

SOUTH TIPPERARY COUNTY COUNCIL



CAPPAWHITE

WASTEWATER DISCHARGE LICENCE

REGISTER NUMBER D0440-01

ANNUAL ENVIRONMENTAL REPORT

1st JANUARY 2013 to DECEMBER 31ST 2013

TABLE OF CONTENTS		Page
1.0 INTRODUCTION and EXECUTIVE SUMMARY		4
1.1	Introduction	4
1.2	Executive Summary	4
2.0 MONITORING REPORTS SUMMARY		6
2.1	Summary report on Monthly Influent Monitoring	6
2.2	Discharges from the Agglomeration	8
2.3	Ambient Monitoring Summary	11
2.4	Data Collection and Reporting Requirements under the UWWT Directive	12
2.5	Pollutant Release and Transfer Register	12
3.0 OPERATIONAL REPORTS SUMMARY		13
3.1	Treatment Efficiency Report	13
3.2	Treatment Capacity Report	13
3.3	Complaints Summary	14
3.4	Reported Incidents Summary	14
4.0 INFRASTRUCTURAL ASSESSMENT & PROGRAMME OF IMPROVEMENTS		15
4.1	Storm Water Overflow Identification and Inspection Report	15
4.2	Report on progress and proposals to meet the Improvement Programme requirements	15
4.3	Sewer Integrity Risk Assessment	16
5.0 LICENCE SPECIFIC REPORTS		17
5.1	Drinking Water Abstraction Point Risk Assessment	17
5.2	Outstanding Reporting Requirements	17
6.0 CERTIFICATION & SIGN OFF		17

List of Tables	Page
Table 1 Wastewater treatment plant influent monitoring results.	6
Table 2 Flow weighted average Influent BOD calculation sheet.	7
Table 3 Effluent monitoring results	8
Table 4 Summary of the effluent monitoring and compliance	9
Table 5 Primary discharge point daily flow recordings	10
Table 6 Ambient monitoring results – Upstream	11
Table 7 Ambient monitoring results – Downstream	11
Table 8 Ambient monitoring summary table	12
Table 9 Treatment efficiency report summary table	13
Table 10 Treatment capacity report summary table	13
Table 11 Complaints summary	14
Table 12 Incidents summary	14
Table 13 Incident detail summary per EPA guidelines	13
Table 14 SWO Identification and Inspection Summary Report Table	15
Table 15 Summary of Sewer Risk Assessment	16

1. INTRODUCTION AND EXECUTIVE SUMMARY

1.0 Introduction

The Environmental Protection Agency on 19th January 2011 granted South Tipperary County Council a Wastewater Discharge Licence (Register No D0440-01) in respect of the agglomeration named Cappawhite. One of the provisions of the licence (Condition 6.10) 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 the Cappawhite Wastewater Treatment Plant and includes the information specified in Schedule D of the licence.

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 Licence for 2013".

The Cappawhite Wastewater Treatment Plant is located in the townland of Philipstown, approximately 1.5km south of Cappawhite village, Co. Tipperary. Wastewater flows to the plant by gravity via a combined sewer system and comprises domestic and non-domestic wastewater sources.

The plant is designed for a biological capacity of 1750 pe at 3DWF or 583 pe at DWF. The plant provides tertiary treatment via an activated sludge membrane bio reactor system, including pre treatment, phosphorus removal and sludge storage facilities.

The Primary discharge occurs into the Cappawhite stream .There are two storm water overflows identified in the agglomeration. There are no secondary discharges or emergency overflows in the agglomeration.

1.2 Executive Summary

The Cappawhite wastewater treatment plant has continued to operate effectively in this reporting period. Cappawhite wastewater treatment plant is operated and managed by the Water Services Section of South Tipperary County Council, County Hall, Emmet Street, Clonmel.

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 1.17 mg/l against an ELV of 10 mg/l while Suspended Solids and COD had average effluent values of 5.58 mg/l and 22 mg/l against ELV's of 10 mg/l and 125 mg/l respectively. The average effluent value for Ammonia was 0.64 mg/l against an ELV of 5mg/l. The average effluent value for Ortho P was 0.86 mg/l against an Emission Limit Value of 0.8 mg/l . The total flow for the year was 55,896

m³ while the current flow weighted average influent BOD to the plant is 71 mg/l giving a current pe loading of the plant of 181 pe. This compares with a plant design of 583 pe at dwf or 1750 pe at 3 dwf.

