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## Ballincollig and Environs Agglomeration

### ANNUAL ENVIRONMENTAL REPORT

**13<sup>th</sup> November 2008 – 31<sup>st</sup> December 2008**

**Cork County Council – Southern Division**

**ORIGINAL**

**Environmental Protection Agency**

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**Licence Reg.  
No.**

**D0049-01**

**BALLINCOLLIG AND ENVIRONS AGGLOMERATION**

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## **1. INTRODUCTION**

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Cork County Council (Southern Division) holds a Waste Water Discharge Licence (Register No. D0049-01) in respect of the agglomeration named Ballincollig and Environs. This licence was granted on 13<sup>th</sup> November 2008. The aim of this Annual Environmental Report (AER) is to provide a review of activities relevant to the discharge from the date of grant of the licence to 31<sup>st</sup> December 2008. Subsequent AERs for this agglomeration will review activities of the entire previous year.

The required scope of the report is outlined in Schedule D (Annual Environmental Report Content) of the Waste Water Discharge Licence.

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## 2. DISCHARGES FROM THE AGGLOMERATION

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### **General**

The village (and now town) of Ballincollig developed to a large extent to the south due to the presence of the Cavalry Barracks on the North side of the main road.

The original village comprised the square and some linear building opposite the main gates to the Barracks.

This development was served by an old Sewage Collection System at the back of the buildings which discharges through the Barracks lands to the West of the Village.

By the early sixties the village had extended, by means of ribbon development on the Cork side, as far as Poulavone at the end of the Model Farm Road. The population had increased to approximately 1,600 persons and a new trunk sewer was laid to service the development.

A Secondary Sewage Treatment Plant (Stone Percolating Filters) was constructed on a site acquired from the Barracks lands.

Towards the end of the 60s and early 70s the Cork Land Use and Transportation Study (LUTS) proposed the model of satellite towns and the first housing estates were constructed in Ballincollig. These, Inniscarra View and Rosewood were initially built on the Cork side of the village and discharge to the Poulavone sewer. There was also a meat (pork) processing factory, Cork Farmers Union (CFU) located near the East Gate (on what is now the Link Road) and this discharged to the Poulavone sewer. Muskerry estate was built to the West of the village and discharges to the original village sewer. These are all large estates and all straddle a low watershed. Because of this all three are partly served by pumping stations.

A new Sewerage Scheme was designed in the mid 70s to service this development and further zoned and un-zoned lands to the South and West of the Village. The first stage of this, a Wastewater Treatment Plant (on the existing site) and extended sewer network, was constructed in the late 70s.

The WWTP was designed to treat the combined domestic load, arising from the dormitory town type development, and the waste from CFU. This pollution load concentration of this wastewater averaged at approximately twice a domestic wastewater.

The sewer network was extended by means of a trunk sewer which serves Beech Park, Castlepark, Time Square and Church View estates and which ultimately discharges through the Barracks lands along the same route as the original town sewer. These have recently been combined into a single sewer during the construction of the new Barracks development. The sewer network was designed on a partially combined basis (18 DWF) with the storm water from the estate developments being discharged to local soakpits.

Provision was also made for development to the south of the watershed by means of a pumphouse (Castlevew of Maglin), which can cater for substantial development in the

catchment. This pumphouse is designed to pump 6 DWF and discharges to the Castlepark sewer.

In the late 70s/early 80s the Council acquired a large area of Innishmore land from the Department of Defence to the West. A further stage of the Sewerage Scheme was constructed to service this and other zoned lands further west. Because of the low-lying nature of the lands the collected sewage has to be pumped into the WWTP. This pumphouse is located within the WWTP site. This was the first part of the scheme to include a separate Storm sewer.

Some other minor sewer extensions have been carried out to accommodate new developments. In addition a storm water drain was laid from Time Square Eastwards towards Colaiste Coilm and thence to the River Lee. Some work was carried out to separate out Road drainage in half of both Inniscarra View and Rosewood estates where the soakpits had failed.

