Dublin City Council
Comhairle Cathrach Bhaile Átha Cliath

Annual Environmental Report, 2011

Greater Dublin Area Agglomeration

Waste Water Discharge Licence No D0034-01

Contents

1. Introduction and Background to the 2011 AER

Summary Report for 2011

Ringsend Wastewater Treatment Plant

The Ringsend Wastewater Treatment Plant was licensed by the EPA (register number D0034-01) on 27th July, 2010, to discharge treated wastewater effluent to the Lower Liffey Estuary. The Lower Liffey Estuary is designated as a "sensitive area" under Urban Wastewater Treatment Regulations 2001 (S.I.254 of 2001).

The activity licensed under the Waste Water Discharge (Authorisation) Regulations, 2007, is:

Discharges from Agglomerations with a Population Equivalent of more than 10,000

The Greater Dublin agglomeration served by the Ringsend plant includes all the areas of Dublin City and South Dublin County Councils, and parts of Fingal, Dun Laoghaire Rathdown and Meath County Councils. The licence was issued by the EPA to all five contributory local authorities.

The Greater Dublin agglomeration is the largest agglomeration in Ireland, with a measured population equivalent in 2011 of 2.49 million (maximum weekly average) and an annual mean PE of 1.74 million. Influent is composed of domestic wastewater, commercial wastewater, licensed trade effluents, surface water from combined sewers, surface water infiltration, groundwater infiltration, saline infiltration and tankered wastewaters.

Condition 6.10 of the licence requires the submission of an annual environmental report (AER), covering the previous calendar year, in compliance with Schedule D of the licence. This report details the performance of the site from January to December, 2011, and has been prepared in compliance with the EPA Guidance on Preparation and Submission of the Annual Environmental Report (AER) for Waste Water Discharge Licences for 2011, dated 30/01/12.

Wastewater Treatment Activity

The Works consists of essentially two treatment activities, namely wastewater treatment and solids treatment.

Wastewater Treatment

The various treatment stages include the following:

Flow measurement
Fine screening (6mm)
Grit removal (aerated retention tanks)
Primary settlement (lamella plates)
Fats oil and grease removal
Biological treatment (sequencing batch reactors)
Ultraviolet disinfection (during bathing season)
Storm water treatment (storage /screening/ settlement / return / overflow)
Ventilation and odour control (all covered channels and tanks)

Solids Treatment

The sludge produced on site consists of primary settled sludge (3% dry solids) and surplus activated sludge (SAS). The SAS is thickened by means of rotary drum thickeners to produce thickened SAS (TSAS) at 3% dry solids.
There are 2 main sludge streams as follows :
Stream 1 – All of the TSAS and a portion of the primary sludge is first screened to 10mm and then dewatered by centrifuges to 15% dry solids. This is then put through the thermal hydrolysis process (Cambi system) prior to mesophilic anaerobic digestion. After digestion, a large portion of the digested

sludge goes to the drying process where it is mixed with the balance of the primary sludge (also screened to 10mm). This mixture is first dewatered and then dried to produce Biofert at 92% dry solids.

Stream 2 – The balance of the digested sludge which does not go to the dryers is dewatered to 26% dry solids and leaves the site as Biocake. See Celtic Anglian (CAW) Schematic in Appendix (1) of the Dublin City Council submission (Appendix 1 of this document).

Compliance Issues

In January, 2011, the secondary treatment system was inhibited during severe, sub zero, weather conditions, which caused the water temperature to fall below the minimum design level. This caused a lack of compliance in Quarter 1 with the Emission Limit Values (ELV's) set for CBOD, COD and TSS which was not typical of the plant performance. Although the performance of the plant recovered in Quarter 2, this caused an annual lack of compliance with the ELV's set for CBOD, COD and SS. Maximum concentration exceedances (detailed in Condition 2.1.2 of the licence) occurred in 2011 in 5 of 138 samples tested for CBOD (3.6%), 4 of the 242 samples tested for COD (1.7%) and in 12 of the 242 samples tested for SS (5.0%). Lack of compliance with ELV's set for Total Nitrogen and Total Phosphorus continued through 2011. This is due to lack of on-site treatment systems for these parameters. See section 2.2 of this report.

Complaints / Incidents

Complaints received during 2011 are summarised in Section 3.1. Incidents reported to the EPA during 2011 are summarised in Section 3.2. Severe weather impacts on the treatment works processes in Q1 causing lack of compliance with ELV's were notified to the EPA. See also CAW report to Dublin City Council in Appendix (2) of the Dublin City Council submission (Appendix 1 of this document). Non-compliance with ELV's set for Total Nitrogen, Total Phosphorus and other parameters was notified quarterly to the EPA during 2011.

Receiving Water Quality

A total of 6 surveys were carried out in 2011 at sampling points (specified by the EPA in the licence) in the Liffey, Liffey and Tolka Estuaries and Dublin Bay. These indicate phosphate-P impact of the discharge on the Liffey and Tolka Estuaries at some locations with little impact of the discharge on Dublin Bay waters. See section 2.3.1. and 2.3.2.

Bathing Water Quality

Section 2.3.3 summarises monitoring at 3 EC designated bathing waters (Dollymount, Sandymount and Merrion Strands) and 5 other sampling points specified in the licence. Dollymount and Merrion Strands complied during the 2011 Bathing Season. Sandymount did not comply during the 2011 season due to elevated E. Coli counts.

Significant Improvement Works / Projects Carried out in 2011

See section 4 for details of the following improvement works /projects carried out in 2011 :

- EIS preparation for Ringsend Extension
- North Dublin WWTP Project
- Long Sea Outfall Project
- Additional Secondary Treatment / Effluent fine screens / SBR covers by 2015 / SBR's to be dedicated to CBOD, TSS and COD removal
- Saline Water Infiltration Project
- Project to Prioritise CSO's – 15 top CSO's over 3 years – 2012 to 2015

2. Monitoring Reports Summary

2.1. Summary Report on Influent Monitoring

2.1.1 Monthly Influent Monitoring Results for BOD/COD/SS/Total N/Total P

Influent Quality

Influent monitoring data for BOD, COD, SS, Total N and Total P for the 24-hour influent composite samples taken in 2011, is presented below. Automatic samplers are run from 09.00 hours on the date prior to the sample collection date.

Annual influent summary statistics are tabulated below for the 5 chemical parameters and the 2 loading parameters required:

	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	TP (mg/l P)	TN (mg/l N)	Loading (m3/d)	Loading (PE/day)
Number of Samples	139	238	238	99	99	365	139
Maximum Result	462	980	511	7.63	65.7	1,488,090	2,486,830
Annual Mean	273	549	241	5.46	38.68	397,533	1,735,449

Comment:

Influent strength depends on discharges of wastewaters from the extensive upstream agglomeration within any 24 hour sampling period. The 24 hour composite influent sewage quality at Ringsend is strongly influenced by rainfall and infiltration prior to and during sample collection dates.

The 5 influent parameters lie within the normal urban wastewater ranges, with annual mean COD to BOD ratio equal to **2.01**

2.1.2 Influent Flow Monitoring

Influent flow is measured on a daily basis at the plant. Summary flow statistics on the influent to the plant during 2011 are tabulated below:

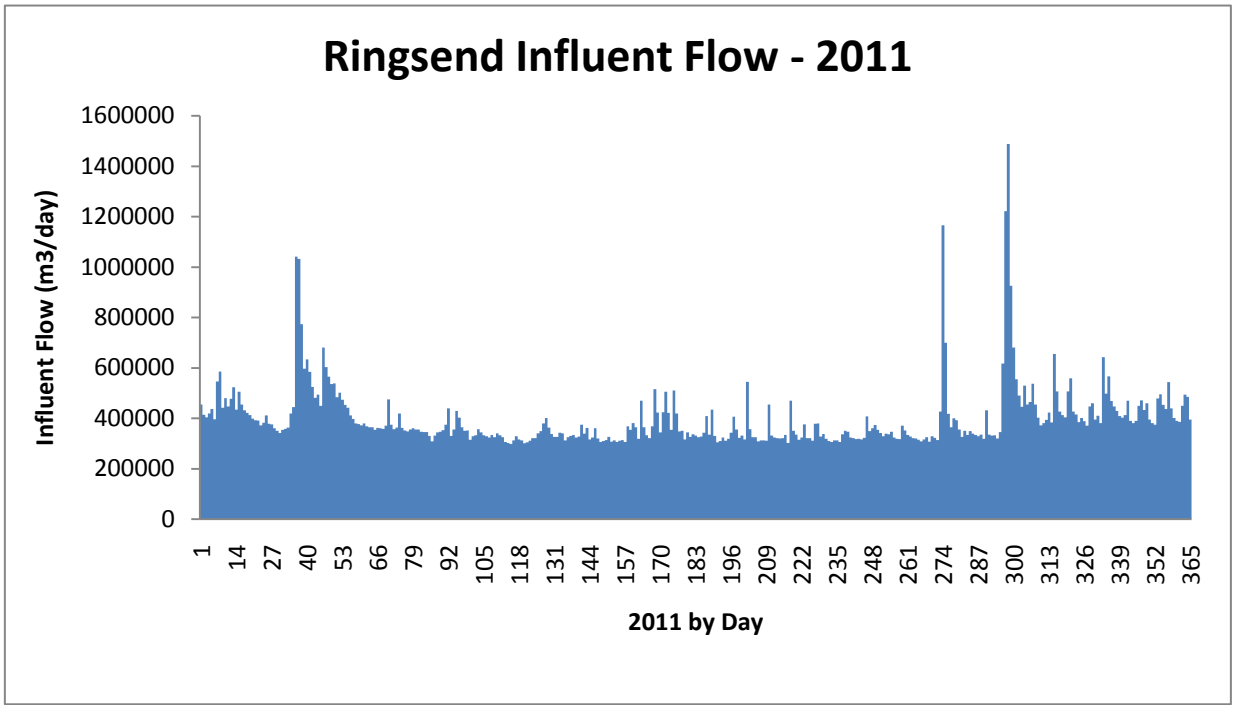
2011 Influent Flow Statistics	Quantity
Annual Influent Flow (Influent to SBR's + Stormwater Flow)	**145,099,483 m3**
Annual Stormwater Flow	**2,752,789 m3**
Annual Influent Flow to Treatment	**142,346,694 m3**
N (Number of Influent Flow Measurements)	**365**
Mean Daily Influent Flow	**397,533 m3**
Median Daily Influent Flow	**360,796 m3**
Minimum Daily Flow	**298,600 m3**
Maximum Daily Flow / Minimum Daily Flow	**4.98**

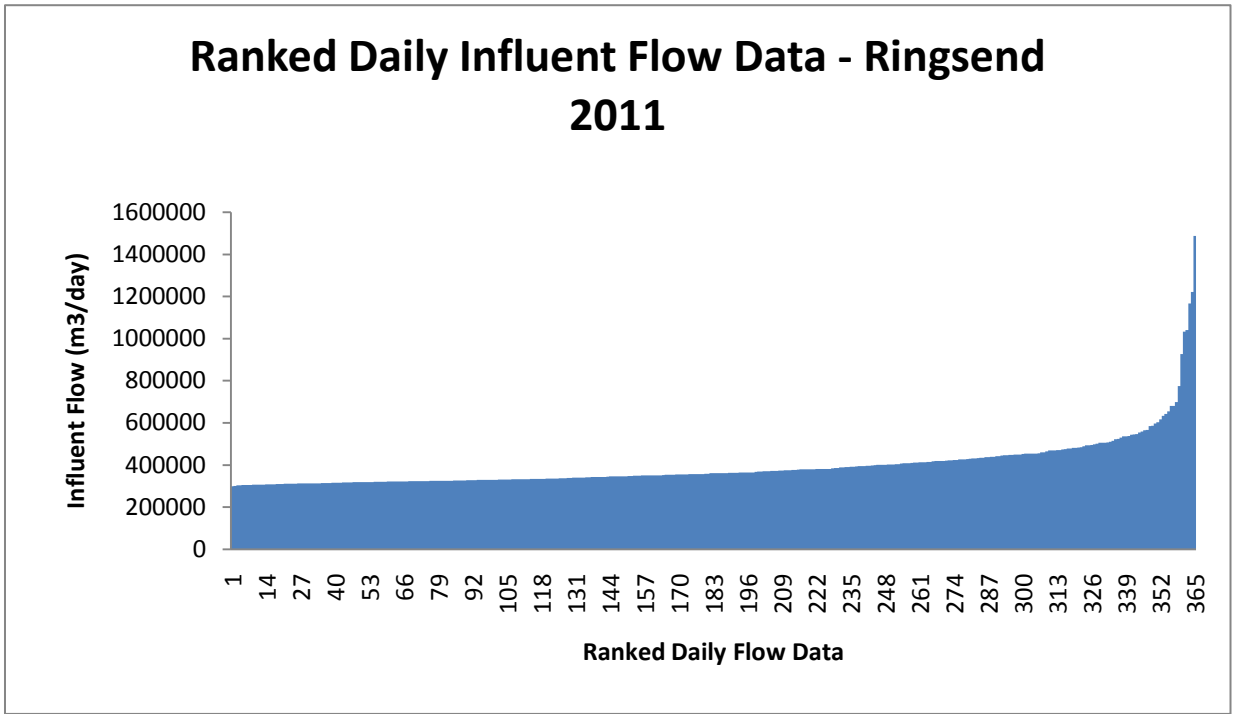
Comment:

Total influent flow data above represents influent wastewater from the agglomeration (5 lines) arriving at the Ringsend Waste Water Treatment Plant. It does not include wastewater lost in combined sewer overflows in the upstream agglomeration.

The wet weather (maximum) hydraulic flow to the Ringsend plant during 2011 occurred on 24/10/11 and was a factor of **4.98** times higher than the dry weather (minimum) flow. This quantifies the large range of influent flows experienced at the Ringsend plant and is caused mainly by surface water ingress after rainfall and by other surface water infiltration in the agglomeration. See plots.

The total Stormwater Overflow during 2011 was **2,752,789 cubic metres**. This occurred on **23** dates during 2011.
Between 20/09/11 and 22/09/11 primary treated effluent was diverted to the receiving waters during an essential engineering survey of the final effluent culvert. This was notified to the EPA.





This plot illustrates the daily 2011 Influent Flow data ranked from Minimum flow to Maximum Flow.

2.2. Discharges from the Agglomeration (Dublin SW1)

Monitoring of the primary discharge from the Ringsend Wastewater Treatment Plant during 2011 is summarised in the recommended summary table overleaf.

2.2.1 Monitoring Frequency

Monitoring frequency complied with (far exceeded) the requirements of the licence.
Test result numbers for parameters with Emission Limit Values (ELV's) and all others specified in Schedule B1 of the licence have been included in the summary table.

2.2.2 Exceedances of Emission Limit Values

Severe sub-zero weather conditions occurred in January, 2011, which seriously affected the performance of the secondary treatment system at Ringsend in Quarter 1. This caused exceedances in the ELV's for BOD / COD / TSS set in the licence. The secondary treatment system had recovered by April, 2011, but exceedances in Quarter 1 affected the annual compliance results for these parameters. See Celtic Anglian Water report in Appendix (2.1) of the Dublin City Council submission (Appendix 1 of this document).

Suspended Solids (TSS) exceedances in 2011 were also caused by wind induced wave action in the upper deck of SBR tanks and by the lack of SBR tank redundancy for maintenance operations.

Effluent concentrations of Total Nitrogen and Total Phosphorus cannot achieve the ELV's set in the licence, as there are currently no specific treatment systems in place.
The duration of TN and TP exceedances were daily during 2011.

Exceedances of ELV's during 2011 were notified to the EPA on a quarterly basis. See Section 3 of this report.

The significance of the impact of effluent ELV exceedances on the receiving waters is discussed in section 2.3 of this report.

Effluent pH was in full compliance with the ELV set in the licence and the effluent E. Coli count (post UV sterilisation)) complied with the ELV set during the 2011 bathing season.

2.2.3 Effluent Flow Data (DublinSW1)

A summary of effluent flow data for 2011 is tabulated below.

No. of Measurements	**365 (daily)**
Annual Total Flow (cubic metres)	**144,744,596**
Mean Daily Flow (cubic metres)	**396,561**
Maximum Daily Flow (cubic metres)	**895,450**
Minimum Daily Flow (cubic metres)	**239,878**

2011 Effluent Monitoring Summary Table

Section 2.2 Discharges from the Agglomeration (DublinSW1) cont.

Parameter :	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Total P (mg/l)	Total N (mg/l)	pH	Toxicity TU	Effluent Flow Data 2011	Comments
WWDL ELV	25	125	35	1	10	6 - 9	5*	-	
WWDL ELV (Condition 2)	50	250	88	1.2	12.0			-	* to be agreed with EPA
Number of Sample Results Required	26	26	26	26	26	365	1	Daily	
Number of Effluent Sample Results	138	241	241	99	97	241	0	365	
Number of Effluent Sample Results above WWDL ELV	28	19	85	99	97	0		-	Failure to comply with ELV's set for BOD and COD due to severe weather in Q1. Failure to comply with ELV for TSS due in part to wind agitation in upper SBR tanks. Failure to comply with ELV's set for TP and TN due to lack of treatment facilities on site.
Number of Effluent Sample Results above WWDL ELV (Condition 2)	5	4	12	98	93	-		-	
Annual Mean	18.3	82.56	35.04	3.65	18.95	N/A		396,561 (m3/day)	
Max. No. of ELV Exceedances (B.3)	11	18	18	9	9	18		-	
Overall Compliance	Fail	Fail	Fail	Fail	Fail	Pass		-	

2011 Effluent Monitoring Summary Table

Parameter	DIN (mg/l N)	Ammonia (mg/l N)	Phosphate (mg/l P)	OFG (mg/l)	E.Coli ** (MPN/100ml)	Enterococci (CFU/100ml)	Visual Inspection Colour ***	Comments
WWDL ELV	-	-	-	-	100,000	-	-	** 01/05/11 to 31/08/11 E.Coli and Enterococci results reported for discrete post UV samples taken
WWDL ELV (Cond.2)	-	-	-	-	150,000	-	-	*** Hazen Units – Laboratory Test
Number of Sample Results Required	26	26	26	4	Biannual	Biannual	Daily	
Number of Effluent Sample Results	240	240	241	99	61	47	241	
Number of Effluent Sample Results above WWDL ELV	-	-	-	-	1	-	-	
Number of Effluent Sample Results above WWDL ELV with Condition 2 interpretation	-	-	-	-	0	-	-	
Annual Mean	15.67	8.83	2.60	14	N/A	N/A	49	
Max. No. of ELV Exceedances (B.3)	-	-	-	-	6	-	-	
Overall Compliance	-	-	-	-	Pass	-	-	

2.3. Ambient Monitoring Summary

Licence D0034-01 requires monitoring and assessment of the impacts of the Ringsend effluent discharge on receiving water quality at agreed sampling locations as follows:

- 9 Ambient Surface Waters (ASW2 – ASW10) covering sampling points in the lower Liffey Estuary in the near field of the discharge (ASW2 to ASW5), and points on the River Liffey and River Tolka (ASW6 to ASW10)
- 11 additional monitoring points on the Liffey and Tolka Estuaries (Surface and Depth)
- 9 monitoring locations in Dublin Bay (Surface and Depth)
- 8 shoreline locations, 3 of which are EC designated bathing waters (Dollymount Bathing Zone, Sandymount and Merrion Strands).

