought through budget submissions for 2014 for funds that will allow a more comprehensive and detailed assessment of the sewers to the standards set out in the Sewer Integrity Risk assessment tool facility. This in turn should allow for development of an appropriate improvement works programme.

6.0 CERTIFICATION AND SIGN OFF

pla un,

I certify that this Annual Environmental Report (AER) for the reporting year 2013 for the Waste Water Discharge Licence No D0452-01 in respect of the Kilsheelan Agglomeration is representative and accurate.

Signed

Dated: 28-14/14

Mr Jimmy Harney

Acting Director of Services

Environment and Water Services

South Tipperary County Council