Storm Water is the major problem affecting both the collection system and the WWTP. Except for the new developments all other rainwater run-off is discharged to the foul sewers and this results in a very flashy drainage system with storm run-off arriving at the WWTP within 30 minutes of the start of a rainfall event

### **Existing Collection System**

As described above the existing sewage collection system has developed over a long number of years but most of has been constructed to a plan contained in the 1979 Ballincollig Sewerage Scheme Preliminary Report.

The main sewage collection system, as it exists at present, consists of four (4) main gravity foul trunk sewers with a further two (2) entering the WWTP site at the lower end and being pumped to the inlet. There is a sub-catchment serving the Maglin area. These main sewers are as follows: -

Original Trunk Sewer	Serves the old town and Muskerry Estate
Poulavone Trunk Sewer	Serves the main road to the East of Ballincollig
Castlepark Trunk Sewer	Serves the Castlepark and pumped Maglin areas
Western Trunk Sewer	Serves the West end of Ballincollig
Western Lower Trunk Sewer	Serves the Innishmore area of the town
Eastern Lower Trunk Sewer	Serves the Leesdale area of the town

### **Wastewater Treatment Plant**

The wastewater arrives at the WWTP, via a number of pipes, at an inlet chamber upstream of the inlet works.



Flows to the plant in excess of 509m<sup>3</sup>/hr are diverted, after screening, to the 'old' Primary Settling Tanks and from there to the 'old' Humus tanks until such time as it is pumped back to the inlet when flows reduce. The use of these tanks as storage was brought online in mid 2008.

An overflow weir discharges further excess storm water to the outfall pipe.

The wastewater passes through two mechanically raked coarse bar screens (25mm c/c).

Grit is removed in three constant velocity grit channels.

The wastewater passes through a 5mm fine screening system. This fine screen was installed in mid 2008.

The wastewater flows to a Carousel type activated sludge plant. The volume of this basin is approximately 9000 m<sup>3</sup>.

The mixed liquor was settled in two circular radial flow clarifiers. A third clarifier was constructed in mid 2008.

The settled sludge (RAS) from the 2 old clarifiers is returned to the aeration basin using Archimedes screw pumps.

The settled sludge (RAS) from the new 'third' clarifier is returned to the aeration basin by gravity.

The excess sludge (WAS) is pumped to the picket fence thickener (PFT) where it settles and compacts.

The floating scum on the clarifiers is removed via a scum box and is pumped to the PFT for further treatment.

The thickened sludge is pumped from bottom of the PFT to the centrifuge.

The centrifuge dewateres and further thickens the sludge prior to off-site disposal. The sludge is presently being composted, off site, for agricultural usage.

The centrate is pumped to the aeration basin.

There are two Bord na Mona odour removers used, one at the picket fence thickener and the other at The centrifuge.

The treated effluent is discharged from the clarifiers via a weir to a chamber. From this chamber it flows to a manhole on the north east of the treatment plant site. From this manhole it is discharged to the river Lee via the outfall pipe.

There are two composite samplers in the process; one at the inlet (flow proportional) and the other at the outlet chamber from the clarifiers that is time based.

## Quality of Effluent

The Waste Water Discharge Licence dictates the standards to which the plant must treat effluent.

Table 2.1 – Primary Wastewater Discharge Limits

Parameter	Emission Limit Value	
	mg/l	kg/day
pH	6-9	
BOD	25	74
COD	125	--
Suspended Solids	35	--
Total Nitrogen	15	--
Total Phosphorous (as P) <sup>Note 1</sup>	2	15
Orthophosphate (as P) <sup>Note 2</sup>	10	29.5

Note 1: Emission limit values shall apply from the 1<sup>st</sup> July 2013

Note 2: The emission limit values shall apply until 1<sup>st</sup> July 2013

The Ballincollig WWTP is currently operated by Cork County Council staff. The plant is manned during the working week 8.30am - 5.00pm (Monday - Friday) and the curator is also on site for a number of hours both Saturday and Sunday. 2 no Wastewater Curators and a general operative maintain the plant and network. In 2008 an Environmental Technician was fully employed between Ballincollig and Blarney WWTPs.

## Sources of Emissions from the Waste Water Works

The pollution load for the Ballincollig agglomeration arises from the following areas:

- The local Population
- The local Industries, commercial and non-domestic users.