See map of monitoring locations agreed with the EPA in Appendix (2.2) of the Dublin City Council submission (Appendix 1 of this document).

The Liffey Estuary from Islandbridge Weir to the Poolbeg Lighthouse including the River Tolka Basin and the South Bull Lagoon is designated as a "sensitive area" by Part 2 of Schedule 3 of the Urban Wastewater Regulations, SI 254 of 2001. The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009), sets physico-chemical standards for High and Good status in transitional and coastal water bodies to be complied with outside the allocated mixing zone of a licensed discharge.

The Rivers Liffey and Tolka and their estuaries are classified under the Water Framework Directive as Transitional Water Bodies. The outer estuary / Dublin Bay is classified as a Coastal Water Body.

The parameter suite set in the marine monitoring section of the licence was tested in all samples (Temperature / Dissolved Oxygen / BOD / Salinity / Dissolved Inorganic Nitrogen / Total Oxidised Nitrogen / Molybdate Reactive Phosphate / Ammonia / Chlorophyll)

Tidal Conditions during the 6 monthly surveys are tabulated below:

Survey No.	Date	High Tide Time	Height (m OD)	Low Tide Time	Height (m OD)	Tidal Status during Survey
1	13/04/11	07.53	3.38	13.57	0.98	Ebbing
	14/04/11	09.00	3.57	15.00	0.72	Ebbing
2	03/05/11	12.34	3.72	06.02	0.82	Flowing
	04/05/11	13.05	3.72	06.30	0.79	Flowing
	11/05/11	06.10	3.56	12.19	0.92	Ebb to Flow
	26/05/11	07.29	3.45	13.25	1.21	Ebbing
3	15/06/11	12.00	3.97	05.15	0.75	Flowing
	16/06/11	12.49	3.96	06.04	0.64	Flowing
	21/06/11	16.33	3.47	09.53	0.85	Ebb to Flow
4	13/07/11	11.04	3.78	16.41	0.99	Flow to Ebb
5	17/08/11	14.29	3.69	07.30	0.68	Flowing
	18/08/11	15.04	3.66	08.35	0.84	Flowing
6	20/09/11	05.05	3.33	10.44	1.53	Ebb to Flow

2.3.1 Marine Monitoring – ASW2 to ASW10

A total of 6 surveys were carried out in the Liffey and Tolka Estuaries during 2011 at the designated locations in the licence, tabulated below:

EPA Map Code	Licence Code	Sampling Point
		Liffey Estuary Lower
	ASW2	25 metres North of Poolbeg Wall
	ASW3	50 metres North of Poolbeg Wall
	ASW4	75 metres North of Poolbeg Wall
	ASW5	100 metres North of Poolbeg Wall
		Liffey
DB000	**ASW6**	Liffey City, Downstream Islandbridge Weir
DB010	**ASW7**	Liffey City, Heuston Station, Upstream of Camac Outfall
	ASW8	Liffey City, Winetavern Street Bridge
		Liffey Estuary Lower
DB210	**ASW9**	Liffey (Surface), Downstream of East Link Toll Bridge
		Tolka
DB310	**ASW10**	Tolka, Downstream of Annesley Bridge

A summary of transitional water quality compliance with SI 272 of 2009 for the above locations is presented in Table 2.3.1. This shows compliance with temperature, dissolved oxygen (lower) and BOD at all locations on all survey dates.

A single dissolved oxygen (Upper) exceedance (slight) occurred in the Tolka at DB 310 (Downstream of Annesley Bridge). The result was 132% saturation at 2.9 PSU.

Four Molybdate Reactive Phosphate (MRP) exceedances occurred, three in the near field of the Ringsend discharge SW1, and one in the Tolka at DB 310 (Downstream of Annesley Bridge). Non-compliant MRP results were as follows:

Location	MRP 2011 Median Result	SI 272 Standard	Comment
ASW2 (Surface)	114 ug/l as P	40 ug/l as P at 35 PSU	Close to SW1 Outfall
ASW2 (Depth)	48 ug/l as P	40 ug/l as P at 35 PSU	Close to SW1 Outfall
ASW3 (Surface)	147 ug/l as P	40 ug/l as P at 35 PSU	Close to SW1 Outfall
ASW10 (Surface)	96 ug/l as P	60 ug/l as P at 0 PSU	Elevated MRP in River Tolka

2.3.2 Marine Monitoring – Transitional Water Monitoring – Points Agreed with the EPA

A total of 6 surveys were carried out in the Liffey and Tolka Estuaries during 2011, at 11 locations agreed with the EPA, tabulated below:

EPA Map Code	Sampling Point
	Liffey Estuary Lower
DB 120	Dodder / Grand Canal Basin
DB 210	East Link Toll Bridge
DB 220	RO RO Ramp No.5 (Old Treatment Works Outfall)
DB 410	Ringsend Cascade
DB 420	Poolbeg Lighthouse
	Liffey Estuary Upper
DB 020	Matt Talbot Bridge
	Tolka Estuary
DB 320	East Point Business Park Bridge
DB 330	Castle Avenue
DB 340	Clontarf Boat Club
DB 350	South Lagoon at Bull Wall Wooden Bridge
	Tolka
DB 300	Upstream of Drumcondra Bridge

A summary of transitional water quality compliance with SI 272 of 2009 for the above locations is presented in Table 2.3.2. This shows full compliance with temperature and dissolved oxygen (lower) at all locations on all survey dates.

One dissolved oxygen (upper) exceedance (slight) occurred in the Liffey at DB 020 (Matt Talbot Bridge, Surface). The result was 131% saturation at 5.73 PSU.
One dissolved oxygen (upper) exceedance (slight) occurred in the Tolka Estuary at DB 340 (Clontarf Boat Club, Depth). The result was 123% saturation at 33.4 PSU.
Dissolved oxygen (upper) exceedances (slight) occurred in the Tolka at DB 300 (Upstream of Drumcondra Bridge) on two survey dates. Results were 135% saturation at 0 PSU and 131% saturation at 0 PSU.

One BOD exceedance(slight) occurred in the Liffey at DB 020 (Matt Talbot Bridge, Surface). The result was 5 mg/l O_2.

Nine Molybdate Reactive Phosphate (MRP) exceedances occurred as follows :

Location	MRP 2011 Median Result	SI 272 Standard	Comment
	Liffey		
DB 410 (Surface)	231 ug/l P	< 40 ug/l P	SW1 Discharge Impact
	Tolka		
DB 320 (Surface)	121 ug/l P	< 60 ug/l P	River / SW1 Impacts
DB 320 (Depth)	133 ug/l P	< 60 ug/l P	River / SW1 Impacts
DB 330 (Surface)	75 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 330 (Depth)	59 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 340 (Surface)	64 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 350 (Surface)	57 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 350 (Depth)	51 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 300 (Surface)	65 ug/l P	< 60 ug/l P	River / SW1 Impacts

2.3.3 Marine Monitoring – Coastal Water Monitoring – Dublin Bay - Points Agreed with the EPA

A total of 6 surveys were carried out at 9 locations in Dublin Bay during 2011. These locations - 6 coastal waters and 3 Irish Sea locations (*), agreed with the EPA, are tabulated below :

EPA Map Code	Sampling Point
	Dublin Bay
DB 610	Off Bailey Lighthouse, Howth
DB 430	1 km. NE Poolbeg Lighthouse
DB 450	South Bull Buoy, 1 km. SE Poolbeg Lighthouse
DB 510*	2.5 km. ENE Poolbeg Lighthouse
DB 540*	2.5 km. SSE Poolbeg Lighthouse
DB 550	No.4 Buoy, 2.5 km. E of S Poolbeg Lighthouse
DB 560	Drumleck Point, Howth, 5 km. ENE Poolbeg Lighthouse
DB 570*	5 km. ESE Poolbeg Lighthouse
DB 580	Dun Laoghaire, 5 km. E of S Poolbeg Lighthouse

These locations were sampled at surface (S) and depth (D).

A summary of coastal water quality compliance with SI 272 of 2009 for the above locations is presented in Table 2.3.3. This shows full compliance with temperature, dissolved oxygen (lower) and dissolved oxygen (upper) and Chlorophyll at all 9 locations on all survey dates.

The Dissolved Inorganic Nitrogen (DIN) standard for coastal waters was complied fully with at DB 580 (off Dun Laoghaire), at DB 610 (Surface), DB 450 (Depth) and DB 560 (Depth) on all survey. dates. All other sampling points complied fully at all locations on the surveys carried out in May, June, July, August and September. The survey in April (14th.) was carried out during ebb tidal conditions. Exceedances in DIN occurred in samples from the April survey only, at the locations tabulated below :

Location	DIN Result	PSU	Comment
DB 610 (Depth)	798 ug/l N	33.2	Doldrum Bay Discharge Impact
DB 430 (Surface)	497 ug/l N	31.0	River / SW1 Impacts
DB 430 (Depth)	317 ug/l N	33.1	River / SW1 Impacts
DB 450 (Surface)	2278 ug/l N	31.9	River / SW1 Impacts
DB 550 (Surface)	2820 ug/l N	31.8	River / SW1 Impacts
DB 550 (Depth)	434 ug/l N	33.2	River / SW1 Impacts
DB 560 (Surface)	1218 ug/l N	32.8	Doldrum Bay Discharge Impact

SI 272 Standard for HIGH Status : DIN < 170 ug/l
GOOD Status : DIN < 250 ug/l (35 PSU)
DIN < 2,600 ug/l (0 PSU)

Impacts of the SW1 effluent discharge on coastal water DIN are identified at 3 sampling locations :

- DB 430 (Surface and Depth), 1 km. NE of Poolbeg Lighthouse under ebbing tidal conditions
- DB 550 (Surface and Depth), No.4 Buoy, 2.5 km. E of S Poolbeg Lighthouse under ebbing tidal conditions
- DB 450 (Surface), South Bull Buoy, 1 km. SE of Poolbeg Lighthouse under ebbing tidal conditions

Riverine DIN in the transitional waters of the Liffey and Tolka estuaries is likely to contribute to the DIN recorded at the above locations especially during ebbing tidal conditions.

2.3.4 Shoreline Monitoring – 2011 Bathing Season

Bathing Water is currently regulated by the Bathing Water Quality Regulations, 2008 (SI No.79 of 2008).

Shoreline sampling was carried out at 8 locations during the 2011 bathing season (Dollymount North, Dollymount Bathing Zone*, Dollymount South, Bull Wall, Poolbeg, Half Moon Club, Sandymount* and Merrion*).

A summary of bathing water quality compliance with SI 272 of 2009 for the above locations, three of which are designated* is presented in Table 2.3.4.

In summary:

Designated bathing waters at Dollymount (Bathing Zone) and Merrion Strand complied in 2011 with the Bathing Water Regulations. Sandymount did not comply due to elevated E.Coli counts.
This is the subject of further investigations.

The remaining 5 locations are not designated bathing waters.

Table 2.3.1 Marine Monitoring Data Compliance with SI 272 of 2009 – Transitional Water Standards

Summary for 2011 (ASW2 to ASW10) - Designated as Sensitive to Eutrophication (UWW Regulations)

Parameter	EPA MAP Reference Code	Temperature	D.O. Lower % Sat	D.O. Upper % Sat	BOD	MRP
Standard		< 1.5 degrees C within mixing zone*	>70 (0 PSU) > 80 (35 PSU)	<130 (0 PSU) <120 (35 PSU)	< 4.0 (mg/l)	<0.06 mg/l (0-17 PSU) < 0.04 mg/l (35 PSU)
ASW-2 (S)	-	All < 16.4	✓	✓	✓	X (Median value = 114 ug/l P)
(D)	-	All < 16.1	✓	✓	✓	X (Median value = 48 ug/l P)
ASW-3 (S)	-	All < 18.6	✓	✓	✓	X (Median value = 147 ug/l P)
(D)	-	All < 16.0	✓	✓	✓	✓
ASW-4 (S)	-	All < 19.0	✓	✓	✓	✓
(D)	-	All < 19.0	✓	✓	✓	✓
ASW-5 (S)	-	All < 19.7	✓	✓	✓	✓
(D)	-	All < 15.9	✓	✓	✓	✓
ASW-6 (S)	DB 000	All < 17.2	✓	✓	✓	✓
ASW-7 (S)	DB 010	All < 16.6	✓	✓	✓	✓
ASW-8 (S)	-	All < 16.4	✓	✓	✓	✓
ASW-9 (S)	DB 210	All < 16.2	✓	✓	✓	✓
ASW-10 (S)	DB 310	All < 15.3	✓	X (132% at 2.9 PSU)	✓	X (Median value = 96 ug/l P)

***Note that no mixing zone was set in Licence D0034-01**

Table 2.3.2 Marine Monitoring Data Compliance with SI 272 of 2009 – Transitional Water Standards

Summary 2011 (Liffey and Tolka Estuary Sampling Points) - also Sensitive to Eutrophication

Parameter	EPA MAP Reference Code	Temperature	D.O. Lower % Sat	D.O. Upper % Sat	BOD	MRP
SI 272 Standard		< 1.5 degrees C within mixing zone*	>70 (0 PSU) > 80 (35 PSU)	<130 (0 PSU) <120 (35 PSU)	< 4.0 (mg/l)	<0.06 mg/l (0-17 PSU) < 0.04 mg/l (35 PSU)
Liffey						
130800 (S)	DB 120	All < 16.3	✓	✓	✓	✓
130801 (D)	DB 120	All < 15.9	✓	✓	✓	✓
130810 (S)	DB 210	All < 16.3	✓	✓	✓	✓
130811 (D)	DB 210	All < 15.9	✓	✓	✓	✓
130820 (S)	DB 220	All < 17.0	✓	✓	✓	✓
130821 (D)	DB 220	All < 16.0	✓	✓	✓	✓
130830 (S)	DB 410	All < 18.8	✓	✓	✓	X (Median value = 231 ug/l P)
130831 (D)	DB 410	All < 16.1	✓	✓	✓	✓
130840 (S)	DB 420	All < 15.8	✓	✓	✓	✓
130841 (D)	DB 420	All < 15.7	✓	✓	✓	✓
130870 (S)	DB 020	All < 17.1	✓	X (DO = 131)	X (BOD = 5)	✓
130871 (D)	DB 020	All < 16.0	✓	✓	✓	✓
Tolka						
130900 (S)	DB 320	All < 16.3	✓	✓	✓	X (Median value = 121 ug/l P)
130901 (D)	DB 320	All < 17.3	✓	✓	✓	X (Median value = 133 ug/l P)
130910 (S)	DB 330	All < 17.9	✓	✓	✓	X (Median value = 75 ug/l P)
130911 (D)	DB 330	All < 16.7	✓	✓	✓	X (Median value = 59 ug/l P)
130920 (S)	DB 340	All < 16.7	✓	✓	✓	X (Median value = 64 ug/l P)
130921 (D)	DB 340	All < 16.2	✓	X (DO = 123)	✓	✓
130930 (S)	DB 350	All < 17.1	✓	✓	✓	X (Median value = 57 ug/l P)
130931 (D)	DB 350	All < 17.1	✓	✓	✓	X (Median value = 51 ug/l P)
45076 (S)	DB 300	All < 15.3	✓	X (DO = 131/135)	✓	X (Median value = 65 ug/l P)

Table 2.3.3 Marine Monitoring Data Compliance with SI 272 of 2009 – Coastal Water Standards Summary 2011 (Dublin Bay Sampling Points)

Parameter	EPA MAP Reference Code	Temperature	D.O. Lower % Sat	D.O. Upper % Sat	Chlorophyll Good / Moderate	BOD	MRP	DIN Coastal Waters
SI 272 Standard		< 1.5 degrees C within mixing zone*	>70 (0 PSU) > 80 (35 PSU)	<130 (0 PSU) <120 (35 PSU)	5 ug/l (Med) 10 ug/l (90%-ile)	< 4.0 (mg/l)	<0.06 mg/l (0-17 PSU) < 0.04 mg/l (35 PSU)	<0.17mg/l 34.5PSU <2.6 mg/l (0 PSU) <0.25 mg/l 34.5PSU
130600 (S)	DB 610	All < 15.5	✓	✓	✓	✓	✓	✓
130601 (D)	DB 610	All < 15.5	✓	✓	✓	✓	✓	Max DIN = 798 ug/l N
130700 (S)	DB 430	All < 15.7	✓	✓	✓	✓	✓	Max DIN = 497 ug/l N
130701 (D)	DB 430	All < 15.4	✓	✓	✓	✓	✓	Max DIN = 317 ug/l N
130710 (S)	DB 450	All < 15.1	✓	✓	✓	✓	✓	Max DIN = 2276 ug/l N
130711 (D)	DB 450	All < 15.3	✓	✓	✓	✓	✓	✓
130720 (S)	**DB 510***	All < 16.1	✓	✓	✓	✓	✓	✓
130721 (D)	**DB 510***	All < 15.5	✓	✓	✓	✓	✓	✓
130730 (S)	**DB 540***	All < 15.1	✓	✓	✓	✓	✓	Max DIN = 376 ug/l N
130731 (D)	**DB 540***	All < 15.3	✓	✓	✓	✓	✓	Max DIN = 499 ug/l N
130740 (S)	DB 550	All < 15.2	✓	✓	✓	✓	✓	Max DIN = 2820 ug/l N
130741 (D)	DB 550	All < 15.4	✓	✓	✓	✓	✓	Max DIN = 434 ug/l N
130750 (S)	DB 560	All < 16	✓	✓	✓	✓	✓	Max DIN = 1218 ug/l N
130751 (D)	DB 560	All < 15.6	✓	✓	✓	✓	✓	✓
130760 (S)	**DB 570***	All < 15.5	✓	✓	✓	✓	✓	✓
130761 (D)	**DB 570***	All < 15.3	✓	✓	✓	✓	✓	✓
130770 (S)	DB 580	All < 15.4	✓	✓	✓	✓	✓	✓
130771 (D)	DB 580	All < 15.3	✓	✓	✓	✓	✓	✓

Table 2.3.4 Shore Monitoring Data Compliance with Bathing Water Regulations, 2008.

