

**SOUTH TIPPERARY COUNTY COUNCIL**



**CAPPAWHITE**

**WASTEWATER DISCHARGE LICENCE**

**REGISTER NUMBER D0440-01**

**ANNUAL ENVIRONMENTAL REPORT**

**1<sup>st</sup> JANUARY 2012 to DECEMBER 31<sup>ST</sup> 2012**

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## **1. INTRODUCTION AND EXECUTIVE SUMMARY**

### **1.0 Introduction**

The Environmental Protection Agency on 19<sup>th</sup> 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 at the end of the year an 'Annual Environmental Report' (AER) to provide a summary of activities relevant to the discharges for that year. This is the second Annual Environmental Report (AER) for 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 2012".

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. 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 which is a tributary of the River Dead. There are two storm water overflows 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 2.08 mg/l against an ELV of 10 mg/l while Suspended Solids and COD had average effluent values of 2.83 mg/l and 20.71 mg/l against ELV's of 10 mg/l and 125 mg/ l respectively. The average effluent value for Ammonia was 0.16 mg/l against an ELV of 5mg/l. The average effluent value for Ortho P was 0.37 mg/l against an Emission Limit Value of 0.8 mg/l

The total flow for the year was 78,470 m<sup>3</sup> while the current flow weighted average influent BOD to the plant is 56.1 mg/l giving a current pe loading of the plant of 201 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 215 m<sup>3</sup> /day against a plant design of 400 m<sup>3</sup>/day 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 table No 6 show that reductions of 96%, 85% and 94% were achieved in BOD, COD and Suspended Solids respectively.

A reduction of 98.5% was achieved in the Ammonia levels while the reduction in Ortho P was 68%.

## 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 2012**

Date	Flow	BOD	COD	SS	TN	TP	pH	Amm	Ortho P
	m3	mg/l	mg/l	mg/l	mg/l	mg/l	value	mg/l	mg/l
18/01/2012	318	26.64	79	16	0.4681	NT	7.7	4.92	0.468
02/02/2012	261	131.8	254	100	NT	0.75	7.85	8.28	0.75
14/03/2012	138	92	164	42	NT	1.6	7.68	18.78	1.6
04/04/2012	130	134.9	280	85	NT	2.25	7.96	27.76	2.25
03/05/2012	152	95.4	191	62	NT	2	7.68	17.51	2.0
13/06/2012	159	28.72	77	37	NT	0.8	7.777	6.99	0.8
19/07/2012	154	6.32	31.5	26	NT	0.6	7.927	5.528	0.6
28/08/2012	149	28.86	68.9	40	NT	1	7.72	12.27	1.0
18/09/2012	138	41.8	104	38	7.1	1	7.718	2.631	1.0
18/10/2012	242	30.66	139	66	8	0.7	7.97	1.8	0.7
07/11/2012	235	54.54	176	70	0.5	2	7.6	17.77	2.0
06/12/2012	255	28.5	95.4	30	11.2	0.85	7.977	7.575	0.85
<b>Average</b>	<b>194</b>	<b>58.35</b>	<b>138.316</b>	<b>51</b>	<b>5.45</b>	<b>1.23</b>	<b>7.79</b>	<b>10.98</b>	<b>1.17</b>

### Calculation of the Population Equivalent load to the WWTP

The total influent for the year 2011 was 78,470 m<sup>3</sup> per Tables No 5 below

The flow weighted averaged influent BOD as calculated per Table 2 below is 56.1 mg/l

Cappawhite population equivalent was determined by the following formula:

Total Influent Flow for 2012 x flow-weighted averaged influent BOD divided by (0.06x366x1000).

Therefore the pe = (78,470 x 56.1) / (0.06 x 366 x 1000) = **201**

**Table 2: Influent BOD Calculation sheet**

Date	Influent Flow (m <sup>3</sup> )	Influent BOD (mg/l)	BOD (Kg)
18/01/2012	318	26.64	8.47
02/02/2012	261	131.8	34.39
14/03/2012	138	92	12.69
04/04/2012	130	134.96	17.54
03/05/2012	152	95.4	14.50
13/06/2012	159	28.72	4.56
19/07/2012	154	6.32	0.97
28/08/2012	149	28.86	4.30
18/09/2012	138	41.8	5.76
18/10/2012	242	30.66	7.41
07/11/2012	235	54.54	12.81
06/12/2012	255	28.5	7.26
<b>Total</b>	<b>2331 m<sup>3</sup></b>	<b>700.20</b>	<b>130.66 Kg</b>