The pollution load from these sources varies with daily, weekly and seasonal producers of effluent. The sewage from all industries is collected via the public sewer and treated in conjunction with domestic waste at the wastewater treatment plant.

The domestic population of Ballincollig has grown over the last three censuses owing to its development as a town within the Cork Metropolitan area. The population of Ballincollig was determined to be 16,339 by the 2006 CSO census.

Other sources of influent that contribute to the sewage scheme would be:

- Commercial premises
- Schools
- Tourism

An approximate non-domestic population equivalent of 8,200 was calculated for 2006.

This gave a present total pollution load of 24,542.

### **Present Capacities of the Plant**

(i) Biological Capacity of the Treatment Works

The capacity of the plant for carbonaceous BOD removal is ~30,000PE (60g/h/d)

(ii) Hydraulic Capacity of the Treatment Works

Following completion of the Interim Works Contract in 2008 the hydraulic capacity of the plant is now stated as 26,000PE.

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### **3. SUMMARY REPORT ON INFLUENT MONITORING**

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In 2008 influent monitoring was carried out both by the Wastewater Laboratory and by the onsite Environmental Technician for process control purposes.

Testing at the Wastewater Laboratory is INAB accredited. All accredited testing for 2008 is detailed in Appendix 1.

Appendix 2 details all onsite testing carried out for the period of the licence in 2008. This testing was carried out by the Environmental Technician for monitoring and control purposes.

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#### 4. DATA COLLECTION AND REPORTING REQUIREMENTS UNDER THE URBAN WASTE WATER TREATMENT DIRECTIVE

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Table 4.1 outlines data collection under the Urban Wastewater Directive carried out from the date of grant of the licence to 31<sup>st</sup> December 2008.

Table 4.1 – Effluent Monitoring

Date	Volume m <sup>3</sup>	pH	BOD mg/l	COD mg/l	Sus.Solids mg/l	TP-P mg/l
02/12/08	2699	7.6	3	39	<2.5	3.6
10/12/08	2679	--	4	33	5	4.5

Appendix 3 details all effluent monitoring carried out in 2008 under the Urban Waste water Directive.

Appendix 4 details all onsite testing carried out for the period of the licence in 2008. This testing was carried out by the Environmental Technician and whose duties were split between Ballincollig and Blarney WWTPs.

The plant experienced some difficulties in January 2008 with COD and Suspended Solids compliance due to an extreme rain event. There are proposals in place under the Water Services Investment Programme for storm removal in the plant.

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## **5. COMPLAINTS SUMMARY**

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No complaints were received in 2008 from the date of issue of the licence relating to the discharge(s) to water from the wastewater works.

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**6. POLLUTANT RELEASE AND TRANSFER REGISTER – REPORT FOR  
PREVIOUS YEAR**

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Due to the short time frame between the issuing of the discharge licence and year end this item was not addressed but will be addressed as part of the second AER.

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**7. POLLUTANT RELEASE AND TRANSFER REGISTER – PROPOSAL FOR  
CURRENT YEAR**

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Due to the short time frame between the issuing of the discharge licence and year end this item was not addressed but will be addressed as part of the second AER.



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## **8. AMBIENT MONITORING SUMMARY**

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Appendices 6 and 7 detail all ambient monitoring carried out in 2008.

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## **9. STORM WATER OVERFLOW INSPECTION REPORT**

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An assessment of storm overflow SW03 shall be carried out prior to the date for submission of the second AER in accordance with Condition 4.13.1 of the licence.

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## **10. REPORTED INCIDENTS SUMMARY**

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No incidents were recorded in 2008 from the date of issue of the licence relating to the discharge(s) to water from the wastewater works.

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## **11. REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS**

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### **Interim Works Contract**

The Interim Works Contract at the waste water treatment plant as approved by Cork County Council in July 2007 are substantially completed. These consisted of the installation of a fine screen package unit downstream of the grit channel, an additional clarifier tank and interim storm water storage/management by converting existing settlement/humus tanks.

### **Cork County Council Assessment of Needs July 2006**

Ballincollig Sewerage Scheme Upgrade-€23,100,000(estimated cost)-Priority No. 8 from 2007 to 2009

Barry's Road Foul and Storm Sewers-€2,500,000(estimated cost)-Priority No. 24 from 2007 to 2009. A Report was submitted to the DoEHLG in October 2007 seeking preliminary design stage approval under this project heading.