Summary from 25th May to September, 2011 (ASW11 to ASW18)

Parameter	Sampling Location:	Faecal Coliform	N	Escherichia Coli	N	Intestinal Enterococci	N	Visual Inspection	N
BW Standard		**NONE**		**100 (cfu/100 mls) (80%-ile) G 2000 (cfu/100 mls) (95%-ile) M**		**100 (cfu/100 mls) (90%-ile) G**			
Licence Monitoring Frequency			**4**		**4**		**4**		**Weekly**
ASW11	Dollymount North	N/A	**0**	N/A	**20**	N/A	**20**	✓	**17**
ASW12 *	**Dollymount Bathing Zone**	N/A	**0**	✓	**20**	✓	**20**	✓	**20**
ASW13	Dollymount South	N/A	**0**	N/A	**21**	N/A	**21**	✓	**18**
ASW14	Bull Wall Causeway	N/A	**0**	N/A	**21**	N/A	**21**	✓	**21**
ASW15	Poolbeg Outall (Main)	N/A	**0**	N/A	**20**	N/A	**19**	✓	**16**
ASW16	Half Moon Club, Southside	N/A	**0**	N/A	**20**	N/A	**20**	✓	**20**
ASW17*	**Sandymount Strand**	N/A	**0**	**X**	**20**	✓	**20**	✓	**20**
ASW18*	**Merrion Strand**	N/A	**0**	✓	**20**	✓	**20**	✓	**20**

2.4. Data Collection and Reporting Requirements under the UWWTD

The Urban Wastewater Returns were uploaded to EDEN on 24/02/2012.

2.5. Pollutant Release and Transfer (PRTR) – Report for Previous Year

The PRTR report for 2011 was submitted to the EPA on the 22nd March 2012. A copy of the relevant extracts is included in this section.

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.13

REFERENCE YEAR	2011

1. FACILITY IDENTIFICATION

Parent Company Name	Dublin City Council
Facility Name	Ringsend Waste Water Treatment Plant
PRTR Identification Number	D0034
Licence Number	D0034-01

Waste or IPPC Classes of Activity

N	class_name
30.4	General

Address 1	Block 4, Floor 4
Address 2	Civic Offices
Address 3	Wood Quay
Address 4	Dublin 8
	Dublin
Country	Ireland
Coordinates of Location	-6.19584 53.3388
River Basin District	IEEA
NACE Code	3700
Main Economic Activity	Sewerage
AER Returns Contact Name	Pat Cronin
AER Returns Contact Email Address	pat.cronin@dublincity.ie
AER Returns Contact Position	Executive Manager
AER Returns Contact Telephone Number	222 2069
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
5(f)	Urban waste-water treatment plants

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	
Have you been granted an exemption ?	
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	24.9	0.0	24.9
02	Carbon monoxide (CO)	E	ESTIMATE	EPA UWWTP Tool v4.0	10094.1	14951.2	0.0	4857.1
03	Carbon dioxide (CO2)	E	ESTIMATE	EPA UWWTP Tool v4.0	2974950.0	37701138.3	0.0	34726188.3
05	Nitrous oxide (N2O)	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	247.4	0.0	247.4
07	Non-methane volatile organic compounds (NMVOC)	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	1533.4	0.0	1533.4
08	Nitrogen oxides (NOx/NO2)	E	ESTIMATE	EPA UWWTP Tool v4.0	30871.7	45726.5	0.0	14854.8
11	**Sulphur oxides (SOx/SO2)**	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	1449.6	0.0	1449.6

ADD NEW ROW DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

ADD NEW ROW DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

ADD NEW ROW DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Ringsend Waste Water Treatment Plant

Please enter summary data on the quantities of methane flared and / or utilised	**T (Total) kg/Year**	**M/C/E**	**Method Used**		**Facility Total Capacity m3 per hour**	
			Method Code	**Designation or Description**		
Total estimated methane generation (as per site model)	0.0				N/A	
Methane flared	0.0				0.0	(Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0				N/A	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
44	1,2,3,4,5,6-hexachlorocyclohexane(HCH)	E	ESTIMATE	EPA WWTP Tool V4.0	0.434	0.442	0.0	0.008
34	1,2-dichloroethane (EDC)	E	ESTIMATE	EPA WWTP Tool V4.0	7.237	7.375	0.0	0.138
25	Alachlor	E	ESTIMATE	EPA WWTP Tool V4.0	1.511	1.54	0.0	0.029
61	Anthracene	E	ESTIMATE	EPA WWTP Tool V4.0	1.532	1.561	0.0	0.029
17	Arsenic and compounds (as As)	E	ESTIMATE	EPA WWTP Tool V4.0	144.62	147.37	0.0	2.75
27	Atrazine	E	ESTIMATE	EPA WWTP Tool V4.0	9.333	9.51	0.0	0.177
91	Benzo(g,h,i)perylene	E	ESTIMATE	EPA WWTP Tool V4.0	0.582	0.593	0.0	0.011
18	Cadmium and compounds (as Cd)	E	ESTIMATE	EPA WWTP Tool V4.0	7.78	7.928	0.0	0.148
28	Chlordane	E	ESTIMATE	EPA WWTP Tool V4.0	0.289	0.295	0.0	0.006
30	Chlorfenvinphos	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
79	Chlorides (as Cl)	E	ESTIMATE	EPA WWTP Tool V4.0	36016735.4	36701710.7	0.0	684975.3
31	Chloro-alkanes, C10-C13	E	ESTIMATE	EPA WWTP Tool V4.0	30.4	30.978	0.0	0.578
19	Chromium and compounds (as Cr)	E	ESTIMATE	EPA WWTP Tool V4.0	53.362	54.377	0.0	1.015
20	Copper and compounds (as Cu)	E	ESTIMATE	EPA WWTP Tool V4.0	256.582	261.462	0.0	4.88
82	Cyanides (as total CN)	E	ESTIMATE	EPA WWTP Tool V4.0	252.921	257.731	0.0	4.81
33	DDT	E	ESTIMATE	EPA WWTP Tool V4.0	1.554	1.584	0.0	0.03
70	Di-(2-ethyl hexyl) phthalate (DEHP)	E	ESTIMATE	EPA WWTP Tool V4.0	181.367	184.816	0.0	3.449
36	Dieldrin	E	ESTIMATE	EPA WWTP Tool V4.0	30.059	30.631	0.0	0.572
37	Diuron	E	ESTIMATE	EPA WWTP Tool V4.0	13.653	13.913	0.0	0.26
38	Endosulphan	E	ESTIMATE	EPA WWTP Tool V4.0	0.9	0.917	0.0	0.017
65	Ethyl benzene	E	ESTIMATE	EPA WWTP Tool V4.0	11.567	11.787	0.0	0.22
88	Fluoranthene	E	ESTIMATE	EPA WWTP Tool V4.0	1.998	2.036	0.0	0.038
83	Fluorides (as total F)	E	ESTIMATE	EPA WWTP Tool V4.0	50625.93	51588.75	0.0	962.82
40	Halogenated organic compounds (as AOX)	E	ESTIMATE	EPA WWTP Tool V4.0	345.484	352.054	0.0	6.57
42	Hexachlorobenzene (HCB)	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
43	Hexachlorobutadiene (HCBD)	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
89	Isodrin	E	ESTIMATE	EPA WWTP Tool V4.0	8.501	8.663	0.0	0.162
23	Lead and compounds (as Pb)	E	ESTIMATE	EPA WWTP Tool V4.0	143.989	146.727	0.0	2.738
45	Lindane	E	ESTIMATE	EPA WWTP Tool V4.0	0.362	0.369	0.0	0.007
21	Mercury and compounds (as Hg)	E	ESTIMATE	EPA WWTP Tool V4.0	9.499	9.68	0.0	0.181
68	Naphthalene	E	ESTIMATE	EPA WWTP Tool V4.0	66.292	67.553	0.0	1.261
22	Nickel and compounds (as Ni)	E	ESTIMATE	EPA WWTP Tool V4.0	1122.224	1143.567	0.0	21.343
64	Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)	E	ESTIMATE	EPA WWTP Tool V4.0	9.586	9.768	0.0	0.182
69	Organotin compounds (as total Sn)	E	ESTIMATE	EPA WWTP Tool V4.0	1.446	1.474	0.0	0.028
48	Pentachlorobenzene	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
71	Phenols (as total C)	E	ESTIMATE	EPA WWTP Tool V4.0	1788.238	1822.247	0.0	34.009
50	Polychlorinated biphenyls (PCBs)	E	ESTIMATE	EPA WWTP Tool V4.0	1.191	1.214	0.0	0.023
72	Polycyclic aromatic hydrocarbons (PAHs)	E	ESTIMATE	EPA WWTP Tool V4.0	116.787	119.008	0.0	2.221
52	Tetrachloroethylene (PER)	E	ESTIMATE	EPA WWTP Tool V4.0	64.8	66.032	0.0	1.232
73	Toluene	E	ESTIMATE	EPA WWTP Tool V4.0	16.931	17.253	0.0	0.322
12	Total nitrogen	M	OTH	Digestion & Colorimetry	2760465.4	2851606.72	0.0	91141.32
76	Total organic carbon (TOC) (as total C or COD/3)	M	OTH	Potassium Dichromate	4130318.96	4440658.6	0.0	310339.64
13	Total phosphorus	M	OTH	Digestion & Colorimetry	514371.34	526867.2	0.0	12495.86
57	Trichloroethylene	E	ESTIMATE	EPA WWTP Tool V4.0	10.98	11.189	0.0	0.209
77	Trifluralin	E	ESTIMATE	EPA WWTP Tool V4.0	0.25	0.255	0.0	0.005
75	Triphenyltin and compounds	E	ESTIMATE	EPA WWTP Tool V4.0	0.285	0.29	0.0	0.005
60	Vinyl chloride	E	ESTIMATE	EPA WWTP Tool V4.0	7.237	7.375	0.0	0.138
78	Xylenes	E	ESTIMATE	EPA WWTP Tool V4.0	40.503	41.273	0.0	0.77
24	**Zinc and compounds (as Zn)**	E	ESTIMATE	EPA WWTP Tool V4.0	5151.146	5249.112	0.0	97.966

ADD NEW ROW | DELETE ROW *

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

ADD NEW ROW | DELETE ROW * | * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					ADD EMISSION POINT	QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
238	Ammonia (as N)	M	OTH	Colorimetric	1323502.276	1359868.846	0.0	36366.57
303	BOD	M	OTH	5-day BOD Test	2775739.004	3633918.004	0.0	858179.0
306	COD	M	OTH	Potassium Dichromate	12390956.88	13321975.8	0.0	931018.92
362	Kjeldahl Nitrogen	M	OTH	Digestion & Colorimetry	1818074.9	1904230.17	0.0	86155.27
327	Nitrate (as N)	M	OTH	Colorimetric	892988.567	898014.819	0.0	5026.252
372	Nitrite (as N)	M	OTH	Colorimetric	49670.357	50235.643	0.0	565.286
387	Ortho-phosphate (as P)	M	OTH	Colorimetric	358052.791	361132.362	0.0	3079.571
240	Suspended Solids	M	OTH	Gravimetric	5549426.9	6047118.1	0.0	497691.2

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	19 08 01	No	1051.0	screenings	D1	M	Weighed	Offsite in Ireland	Greenstar Ltd.,CPD 735/5	Unit 41 ,Cookstown Industrial Estate,Tallaght,Dublin 24,Ireland		
Within the Country	19 08 02	No	19.0	waste from desanding	D1	M	Weighed	Offsite in Ireland	Greenstar Ltd.,CPD 735/5	Unit 41 ,Cookstown Industrial Estate,Tallaght,Dublin 24,Ireland		
Within the Country	**19 08 05**	**No**	22145.0	sludges from treatment of urban waste water	R10	M	Weighed	Offsite in Ireland	Peadar Byrne Haulage,990s70099508	Peadar Byrne Haulage,Baltinglass,Wicklow,Co. Wicklow,Ireland		

3. Operational Reports Summary

3.1. Complaints Summary

All complaints regarding the network received by Dublin City Council are recorded on a database. Table 3.1 outlines those complaints, received in 2011, which had the potential to adversely impact waters.

Table 3.1 Complaints Summary

Complaints to Dublin City Council					
Date	Incident Description	Cause	Corrective Action	Authorities Contacted	Closed
31/12/2010	Fish Kill Ranelagh	Unknown	Fish removed from pond	Fisheries	Y
14/02/2011	Overflow at Lansdowne Valley	Blocked sewer	Blockage cleared	South Dublin Co. Council	Y
05/04/2011	Sewage in Tolka	Blocked sewer	Blockage cleared	None	Y
28/04/2011	Sewage in Liffey	Blocked sewer	Blockage cleared	None	Y
23/06/2011	Sewage in Liffey	Blocked sewer	Blockage cleared	None	Y
Complaints to Dún Laoghaire Rathdown County Council					
Various	Pump Blockages			None	Y
Complaints to Fingal County Council – none					
Complaints to South Dublin County Council – none					
Complaints to Meath County Council – none					

3.2. Reported Incidents Summary

Following the issuing of this licence, Dublin City Council met with the EPA and agreed to forward summary incident reports to the EPA on a quarterly basis. Table 3.2 outlines the reported incidents for 2011.

Table 3.2 Reported Incidents Summary Table, Dublin City Council

Incident Type	Incident Description	Cause	No. of Incidents	Corrective Action	Reported to EPA	Closed
Non-Compliance	ELV set for TN (SW1)	Lack of Treatment on-site	All dates in 2011	Long Sea Outfall	Yes Quarterly	No
Non-Compliance	ELV set for TP (SW1)	Lack of Treatment on-site	All dates in 2011	Long Sea Outfall	Yes Quarterly	No
Non-Compliance	ELV set for BOD (SW1)	Q1 – Cold Weather / Capacity issues	28/138 5/138*	Extension of Treatment Facilities	Yes Quarterly	No
Non-Compliance	ELV set for COD (SW1)	Q1 – Cold Weather / Capacity issues	19/241 4/241*	Extension of Treatment Facilities	Yes Quarterly	No
Non-Compliance	ELV set for TSS (SW1)	Q1 – Cold Weather / Capacity issues	85/241 12/241*	Extension of Treatment Facilities	Yes Quarterly	No
Engineering Survey of Effluent Channel	Closure of Effluent Channel	Survey for extension of WWTP	21/09/2011 to 22/09/2011	Diversion of Effluent to Stormwater Tanks	Yes	Yes

*see Condition 2.1.2 on compliance

There are no incidents to report from Fingal, Dún Laoghaire Rathdown, South Dublin or Meath County Councils.

4. Infrastructural Assessment and Programme of Improvements

4.1. Treatment Capacity

Condition 1 of the licence requires the licensee to complete an annual assessment of the remaining organic and hydraulic retention capacities within the waste water works. The organic capacity of the works was exceeded in 2011 and a request for a technical amendment to the licence has been made to the EPA in light of this. This matter will be addressed with the expansion to the works, that part of which is due to be completed at the end of 2015. Table 4.1 is the summary report table for treatment capacity.

Table 4.1 Treatment Capacity Report Summary Table

Hydraulic Capacity – Average Design / As Constructed (m3/day)	470,000
Hydraulic Capacity – Current loading (m3/day) **(Annual Mean Daily Value)**	397,533
Hydraulic Capacity – Remaining (m3/day)	72,467
Organic Capacity – Average Design / As Constructed (PE)	1.64 million
Organic Capacity – Current loading (PE) **(Annual Daily Mean Value)**	1.74 million
Organic Capacity –Current loading (PE) **(Maximum Weekly Average)**	2.49 million
Organic Capacity – Remaining (PE)	Over capacity
Will the capacity be exceeded in the next three years? (Yes / No)	Yes

4.2. Storm Water Overflow Identification and Inspection Report

Condition 4.12 of the Discharge Licence requires the carrying out of an investigation and assessment of storm water overflows, including the prioritisation of the most significantly non-compliant storm water overflows for improvement works. Table 4.2 summarises the results of work done to comply with this requirement.

Table 4.2 SWO Identification and Inspection Summary Report Table

How many SWOs are listed in Schedule A4 of the WWDL? DCC – 176* FCC – 29 DLRCC – 28 SDCC – 28 MCC - 8	269
How many additional SWOs are listed in the agglomeration?	3
Total number of SWOs in the agglomeration?	272
How many SWOs are listed as compliant with the DoEHLG Guidance?	Unknown**
For each SWO identified as non-compliant with DoEHLG Guidance is there a corrective action plan included in the Programme of Improvements?	No
Does the SWO assessment include the requirements of Schedule A3 and C3?	Yes
Have the EPA been advised of any additional SWOs/changes to Schedule A3 and A4 under Condition 1.7?	Yes

* excluding the storm water overflow at the Waste Water Treatment Works

** this is still work in progress, except for Dún Laoghaire Rathdown County Council who have completed this exercise

The following works have been carried out in 2011 to address this licence condition.

Dublin City Council

4.2.1 City Centre Sewerage Scheme

The first stage of this Scheme was a detailed Flow Survey of the entire catchment, including water quality sampling. The Contract for a Flow Survey was completed at the end of November 2010. Future results arising from the combined sewer overflow studies and city centre sewerage schemes will form the basis of this section of the AER. It is hoped to invite tenders by Q3 of 2012 for a Service Provider to carry out a detailed assessment of the catchment and propose solutions in relation to the City Centre Catchment.

4.2.2 Review of the Greater Dublin Strategic Drainage Study (GDSDS) Reports

The data on storm water overflows contained within the Greater Dublin Strategic Drainage Study (GDSDS) was collated and the storm water overflows ranked according to greatest estimated annual volumetric flow. The percentage contribution to this flow from every 10 storm water overflows was determined. The top 20 storm water overflows in Dublin City Council's functional area account for approximately 80% of the spill volume, with the top 40 accounting for approximately 93%. An assessment into the most frequent spillers is also underway. Table 4.3 below contains details of the top ten most significant storm water overflows in Dublin City Council's functional area and the full list is contained in Appendix 4 of the Dublin City Council submission (Appendix 1 of this document). All this data is from the GDSDS, which must be verified by more detailed studies, such as the City Centre Sewerage Scheme.

It is intended in 2012 to carry out a full review of the top 5 to 10 storm water overflows to verify the data in the GDSDS reports, to determine their impact on their receiving waters and to determine what actions are necessary to address excess spillages from them. It is anticipated that works carried out to address excess spillages from storm water overflows will require capital funding and, therefore, will be addressed under the Water Services Investment Programme.