The average flow for the year was 153 m³ /day against a plant design of 400 m³/day which indicates that the plant is operating within it's hydraulic and treatment capacities. The maximum flow recorded during the year was 544 m³.

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. Small Stream Risk Score assessments carried out upstream and downstream of the outfall were similar and indicating no impacts from the discharge.

The percentage reductions shown in the treatment efficiency report summary (Section 3) shows that reductions of 98.7%, 93% and 95% were achieved in BOD, COD and Suspended Solids respectively.

A reduction of 70% was achieved in the Ortho P value which compares favourably with the 2012 figure of a 68% reduction

An analysis and interpretation 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 (N), Ortho P 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

Date	Flow m3/day	BOD mg/l	COD mg/l	Suspended Solids (mg/l)	pH value (unit)	Ammonia (mg/l)	TP (mg/l)	TN (mg/l)	Ortho P (mg/l)
ELV		10 mg/l	125 mg/l	10 mg/l	6 to 9	5 mg/l			0.8 mg/l
17/01/2013	241	16.1	70.2	20	7.6	8.108	4.4	10.5	0.5
12/02/2013	275	20.2	47	30	7.5	5.193	0.93	11	0.55
20/03/2013	110	81.2	187	58	7.737	24.5275	3.651	17	2.5
17/04/2013	161	69.8	193.5	58	7.582	23.453	4.32	24.5	2.5
08/05/2013	168	123	542	80	7.691	18.75	12.5	39.5	1.2
26/06/2013	82	396	1201	598	7.502	42.5	11.57	67.5	6.8
17/07/2013	73	124.2	590	220	7.727	32.75	4.7	53	5.5
13/08/2013	81	13.9	109	35	8.45	26	4.5	32.5	3.89
26/09/2013	109	148.4	375	118	7.69	43	6.65	61	5.325
17/10/2013	186	50.04	176	74	7.7	19.5	3.15	27	1.827
26/11/2013	206	6.9	93	34	7.53	2.39	0.9	19.4	1.134
04/12/2013	147	72	185	80	7.53	16.58	0.94	23.6	1.897
No of Samples	12	12	12	12	12	12	12	12	12
Annual Max	275	396	1201	598	8.45	43	12.5	67.5	6.8
Annual Mean	153.3	93.5	314.1	117.1	7.7	21.9	4.85	32.21	2.80

Calculation of the Population Equivalent load to the WWTP

The total influent for the year 2013 was 55,896 m³. The average daily influent flow was 153m³/day.

The flow weighted averaged influent BOD as calculated per Table 2 below is 71 mg/l

Cappawhite population equivalent was determined by the following formula:

Total Influent Flow for 2013 x flow-weighted averaged influent BOD divided by (0.06x365x1000).

Therefore the pe = (55,896 x 71) / (0.06 x 365 x 1000) = 181

Table 2: Influent BOD Calculation sheet

	Flow in M ³ /Day	cBOD 5d with nitrification inhib mg/l	kg BOD
17/01/2013	241	16.1	3.88
12/02/2013	275	20.2	5.56
20/03/2013	110	81.2	8.93
17/04/2013	161	69.8	11.24
08/05/2013	168	123	20.66
26/06/2013	82	396	32.47
17/07/2013	73	124.2	9.07
13/08/2013	81	13.9	1.13
26/09/2013	109	148.4	16.18
17/10/2013	186	50.04	9.31
26/11/2013	206	6.9	1.42
04/12/2013	147	72	10.58
Totals	1839		130.42

The Flow weighted average BOD is 130.42 Kg x 1000 / 1839 m³ =71 mg/l

2.2 Discharges from the agglomeration

Presented below in Tables 3 and 4 are the primary discharge point monitoring effluent results for the parameters as set out in Schedule B 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).