### **Water Services Investment Programme 2007 - 2009**

Ballincollig Sewerage Scheme (Nutrient Removal). A Report was submitted to the DoEHLG in November 2008 seeking preliminary design stage approval under this project heading. The report is entitled the "Advance Works Report".

Ballincollig Sewerage Scheme (Upgrade) €22,250,000(approved funding)-Programmed to start in 2009 and completion by second quarter 2013. A draft Preliminary Design Stage Report for the upgrade of the WwTP has been submitted to the Council for comment under this project heading.

### **Ballincollig Green Route and Water Services Contract**

The above contract is under construction in Ballincollig and will cost about €8,800,000. The water services element of the contract will cost about €2,000,000. The water services section of the contract consists in part of a new trunk surface water sewer laid within the Ballincollig Main Street between Inniscarra View Housing Estate entrance and the Oriel House Hotel. That will allow separation of surface water from the foul sewer and WwTP. The works are programmed for completion in 2009.

The Council intention is to comply with the improvement programme timeframe requirements in A1, C1 and C3, Schedules A and C of the WWDL for Ballincollig Wastewater Treatment Plant.

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**12. DEVELOPMENT/INFRASTRUCTURAL WORKS SUMMARY  
(COMPLETED IN PREVIOUS YEAR OR PREPARED FOR CURRENT  
YEAR)**

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Interim Works Contract is substantially completed since August 2008.

1. Fine screen installation is operational with non mechanical bypass.
2. Storm water management is operational.
3. Additional clarification tank is operational.
4. Supplementary sludge return pump is operational.
5. Duplicate outfall pipe from Clarifiers is completed
6. Rehabilitation of the old filter belt press has not been carried out primarily in the interest of operative safety and health. A mobile plant may be brought on site to provide backup sludge dewatering if necessary. Approval for new dewatering facilities has been applied for as part of the Ballincollig Sewerage Scheme (Nutrient Removal) construction budget application.

Ballincollig Sewerage Scheme (Nutrient Removal).

The works proposals within the “Advance Works Report” are subject to DoEHLG approval. The proposals consist of the following principal elements:

1. A new Inlet Works including Screening, Grit Removal, FOG Removal and Control of Storm water Overflow within a new Inlet Works Building designed for the ultimate Population Equivalent of 60,000.
2. New Storm water Management System comprising Storm water Holding Tanks and Storm water Return Pumping designed for the ultimate Population Equivalent of 60,000.
3. Phosphorus Removal System and Sludge Dewatering Facilities designed for a Population Equivalent of 45,000.
4. Ancillary Works including the Rehabilitation of the Outfall Pipe, Repairs to the Existing Control Building and Repaving of Roadways and Hardstandings.

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### **13. ASSESSMENT OF PREDICTED IMPACTS ON HABITATS**

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An assessment of the predicted impacts on the Cork Harbour Special Area of Conservation (4030) arising as a result of the discharges from the agglomeration will be carried out within twelve months of the date of grant of the licence; in accordance with Condition 4.17 of the licence.

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**14. ANY OTHER ITEMS SPECIFIED BY THE AGENCY**

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No other items were specified by the Agency

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**APPENDIX 1 - INFLUENT MONITORING – WASTEWATER LABORATORY**

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Wastewater Laboratory Testing of Influent (INAB Accredited)

Sample Date	07/02/08	06/03/08	03/04/08	05/06/08	21/08/08
Sample	Inlet	Inlet	Inlet	Inlet	Inlet
Sample Code	GS042	GS156	GS234	GS489	GS790
Flow M <sup>3</sup> /Day	--	4694	--	--	--
pH	--	--	--	--	--
Temperature °C	--	--	--	--	--
Cond 20°C	--	--	880	992	--
SS mg/L	--	473	--	--	--
NH <sub>3</sub> mg/L	33.4	--	--	74	--
BOD mg/L	--	--	--	--	--
COD mg/L	831	1022	1069	916	854
TN mg/L	69	--	--	--	--
Nitrite mg/L	--	--	--	--	--
Nitrate mg/L	--	--	--	--	--
TP mg/L	8.95	14.5	12.08	12.85	--
O-PO <sub>4</sub> -P mg/L	5.41	8.78	8.27	11.15	--
SO <sub>4</sub> mg/L	53.3	--	--	--	--
Chromium mg/L	--	<0.02	--	<0.02	--
Copper mg/L	--	0.062	--	0.031	--
Lead mg/L	--	0.0352	--	<0.02	--
Nickel mg/L	--	<0.02	--	<0.02	--
Zinc mg/L	--	0.178	--	0.183	--
Boron mg/L	--	0.061	--	0.111	--
Cadmium mg/L	--	<0.02	--	<0.02	--
Barium mg/L	--	0.028	--	0.038	--