**The Flow weighted average BOD is 130.66 Kg x 1000 / 2331 m<sup>3</sup> = 56.1 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).**

Date	cBOD 5d with nitrification inhib (mg/l)	Chemical Oxygen Demand (mg/l)	Suspended Solids (mg/l)	Soluble Reactive Phosphorus as P (mg/l)	Ammonia as N (mg/l)	pH (value)
<b>ELV's</b>	<b>10 mg/l</b>	<b>125 mg/l</b>	<b>10 mg/l</b>	<b>0.8 mg/l</b>	<b>5 mg/l</b>	<b>6 to 9</b>
18/01/2012	1.28	9	1	0.06	0.053	8.25
02/02/2012	3.1	18	1	0.07	0.12	8.09
14/03/2012	0.02	11	0	0.28	0.02	8.27
04/04/2012	1.5	20	5	0.15	0.149	8.12
03/05/2012	3.18	20	0	0.30	0.05	8.18
13/06/2012	1.98	16	0	0.37	0.05	7.58
19/07/2012	0.77	15.9	2	0.39	0.147	8.26
28/08/2012	<b>10.8</b>	51.2	<b>18</b>	<b>1.35</b>	0.609	7.87
18/09/2012	1.04	21	3	0.35	0.142	7.68
18/10/2012	0	30	2	0.44	0.05	8.08
07/11/2012	0.96	11.9	2	0.44	0.073	8.02
06/12/2012	0.3	24.6	0	0.22	0.481	7.98
<b>Average</b>	<b>2.08</b>	<b>20.71</b>	<b>2.83</b>	<b>0.37</b>	<b>0.162</b>	<b>8.03</b>

**Comment:** Exceedences in the ELV's for BOD, Suspended Solids and Ortho P was recorded on 28/8/2012. These were due to transient operational maintenance works at the WWTP.

**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	1	0	1	1	0	0
Annual Mean	2.08	20.71	2.83	0.37	0.162	8.03
Overall Compliance	Pass	Pass	Pass	Pass	Pass	Pass



**Table 5: Cappawhite WWTP Primary discharge point daily flow recordings (m3/day) for 2012 as required under Schedule B of the Licence.**

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	491	237	194	127	162	120	122	260	198	143	170	280
2	465	261	195	149	125	122	154	262	213	146	135	275
3	459	282	281	162	152	161	155	258	203	140	182	285
4	460	291	205	130	153	189	153	207	155	143	183	279
5	453	297	193	126	156	226	230	205	195	170	204	214
6	431	291	207	124	155	154	240	209	150	165	206	385
7	412	277	269	130	124	146	225	234	121	175	235	168
8	414	265	182	137	202	139	229	139	150	169	211	198
9	377	267	187	185	176	128	227	175	183	210	218	218
10	417	269	175	154	193	135	231	179	185	214	217	210
11	400	266	170	141	209	128	284	76	188	370	206	176
12	326	269	166	156	232	130	295	78	202	384	184	185
13	220	271	160	160	164	159	303	75	189	152	279	229
14	172	276	138	153	173	184	345	181	183	148	281	249
15	202	250	162	152	177	180	350	260	167	156	274	239
16	301	284	162	166	155	193	353	268	178	171	228	263
17	318	275	153	107	159	196	301	278	186	261	197	255
18	318	385	150	105	135	195	252	173	138	258	167	203
19	312	319	145	187	127	194	175	171	165	220	224	242
20	307	251	146	170	136	194	195	169	173	201	218	158
21	312	245	145	181	139	187	313	175	161	293	286	295
22	314	330	245	179	141	193	218	177	153	284	294	308
23	323	240	164	178	137	194	307	179	178	285	281	279
24	330	244	136	182	145	198	280	223	189	161	273	261
25	335	219	104	190	161	198	284	220	209	107	268	218
26	354	225	181	185	133	200	218	226	184	277	278	252
27	353	215	182	184	138	203	225	223	176	269	273	264
28	309	206	136	145	128	200	270	149	188	249	263	264
29	205	204	137	136	92	203	224	148	163	243	268	265
30	318		149	113	88	197	222	144	152	220	255	260
31	292		138		328		221	152		238		261
	10700	7711	5357	4594	4895	5246	7601	5873	5275	6622	6958	7638

Total	78470
Min	76
Max	491
Ave	215

## 2.3 Treatment Efficiency Report

Presented below in Table 6 is a summary of the efficiency reductions achieved in the treatment process for those parameters specified in the licence.