	Flow (m ³ /day)	cBOD (mg/l)	Chemical Oxygen Demand	Suspended Solids (mg/l)	pH (Unit)	Ammonia Nitrogen	Total Nitrogen	Total Phosphorus	Soluble Reactive Phosphorus
ELV		10 mg/l	125 mg/l	10 mg/l	6 to 9	5 mg/l	n/a	n/a	0.8 mg/l
17/1/2013	241	0.48	15	3	8.129	0.042	8.7	0.59	0.16
12/02/2013	275	0.52	13	1	8.196	0.047	8.7	0.27	0.22
20/03/2013	110	0	26	5	8.134	0.6871	7.6	0.381	0.16
17/04/2013	161	0.88	15.4	BLD	8.043	0.09	15.3	0.64	0.46
08/05/2013	168	0.8	16	1	7.718	0.15	19.4	1.3	0.2
26/06/2013	82	2.28	31	12	7.61	0.33	37	1.02	0.72
17/07/2013	73	0	54	43	7.926	6	42	3.62	3.2
13/08/2013	81	2.2	42	BLD	7.91	0.15	31	1.16	2.225
26/09/2013	109	1.38	24	5	8.08	0.07	34	2.15	1.385
17/10/2013	186	0.92	10	BLD	7.91	0.03	17.6	0.93	0.86
26/11/2013	206	4.24	11	BLD	8.10	0.05	BLD	0.23	0.331
04/12/2013	147	0.38	7	3	8.06	0.02	15.8	0.32	0.349
No of samples	12	12	12	12	12	12	12	12	12
Annual Max	275	4.24	54	43	8.196	6	42	3.62	3.2
Annual Mean	153	1.17	22	6	7.98	0.64	19.76	1.05	0.86

Table 4: Summary of the Effluent Monitoring and Compliance

	BOD	COD	SS	Ortho P	Ammonia	pH
WWDL ELV	10 mg/l	125 mg/l	10 mg/l	0.8 mg/l	5 mg/l	6 to 9
No of sample results	12	12	12	12	12	12
No of sample results above ELV	0	0	2	4	1	0
No of sample results above ELV with Condition 2 interpretation	0	0	1	3	0	0
Overall Compliance	Pass	Pass	Pass	Fail	Pass	Pass

Interpretation of Results:

One final effluent sample taken on 17/7/2013 exceeded the ELV for Suspended Solids having a recorded reading of 43mg/l against an ELV of 10mg/l. This was due to operational process changes at the plant at the time of sampling. A second exceedence of 12 mg/l was marginal and would fall within the allowable range by interpretation of Condition 2 of the licence.

The final effluent values for Soluble Reactive Phosphorus was the most challenging parameter during this reporting period. Exceedences were recorded on 3 occasions. A fourth exceedence was also recorded but was within the allowable range by interpretation of Condition 2 of the licence. One exceedence for Ammonia was also recorded on 17/7/2013 . A value of 6mg/l was recorded against an ELV of 5 mg/l. This was within the allowable range by Interpretation of Condition 2 of the licence. A site inspection by the Councils Executive Chemist identified a combination of hard water supply and the need for increased ferric dosing as the possible causes for the exceedences. Subsequent process changes and increase in ferric dosing brought the Soluble Reactive Phosphorus Values back within the allowable ranges for the remainder of the year

Both the Soluble Reactive Phosphorus and Suspended Solids exceedences were reported to the EPA via EDEN.

Table 5: Cappawhite WWTP Primary discharge point daily flow recordings (m3/day) for 2013 as required under Schedule B of the Licence.

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	544	113	153	131	117	131	74	145	71	159	288	158
2	206	101	161	106	94	92	132	163	61	153	301	149
3	251	103	150	148	113	96	96	201	45	151	366	152
4	269	382	193	149	140	97	77	154	145	93	222	147
5	278	342	236	158	138	88	75	210	69	97	274	139
6	261	207	214	130	174	85	78	198	40	145	338	141
7	223	218	197	122	165	163	76	154	17	75	251	132
8	275	209	230	134	168	87	69	163	60	86	330	116
9	274	220	215	86	149	83	74	73	126	67	282	116
10	281	215	226	132	148	92	74	70	112	62	312	116
11	274	284	234	159	148	142	72	83	88	61	318	83
12	278	275	202	152	147	119	73	74	142	63	313	86
13	140	228	141	155	145	129	73	81	93	62	310	126
14	273	231	109	161	143	146	70	92	80	105	312	122
15	219	226	164	135	138	159	74	101	145	92	307	122
16	235	232	161	137	146	142	74	93	142	197	171	182
17	241	224	175	161	143	141	73	94	164	186	11	185
18	229	213	191	159	147	141	77	83	141	156	25	178
19	238	297	110	159	146	96	137	91	96	192	15	162
20	232	302	110	142	112	78	205	73	121	190	13	95
21	228	293	107	141	124	123	185	27	99	187	13	83
22	246	132	116	140	100	118	184	38	78	105	174	171
23	216	125	138	167	103	86	241	61	144	101	309	229
24	220	141	148	139	102	94	203	53	167	103	281	259
25	190	136	142	174	22	81	153	59	164	186	222	47
26	194	129	143	202	87	82	170	62	109	184	206	181
27	198	133	137	154	147	75	149	71	124	178	200	290
28	197	132	136	154	107	88	136	65	91	173	193	291
29	160		216	123	196	87	165	60	79	174	182	281
30	162		153	127	155	80	143	51	145	172	174	237
31	161		199		204		156	49		271		232