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**APPENDIX 2 - INFLUENT MONITORING - CARRIED OUT FOR  
MONITORING AND CONTROL**

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Onsite Testing of Influent

<b>Sample Date</b>	17/11/08	26/11/08	02/12/08	10/12/08	17/12/08
<b>Sample</b>	<b>Inlet</b>	<b>Inlet</b>	<b>Inlet</b>	<b>Inlet</b>	<b>Inlet</b>
<b>Flow M<sup>3</sup>/Day</b>	3694	2692	4341	3157	2616
<b>pH</b>	7.65	7.69	7.59	7.49	7.54
<b>COD mg/L</b>	850	1096	1086	1105	1086

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**APPENDIX 3 - EFFLUENT MONITORING – WASTEWATER LABORATORY**

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Wastewater Laboratory Testing of Effluent (INAB Accredited)

<b>Sample Date</b>	09/01/08	10/01/08	07/02/08	06/03/08	03/04/08	06/05/08	05/06/08
<b>Sample</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>
<b>Sample Code</b>	GS001	GS003	GS043	GS155	GS235	GS386	GS488
<b>Flow M<sup>3</sup>/Day</b>	7888	13148	5955	4694	3453	3406	3390
<b>pH</b>	--	--	7.2	7.5	--	7.6	7.6
<b>Temperature °C</b>	--	--	--	--	--	--	--
<b>Cond 20°C</b>	--	--	--	570	485	--	519
<b>SS mg/L</b>	247	819	6	4	3	4	5
<b>NH<sub>3</sub> mg/L</b>	--	--	<0.1	<0.1	--	<0.1	<0.1
<b>BOD mg/L</b>	--	--	2.6	5.49	2.1	<1.0	3.07
<b>COD mg/L</b>	111	789	<21	41	<21	22	<21
<b>TN mg/L</b>	17.9	47	16.1	--	--	--	4
<b>Nitrite mg/L</b>	--	--	--	--	--	--	--
<b>Nitrate mg/L</b>	--	--	--	--	--	--	--
<b>TP mg/L</b>	5.8	12.4	4.58	5.85	6.6	--	7.6
<b>O-PO<sub>4</sub>-P mg/L</b>	--	--	4.61	6.8	--	6.12	<0.05
<b>SO<sub>4</sub> mg/L</b>	--	--	45.1	55.9	--	--	--
<b>Chromium mg/L</b>	--	--	<0.02	<0.02	--	--	--
<b>Copper mg/L</b>	--	--	<0.02	<0.02	--	--	--
<b>Lead mg/L</b>	--	--	0.021	0.027	--	--	--
<b>Nickel mg/L</b>	--	--	<0.2	<0.02	--	--	--
<b>Zinc mg/L</b>	--	--	0.036	<0.02	--	--	--
<b>Boron mg/L</b>	--	--	--	0.105	--	--	--
<b>Cadmium mg/L</b>	--	--	<0.02	--	--	--	--
<b>Barium mg/L</b>	--	--	0.025	<0.02	--	--	--

Appendix 3 - Effluent monitoring (continued)

Wastewater Laboratory Testing of Effluent (INAB Accredited)