**Table 6: Treatment Efficiency Report Summary Table**

	<b>cBOD</b>	<b>COD</b>	<b>SS</b>	<b>Ammonia</b>	<b>Ortho P</b>
<b>Influent Mass Loading (Kg/day)</b>	12.55	29.73	10.99	2.36	0.25
<b>Effluent Mass Loading (Kg/day)</b>	0.45	4.45	0.61	0.035	0.08
<b>% Efficiency Reduction</b>	96%	85%	94%	98.5%	68%

## 2.4 Treatment Capacity Report

Presented below in Table 7 is a summary of the current and the remaining treatment capacity of the treatment process.

**Table 7: Treatment Capacity Report Summary Table**

<b>Hydraulic Capacity – Design</b>	400 m3/day at 1dwf , 1750 m3 /day at 3dwf
<b>Hydraulic Capacity – Current Loading</b>	215 m3 /day
<b>Hydraulic Capacity – Remaining</b>	185 m3 / day
<b>Organic Capacity – Design (pe)</b>	583 pe or 1,750 pe at 3 dwf
<b>Organic Capacity – Current Loading (pe)</b>	201 pe
<b>Organic Capacity – Remaining (pe)</b>	382 pe
<b>Will the capacity be exceeded in the next 3 years</b>	No

## 2.5 Ambient monitoring summary

The ambient monitoring results for the parameters as set out in Schedule B of the licence is presented in table No 8 (Upstream) and table No 9 (Downstream) below. Also presented in Table 10 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)**

	Ammonia(N) mg/l as N	BOD mg/l O2	Dissolved Oxygen (Measurement)mg/l O2	Ortho- phosphate mg/l P	pH	Temperature deg C	Total Nitrogen mg/l N
14/03/2012	0.1	2.1	10	0.04	8.22	10.5	
28/08/2012	0.2275	1.01	8.9	0.05	8.06	13.8	
18/09/2012	0.02	0.54	9.5	0.01	8.041	AR	7.1
18/10/2012	0.02	1.24	10.04	0.1	7.7	11.1	
07/11/2012	0.0854	1.27	9.85	0.03	7.93	9.7	2.9
06/12/2012	0.3932	0.49	10.98	0.08	8.029	5.7	2.2
<b>Average Value</b>	<b>0.14</b>	<b>1.11</b>	<b>9.88</b>	<b>0.05</b>	<b>8.00</b>	<b>10.16</b>	<b>4.07</b>
<b>Maximum Value</b>	<b>0.39</b>	<b>2.10</b>	<b>10.98</b>	<b>0.10</b>	<b>8.22</b>	<b>13.80</b>	<b>7.10</b>
<b>95% Percentile</b>	<b>0.35</b>	<b>1.89</b>	<b>10.75</b>	<b>0.10</b>	<b>8.18</b>	<b>13.26</b>	<b>6.68</b>

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

SampleDate	Ammonia(N) mg/l as N	BOD mg/l O2	Dissolved Oxygen (Measurement)mg/l O2	Ortho- phosphate mg/l P	pH	Temperature deg C	Total Nitrogen mg/l
14/03/2012	0.05	2.03	9.93	0.04	8.16	9.93	
28/08/2012	0.23	1.95	8.46	0.07	7.95	13.80	4.30
18/09/2012	0.29	0.93	9.78	0.06	7.94	12.00	NT
18/10/2012	<0.02	1.59	9.49	0.10	7.68	10.60	
07/11/2012	0.09	0.80	9.61	0.04	7.88	10.30	3.60
06/12/2012	0.36	1.60	10.60	0.04	7.76	5.90	
<b>Average Value</b>	<b>0.20</b>	<b>1.48</b>	<b>9.65</b>	<b>0.06</b>	<b>7.89</b>	<b>10.42</b>	<b>3.95</b>
<b>Maximum Value</b>	<b>0.36</b>	<b>2.03</b>	<b>10.60</b>	<b>0.10</b>	<b>8.16</b>	<b>13.80</b>	<b>4.30</b>
<b>95% Percentile</b>	<b>0.35</b>	<b>2.01</b>	<b>10.43</b>	<b>0.09</b>	<b>8.11</b>	<b>13.35</b>	<b>4.27</b>