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 No 6 (Upstream) and table No 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 water.

Table 6 Ambient monitoring at aSW-I U upstream of SW I (189019E 146310N)

Date	Ammonia (N) mg/l as N	BOD mg/l O2	Dissolved Oxygen mg/l O2	Ortho-phosphate mg/l P	pH Value	Temperature deg C	Total Nitrogen mg/l (N)
17/01/2013	0.21	0.69	10.65	0.05	7.77	6.70	2.30
12/02/2013	0.10	1.12	10.71	0.03	7.91	6.70	4.40
20/03/2013	0.08	0.65	10.86	0.02	8.16	6.70	2.60
26/06/2013	0.05	0.96	8.62	0.04	8.15	13.60	2.40
17/07/2013	0.11	0.36	7.47	0.26	8.27	18.40	2.20
17/10/2013	0.04	1.84	8.84	0.10	7.68	11.70	1.00
04/12/2013	0.04	0.85	10.46	0.03	7.93	6.70	2.80
Max Value	0.21	1.84	10.86	0.26	8.27	18.40	4.40
Average Value	0.09	0.92	9.66	0.08	7.98	10.07	2.53

Table 7 Ambient monitoring at aSW-Id downstream of SW I (188287E 146311N)

Date	Ammonia (N) mg/l as N	BOD mg/l O2	Dissolved Oxygen mg/l O2	Ortho-phosphate mg/l P	pH Value	Temperature deg C	Total Nitrogen mg/l N
17/01/2013	0.215	0.52	10.39	0.04	7.744	6.8	2
12/02/2013	0.204	0.76	10.41	0.04	7.866	7	2.3
20/03/2013	0.0681	1.15	10.8	0.03	8.23	6.7	2.9
26/06/2013	0.02	1.17	8.89	0.07	8.055	12.6	2.9
17/07/2013	0.13	0.53	7.75	0.06	8.164	16.8	5.2
17/10/2013	0.04	1.87	8.53	0.113	7.74	12.3	1
04/12/2013	0.07	0.9	10.05	0.051	7.85	7.2	3
Max Value	0.215	1.87	10.8	0.113	8.23	16.8	5.2
Average Value	0.11	0.99	9.55	0.06	7.9	9.9	3

Table 8: Ambient Monitoring Summary Table

Ambient Monitoring Point from WWDL	Irish Grid Reference	EPA Feature Coding Tool code	Is discharge impacting on water quality
aSW-IU upstream of SW1	189019E, 146310N	TBC	No
aSW-ID downstream Of SW1	188287E, 146311N	TBC	No

Small Stream Risk Score Assessment

The Small Streams Risk Score (SSRS) is a biological assessment designed to detect potential sources of pollution to watercourses and involves identification of pollution sensitive and pollution tolerant macroinvertebrae. The results shown below show that there is no deterioration to the SSRS risk score downstream from the effluent discharge point.

Cappawhite stream:

SSRS Score Upstream 8.0 SSRS Score Downstream 8.8

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

It is confirmed that the annual urban wastewater 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 submission of a PRTR for 2013 for the Cappawhite Agglomeration is not required, as advised by the EPA, as the population equivalent for the agglomeration is less than 2,000.

3.0 OPERATIONAL REPORTS SUMMARY.

3.1 Treatment Efficiency Report

Presented below in Table 8 is a summary of the efficiency reductions achieved in the treatment process for those parameters specified in the licence.