Sample Date	10/07/08	21/08/08	24/09/08	09/10/08	02/12/08	10/12/08
Sample	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Code	GS634	GS789	GS1001	GS1027	GS1313	GS1354
Flow M <sup>3</sup> /Day	3265	3877	3405	3119	2699	2679
pH	--	7.8	--	--	7.6	4
Temperature °C	--	--	--	--	--	--
Cond 20 °C	429	--	--	--	--	--
SS mg/L	7	<2.5	<2.5	3	<2.5	5
NH <sub>3</sub> mg/L	0.2	--	--	--	1.3	0.3
BOD mg/L	2.71	1.2	1.2	2	2.97	--
COD mg/L	26	33	<21	<21	39	33
TN mg/L	6.4	--	--	--	18	3
Nitrite mg/L	--	--	--	--	--	--
Nitrate mg/L	--	--	--	--	--	--
TP mg/L	6.53	2.84	--	--	3.6	4.5
O-PO <sub>4</sub> -P mg/L	5.46	--	--	--	5.83	5.1
SO <sub>4</sub> mg/L	--	--	--	--	--	--
Chromium mg/L	<0.02	<0.02	--	--	--	--
Copper mg/L	<0.02	<0.02	--	--	--	--
Lead mg/L	<0.02	0.021	--	--	--	--
Nickel mg/L	<0.02	<0.02	--	--	--	--
Zinc mg/L	0.043	0.025	--	--	--	--
Boron mg/L	0.049	0.04	--	--	--	--
Cadmium mg/L	<0.02	<0.02	--	--	--	--
Barium mg/L	<0.02	<0.02	--	--	--	--

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**APPENDIX 4 - EFFLUENT MONITORING – CARRIED OUT FOR  
MONITORING AND CONTROL**

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Onsite testing of effluent

Sample Date	14/11/08	15/11/08	16/11/08	17/11/08	18/11/08	19/11/08	23/11/08	24/11/08
Sample	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Flow M <sup>3</sup> /Day	3762	3914	3403	3694	3489	3442	3442	2609
pH	7.37	7.53	7.47	7.46	7.41	7.45	7.5	7.45
SS mg/L	2	3	7	6	4	--	6	4
NH <sub>3</sub> mg/L	--	--	--	--	--	--	--	--
COD mg/L	22	23	34	29	21	--	26	27
TN mg/L	--	--	--	--	--	--	--	--
Nitrate mg/L	--	--	--	--	--	--	--	--
TP mg/L	--	--	--	--	--	--	--	--
O-PO4-P mg/L	--	--	--	4.8	5.75	--	--	6

Sample Date	25/11/08	26/11/08	27/11/08	01/12/08	02/12/08	03/12/08	04/12/08	05/12/08
Sample	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Flow M <sup>3</sup> /Day	2719	2692	2764	2746	4341	4514	3731	3140
pH	7.42	7.41	7.4	7.42	7.39	7.27	7.36	7.39
SS mg/L	3	3	--	--	--	19	--	2
NH <sub>3</sub> mg/L	0.45	--	--	--	--	--	--	--
COD mg/L	21	24	28	38	--	42	28	19
TN mg/L	0.7	--	--	--	--	--	--	--
Nitrate mg/L	0.4	--	--	--	--	1.8	--	--
TP mg/L	5.9	--	--	--	--	--	--	--
O-PO4-P mg/L	5.75	--	--	--	--	--	--	--

Sample Date	06/12/08	07/12/08	08/12/08	10/12/08	13/12/08	14/12/08	15/12/08	16/12/08
Sample	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Flow M <sup>3</sup> /Day	2898	2239	3546	3157	2882	2757	2570	2747
pH	7.41	7.4	7.41	7.38	7.46	7.52	7.46	7.44
SS mg/L	3	5	7	2	3	5	6	3
NH <sub>3</sub> mg/L	--	--	--	--	--	--	--	--
COD mg/L	16	24	37	22	53	30	25	21
TN mg/L	--	--	--	--	--	--	--	--
Nitrate mg/L	--	--	--	--	--	--	--	--
TP mg/L	--	--	--	--	--	--	--	--
O-PO4-P mg/L	--	--	5.5	--	--	--	--	--

Appendix 4 - Effluent monitoring (continued)