Table 4.3 Top 10 Storm water overflows ranked according to greatest estimated annual volumetric flow

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	STC25 Ref	Address	EASTING	NORTHING	Volume Emitted	Cumulative Flows	% Cumulative Flow
CSO186DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17328507	Shelbourne Road on school grounds	317881	232507	521299	521299	12.1
CSO88DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17346807	East Wall Pumping Station	317683	234884	394401	915700	21.3
CSO180DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18321802	At railway bridge, Beatty's Avenue, Ballsbridge, D4	318106.6	232850	325145	1240845	28.9
CSO171DCC	Storm Water Overflow	Dublin City Council	River	River Dodder (via Swan Culvert)		SO17325401	10 Clyde Road, Ballsbridge, D4	317550	232447	284186	1525031	35.5
CSO36DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17342203	Jcn. Sir John Rogerson's Quay and Cardiff Lane	317234	234294	237469	1762500	41.1
CSO176DCC	Storm Water Overflow	Dublin City Council	River	River Dodder (via Swan Culvert)		SO17326503	Opp. 38 Elgin Road	317639	232519	196982	1959482	45.6
CSO168DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18331407	Side of 60 Derrynane Gardens, off Bath Avenue	318139	233413.1	194860	2154342	50.2
CSO156DCC	Storm Water Overflow	Dublin City Council	Transitional	Santry River		SO22371604	Watermill Road near James Larkin Road	322127.4	237600.7	163715	2318057	54.0
CSO49DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO13346404	Opp. 27 Parkgate Street	313699	234415	156055	2474112	57.6
CSO84DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15341109	Adj. O'Donovan Rossa Bridge, Wood Quay	315139	234124	126886	2600998	60.6

Fingal County Council

The number and volume of discharges from the SWOs was estimated for the Licence application using the local knowledge of the Area Inspector and the Area Engineer. It was intended that flow monitors would be used in 2011 to determine the actual flows and number of discharges and whether the SWOs complied with the definition of a SWO as set out in the publication of the DoEHLG: "*Procedures and Criteria in Relation to SWOs".* **However delays due to staff shortages meant that this has not taken place yet. Fingal County Council propose to carry out the flow monitoring in 2012 instead and will report fully in the 2012 AER.**

The emergency overflows are associated with pumping stations in the agglomeration. The PS's are all linked to the Regional Telemetry system and the number of overflows can be quantified from this. The volume of overflows is harder to estimate. **A trial was arranged with one PS in the County to attempt to measure the volume of overflow, but again due to staff shortages, the trial was not carried out. Fingal County Council proposes to implement monitoring of frequency and volume of emergency overflows in 2012 instead and will report fully in the 2012 AER.**

As discussed above, it was intended to determine whether the SWOs complied with the definition of an SWO as set out in the publication of the DoEHLG: "P*rocedures and Criteria in Relation to SWOs",* and the effectiveness of the emergency overflows, during 2011. **However delays due to staff shortages meant that this did not take place during 2011. Fingal County Council proposes to carry out these works in 2012 instead and will report fully in the 2012 AER.**

Dún Laoghaire Rathdown County Council

Assessment of Combined Sewer Overflows

Introduction

There are 27 overflows identified in the Council's licence. One of these overflow pipes leads directly to the sea namely DLRCC/B5/R/019 at Idrone Terrace in Blackrock. Investigations have shown that this outlet is fully blocked beneath the DART track on the south side of Blackcock DART Station and consequently that the effluent entering the overflow pipe does not makes its way to the sea. Rather it overflows onto the DART track. The Council has been in discussions with Iarnrod Eireann regarding a resolution to the matter.

In compliance with 4.12.2 of its Discharge Licence, the Council engaged Capital Water Systems Ltd to carry out an investigation for the identification and assessment of storm water overflows. The report is included in the Appendix A to this AER of the Dún Laoghaire Rathdown County Council submission (Appendix 3 of this document). 25 of the 27 licensed CSO's were visited and reported on. It was not possible to gain access to DLRCC/B5/R/005 and DLRCC/B5/R/008. Visits to these locations have been prioritised.

Internal and external photographs of the overflow manhole were taken. The condition of the manholes and pipes were reported on and technical options for monitoring of the manholes were proposed.

Monitoring

As a result of the survey carried out by Capital Water Systems, 4 overflows were chosen for monitoring for 12 months. An ultrasonic monitor was installed and the levels in the manhole were logged. An analysis of the levels could then show when the overflow level had been reached. It is intended that these monitors be connected to a telemetry system and also that when an overflow occurs that an alarm be sent to the relevant Council official via text message and email. There have been technical difficulties in getting this set up in relation to the gsm modems but a resolution is expected within the next 2 months. The following CSOs are being monitored.

Millmount Grove Dundrum	DLRCC/B5/R/013
Seafort Parade	DLRCC/B5/R/017
Lisalea Apartments, Blackrock	DLRCC/B5/R/018
Maretimo Gardens West, Blackrock	DLRCC/B5/R/026

All pumps stations are monitored except a small pump station at Rocklands, Dalkey which serves a small cul de sac.

Prioritisation
By choosing the 4 CSOs to monitor the Council has already prioritised CSOs that at this stage may need some works. The results of the monitoring will determine what works, if any, are needed.

Assessment of Licensed Overflows in relation to DOEHLG 'Procedures and Criteria in relation to Storm Water Overflows'
In Section 4 of the above document four criteria are proposed in relation to the assessment of the operation of an existing CSO.

1. Causes significant visual or aesthetic impact and public complaints
2. Causes deterioration in water quality in the receiving water
3. Gives rise to failure in meeting the requirements of national regulations on foot of EU Directives (Bathing Waters etc)
4. Operates in dry weather

In the cases of items 3 and 4, none of the licensed overflows contravene these requirements. Regarding number 2, all CSO's when operating, cause temporary deterioration of the receiving water. However, the Council has no evidence that this temporary deterioration is in any way significant. Similarly the Council does not have evidence to suggest that they are the cause of significant visual or aesthetic impact or public complaints. As yet, the Council does not have sufficient information on spill frequency to be absolutely certain of the threat, if any, to surface waters that the overflows contain. However, based on the experience of the Drainage Inspectors (who examine the manholes in heavy rain) the threat is very small. Consequently, at this stage, it is reasonable to say that to the best of the Council's knowledge, the licensed overflows are compliant with the criteria set out in the above-mentioned document.

South Dublin County Council

South Dublin County Council sewerage network has a total of 28 Overflows. 13 of these are associated with Pumping Stations and other infrastructure and strictly speaking are not for the purposes of relieving the system of excess stormwater flows, but rather are emergency overflows that would become active only in the event of a catastrophic failure of the pumping station.

Meath County Council

As part of future capital schemes, Meath County Council hopes to prepare a Storm Water Overflow Identificatioin and Inspection Report for the following:

- Ashbourne, Rathoath and Kilbride wastewater scheme
- Clonee and Dunboyne wastewater scheme

4.3. Report on Progress Made and Proposals being developed to meet the Improvement Programme Requirements

Condition 5 of the licence requires the licensee to prepare and implement an improvement programme to maximise the effectiveness and efficiency of the work as specified in Condition 5.1. Tables 4.4 and 4.5 below summarise the data on these works.

Table 4.4 Schedule A3 and C Improvement Programme Summary Report (1)

Dublin City Council						
Specified Improvement Programmes	**Licence Schedule (A or C)**	**Licence Completion Date**	**Date Expired?**	**Status of Works**	**Comments**	**Licensee Timeframe for Completing Works**
Improvement Programme for Primary Discharge						
Upgrade waste water treatment plant and ancillary works in accordance with Condition 5.5	C.1	22nd December 2015	No	At planning stage	Includes Long Sea Outfall, extension and upgrade SI largely complete	Estimated 2015/2016
Upgrade storm water storage tank at WWTP as necessary	C.1	Not applicable	Not applicable	Not applicable	There are no plans to upgrade the storm water storage tanks at the Works.	See technical amendment request
Any other work notified in writing by the Agency	C.1					
Improvement Programme for Secondary Discharge(s)	C.2	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Specified Improvement Programmes	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing Works
Improvement Programme for Storm Water Overflows						
City Centre Sewerage Scheme (CCSS)	C.3	None specified	Not applicable	Approval for tender documents sought	Preliminary SWO survey carried out in 2010/2011 in City Centre area. Conclusion was that full study of the SWOs should be carried out. Approval for tender documents sought	To be determined
North Docklands Sewerage Scheme	C4	None specified	Not applicable	Work on Site	Construction of Spencer Dock Pumping Station under way; tenders for construction of new sewers expected to be invited by Q2 of 2012	Spencer Dock Pumping Station: end 2012
Rathmines and Pembroke (R&P) Scheme	C.3	None specified	Not applicable	A Project Engineer has been appointed	A request to appoint a Project Consultant will be submitted to the DECLG.	At preliminary stage

Specified Improvement Programmes	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing Works
Assessment of sea water infiltration to drainage network	C.3	None specified	Not applicable	Not started	Network survey completed	2014
Grand Canal Surface Water Outfall Scheme	C3	None specified	Not applicable	In progress	Listed at 'Planning Stage'	Unknown,
Integrated Constructed Wetland (ICW) project, Longmeadows, Chapelizod	C.3	None specified	Not applicable	Not started	At planning stage	2012 / 2013
Fingal County Council						
Discharge from S4 Fingal shall cease from 31 December 2011	A3	31st Dec 2011	Y	Discharge has not been discontinued	Funding for the construction of the scheme, estimated at €1.5m, was not included in the Water Services Investment Programme (WSIP) 2010-2012. However, it has been approved to move to planning stage under the Portmarnock Drainage Scheme in the 2010-2012 WSIP	Q4 2013

Specified Improvement Programmes	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing Works
Discharge from S5 Fingal shall cease 3 months from date of grant of licence	A3	27th December 2010	Y	Discharge ceased	N/A	N/A
Any other works notified in writing by the Agency.	C1	'As agreed'		None notified for Fingal County Council.	N/A	N/A

Dún Laoghaire Rathdown County Council

There are no Specified Improvement Programmes for DLRCC detailed in Schedules A3 and C of the licence.

Programme of Infrastructural Improvements to maximise the effectiveness and efficiency of the waste water works

Condition 5.2b requires that DLRCC carry out a Programme of Infrastructural Improvements that shall include and assessment of the

i. capacity of the waste water works
ii. leaks from the waste water works
iii. misconnections between foul sewers fn surface water drainage network
iv. infiltration by surface water
v. infiltration by groundwater
vi. infiltration by sea-water
vii. all storm water overflows associated with the waste water works to determine the effectiveness of their operation and in particular to identify improvements necessary to comply with the requirements of the licence.

In the Greater Dublin Strategic Drainage Study Regional Policies Technical Document Volume 4 Inflow, Infiltration and Exfiltration the following figures are given for the Ringsend Catchment.

Catchment	Average DWF(l/s)	Infiltration (l/s)	%DWF
Dodder Valley	322	56	17%
Dun Laoghaire East	153	78	51%

Dun Laoghaire West	185	60	33%

The following Infrastructural Improvements (within the Shanganagh Catchment) are programmed in the current Water Service Investment Programme 2010-2012.

Schemes at Planning Stages 2010-2012
Dun Laoghaire Sewerage Scheme Phase II
Dodder Valley (Dun Laoghaire Rathdown) Sewerage Scheme

The portion of DLRCC County that is served by Ringsend Treatment Works is comprised of 3 catchments; West Pier East, West Pier East, Dodder Valley. The first 2 catchments are included in the first above scheme, the third catchment incorporates the second. Funding for these projects is awaited from the DOHELG. The requirements listed in condition 5.2b I) to vi) will be satisfied by these studies. The monitoring of CSOs currently ongoing addresses condition 5.2 vii).

Surface Water Separation Projects

In 2011 DLRCC carried out the following project to separate water from the combined network.

1. Mount Merrion Avenue Surface Water Sewers: Complete. Work carried out as part of the QBC. Cost: €150k

2. Hyde Road/Cuala: Construction of the joint Water Services/Parks project substantially complete. Water Services laid a 900mm diameter diversion sewer pipe around the club house and overflow/attenuation chambers. Parks Section laid an underground 'stormtech' attenuation/infiltration system. Cost: €600k

3. Glenageary Stormwater Separation Project: Purpose is to identify civil project(s) that will separate significant amounts of surface water from the combined systems. Report currently being reviewed.

4. Kill Lane Surface water Separation Project: Work as part of the QBC. Cost €160k.

5. Booterstown Avenue Stormwater Separation Project: Work carried out in advance of road resurfacing. Cost: €60k

6. Misc Smaller Surface Water Separation Projects: Combined total cost: €80k

- Completed projects:

- Sandycove Ave East
- Sandycove Ave West
- Newtownsmith
- Upper Georges Street
- Booterstown Ave

7. Dun Leary Hill/Packenham Surface Water Sewer: Project complete and operating satisfactorily. Monkstown stream overflow now diverted out of the combined system and large areas of Packenham/The Hill. Total Cost: €150k

8. Rourke Park SW Separation Project: A 300mm diameter SW sewer was directing continuous infiltration/groundwater flow into the combined system. The line was diverted into a new dedicated SW system. Cost €60k

South Dublin County Council

Pump Station	Description of Works	Benefits
Lucan Spa PS – Completed	Installation of Standby Generator (including extension to pump station to house generator)	Maintain pumping during mains power failure
Quarryvale PS – Completed	Upgrade of pump station. Replacement of pumps, installation of control room, new electrical panels, penstocks, inlet flowmeter, staircase, gas detection, lift equipment, air extraction.	More reliable pumping. Original pumps date back to 1984.
Lucan Low Level PS – Completed	Installation of Pump 3 (Chopper Type Pump).	Help prevent clogging at Lucan Low Level & Esker (as L.L.L. pumps directly into Esker.
Newcastle PS – Completed	Installation of Pump 3 (Chopper Type Pump).	Help prevent pump clogging at Newcastle
Rathcoole PS – Completed	Replacement of Pumps 1 & 2 with Chopper pumps	Help prevent pump clogging at Rathcoole
Ballymanaggin PS – Completed	Replacement of Pump 1 with Chopper pump	Help prevent pump clogging at Ballymanagan
Ballymanaggin PS – Completed	Replacement of Pump 2 with Chopper pump	Help prevent pump clogging at Ballymanaggin
St Brigid's Cottages PS – Completed	Replacement of Pumps 1 & 2 with Chopper pumps	Help prevent pump clogging at St Brigid's
Lucan Low Level PS – Out to Tender	Installation of Pump 4 (Chopper Type Pump).	Help prevent clogging at Lucan Low Level & Esker (as L.L.L. pumps directly into Esker.
Newcastle PS – Out to Tender	Installation of Pump 4 (Chopper Type Pump).	Help prevent pump clogging at Newcastle
Esker Lane PS— Out to Tender	Installation of 2 No. Macerators	Help prevent pumps clogging at Esker Lane
Whitehall Road PS— Out to Tender	Replace Pumps No.1 & 2	More reliable pumping. Existing pumps exceeded their economical life cycle.

Dodder Valley Trunk Sewer (DVS)- Completed	Diverted combined sewers from Butterfield Avenue at Kilvere Estate and Rathfarnham Shopping Centre to the DVS.	To prevent surcharge at manholes on Butterfield Ave. during heavy rain.
FOG (Fats, Oil & Grease) Programme- Started Feb. 2012	Licencing all Food Outlets ie restaurants, take-aways, canteens, etc	To prevent blockages and overflows in the foul sewerage network.

Meath County Council
In 2010, Meath County Council completed a major capital upgrade project, the “Ashbourne/Ratoath/Kilbride Sewerage Scheme – Phase 2”. Under this project, approximately €14m was invested in a substantial upgrade of the sewer networks in both Ashboure and Ratoath. Major works were carried out to the Ashboure, Ratoath and Kilbride pumping stations. New storm detention tanks were also constructed at Ashboure and Ratoath Pumping Stations. As a result, capacity has been substantially increased. In relation to Ashbourne, Ratoath and Kilbride, a major wastewater network rehabilitation contract, valued at approximately €2m was recently awarded and work on this project is expected to be completed by mid-2013. Under this contract, extensive sewer network repairs will be undertaken in an effort to significantly reduce infiltration and hence hydraulic loading. These works when complete will further improve capacity and further reduce the risk of hydraulic surcharging/overflow. The Dunboyne and Clonee wastewater scheme generally functions satisfactorily with no significant capacity constraints. In this regard, Meath County Council has no plans to undertake any notable capital upgrade works to this scheme.

Table 4.5 Schedule A3 and C Improvement Programme Summary Report (2)

Does the Improvement Programme include an assessment of the integrity of the existing wastewater works (WWTP and network) for the following:	
Capacity of the Works	Yes
Leaks from the Works	Yes
What % of leakage is reported	
Misconnections between foul sewer to surface water drainage	Yes
What % of misconnections is reported	
Surface Water Infiltration - including seawater	Yes
Groundwater Infiltration	Yes
Comment	
Does the Improvement Programme require an assessment of Secondary Discharges (e.g. cease discharge/upgrade to meet requirements) for the following:	
Receiving water body designation	No
Downstream abstractions and use of water	No
Water quality objectives for the water body	No
Comment: Schedule C does not require any additional improvement works	
Are the findings of the SWO Identification and Inspection Report included in the Improvement Programme (upgrades to meet the licence requirements)?	No
Comment: ***this work is still ongoing. There are a number of projects underway to assess SWOs***	
For each improvement identified, does the Improvement Programme include an implementation plan that:	
Identifies and describes each improvement, including a timeframe for implementation (Condition 5.3)	No
Specifies the parameters that will be affected by the improvement	No
Estimates the costs and sources of funding	No
Estimates the water quality improvement associated with the Improvement	No
Comment: ***this work is still ongoing. There are a number of projects underway to assess SWOs***	

The following sections give a brief update on the status of the projects that are underway to address the improvement programme requirements within the functional area of Dublin City Council.

4.3.1. Upgrade to Ringsend Wastewater Treatment Works

Preliminary design and geotechnical investigation work on this project is almost complete and the EIS will be submitted to An Bord Pleanála in April 2012. The upgrade work is divided into 3 main components; immediate upgrades, additional secondary treatment and a long sea outfall. While the immediate upgrades and additional secondary treatment will complete before the end of 2015, the construction of the long sea outfall however, due to the complexity of the works, will not be completed until 2016.

4.3.2. GDRDP – City Centre Sewerage Scheme

The first stage of this Scheme included a detailed Flow Survey of the entire catchment, including water quality sampling. The Contract for a Flow Survey was completed at the end of November 2010. Included in the survey was monitoring of the performance of the storm water overflows.

Future results arising from the combined sewer overflow studies and city centre sewerage schemes will form the basis of this section of the AER. It is hoped to invite tenders by Q3 of 2012 for a Service Provider to carry out a detailed assessment of the catchment and propose solutions in relation to the City Centre Catchment.