### *Small Stream Risk Score Assessment*

SSRS Score Upstream

8.0

SSRS Score Downstream

8.8

## **2.6 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 2011 was submitted to the EPA in electronic form in 2011.

## **2.7 Pollutant Release and Transfer Register (PRTR)**

This AER/PRTR for 2012 has been submitted electronically to the EPA.

The AER/PRTR Emissions Data information (i.e all relevant worksheets including the Facility ID and Activities sheet) has been printed out and included in this AER -see Appendix A attached.

**3.0 OPERATIONAL REPORTS SUMMARY.**

**3.1 Complaints summary**

There were no complaints of an environmental nature related to the discharge to water from the Cappawhite Wastewater treatment Plant in 2012.

*Table 11: Complaints*

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

**3.2 Reported Incidents Summary**

There was no recorded incidents in relation to the Cappawhite Wastewater Treatment Plant in 2012.

*Table 12: Incidents Summary*

<b>Date and Time</b>	<b>Incident Description</b>	<b>Cause</b>	<b>Corrective Action</b>	<b>Authorities Contacted</b>	<b>Reported to EPA</b>	<b>Closed (Y/N)</b>
N/A	None	None	N/A	N/A	N/A	N/A

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

<b>No of Incidents in 2012</b>	<b>None</b>
Number of Incidents reported to the EPA via EDEN in 2012.	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 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. The following criteria were assessed.

#### ***1. Causes significant visual or aesthetic impact and public complaints***

The storm water overflow SW 1 is the flow from the overflow at the inlet sump and storm tank located within the treatment plant site. This is a screened overflow does not cause a visual or aesthetic impact or public complaint issue.

SW 2 is located to the east of Crescent Court housing estate in Cappawhite and similarly does not create a visual, aesthetic or public complaint issue.

#### ***2. Causes deterioration in water quality in the receiving water***

The storm water overflows do not cause any deterioration of water quality in their respective receiving waters, namely the Cappawhite stream for SW1 and a tributary of the Cappawhite stream for SW2. The storm water retention tank at the plant has a 2 hour retention capacity at 3dwf or approximately 100m<sup>3</sup>.

#### ***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 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 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 requirements specified Schedule C of the Discharge Licence.

#### 4.3 Sewer Integrity Risk Assessment

The sewer integrity risk assessment for the Cappawhite Agglomeration is attached in Appendix B

A summary of the Risk Assessment is presented below 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
<b>Total RAS for Network</b>	<b>465</b>	<b>High</b>	<b>47 %</b>	<b>1000</b>

## **5.0 ENVIRONMENTAL LIABILITY AND FINANCIAL PROVISIONS**

### **5.1 Environmental Liabilities and Financial Charges**

The licensee has in place funding to meet the financial charges associated with the monitoring and enforcement costs payable to the Agency (EPA). These payments are made on an annual basis. The current annual cost for the Cappawhite WWTP is €2,968.

Financial provisions in relation to underwriting of potential costs for remedial actions in the event of accidents or other Environmental Liabilities will need to be assessed by the Local Authority.

## **6.0 RISK BASED ASSESSMENTS (Priority Substances)**

### **6.1 Priority Substances Assessments**

The requirement for a risk based assessment to identify the possible presence of priority substances is not specifically set out in the Discharge Licence. However the Licensee has prepared and submitted to the Agency (EPA) the PRTR report for 2012 – see attached Appendix A.



## **7.0 CERTIFICATION & SIGN OFF**

I certify that this Annual Environmental Report (AER) for the reporting year 2012 for the Waste Water Discharge Licence No D0440-01 in respect of the Cappawhite Agglomeration is representative and accurate.

**Signed:**

**Dated:**

**Mr Jimmy Harney**

**Acting Director of Services**

**Environment and Water Services**

**South Tipperary County Council**

**APPENDIX A**  
**AER/PRTR Emissions Data**

**APPENDIX B**  
**Sewer Integrity Risk Assessment**