Table 9: Treatment Efficiency Report Summary Table

	cBOD 5d with nitrification inhib	Chemical Oxygen Demand (COD)	Suspended Solids	Ammonia Nitrogen (as N)	Total Phosphorus (as P)	Total Nitrogen (as N)	Soluble Reactive
Influent mass loading (Kg/day)	14.3	48.1	17.9	3.35	0.74	4.93	0.43
Effluent mass emission (Kg/day)	0.18	3.37	0.85	0.1	0.16	3.02	0.13
% Efficiency (% reduction of influent load)	98.7%	93%	95%	97%	78%	39%	70%

3.2 Treatment Capacity Report

Presented below in Table 9 is a summary of the current and the remaining treatment capacity of the treatment process.

Table 10: Treatment Capacity Report Summary Table

Hydraulic Capacity – Design	400 m3/day at 1dwf , 1200 m3 /day at 3dwf
Hydraulic Capacity – Current Loading	153 m3 /day
Hydraulic Capacity – Remaining	430 m3 / day
Organic Capacity – Design (pe)	583 pe or 1,750 pe at 3 dwf
Organic Capacity – Current Loading (pe)	181 pe
Organic Capacity – Remaining (pe)	402 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 Cappawhite 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)
N/A	N/A	None	None	N/A	N/A

3.4 Reported Incidents Summary

There was 4 recorded incidents in relation to the Cappawhite Wastewater Treatment Plant in 2013.

Table 21: Incidents Summary

Date and Time	Incident Description	Cause	Corrective Action	Authorities Contacted	Reported to EPA	Closed (Y/N)
2013	Soluble Reactive Phos Exceeded	Hard water and Ferric dosing	Increase dosing	EPA	Yes via EDEN	Yes
2013	Suspended Solids	Process change	Process Adjustme	EPA	Yes via EDEN	Yes

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

No of Incidents in 2013	None
Number of Incidents reported to the EPA via EDEN in 2013	4
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 operation of the storm water overflows (SWOs) was assessed 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. This assessment was done in 2012 and was reported on in the 2012 AER submission to the EPA. Presented in Table 13 below is the SWO Identification and Inspection Summary Report as submitted in the 2012 AER.

Table 14: SWO Identification and Inspection Summary Report Table

Is each SWO Identified as non complaint with DoEHLG included in the Programme of Improvements	No SWO Identified as non-complaint
Does the SWO assessment include the requirements of Schedule A3 and C3	No Improvement works specified in the Licence
Has the EPA been advised of any additional SWO's / changes to Schedule CE and A4 under Condition 1.7	No additional SWO's / changes to Schedule C3 and A4 under Condition 1.7 required or identified.

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

There are no Improvement Works currently proposed. However Improvement works relating to infiltration to the sewer network will be examined and developed in 2014 and reported on in the AER for submission in 2015. Funding is being sought through the budget submissions for 2014 for those funds that will allow a more complete and detailed assessment of the sewer network to the standards and specification set out in the Sewer Integrity Risk Assessment Tool (see results of the Sewer Integrity Assessment in 2012 below).

4.3 Sewer Integrity Risk Assessment

The sewer integrity risk assessment for the Cappawhite Agglomeration was carried in 2012.

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

Table 15: Summary of the Sewer Risk Assessment for Cappawhite

Element	Risk Ass Score	Risk Category	% Risk Score	Max Risk Score
Section 2.1 Hydraulic Risk Assessment	145	High	97 %	150
Section 3.1 Env Risk Assessment	140	Low	28 %	500
Section 4.1 Structural Risk Assessment	150	High	100 %	150
Section 5.1 O and M Risk Assessment	30	Low	15 %	200
Total RAS for Network	465	High	47 %	1000

5 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

5.2.1 Sewer Integrity Risk Assessment (associated Improvement Works)

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

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

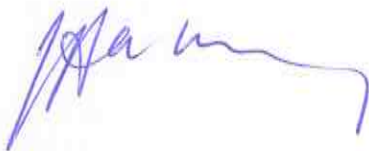
However this result is based on the fact that assessment of the network to the standards set out in the assessment tool was not possible. The assessment was based only on a visual assessment and a review of existing sewer layout maps and data.

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 will allow for development of an appropriate improvement works programme.

6.0 CERTIFICATION AND SIGN OFF

I certify that this Annual Environmental Report (AER) for the reporting year 2013 for the Waste Water Discharge Licence No D0440-01 in respect of the Cappawhite Agglomeration is representative and accurate.

Signed



Dated: 28/4/14

Mr Jimmy Harney

Acting Director of Services

Environment and Water Services

South Tipperary County Council