4.3.3. GDRDP – Rathmines and Pembroke Sewerage Scheme

There were no developments with this project in 2011. A Project Engineer has been appointed to oversee the advancement of the project into 2012. It is anticipated that a request to appoint a Project Consultant will be submitted to the DECLG in 2012.

4.3.4. GRDRP – Grand Canal Surface Water Outfall

The project involves extending the existing surface water outfall into the Grand Canal Dock in a new pipeline through the dock, connecting with an existing surface water Culvert laid in Hanover Quay (Phase 1) and discharging into the River Liffey through a new outfall constructed in Sir John Rogerson's Quay. Phase 1 of the Scheme was completed in January 2003.

The Scheme is listed at “Planning Stage” in the WSIP 2010–2012 as “GDRDP: Grand Canal Surface Water Outfall”. Dublin City Council propose the scheme as a construction contract in the next WSIP.

The remaining task is to complete the New Contract Documents for Phase 2 to comply with the New Conditions of Contract for Public Works Construction Contracts. It is anticipated the detailed design and contract document stage will be completed in 2012.

4.3.5. North Docklands Sewerage Scheme

This project should have a significant positive impact on the spill frequency of the existing storm water overflows in the North Docklands area of the city. The scheme is currently divided into four contracts, as outlined in table 4.6.

Table 4.6 Contracts in the North Docklands Sewerage Scheme

Contract Number	Description	Status
1	Spencer Dock Pumping Station	Construction commenced August 2011 Scheduled to be commissioned by end 2012
2	Rising Main and Pumping Station	Complete
3	Liffey Services Installation Contract	Complete
4	Provision of new sewers	Tenders are expected to be invited by Q2 2012

4.3.6. Infiltration of estuarine water into the drainage network

A study into the potential backflow of estuarine waters into the drainage network is due to commence in 2012. Research at the Wastewater Treatment Works suggests that the inflow to the Works is significantly impacted by estuarine water, which affects the hydraulic loading on the Works and also impacts on the treatment processes within the Works.

It is envisaged that, by preventing the flow of estuarine waters into the drainage networks, the hydraulic load on the Works will be reduced and the treatment processes within the Works will no longer be impacted on by estuarine waters.

A programme to replace non-return valves along the Liffey quay wall is currently being developed. To date, a number of non-return valves have been purchased to replace the existing non-return valves. It is necessary to carry out a risk assessment of each individual non-return valve and determine whether it is possible to replace it. As a consequence of the floods of 24th October 2011, which required staff to be assigned to the remediation and other follow-up works, this project has not advanced any further. It is intended to resume this project at the first available opportunity.

5. Environmental Liability and Financial Provision

5.1. Statement of Measures

Dublin City Council

Dublin City Council is responsible for managing the infrastructure necessary for the collection, treatment and disposal of wastewater from all of its functional area and from parts of the functional areas of Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council. The City Council Divisions that maintain this infrastructure are Drainage Services Division and Wastewater Services Division. The Drainage Services Division is comprised of four sections; (Drainage) Planning & Development Control, Maintenance, Reconstruction and Pollution Control. Wastewater Services Division has responsibility for the management of the Ringsend Waste Water Treatment Plant Operation & Maintenance Contract and all pumping stations throughout the network. Infrastructural assessment and programme improvements are undertaken by the Council's Strategic Planning and Project Management Division.

In general terms, environmental risks associated with operation of the Treatment Plant and drainage network are mitigated by the following measures:-

- An Environmental Management System compliant with ISO 14001 is in place for the operation of Ringsend Treatment Works
- Comprehensive monitoring/sampling regime for the Works
- Major Emergency Plans in place, including procedures to deal with environmental incidents
- Resources deployed to operate and maintain the drainage network in an effective manner.

Fingal County Council

The following are a list of the measures taken to prevent environmental damage in the Fingal portion of the Greater Dublin Area Agglomeration:

a) Fingal County Council employs a Water Services Operational Section with a staff of 51 to maintain and service the sewer network.

b) Fingal County Council employs a Mechanical Section to maintain and service the pump stations in the agglomeration and the Telemetry system which monitors them.

c) Fingal County Council maintains an out-of-hours capability for dealing with mechanical breakdowns and sewer chokes/environmental incidents.

Fingal County Council does not maintain a specific financial provision in relation to underwriting of costs for remedial action following environmental incidents.

Dún Laoghaire Rathdown County Council

The Dun Laoghaire Rathdown County Council Drainage Department includes a Director of Services, Senior Engineer, Senior Executive Engineers x 4, Area Engineers x 2, Supervising Inspectors x 2, Drainage Inspectors x 6. The separate Water Pollution Department consists of a Pollution Engineer, Supervising Inspector, Pollution Inspectors x 2 and a Foreman/Sampler and Drainage Maintenance Outdoor Crews capable of Emergency Response.

The Dún Laoghaire Rathdown County Council Water Services Investment Programme Assessment of Needs 2007-2014 outlines an overall Strategic Investment Plan for the medium to long term and to set out a programme of works to meet the identified drainage infrastructural needs.

The following is a list of ongoing Measures in the Ringsend Catchment:

- Capital Investment, Maintenance and Rehabilitation Programmes.

- Proposed and ongoing Catchment Studies and surveys to relieve local lack of capacity resulting in overflows and flooding.
- On going monitoring and sampling on all surface water rivers throughout County.
- Comprehensive GIS spatial database mapping programme 'Mapdrain' incorporating the entire Drainage Network of the County.
- Section 16 FOG and Trade Effluent Licensing Programme (discharge conditions on industry using county foul sewers).
- Sampling, Environmental Inspections, Breach Investigation and Incident Investigations on the County's foul sewer network.
- Comprehensive Misconnection Programme in Place covering mainly Domestic Misconnection Issues.
- Professional Working relationship with Eastern River Fisheries Board(ERFB)
- Comprehensive Bathing Water and Coastal monitoring Programme and sampling all year round.
- CSO Monitoring Programme (Alarming of Overflows in County)
- SUDS are a requirement of Development Plant.
- Implementation of the ERBD River Basin Management Plan
- Involvement with the ERBD Liaison Group and the regional ERBD Senior Management Meetings.

5.2. Environmental Liabilities Risk Assessment

Dublin City Council

A copy of the public liability insurance policy issued by Irish Public Bodies (IPB) to Dublin City Council is included in the individual submission by Dublin City Council (Appendix 1). Dublin City Council is currently endeavouring to determine if any amendments are required to this policy arising out of the ELRA required under the discharge license.

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.

Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.

It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

Fingal County Council

Please refer to individual submission by Fingal County Council for the ELRA specific to the functional area of Fingal County Council (Appendix 2 of this report).

Dún Laoghaire Rathdown County Council

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.

Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However, a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.

It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

South Dublin County Council

South Dublin County Council has a public liability insurance policy issued by Irish Public Bodies (IPB). South Dublin County Council is currently endeavouring to determine if any amendments are required to this policy arising out of the ELRA required under the discharge license.

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.

Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.

It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

Meath County Council

A copy of the public liability insurance policy issued by Irish Public Bodies (IPB) to Meath County Council is included in the individual submission by Meath County Council (Appendix 5). Dublin City Council is currently endeavouring to determine if any amendments are required to this policy arising out of the ELRA required under the discharge license.

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.

Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.

It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

6. Licence Specific Reports

Licence Specific Report	Required in 2011 AER	Included in 2011 AER	Location in 2011 AER
6.1 Priority Substances Assessment	**Yes**	**Yes**	**Section 6.1 Appendix 5***
6.2 Drinking Water Abstraction Point Risk Assessment	**No**	**No**	**N/A**
6.3 Habitats Impact Assessment	**No**	**No**	**N/A**
6.4 Shellfish Impact Assessment	**No**	**No**	**N/A**
6.5 Toxicity / Leachate Management	**Yes**	**Yes**	**Section 6.5**
6.6 Report of Mass Loadings and Removal Efficiencies	**Yes**	**Yes**	**Section 6.6**

* of the Dublin City Council submission (Appendix 1 of this document)

6.1 Priority Substances Assessment

See detailed assessment report in Appendix 6.1 of the Dublin City Council submission (Appendix 1 of this document).
The EPA recommended Priority Substances Assessment summary table is presented below:

Does the review use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 5 of the EPA Guidance (date of issue 17/01/11) ?	Yes - Screening Analysis (as recommended for plants >50,000 PE)
Does it include a review of Trade inputs to the works ?	All trade effluent licences and consents issued in the Dublin agglomeration in 2011 took into account priority substances.
Does it include a review of other inputs to the works ?	Yes – tankered wastes including leachates / saline infiltration / surface water and mains water leakage inclusion from combined sewers in the City Centre
Does it contain an assessment of the significance of the results where a listed material is present in the discharge ? (e.g. impact on the relevant EQS standard for the receiving water)	Yes – to a limited extent – the Licensee has not monitored priority substances in the receiving waters
Does the investigation identify that a priority substance is impacting the receiving waters ?	Note that a mixing zone has not been defined for SW1. See Table 6.1.5 in Appendix 5* report
List priority substances identified	See Table 6.1.5 in Appendix 6.1* for substances detected > EQS for specific pollutants : Copper / Glyphosate / Zinc
Where relevant are there corrective actions identified to eliminate / minimise the substances identified in the discharge ?	Yes – ongoing review of trade effluent licences and consents.
Is there a timeframe given to implement the corrective action for each substance identified ?	Yes – by 31/12/2014
List corrective actions	Reduce loading of relevant parameters in licensed discharges
List completion date	31/12/2014

* of the Dublin City Council submission (Appendix 1 of this document)

6.5 Toxicity / Leachate Management

6.5.1 Toxicity

It is planned to test the effluent toxicity in 2012 following agreement with the EPA.

6.5.2 Leachate Management 2011

Tankered leachates from the following 3 sources were received at the Main Lift Pumping Station and the Ringsend Wastewater Treatment Plant during 2011 :

Source	**2011 Volume (cubic metres)**
Celtic Anglian, Greenstar, Connaught Regional Landfill, Ballinasloe	15,347
Fingal County Council, Baleally Landfill	37,325
Kerdiffstown Landfill, County Kildare	9,531
Total	**62,203**

The total volume of leachate disposed of by tanker in 2011 was 62,203 cubic metres.
This represents 15.55 % of one day's average flow to the works or 0.043% of the total annual flow.
Leachates arriving for disposal are sampled and tested to check compliance with the conditions included in the terms of disposal.

6.6 Summary Report of Mass Loadings Received at the Ringsend Wastewater Treatment Plant and Removal Efficiencies in 2011

Mass Loadings 2011

The mass influent and effluent loadings are based on the daily mean influent and effluent flows multiplied by the mean parameter concentrations for 2011 . See summary table below:

Parameter	2011 Influent Load (tonnes)	2011 Effluent Load (tonnes)	2011 Removal Efficiency (%)
BOD	39,613	2,649	93.32
COD	79,660	11,951	85.0
TSS	34,969	5,072	85.50
TN	5,613	2,743	51.13
TP	793	529	33.29
Annual Flow (cubic metres)	145,099,540	144,744,596	

Comment:

Efficiency of load removal for 2011 shows that the Ringsend Wastewater Treatment Plant complied well with the Urban Waste Water Treatment Regulations (2001 and 2004) requirements for minimum percentage reductions for the BOD and COD parameters.
The percentage reductions required for TSS (90%), TP (80%) and TN (70%-80%) were not complied with during 2011.

7. Certification and Sign Off

Does the AER include an executive summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and/or Environmental Quality Standards	Yes
Is there a need to advise the EPA of any modifications to the existing WWDL	Yes
List Reason	See Request for Technical Amendment
Has this process commenced	Yes – Request for Technical Amendment Submitted
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	No outstanding issues exist

Appendices

Appendix 1 Submission by Dublin City Council

Appendix 2 Submission by Fingal County Council

Appendix 3 Submission by Dún Laoghaire Rathdown County Council

Appendix 4 Submission by South Dublin County Council

Appendix 5 Submission by Meath County Council

Dublin City Council
Comhairle Cathrach Bhaile Átha Cliath

Annual Environmental Report, 2011

Greater Dublin Area Agglomeration

Waste Water Discharge Licence No D0034-01

Contents

1. Introduction and Background to the 2011 AER

1.1. Summary Report for 2011

Ringsend Wastewater Treatment Plant

The Ringsend Wastewater Treatment Plant was licensed by the EPA (register number D0034-01) on 27th July, 2010, to discharge treated wastewater effluent to the Lower Liffey Estuary. The Lower Liffey Estuary is designated as a "sensitive area" under Urban Wastewater Treatment Regulations 2001 (S.I.254 of 2001).

The activity licensed under the Waste Water Discharge (Authorisation) Regulations, 2007, is:

Discharges from Agglomerations with a Population Equivalent of more than 10,000

The Greater Dublin agglomeration served by the Ringsend plant includes all the areas of Dublin City and South Dublin County Councils, and parts of Fingal, Dun Laoghaire Rathdown and Meath County Councils. The licence was issued by the EPA to all five contributory local authorities.

The Greater Dublin agglomeration is the largest agglomeration in Ireland, with a measured population equivalent in 2011 of 2.49 million (maximum weekly average) and an annual mean PE of 1.74 million. Influent is composed of domestic wastewater, commercial wastewater, licensed trade effluents, surface water from combined sewers, surface water infiltration, groundwater infiltration, saline infiltration and tankered wastewaters.

Condition 6.10 of the licence requires the submission of an annual environmental report (AER), covering the previous calendar year, in compliance with Schedule D of the licence. This report details the performance of the site from January to December, 2011, and has been prepared in compliance with the EPA Guidance on Preparation and Submission of the Annual Environmental Report (AER) for Waste Water Discharge Licences for 2011, dated 30/01/12.

Wastewater Treatment Activity

The Works consists of essentially two treatment activities, namely wastewater treatment and solids treatment.

WASTEWATER TREATMENT

The various treatment stages include the following:

Flow measurement
Fine screening (6mm)
Grit removal (aerated retention tanks)
Primary settlement (lamella plates)
Fats oil and grease removal
Biological treatment (sequencing batch reactors)
Ultraviolet disinfection (during bathing season)
Storm water treatment (storage /screening/ settlement / return / overflow)
Ventilation and odour control (all covered channels and tanks)

SOLIDS TREATMENT

The sludge produced on site consists of primary settled sludge (3% dry solids) and surplus activated sludge (SAS). The SAS is thickened by means of rotary drum thickeners to produce thickened SAS (TSAS) at 3% dry solids.
There are 2 main sludge streams as follows :

Stream 1 – All of the TSAS and a portion of the primary sludge is first screened to 10mm and then dewatered by centrifuges to 15% dry solids. This is then put through the thermal hydrolysis process (Cambi system) prior to mesophilic anaerobic digestion. After digestion, a large portion of the digested sludge goes to the drying process where it is mixed with the balance of the primary sludge (also screened to 10mm). This mixture is first dewatered and then dried to produce Biofert at 92% dry solids.

Stream 2 – The balance of the digested sludge which does not go to the dryers is dewatered to 26% dry solids and leaves the site as Biocake. See Celtic Anglian (CAW) Schematic in Appendix (1).

Compliance Issues

In January, 2011, the secondary treatment system was inhibited during severe, sub zero, weather conditions, which caused the water temperature to fall below the minimum design level. This caused a lack of compliance in Quarter 1 with the Emission Limit Values (ELV's) set for CBOD, COD and TSS which was not typical of the plant performance. Although the performance of the plant recovered in Quarter 2, this caused an annual lack of compliance with the ELV's set for CBOD, COD and SS. Maximum concentration exceedances (detailed in Condition 2.1.2 of the licence) occurred in 2011 in 5 of 138 samples tested for CBOD (3.6%), 4 of the 242 samples tested for COD (1.7%) and in 12 of the 242 samples tested for SS (5.0%). Lack of compliance with ELV's set for Total Nitrogen and Total Phosphorus continued through 2011. This is due to lack of on-site treatment systems for these parameters. See section 2.2 of this report.

Complaints / Incidents

Complaints received during 2011 are summarised in Section 3.1. Incidents reported to the EPA during 2011 are summarised in Section 3.2. Severe weather impacts on the treatment works processes in Q1 causing lack of compliance with ELV's were notified to the EPA. See also CAW report to Dublin City Council in Appendix (2). Non-compliance with ELV's set for Total Nitrogen, Total Phosphorus and other parameters was notified quarterly to the EPA during 2011.

Receiving Water Quality

A total of 6 surveys were carried out in 2011 at sampling points (specified by the EPA in the licence) in the Liffey, Liffey and Tolka Estuaries and Dublin Bay. These indicate phosphate-P impact of the discharge on the Liffey and Tolka Estuaries at some locations with little impact of the discharge on Dublin Bay waters. See section 2.3.1. and 2.3.2.

Bathing Water Quality

Section 2.3.3 summarises monitoring at 3 EC designated bathing waters (Dollymount, Sandymount and Merrion Strands) and 5 other sampling points specified in the licence. Dollymount and Merrion Strands complied during the 2011 Bathing Season. Sandymount did not comply during the 2011 season due to elevated E. Coli counts.

Significant Improvement Works / Projects Carried out in 2011

See section 4 for details of the following improvement works /projects carried out in 2011:

- EIS preparation for Ringsend Extension
- North Dublin WWTP Project
- Long Sea Outfall Project
- Additional Secondary Treatment / Effluent fine screens / SBR covers by 2015 / SBR's to be dedicated to CBOD, TSS and COD removal
- Saline Water Infiltration Project
- Project to Prioritise CSO's – 20 top CSO's over 3 years – 2012 to 2015

2. Monitoring Reports Summary

2.1. Summary Report on Influent Monitoring

2.1.1 Monthly Influent Monitoring Results for BOD/COD/SS/Total N/Total P

Influent Quality

Influent monitoring data for BOD, COD, SS, Total N and Total P for the 24-hour influent composite samples taken in 2011, is presented below. Automatic samplers are run from 09.00 hours on the date prior to the sample collection date.

Annual influent summary statistics are tabulated below for the 5 chemical parameters and the 2 loading parameters required:

	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	TP (mg/l P)	TN (mg/l N)	Loading (m3/d)	Loading (PE/day)
Number of Samples	139	238	238	99	99	365	139
Maximum Result	462	980	511	7.63	65.7	1,488,090	2,486,830
Annual Mean	273	549	241	5.46	38.68	397,533	1,735,449

Comment :

Influent strength depends on discharges of wastewaters from the extensive upstream agglomeration within any 24 hour sampling period. The 24 hour composite influent sewage quality at Ringsend is strongly influenced by rainfall and infiltration prior to and during sample collection dates.