Onsite testing of effluent

<b>Sample Date</b>	17/12/08	19/12/08	20/12/08	21/12/08	28/12/08	29/12/08	30/12/08
<b>Sample</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>	<b>Effluent</b>
<b>Flow M<sup>3</sup>/Day</b>	2616	2868	2471	2665	2350	2567	2555
<b>pH</b>	7.48	7.5	7.44	7.42	7.44	7.37	7.39
<b>SS mg/L</b>	3	2	10	5	2	4	2
<b>NH<sub>3</sub> mg/L</b>	0.21	--	--	--	--	--	--
<b>COD mg/L</b>	24	23	39	24	32	34	30
<b>TN mg/L</b>	0.2	--	--	--	--	--	--
<b>Nitrate mg/L</b>	0.8	--	--	--	--	--	1.1
<b>TP mg/L</b>	6.2	--	--	--	--	--	--
<b>O-PO<sub>4</sub>-P mg/L</b>	5.5	--	--	--	--	--	6.5

**APPENDIX 5 - EFFLUENT MONITORING – LABORATORY TEST REPORT**



**Laboratory Test Report  
Cork County Council  
Waste Water Laboratory  
Inniscarra, Co. Cork**

Page 1 of 1  
January 28, 2009

Industry Name: Ballincollig STP Riv. Discharge  
Address: Ballincollig Treatment Plant,  
Ballincollig,  
Co. Cork

WATER SERVICES - MAINTENANCE  
SOUTH CORK  
30 JAN 2009  
RECEIVED  
CORK COUNTY COUNCIL, CORK

Industry Code No. 360  
Report Ref No. T22-01-09-002  
Issued to: Not Mahony  
A/SEE. CCC

Licence No. Type S

Licence Limit	Volume m3	pH	B.O.D. mg/l	C.O.D. mg/l	Sus Solids mg/l	TP-P mg/l	Code	Comments
999999		12.99	25	125	35	99		
Date								
09/01/08	7888			111	* 247	5.8	GS001	C TN-N\$=17.9mg/l(sample po
10/01/08	13148			* 789	* 819	12.4	GS003	C TN-N\$=47mg/l(heavy rain e
~ 07/02/08	5955	7.2	2.60	<21	6	4.58	GS043	C NH3-N=<0.1mg/l O-PO4=4
06/03/08	4694	7.5	5.49	41	4	5.85	GS155	C NH3-N=<0.1mg/l
03/04/08	3453		2.1	<21	3	6.6	GS235	C
06/05/08	3406	7.6	<1.0	22	4		GS386	C OPO4-P=6.12mg/l
05/06/08	3390	7.6	3.1	<21	5	7.6	GS488	C
10/07/08	3265		2.71	26	7	6.53	GS634	C TN-N\$=6.4mg/L
21/08/08	3877	7.8	1.2	33	<2.5	2.84	GS789	C
09/10/08	3119		2	<21	3		GS1027	C
02/12/08	2699	7.6	3	39	<2.5	3.6	GS1313	C Amm-n=1.3mg/l, TN-N=18m
10/12/08	2679		4	33	5	4.5	GS1354	C OPO4-P=5.10mg/l, TN=3mg
% Compl. Average	100	100	100	91	83	100	***	***
	4797.75	7.55	2.62	91.17	91.92	6.03	*****	*****

The samples are received at the Laboratory on the day of sampling. The above test methods are based on Standard Methods for the examination of Water and Waste Water, 21st Edition 2005, APHA, AWWA, WEF. C = Composite Sample, G = Grab Sample. The compliance value may be varied on items marked with an \* by the application of uncertainty of measurement values on reverse Page Chemical Procedure Numbers(CP No.) for INAB accredited tests are as follows:  
CP NO. 1 = B.O.D. CP NO. 3 = S.S. CP NO.20 = TP-P  
CP NO. 5 = pH CP NO. 6 = C.O.D. CP NO. 7 = Cl<sup>-</sup> CP NO.22=Ammonia(KONELAB)  
CP NO.23 = OPO4-P(KONELAB) CP NO.24 = Chloride (KONELAB) CP NO.25=Sulphate(KONELAB)  
This report relates only to the samples listed above. This report shall not be reproduced except in full and only with the approval of the testing laboratory. Cork County Council is not accredited by INAB for tests marked with \$. Kg loadings based on flows as supplied by the company. ~ indicates results that have been edited.