The 5 influent parameters lie within the normal urban wastewater ranges, with annual mean COD to BOD ratio equal to **2.01**

2.1.2 Influent Flow Monitoring

Influent flow is measured on a daily basis at the plant. Summary flow statistics on the influent to the plant during 2011 are tabulated below:

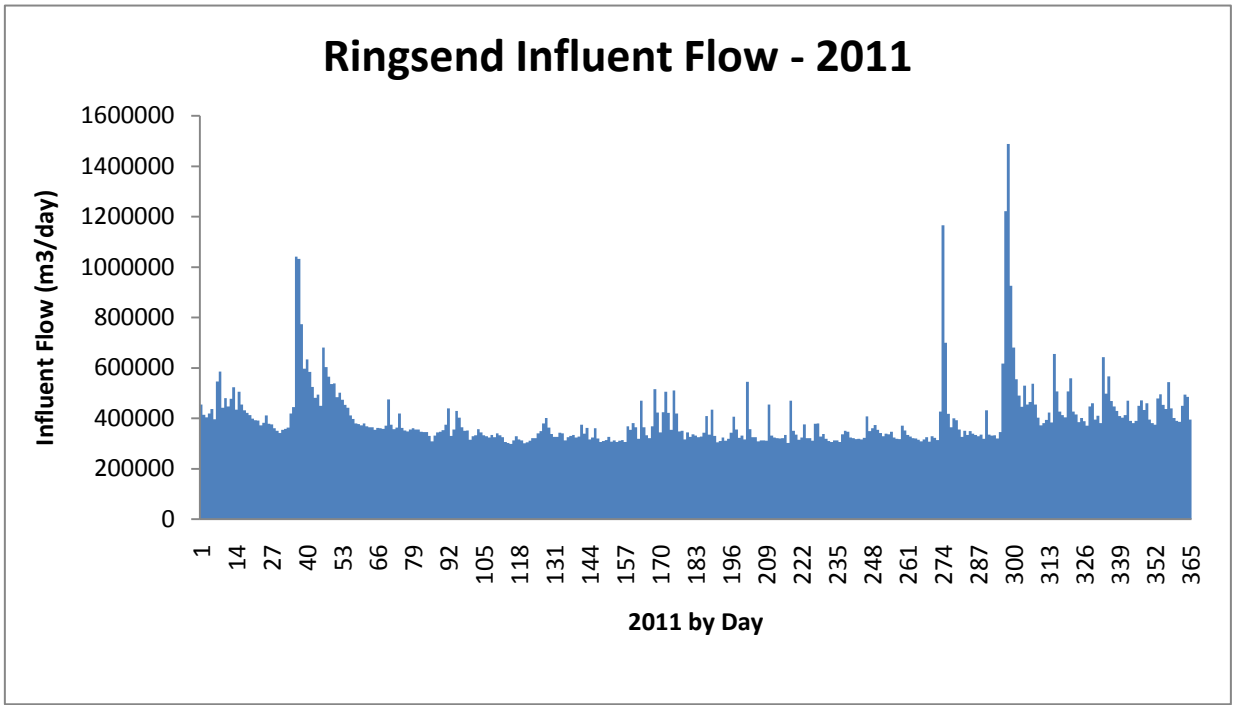
2011 Influent Flow Statistics	Quantity
Annual Influent Flow (Influent to SBR's + Stormwater Flow)	**145,099,483 m^3**
Annual Stormwater Flow	**2,752,789 m^3**
Annual Influent Flow to Treatment	**142,346,694 m^3**
N (Number of Influent Flow Measurements)	**365**
Mean Daily Influent Flow	**397,533 m^3**
Median Daily Influent Flow	**360,796 m^3**
Minimum Daily Flow	**298,600 m^3**
Maximum Daily Flow / Minimum Daily Flow	**4.98**

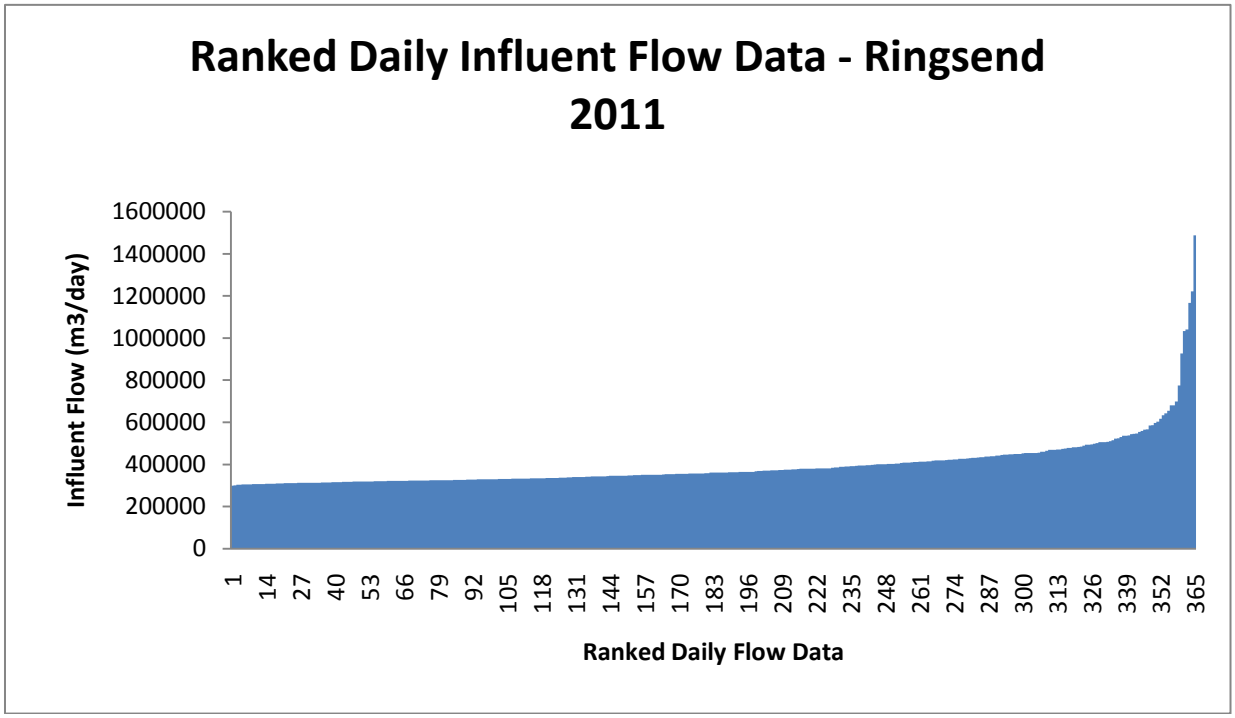
Comment:

Total influent flow data above represents influent wastewater from the agglomeration (5 lines) arriving at the Ringsend Waste Water Treatment Plant. It does not include wastewater lost in combined sewer overflows in the upstream agglomeration.

The wet weather (maximum) hydraulic flow to the Ringsend plant during 2011 occurred on 24/10/11 and was a factor of **4.98** times higher than the dry weather (minimum) flow. This quantifies the large range of influent flows experienced at the Ringsend plant and is caused mainly by surface water ingress after rainfall and by other surface water infiltration in the agglomeration. See plots.

The total Stormwater Overflow during 2011 was **2,752,789 cubic metres**. This occurred on **23** dates during 2011.
Between 20/09/11 and 22/09/11 primary treated effluent was diverted to the receiving waters during an essential engineering survey of the final effluent culvert. This was notified to the EPA.





This plot illustrates the daily 2011 Influent Flow data ranked from Minimum flow to Maximum Flow.

2.2. Discharges from the Agglomeration (Dublin SW1)

Monitoring of the primary discharge from the Ringsend Wastewater Treatment Plant during 2011 is summarised in the recommended summary table overleaf.

2.2.1 Monitoring Frequency

Monitoring frequency complied with (far exceeded) the requirements of the licence.
Test result numbers for parameters with Emission Limit Values (ELV's) and all others specified in Schedule B1 of the licence have been included in the summary table.

2.2.2 Exceedances of Emission Limit Values

Severe sub-zero weather conditions occurred in January, 2011, which seriously affected the performance of the secondary treatment system at Ringsend in Quarter 1. This caused exceedances in the ELV's for BOD / COD / TSS set in the licence. The secondary treatment system had recovered by April, 2011, but exceedances in Quarter 1 affected the annual compliance results for these parameters. See Celtic Anglian Water report in Appendix (2).

Suspended Solids (TSS) exceedances in 2011 were also caused by wind induced wave action in the upper deck of SBR tanks and by the lack of SBR tank redundancy for maintenance operations.

Effluent concentrations of Total Nitrogen and Total Phosphorus cannot achieve the ELV's set in the licence, as there are currently no specific treatment systems in place.
The duration of TN and TP exceedances were daily during 2011.

Exceedances of ELV's during 2011 were notified to the EPA on a quarterly basis. See Section 3 of this report.

The significance of the impact of effluent ELV exceedances on the receiving waters is discussed in section 2.3 of this report.

Effluent pH was in full compliance with the ELV set in the licence and the effluent E. Coli count (post UV sterilisation)) complied with the ELV set during the 2011 bathing season.

2.2.3 Effluent Flow Data (DublinSW1)

A summary of effluent flow data for 2011 is tabulated below.

No. of Measurements	**365 (daily)**
Annual Total Flow (cubic metres)	**144,744,596**
Mean Daily Flow (cubic metres)	**396,561**
Maximum Daily Flow (cubic metres)	**895,450**
Minimum Daily Flow (cubic metres)	**239,878**

Section 2.2 Discharges from the Agglomeration (DublinSW1)

2011 Effluent Monitoring Summary Table

Parameter :	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Total P (mg/l)	Total N (mg/l)	pH	Toxicity TU*	Effluent Flow Data 2011	Comments
WWDL ELV	25	125	35	1	10	6 - 9	5	-	
WWDL ELV (Condition 2)	50	250	88	1.2	12.0			-	* to be agreed with EPA
Number of Sample Results Required	26	26	26	26	26	365	1	Daily	
Number of Effluent Sample Results	138	241	241	99	97	241	0	365	
Number of Effluent Sample Results above WWDL ELV	28	19	85	99	97	0		-	Failure to comply with ELV's set for BOD and COD due to severe weather in Q1. Failure to comply with ELV for TSS due in part to wind agitation in upper SBR tanks. Failure to comply with ELV's set for TP and TN due to lack of treatment facilities on site.
Number of Effluent Sample Results above WWDL ELV (Condition 2)	5	4	12	98	93	-		-	
Annual Mean	18.3	82.56	35.04	3.65	18.95	N/A		396,561 (m3/day)	
Max. No. of ELV Exceedances (B.3)	11	18	18	9	9	18		-	
Overall Compliance	Fail	Fail	Fail	Fail	Fail	Pass		-	

Section 2.2 Discharges from the Agglomeration (DublinSW1) cont.

2011 Effluent Monitoring Summary Table

Parameter	DIN (mg/l N)	Ammonia (mg/l N)	Phosphate (mg/l P)	OFG (mg/l)	E.Coli ** (MPN/100ml)	Enterococci (CFU/100ml)	Visual Inspection Colour ***	Comments
WWDL ELV	-	-	-	-	100,000	-	-	** 01/05/11 to 31/08/11 E.Coli and Enterococci results reported for discrete post UV samples taken
WWDL ELV (Cond.2)	-	-	-	-	150,000	-	-	*** Hazen Units – Laboratory Test
Number of Sample Results Required	26	26	26	4	Biannual	Biannual	Daily	
Number of Effluent Sample Results	240	240	241	99	61	47	241	
Number of Effluent Sample Results above WWDL ELV	-	-	-	-	1	-	-	
Number of Effluent Sample Results above WWDL ELV with Condition 2 interpretation	-	-	-	-	0	-	-	
Annual Mean	15.67	8.83	2.60	14	N/A	N/A	49	
Max. No. of ELV Exceedances (B.3)	-	-	-	-	6	-	-	
Overall Compliance	-	-	-	-	Pass	-	-	

2.3. Ambient Monitoring Summary

Licence D0034-01 requires monitoring and assessment of the impacts of the Ringsend effluent discharge on receiving water quality at agreed sampling locations as follows:

- 9 Ambient Surface Waters (ASW2 – ASW10) covering sampling points in the lower Liffey Estuary in the near field of the discharge (ASW2 to ASW5), and points on the River Liffey and River Tolka (ASW6 to ASW10)
- 11 additional monitoring points on the Liffey and Tolka Estuaries (Surface and Depth)
- 9 monitoring locations in Dublin Bay (Surface and Depth)
- 8 shoreline locations, 3 of which are EC designated bathing waters (Dollymount Bathing Zone, Sandymount and Merrion Strands).

See map of monitoring locations agreed with the EPA in Appendix 3.

The Liffey Estuary from Islandbridge Weir to the Poolbeg Lighthouse including the River Tolka Basin and the South Bull Lagoon is designated as a "sensitive area" by Part 2 of Schedule 3 of the Urban Wastewater Regulations, SI 254 of 2001. The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009), sets physico-chemical standards for High and Good status in transitional and coastal water bodies to be complied with outside the allocated mixing zone of a licensed discharge.

The Rivers Liffey and Tolka and their estuaries are classified under the Water Framework Directive as Transitional Water Bodies. The outer estuary / Dublin Bay is classified as a Coastal Water Body.

The parameter suite set in the marine monitoring section of the licence was tested in all samples (Temperature / Dissolved Oxygen / BOD / Salinity / Dissolved Inorganic Nitrogen / Total Oxidised Nitrogen / Molybdate Reactive Phosphate / Ammonia / Chlorophyll)

Tidal Conditions during the 6 monthly surveys are tabulated below:

Survey No.	Date	High Tide Time	Height (m OD)	Low Tide Time	Height (m OD)	Tidal Status during Survey
1	13/04/11	07.53	3.38	13.57	0.98	Ebbing
	14/04/11	09.00	3.57	15.00	0.72	Ebbing
2	03/05/11	12.34	3.72	06.02	0.82	Flowing
	04/05/11	13.05	3.72	06.30	0.79	Flowing
	11/05/11	06.10	3.56	12.19	0.92	Ebb to Flow
	26/05/11	07.29	3.45	13.25	1.21	Ebbing
3	15/06/11	12.00	3.97	05.15	0.75	Flowing
	16/06/11	12.49	3.96	06.04	0.64	Flowing
	21/06/11	16.33	3.47	09.53	0.85	Ebb to Flow
4	13/07/11	11.04	3.78	16.41	0.99	Flow to Ebb
5	17/08/11	14.29	3.69	07.30	0.68	Flowing
	18/08/11	15.04	3.66	08.35	0.84	Flowing
6	20/09/11	05.05	3.33	10.44	1.53	Ebb to Flow

2.3.1 Marine Monitoring – ASW2 to ASW10

A total of 6 surveys were carried out in the Liffey and Tolka Estuaries during 2011 at the designated locations in the licence, tabulated below:

EPA Map Code	Licence Code	Sampling Point
		Liffey Estuary Lower
	ASW2	25 metres North of Poolbeg Wall
	ASW3	50 metres North of Poolbeg Wall
	ASW4	75 metres North of Poolbeg Wall
	ASW5	100 metres North of Poolbeg Wall
		Liffey
DB000	**ASW6**	Liffey City, Downstream Islandbridge Weir
DB010	**ASW7**	Liffey City, Heuston Station, Upstream of Camac Outfall
	ASW8	Liffey City, Winetavern Street Bridge
		Liffey Estuary Lower
DB210	**ASW9**	Liffey (Surface), Downstream of East Link Toll Bridge
		Tolka
DB310	**ASW10**	Tolka, Downstream of Annesley Bridge

A summary of transitional water quality compliance with SI 272 of 2009 for the above locations is presented in Table 2.3.1. This shows compliance with temperature, dissolved oxygen (lower) and BOD at all locations on all survey dates.

A single dissolved oxygen (Upper) exceedance (slight) occurred in the Tolka at DB 310 (Downstream of Annesley Bridge). The result was 132% saturation at 2.9 PSU.

Four Molybdate Reactive Phosphate (MRP) exceedances occurred, three in the near field of the Ringsend discharge SW1, and one in the Tolka at DB 310 (Downstream of Annesley Bridge). Non-compliant MRP results were as follows :

Location	MRP 2011 Median Result	SI 272 Standard	Comment
ASW2 (Surface)	114 ug/l as P	40 ug/l as P at 35 PSU	Close to SW1 Outfall
ASW2 (Depth)	48 ug/l as P	40 ug/l as P at 35 PSU	Close to SW1 Outfall
ASW3 (Surface)	147 ug/l as P	40 ug/l as P at 35 PSU	Close to SW1 Outfall
ASW10 (Surface)	96 ug/l as P	60 ug/l as P at 0 PSU	Elevated MRP in River Tolka

2.3.2 Marine Monitoring – Transitional Water Monitoring – Points Agreed with the EPA

A total of 6 surveys were carried out in the Liffey and Tolka Estuaries during 2011, at 11 locations agreed with the EPA, tabulated below :

EPA Map Code	Sampling Point
	Liffey Estuary Lower
DB 120	Dodder / Grand Canal Basin
DB 210	East Link Toll Bridge
DB 220	RO RO Ramp No.5 (Old Treatment Works Outfall)
DB 410	Ringsend Cascade
DB 420	Poolbeg Lighthouse
	Liffey Estuary Upper
DB 020	Matt Talbot Bridge
	Tolka Estuary
DB 320	East Point Business Park Bridge
DB 330	Castle Avenue
DB 340	Clontarf Boat Club
DB 350	South Lagoon at Bull Wall Wooden Bridge
	Tolka
DB 300	Upstream of Drumcondra Bridge

A summary of transitional water quality compliance with SI 272 of 2009 for the above locations is presented in Table 2.3.2. This shows full compliance with temperature and dissolved oxygen (lower) at all locations on all survey dates.

One dissolved oxygen (upper) exceedance (slight) occurred in the Liffey at DB 020 (Matt Talbot Bridge, Surface). The result was 131% saturation at 5.73 PSU.
One dissolved oxygen (upper) exceedance (slight) occurred in the Tolka Estuary at DB 340 (Clontarf Boat Club, Depth). The result was 123% saturation at 33.4 PSU.
Dissolved oxygen (upper) exceedances (slight) occurred in the Tolka at DB 300 (Upstream of Drumcondra Bridge) on two survey dates. Results were 135% saturation at 0 PSU and 131% saturation at 0 PSU.

One BOD exceedance(slight) occurred in the Liffey at DB 020 (Matt Talbot Bridge, Surface). The result was 5 mg/l O_2.

Nine Molybdate Reactive Phosphate (MRP) exceedances occurred as follows :

Location	MRP 2011 Median Result	SI 272 Standard	Comment
	Liffey		
DB 410 (Surface)	231 ug/l P	< 40 ug/l P	SW1 Discharge Impact
	Tolka		
DB 320 (Surface)	121 ug/l P	< 60 ug/l P	River / SW1 Impacts
DB 320 (Depth)	133 ug/l P	< 60 ug/l P	River / SW1 Impacts
DB 330 (Surface)	75 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 330 (Depth)	59 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 340 (Surface)	64 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 350 (Surface)	57 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 350 (Depth)	51 ug/l P	< 40 ug/l P	River / SW1 Impacts
DB 300 (Surface)	65 ug/l P	< 60 ug/l P	River / SW1 Impacts

2.3.3 Marine Monitoring – Coastal Water Monitoring – Dublin Bay - Points Agreed with the EPA

A total of 6 surveys were carried out at 9 locations in Dublin Bay during 2011. These locations - 6 coastal waters and 3 Irish Sea locations (*), agreed with the EPA, are tabulated below:

EPA Map Code	Sampling Point
	Dublin Bay
DB 610	Off Bailey Lighthouse, Howth
DB 430	1 km. NE Poolbeg Lighthouse
DB 450	South Bull Buoy, 1 km. SE Poolbeg Lighthouse
DB 510*	2.5 km. ENE Poolbeg Lighthouse
DB 540*	2.5 km. SSE Poolbeg Lighthouse
DB 550	No.4 Buoy, 2.5 km. E of S Poolbeg Lighthouse
DB 560	Drumleck Point, Howth, 5 km. ENE Poolbeg Lighthouse
DB 570*	5 km. ESE Poolbeg Lighthouse
DB 580	Dun Laoghaire, 5 km. E of S Poolbeg Lighthouse

These locations were sampled at surface (S) and depth (D).

A summary of coastal water quality compliance with SI 272 of 2009 for the above locations is presented in Table 2.3.3. This shows full compliance with temperature, dissolved oxygen (lower) and dissolved oxygen (upper) and Chlorophyll at all 9 locations on all survey dates.

The Dissolved Inorganic Nitrogen (DIN) standard for coastal waters was complied fully with at DB 580 (off Dun Laoghaire), at DB 610 (Surface), DB 450 (Depth) and DB 560 (Depth) on all survey. dates. All other sampling points complied fully at all locations on the surveys carried out in May, June, July, August and September. The survey in April (14th.) was carried out during ebb tidal conditions. Exceedances in DIN occurred in samples from the April survey only, at the locations tabulated below :

Location	DIN Result	PSU	Comment
DB 610 (Depth)	798 ug/l N	33.2	Doldrum Bay Discharge Impact
DB 430 (Surface)	497 ug/l N	31.0	River / SW1 Impacts
DB 430 (Depth)	317 ug/l N	33.1	River / SW1 Impacts
DB 450 (Surface)	2278 ug/l N	31.9	River / SW1 Impacts
DB 550 (Surface)	2820 ug/l N	31.8	River / SW1 Impacts
DB 550 (Depth)	434 ug/l N	33.2	River / SW1 Impacts
DB 560 (Surface)	1218 ug/l N	32.8	Doldrum Bay Discharge Impact

SI 272 Standard for HIGH Status : DIN < 170 ug/l
GOOD Status : DIN < 250 ug/l (35 PSU)
DIN < 2,600 ug/l (0 PSU)

Impacts of the SW1 effluent discharge on coastal water DIN are identified at 3 sampling locations :

- DB 430 (Surface and Depth), 1 km. NE of Poolbeg Lighthouse under ebbing tidal conditions
- DB 550 (Surface and Depth), No.4 Buoy, 2.5 km. E of S Poolbeg Lighthouse under ebbing tidal conditions
- DB 450 (Surface), South Bull Buoy, 1 km. SE of Poolbeg Lighthouse under ebbing tidal conditions

Riverine DIN in the transitional waters of the Liffey and Tolka estuaries is likely to contribute to the DIN recorded at the above locations especially during ebbing tidal conditions.

2.3.4 Shoreline Monitoring – 2011 Bathing Season

Bathing Water is currently regulated by the Bathing Water Quality Regulations, 2008 (SI No.79 of 2008).

Shoreline sampling was carried out at 8 locations during the 2011 bathing season (Dollymount North, Dollymount Bathing Zone*, Dollymount South, Bull Wall, Poolbeg, Half Moon Club, Sandymount* and Merrion*).

A summary of bathing water quality compliance with SI 272 of 2009 for the above locations, three of which are designated* is presented in Table 2.3.4.

In summary:

Designated bathing waters at Dollymount (Bathing Zone) and Merrion Strand complied in 2011 with the Bathing Water Regulations. Sandymount did not comply due to elevated E.Coli counts.
This is the subject of further investigations.

The remaining 5 locations are not designated bathing waters.

Table 2.3.1 Marine Monitoring Data Compliance with SI 272 of 2009 – Transitional Water Standards

Summary for 2011 (ASW2 to ASW10) - Designated as Sensitive to Eutrophication (UWW Regulations)

Parameter	EPA MAP Reference Code	Temperature	D.O. Lower % Sat	D.O. Upper % Sat	BOD	MRP
Standard		< 1.5 degrees C within mixing zone*	>70 (0 PSU) > 80 (35 PSU)	<130 (0 PSU) <120 (35 PSU)	< 4.0 (mg/l)	<0.06 mg/l (0-17 PSU) < 0.04 mg/l (35 PSU)
ASW-2 (S)	-	All < 16.4	✓	✓	✓	X (Median value = 114 ug/l P)
(D)	-	All < 16.1	✓	✓	✓	X (Median value = 48 ug/l P)
ASW-3 (S)	-	All < 18.6	✓	✓	✓	X (Median value = 147 ug/l P)
(D)	-	All < 16.0	✓	✓	✓	✓
ASW-4 (S)	-	All < 19.0	✓	✓	✓	✓
(D)	-	All < 19.0	✓	✓	✓	✓
ASW-5 (S)	-	All < 19.7	✓	✓	✓	✓
(D)	-	All < 15.9	✓	✓	✓	✓
ASW-6 (S)	DB 000	All < 17.2	✓	✓	✓	✓
ASW-7 (S)	DB 010	All < 16.6	✓	✓	✓	✓
ASW-8 (S)	-	All < 16.4	✓	✓	✓	✓
ASW-9 (S)	DB 210	All < 16.2	✓	✓	✓	✓
ASW-10 (S)	DB 310	All < 15.3	✓	X (132% at 2.9 PSU)	✓	X (Median value = 96 ug/l P)

***Note that no mixing zone was set in Licence D0034-01**

Table 2.3.2 Marine Monitoring Data Compliance with SI 272 of 2009 – Transitional Water Standards

Summary 2011 (Liffey and Tolka Estuary Sampling Points) - also Sensitive to Eutrophication

Parameter	EPA MAP Reference Code	Temperature	D.O. Lower % Sat	D.O. Upper % Sat	BOD	MRP
SI 272 Standard		< 1.5 degrees C within mixing zone*	>70 (0 PSU) > 80 (35 PSU)	<130 (0 PSU) <120 (35 PSU)	< 4.0 (mg/l)	<0.06 mg/l (0-17 PSU) < 0.04 mg/l (35 PSU)
Liffey						
130800 (S)	DB 120	All < 16.3	✓	✓	✓	✓
130801 (D)	DB 120	All < 15.9	✓	✓	✓	✓
130810 (S)	DB 210	All < 16.3	✓	✓	✓	✓
130811 (D)	DB 210	All < 15.9	✓	✓	✓	✓
130820 (S)	DB 220	All < 17.0	✓	✓	✓	✓
130821 (D)	DB 220	All < 16.0	✓	✓	✓	✓
130830 (S)	DB 410	All < 18.8	✓	✓	✓	X (Median value = 231 ug/l P)
130831 (D)	DB 410	All < 16.1	✓	✓	✓	✓
130840 (S)	DB 420	All < 15.8	✓	✓	✓	✓
130841 (D)	DB 420	All < 15.7	✓	✓	✓	✓
130870 (S)	DB 020	All < 17.1	✓	X (DO = 131)	X (BOD = 5)	✓
130871 (D)	DB 020	All < 16.0	✓	✓	✓	✓
Tolka						
130900 (S)	DB 320	All < 16.3	✓	✓	✓	X (Median value = 121 ug/l P)
130901 (D)	DB 320	All < 17.3	✓	✓	✓	X (Median value = 133 ug/l P)
130910 (S)	DB 330	All < 17.9	✓	✓	✓	X (Median value = 75 ug/l P)
130911 (D)	DB 330	All < 16.7	✓	✓	✓	X (Median value = 59 ug/l P)
130920 (S)	DB 340	All < 16.7	✓	✓	✓	X (Median value = 64 ug/l P)
130921 (D)	DB 340	All < 16.2	✓	X (DO = 123)	✓	✓
130930 (S)	DB 350	All < 17.1	✓	✓	✓	X (Median value = 57 ug/l P)
130931 (D)	DB 350	All < 17.1	✓	✓	✓	X (Median value = 51 ug/l P)
45076 (S)	DB 300	All < 15.3	✓	X (DO = 131/135)	✓	X (Median value = 65 ug/l P)

Table 2.3.3 Marine Monitoring Data Compliance with SI 272 of 2009 – Coastal Water Standards Summary 2011 (Dublin Bay Sampling Points)

Parameter	EPA MAP Reference Code	Temperature	D.O. Lower % Sat	D.O. Upper % Sat	Chlorophyll Good / Moderate	BOD	MRP	DIN Coastal Waters
SI 272 Standard		< 1.5 degrees C within mixing zone*	>70 (0 PSU) > 80 (35 PSU)	<130 (0 PSU) <120 (35 PSU)	5 ug/l (Med) 10 ug/l (90%-ile)	< 4.0 (mg/l)	<0.06 mg/l (0-17 PSU) < 0.04 mg/l (35 PSU)	<0.17mg/l 34.5PSU <2.6 mg/l (0 PSU) <0.25 mg/l 34.5PSU
130600 (S)	DB 610	All < 15.5	✓	✓	✓	✓	✓	✓
130601 (D)	DB 610	All < 15.5	✓	✓	✓	✓	✓	Max DIN = 798 ug/l N
130700 (S)	DB 430	All < 15.7	✓	✓	✓	✓	✓	Max DIN = 497 ug/l N
130701 (D)	DB 430	All < 15.4	✓	✓	✓	✓	✓	Max DIN = 317 ug/l N
130710 (S)	DB 450	All < 15.1	✓	✓	✓	✓	✓	Max DIN = 2276 ug/l N
130711 (D)	DB 450	All < 15.3	✓	✓	✓	✓	✓	✓
130720 (S)	**DB 510***	All < 16.1	✓	✓	✓	✓	✓	✓
130721 (D)	**DB 510***	All < 15.5	✓	✓	✓	✓	✓	✓
130730 (S)	**DB 540***	All < 15.1	✓	✓	✓	✓	✓	Max DIN = 376 ug/l N
130731 (D)	**DB 540***	All < 15.3	✓	✓	✓	✓	✓	Max DIN = 499 ug/l N
130740 (S)	DB 550	All < 15.2	✓	✓	✓	✓	✓	Max DIN = 2820 ug/l N
130741 (D)	DB 550	All < 15.4	✓	✓	✓	✓	✓	Max DIN = 434 ug/l N
130750 (S)	DB 560	All < 16	✓	✓	✓	✓	✓	Max DIN = 1218 ug/l N
130751 (D)	DB 560	All < 15.6	✓	✓	✓	✓	✓	✓
130760 (S)	**DB 570***	All < 15.5	✓	✓	✓	✓	✓	✓
130761 (D)	**DB 570***	All < 15.3	✓	✓	✓	✓	✓	✓
130770 (S)	DB 580	All < 15.4	✓	✓	✓	✓	✓	✓
130771 (D)	DB 580	All < 15.3	✓	✓	✓	✓	✓	✓

Table 2.3.4 Shore Monitoring Data Compliance with Bathing Water Regulations, 2008.

Summary from 25th May to September, 2011 (ASW11 to ASW18)

Parameter	Sampling Location:	Faecal Coliform	N	Escherichia Coli	N	Intestinal Enterococci	N	Visual Inspection	N
BW Standard		**NONE**		**100 (cfu/100 mls) (80%-ile) G 2000 (cfu/100 mls) (95%-ile) M**		**100 (cfu/100 mls) (90%-ile) G**			
Licence Monitoring Frequency			**4**		**4**		**4**		**Weekly**
ASW11	Dollymount North	N/A	**0**	N/A	**20**	N/A	**20**	✓	**17**
ASW12 *	**Dollymount Bathing Zone**	N/A	**0**	✓	**20**	✓	**20**	✓	**20**
ASW13	Dollymount South	N/A	**0**	N/A	**21**	N/A	**21**	✓	**18**
ASW14	Bull Wall Causeway	N/A	**0**	N/A	**21**	N/A	**21**	✓	**21**
ASW15	Poolbeg Outall (Main)	N/A	**0**	N/A	**20**	N/A	**19**	✓	**16**
ASW16	Half Moon Club, Southside	N/A	**0**	N/A	**20**	N/A	**20**	✓	**20**
ASW17*	**Sandymount Strand**	N/A	**0**	**X**	**20**	✓	**20**	✓	**20**
ASW18*	**Merrion Strand**	N/A	**0**	✓	**20**	✓	**20**	✓	**20**

2.4. Data Collection and Reporting Requirements under the UWWTD

The Urban Wastewater Returns were uploaded to EDEN on 24/02/2012.

2.5. Pollutant Release and Transfer (PRTR) – Report for Previous Year

The PRTR report for 2011 was submitted to the EPA on the 22nd March 2012. A copy of the relevant extracts is included in this section.

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.13

REFERENCE YEAR	2011

1. FACILITY IDENTIFICATION

Parent Company Name	Dublin City Council
Facility Name	Ringsend Waste Water Treatment Plant
PRTR Identification Number	D0034
Licence Number	D0034-01

Waste or IPPC Classes of Activity

N	class_name
30.4	General

Address 1	Block 4, Floor 4
Address 2	Civic Offices
Address 3	Wood Quay
Address 4	Dublin 8
	Dublin
Country	Ireland
Coordinates of Location	-6.19584 53.3388
River Basin District	IEEA
NACE Code	3700
Main Economic Activity	Sewerage
AER Returns Contact Name	Pat Cronin
AER Returns Contact Email Address	pat.cronin@dublincity.ie
AER Returns Contact Position	Executive Manager
AER Returns Contact Telephone Number	222 2069
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
5(f)	Urban waste-water treatment plants

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	
Have you been granted an exemption ?	
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	24.9	0.0	24.9
02	Carbon monoxide (CO)	E	ESTIMATE	EPA UWWTP Tool v4.0	10094.1	14951.2	0.0	4857.1
03	Carbon dioxide (CO2)	E	ESTIMATE	EPA UWWTP Tool v4.0	2974950.0	37701138.3	0.0	34726188.3
05	Nitrous oxide (N2O)	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	247.4	0.0	247.4
07	Non-methane volatile organic compounds (NMVOC)	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	1533.4	0.0	1533.4
08	Nitrogen oxides (NOx/NO2)	E	ESTIMATE	EPA UWWTP Tool v4.0	30871.7	45726.5	0.0	14854.8
11	**Sulphur oxides (SOx/SO2)**	E	ESTIMATE	EPA UWWTP Tool v4.0	0.0	1449.6	0.0	1449.6

ADD NEW ROW | DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

ADD NEW ROW | DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

ADD NEW ROW | DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Ringsend Waste Water Treatment Plant