Reported by: V. Hannon Date: 28/01/09

Ms. V. Hannon Technical Manager   
Deputy Technical Manager

CTR 001 Issue No. 36 November 2007 <sup>VH</sup> October 2008

**APPENDIX 6A - AMBIENT MONITORING – RIVER LEE UPSTREAM OF PLANT**

<b>Sample Date</b>	07/02/08	06/03/08	03/04/08	06/05/08	05/06/08	10/07/08	21/08/08
<b>Sample</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>
<b>Sample Code</b>	GS040	GS154	GS233	GS385	GS491	GS633	GS792
<b>Flow M<sup>3</sup>/Day</b>	--	--	--	--	--	--	--
<b>pH</b>	7.6	7.8	--	8	7.6	--	7.5
<b>Temperature °C</b>	--	--	--	--	--	--	--
<b>Cond 20°C</b>	--	177	141	--	173	--	--
<b>SS mg/L</b>	<2.5	<2.5	3	<2.5	4	<2.5	3
<b>NH<sub>3</sub> mg/L</b>	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
<b>BOD mg/L</b>	<1.0	2.03	1.12	<1.0	<1.0	--	<1.0
<b>COD mg/L</b>	<21	--	--	--	--	0.8	--
<b>TN mg/L</b>	2.7	--	--	--	1.3	--	--
<b>Nitrite mg/L</b>	--	--	--	--	--	--	--
<b>Nitrate mg/L</b>	--	--	--	--	--	--	--
<b>TP mg/L</b>	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20
<b>O-PO<sub>4</sub>-P mg/L</b>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>SO<sub>4</sub> mg/L</b>	<30	<30.0	--	--	--	--	--
<b>Chromium mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Copper mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Lead mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Nickel mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Zinc mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Boron mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Cadmium mg/L</b>	<0.02	--	<0.02	--	--	<0.02	<0.02
<b>Barium mg/L</b>	<0.02	<0.02	<0.02	--	--	0.043	0.039

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**APPENDIX 6B - AMBIENT MONITORING – RIVER LEE UPSTREAM OF  
PLANT**

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See attached A3 sheet





**APPENDIX 7A - AMBIENT MONITORING – RIVER LEE DOWNSTREAM OF PLANT**

<b>Sample Date</b>	07/02/08	06/03/08	03/04/08	06/05/08	05/06/08	10/07/08	21/08/08
<b>Sample</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>	<b>RIVER</b>
<b>Sample Code</b>	GS041	GS157	GS236	GS387	GS490	GS635	GS791
<b>Flow M<sup>3</sup>/Day</b>	--	--	--	--	--	--	--
<b>pH</b>	7.6	7.9	--	7.9	7.7	--	7.5
<b>Temperature °C</b>	--	--	--	--	--	--	--
<b>Cond 20°C</b>	--	176	141	--	178	131.2	--
<b>SS mg/L</b>	3	<2.5	3	<2.5	4	<2.5	3
<b>NH<sub>3</sub> mg/L</b>	<0.1	<0.1	<0.1	<0.1	--	--	<0.1
<b>BOD mg/L</b>	1.27	1.42	1.39	<1.0	<1.0	--	<1.0
<b>COD mg/L</b>	<21	--	--	--	--	--	--
<b>TN mg/L</b>	1.9	--	3.6	--	<0.5	6.9	--
<b>Nitrite mg/L</b>	--	--	--	--	--	--	--
<b>Nitrate mg/L</b>	--	--	--	--	--	--	--
<b>TP mg/L</b>	<0.02	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20
<b>O-PO<sub>4</sub>-P mg/L</b>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>SO<sub>4</sub> mg/L</b>	<30	<30.0	--	--	--	--	--
<b>Chromium mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Copper mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Lead mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	0.022
<b>Nickel mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Zinc mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Boron mg/L</b>	<0.02	<0.02	<0.02	--	--	<0.02	<0.02
<b>Cadmium mg/L</b>	<0.02	--	<0.02	--	--	<0.02	<0.02
<b>Barium mg/L</b>	<0.02	<0.02	<0.02	--	--	0.035	0.039

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**APPENDIX 7B - AMBIENT MONITORING – RIVER LEE DOWNSTREAM OF  
PLANT**

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See attached A3 sheet