Please enter summary data on the quantities of methane flared and / or utilised

	T (Total) kg/Year	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Facility Total Capacity m3 per hour	
Total estimated methane generation (as per site model)	0.0				N/A	
Methane flared	0.0				0.0	(Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0				N/A	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					ADD EMISSION POINT	QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
44	1,2,3,4,5,6-hexachlorocyclohexane(HCH)	E	ESTIMATE	EPA WWTP Tool V4.0	0.434	0.442	0.0	0.008
34	1,2-dichloroethane (EDC)	E	ESTIMATE	EPA WWTP Tool V4.0	7.237	7.375	0.0	0.138
25	Alachlor	E	ESTIMATE	EPA WWTP Tool V4.0	1.511	1.54	0.0	0.029
61	Anthracene	E	ESTIMATE	EPA WWTP Tool V4.0	1.532	1.561	0.0	0.029
17	Arsenic and compounds (as As)	E	ESTIMATE	EPA WWTP Tool V4.0	144.62	147.37	0.0	2.75
27	Atrazine	E	ESTIMATE	EPA WWTP Tool V4.0	9.333	9.51	0.0	0.177
91	Benzo(g,h,i)perylene	E	ESTIMATE	EPA WWTP Tool V4.0	0.582	0.593	0.0	0.011
18	Cadmium and compounds (as Cd)	E	ESTIMATE	EPA WWTP Tool V4.0	7.78	7.928	0.0	0.148
28	Chlordane	E	ESTIMATE	EPA WWTP Tool V4.0	0.289	0.295	0.0	0.006
30	Chlorfenvinphos	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
79	Chlorides (as Cl)	E	ESTIMATE	EPA WWTP Tool V4.0	36016735.4	36701710.7	0.0	684975.3
31	Chloro-alkanes, C10-C13	E	ESTIMATE	EPA WWTP Tool V4.0	30.4	30.978	0.0	0.578
19	Chromium and compounds (as Cr)	E	ESTIMATE	EPA WWTP Tool V4.0	53.362	54.377	0.0	1.015
20	Copper and compounds (as Cu)	E	ESTIMATE	EPA WWTP Tool V4.0	256.582	261.462	0.0	4.88
82	Cyanides (as total CN)	E	ESTIMATE	EPA WWTP Tool V4.0	252.921	257.731	0.0	4.81
33	DDT	E	ESTIMATE	EPA WWTP Tool V4.0	1.554	1.584	0.0	0.03
70	Di-(2-ethyl hexyl) phthalate (DEHP)	E	ESTIMATE	EPA WWTP Tool V4.0	181.367	184.816	0.0	3.449
36	Dieldrin	E	ESTIMATE	EPA WWTP Tool V4.0	30.059	30.631	0.0	0.572
37	Diuron	E	ESTIMATE	EPA WWTP Tool V4.0	13.653	13.913	0.0	0.26
38	Endosulphan	E	ESTIMATE	EPA WWTP Tool V4.0	0.9	0.917	0.0	0.017
65	Ethyl benzene	E	ESTIMATE	EPA WWTP Tool V4.0	11.567	11.787	0.0	0.22
88	Fluoranthene	E	ESTIMATE	EPA WWTP Tool V4.0	1.998	2.036	0.0	0.038
83	Fluorides (as total F)	E	ESTIMATE	EPA WWTP Tool V4.0	50625.93	51588.75	0.0	962.82
40	Halogenated organic compounds (as AOX)	E	ESTIMATE	EPA WWTP Tool V4.0	345.484	352.054	0.0	6.57
42	Hexachlorobenzene (HCB)	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
43	Hexachlorobutadiene (HCBD)	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
89	Isodrin	E	ESTIMATE	EPA WWTP Tool V4.0	8.501	8.663	0.0	0.162
23	Lead and compounds (as Pb)	E	ESTIMATE	EPA WWTP Tool V4.0	143.989	146.727	0.0	2.738
45	Lindane	E	ESTIMATE	EPA WWTP Tool V4.0	0.362	0.369	0.0	0.007
21	Mercury and compounds (as Hg)	E	ESTIMATE	EPA WWTP Tool V4.0	9.499	9.68	0.0	0.181
68	Naphthalene	E	ESTIMATE	EPA WWTP Tool V4.0	66.292	67.553	0.0	1.261
22	Nickel and compounds (as Ni)	E	ESTIMATE	EPA WWTP Tool V4.0	1122.224	1143.567	0.0	21.343
64	Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)	E	ESTIMATE	EPA WWTP Tool V4.0	9.586	9.768	0.0	0.182
69	Organotin compounds (as total Sn)	E	ESTIMATE	EPA WWTP Tool V4.0	1.446	1.474	0.0	0.028
48	Pentachlorobenzene	E	ESTIMATE	EPA WWTP Tool V4.0	0.145	0.148	0.0	0.003
71	Phenols (as total C)	E	ESTIMATE	EPA WWTP Tool V4.0	1788.238	1822.247	0.0	34.009
50	Polychlorinated biphenyls (PCBs)	E	ESTIMATE	EPA WWTP Tool V4.0	1.191	1.214	0.0	0.023
72	Polycyclic aromatic hydrocarbons (PAHs)	E	ESTIMATE	EPA WWTP Tool V4.0	116.787	119.008	0.0	2.221
52	Tetrachloroethylene (PER)	E	ESTIMATE	EPA WWTP Tool V4.0	64.8	66.032	0.0	1.232
73	Toluene	E	ESTIMATE	EPA WWTP Tool V4.0	16.931	17.253	0.0	0.322
12	Total nitrogen	M	OTH	Digestion & Colorimetry	2760465.4	2851606.72	0.0	91141.32
76	Total organic carbon (TOC) (as total C or COD/3)	M	OTH	Potassium Dichromate	4130318.96	4440658.6	0.0	310339.64
13	Total phosphorus	M	OTH	Digestion & Colorimetry	514371.34	526867.2	0.0	12495.86
57	Trichloroethylene	E	ESTIMATE	EPA WWTP Tool V4.0	10.98	11.189	0.0	0.209
77	Trifluralin	E	ESTIMATE	EPA WWTP Tool V4.0	0.25	0.255	0.0	0.005
75	Triphenyltin and compounds	E	ESTIMATE	EPA WWTP Tool V4.0	0.285	0.29	0.0	0.005
60	Vinyl chloride	E	ESTIMATE	EPA WWTP Tool V4.0	7.237	7.375	0.0	0.138
78	Xylenes	E	ESTIMATE	EPA WWTP Tool V4.0	40.503	41.273	0.0	0.77
24	**Zinc and compounds (as Zn)**	E	ESTIMATE	EPA WWTP Tool V4.0	5151.146	5249.112	0.0	97.966

ADD NEW ROW | DELETE ROW *

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	19 08 01	No	1051.0	screenings	D1	M	Weighed	Offsite in Ireland	Greenstar Ltd.,CPD 735/5	Unit 41 ,Cookstown Industrial Estate,Tallaght,Dublin 24,Ireland		
Within the Country	19 08 02	No	19.0	waste from desanding	D1	M	Weighed	Offsite in Ireland	Greenstar Ltd.,CPD 735/5	Unit 41 ,Cookstown Industrial Estate,Tallaght,Dublin 24,Ireland		
Within the Country	**19 08 05**	**No**	22145.0	sludges from treatment of urban waste water	R10	M	Weighed	Offsite in Ireland	Peadar Byrne Haulage,990s70099508	Peadar Byrne Haulage,Baltinglass,Wicklow,Co. Wicklow,Ireland		

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					ADD EMISSION POINT	QUANTITY		
No. Annex II	Name	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

ADD NEW ROW | DELETE ROW * * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					ADD EMISSION POINT	QUANTITY		
Pollutant No.	Name	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
238	Ammonia (as N)	M	OTH	Colorimetric	1323502.276	1359868.846	0.0	36366.57
303	BOD	M	OTH	5-day BOD Test	2775739.004	3633918.004	0.0	858179.0
306	COD	M	OTH	Potassium Dichromate	12390956.88	13321975.8	0.0	931018.92
362	Kjeldahl Nitrogen	M	OTH	Digestion & Colorimetry	1818074.9	1904230.17	0.0	86155.27
327	Nitrate (as N)	M	OTH	Colorimetric	892988.567	898014.819	0.0	5026.252
372	Nitrite (as N)	M	OTH	Colorimetric	49670.357	50235.643	0.0	565.286
387	Ortho-phosphate (as P)	M	OTH	Colorimetric	358052.791	361132.362	0.0	3079.571
240	Suspended Solids	M	OTH	Gravimetric	5549426.9	6047118.1	0.0	497691.2

3. Operational Reports Summary

3.1. Complaints Summary

All complaints regarding the network received by Dublin City Council are recorded on a database. Table 3.1 outlines those complaints which had the potential to adversely impact waters.

Table 3.1 Complaints Summary, Dublin City Council

Date	Incident Description	Cause	Corrective Action	Authorities Contacted	Closed
31/12/2010	Fish Kill Ranelagh	Unknown	Fish removed from pond	Fisheries	Y
14/02/2011	Overflow at Lansdowne Valley	Blocked sewer	Blockage cleared	South Dublin Co. Council	Y
05/04/2011	Sewage in Tolka	Blocked sewer	Blockage cleared	None	Y
28/04/2011	Sewage in Liffey	Blocked sewer	Blockage cleared	None	Y
23/06/2011	Sewage in Liffey	Blocked sewer	Blockage cleared	None	Y

3.2. Reported Incidents Summary

Following the issuing of this licence, Dublin City Council met with the EPA and agreed to forward summary incident reports to the EPA on a quarterly basis. Table 3.2 outlines the reported incidents for 2011.

Table 3.2 Reported Incidents Summary Table, Dublin City Council

Incident Type	Incident Description	Cause	No. of Incidents	Corrective Action	Reported to EPA	Closed
Non-Compliance	ELV set for TN (SW1)	Lack of Treatment on-site	All dates in 2011	Long Sea Outfall	Yes Quarterly	No
Non-Compliance	ELV set for TP (SW1)	Lack of Treatment on-site	All dates in 2011	Long Sea Outfall	Yes Quarterly	No
Non-Compliance	ELV set for BOD (SW1)	Q1 - Cold Weather / Capacity issues	28/138 5/138*	Extension of Treatment Facilities	Yes Quarterly	No
Non-Compliance	ELV set for COD (SW1)	Q1 - Cold Weather / Capacity issues	19/241 4/241*	Extension of Treatment Facilities	Yes Quarterly	No
Non-Compliance	ELV set for TSS (SW1)	Q1 - Cold Weather / Capacity issues	85/241 12/241*	Extension of Treatment Facilities	Yes Quarterly	No
Engineering Survey of Effluent Channel	Closure of Effluent Channel	Survey for extension of WWTP	21/09/2011 to 22/09/2011	Diversion of Effluent to Stormwater Tanks	Yes	Yes

*see Condition 2.1.2 on compliance

4. Infrastructural Assessment and Programme of Improvements

4.1. Treatment Capacity

Condition 1 of the licence requires the licensee to complete an annual assessment of the remaining organic and hydraulic retention capacities within the waste water works. The organic capacity of the works was exceeded in 2011 and a request for a technical amendment to the licence has been made to the EPA in light of this. This matter will be addressed with the expansion to the works, that part of which is due to be completed at the end of 2015. Table 4.1 is the summary report table for treatment capacity.

Table 4.1 Treatment Capacity Report Summary Table

Hydraulic Capacity – Average Design / As Constructed (m3/day)	470,000
Hydraulic Capacity – Current loading (m3/day) **(Annual Mean Daily Value)**	397,533
Hydraulic Capacity – Remaining (m3/day)	72,467
Organic Capacity – Average Design / As Constructed (PE)	1.64 million
Organic Capacity - Current loading (PE) **(Annual Daily Mean Value)**	1.74 million
Organic Capacity –Current loading (PE) **(Maximum Weekly Average)**	2.49 million
Organic Capacity – Remaining (PE)	Over capacity
Will the capacity be exceeded in the next three years? (Yes / No)	Yes

4.2. Storm Water Overflow Identification and Inspection Report

Condition 4.12 of the Discharge Licence requires the carrying out of an investigation and assessment of storm water overflows, including the prioritisation of the most significantly non-compliant storm water overflows for improvement works. Table 4.2 summarises the results of work done to comply with this requirement.

Table 4.2 SWO Identification and Inspection Summary Report Table

How many SWOs are listed in the Schedule A4 of the WWDL?	176*
How many additional SWOs are listed in the agglomeration?	0
Total number of SWOs in the agglomeration?	176*
How many SWOs are listed as compliant with the DoEHLG Guidance?	Unknown**
For each SWO identified as non-compliant with DoEHLG Guidance is there a corrective action plan included in the Programme of Improvements?	N/A
Does the SWO assessment include the requirements of Schedule A3 and C3?	A3 – N/A C3 – Yes
Have the EPA been advised of any additional SWOs/changes to Schedule A3 and A4 under Condition 1.7?	No

* excluding the storm water overflow at the Waste Water Treatment Works
** this is still work in progress

The following works have been carried out in 2011 to address this licence condition.

4.2.1 City Centre Sewerage Scheme

The first stage of this Scheme was a detailed Flow Survey of the entire catchment, including water quality sampling. The Contract for a Flow Survey was completed at the end of November 2010. Future results arising from the combined sewer overflow studies and city centre sewerage schemes will form the basis of this section of the AER. It is hoped to invite tenders by Q3 of 2012 for a Service Provider to carry out a detailed assessment of the catchment and propose solutions in relation to the City Centre Catchment.

4.2.2 Review of the Greater Dublin Strategic Drainage Study (GDSDS) Reports

The data on storm water overflows contained within the Greater Dublin Strategic Drainage Study (GDSDS) was collated and the storm water overflows ranked according to greatest estimated annual volumetric flow. The percentage contribution to this flow from every 10 storm water overflows was determined. The top 20 storm water overflows account for approximately 80% of the spill volume, with the top 40 accounting for approximately 93%. An assessment into the most frequent spillers is also underway. Table 4.3 below contains details of the top ten most significant storm water overflows and the full list is contained in Appendix 4. All this data is from the GDSDS, which must be verified by more detailed studies, such as the City Centre Sewerage Scheme.

It is intended in 2012 to carry out a full review of the top 5 to 10 storm water overflows to verify the data in the GDSDS reports, to determine their impact on their receiving waters and to determine what actions are necessary to address excess spillages from them. It is anticipated that works carried out to address excess spillages from storm water overflows will require capital funding and, therefore, will be addressed under the Water Services Investment Programme.

Table 4.3 Top 10 Storm water overflows ranked according to greatest estimated annual volumetric flow

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	STC25 Ref	Address	EASTING	NORTHING	Volume Emitted	Cumulative Flows	% Cumulative Flow
CSO186DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17328507	Shelbourne Road on school grounds	317881	232507	521299	521299	12.1
CSO88DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17346807	East Wall Pumping Station	317683	234884	394401	915700	21.3
CSO180DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18321802	At railway bridge, Beatty's Avenue, Ballsbridge, D4	318106.6	232850	325145	1240845	28.9
CSO171DCC	Storm Water Overflow	Dublin City Council	River	River Dodder (via Swan Culvert)		SO17325401	10 Clyde Road, Ballsbridge, D4	317550	232447	284186	1525031	35.5
CSO36DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17342203	Jcn. Sir John Rogerson's Quay and Cardiff Lane	317234	234294	237469	1762500	41.1
CSO176DCC	Storm Water Overflow	Dublin City Council	River	River Dodder (via Swan Culvert)		SO17326503	Opp. 38 Elgin Road	317639	232519	196982	1959482	45.6
CSO168DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18331407	Side of 60 Derrynane Gardens, off Bath Avenue	318139	233413.1	194860	2154342	50.2
CSO156DCC	Storm Water Overflow	Dublin City Council	Transitional	Santry River		SO22371604	Watermill Road near James Larkin Road	322127.4	237600.7	163715	2318057	54.0
CSO49DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO13346404	Opp. 27 Parkgate Street	313699	234415	156055	2474112	57.6
CSO84DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15341109	Adj. O'Donovan Rossa Bridge, Wood Quay	315139	234124	126886	2600998	60.6

4.3. Report on Progress Made and Proposals being developed to meet the Improvement Programme Requirements

Condition 5 of the licence requires the licensee to prepare and implement an improvement programme to maximise the effectiveness and efficiency of the work as specified in Condition 5.1. Tables 4.4 and 4.5 below summarise the data on these works.

Table 4.4 Schedule A3 and C Improvement Programme Summary Report (1)

Specified Improvement Programmes	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing Works
Improvement Programme for Primary Discharge						
Upgrade waste water treatment plant and ancillary works in accordance with Condition 5.5	C.1	22nd December 2015	No	At planning stage	Includes Long Sea Outfall, extension and upgrade SI largely complete	Estimated 2015/16
Upgrade storm water storage tank at WWTP as necessary	C.1	Not applicable	Not applicable	Not applicable	There are no plans to upgrade the storm water storage tanks at the Works.	See technical amendment request
Any other work notified in writing by the Agency	C.1					
Improvement Programme for Secondary Discharge(s)	C.2	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Specified Improvement Programmes	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing Works
Improvement Programme for Storm Water Overflows						
City Centre Sewerage Scheme (CCSS)	C.3	None specified	Not applicable	Approval for tender documents sought	Preliminary SWO survey carried out in 2010/2011 in City Centre area. Conclusion was that full study of the SWOs should be carried out. Approval for tender documents sought	To be determined
North Docklands Sewerage Scheme	C4	None specified	Not applicable	Work on Site	Construction of Spencer Dock Pumping Station under way; tenders for construction of new sewers expected to be invited by Q2 of 2012	Spencer Dock Pumping Station: end 2012
Rathmines and Pembroke (R&P) Scheme	C.3	None specified	Not applicable	A Project Engineer has been appointed.	A Project Engineer has been appointed A request to appoint a Project Consultant will be submitted to the DECLG.	At preliminary stage

Specified Improvement Programmes	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing Works
Assessment of sea water infiltration to drainage network	C.3	None specified	Not applicable	Not started	Network survey completed	2014
Grand Canal Surface Water Outfall Scheme	C3	None specified	Not applicable	In progress	Listed at 'Planning Stage'	Unknown
Integrated Constructed Wetland (ICW) project, Longmeadows, Chapelizod	C.3	None specified	Not applicable	Not started	At planning stage	2012/2013

Table 4.5 Schedule A3 and C Improvement Programme Summary Report (2)

Does the Improvement Programme include an assessment of the integrity of the existing wastewater works (WWTP and network) for the following>	
Capacity of the Works	Yes
Leaks from the Works	Yes
What % of leakage is reported	
Misconnections between foul sewer to surface water drainage	Yes
What % of misconnections is reported	
Surface Water Infiltration - including seawater	Yes
Groundwater Infiltration	Yes
Comment	
Does the Improvement Programme require an assessment of Secondary Discharges (e.g. cease discharge/upgrade to meet requirements) for the following:	
Receiving water body designation	No
Downstream abstractions and use of water	No
Water quality objectives for the water body	No
Comment: Schedule C does not require any additional improvement works	
Are the findings of the SWO Identification and Inspection Report included in the Improvement Programme (upgrades to meet the licence requirements)?	No
Comment: this work is still ongoing. There are a number of projects underway to assess SWOs	
For each improvement identified, does the Improvement Programme include and implementation plan that:	
Identifies and describes each improvement, including a timeframe for implementation (Condition 5.3)	No
Specifies the parameters that will be affected by the improvement	No
Estimates the costs and sources of funding	No
Estimates the water quality improvement associated with the Improvement	No
Comment: this work is still ongoing. There are a number of projects underway to assess SWOs	

The following sections give a brief update on the status of the projects that are underway to address the improvement programme requirements.

4.3.1. Upgrade to Ringsend Wastewater Treatment Works

Preliminary design and geotechnical investigation work on this project is almost complete and the EIS will be submitted to An Bord Pleanála in April 2012. The upgrade work is divided into 3 main components; immediate upgrades, additional secondary treatment and a long sea outfall. While the immediate upgrades and additional secondary treatment will complete before the end of 2015, the construction of the long sea outfall however, due to the complexity of the works, will not be completed until 2016.

4.3.2. GDRDP – City Centre Sewerage Scheme

The first stage of this Scheme included a detailed Flow Survey of the entire catchment, including water quality sampling. The Contract for a Flow Survey was completed at the end of November 2010. Included in the survey was monitoring of the performance of the storm water overflows.

Future results arising from the combined sewer overflow studies and city centre sewerage schemes will form the basis of this section of the AER. It is hoped to invite tenders by Q3 of 2012 for a Service Provider to carry out a detailed assessment of the catchment and propose solutions in relation to the City Centre Catchment.

4.3.3. GDRDP – Rathmines and Pembroke Sewerage Scheme

There were no developments with this project in 2011. A Project Engineer has been appointed to oversee the advancement of the project into 2012. It is anticipated that a request to appoint a Project Consultant will be submitted to the DECLG in 2012.

4.3.4. GRDRP – Grand Canal Surface Water Outfall

The project involves extending the existing surface water outfall into the Grand Canal Dock in a new pipeline through the dock, connecting with an existing surface water Culvert laid in Hanover Quay (Phase 1) and discharging into the River Liffey through a new outfall constructed in Sir John Rogerson's Quay. Phase 1 of the Scheme was completed in January 2003.

The Scheme is listed at “Planning Stage” in the WSIP 2010–2012 as “GDRDP: Grand Canal Surface Water Outfall”. Dublin City Council propose advancing the scheme as a construction contract in the next WSIP.

The remaining task is to complete the New Contract Documents for Phase 2 to comply with the New Conditions of Contract for Public Works Construction Contracts. It is anticipated the detailed design and contract document stage will be completed in 2012.

4.3.5. North Docklands Sewerage Scheme

This project will have a significant positive impact on the spill frequency of the existing storm water overflows in the North Docklands area of the city. The scheme is currently divided into four contracts, as outlined in table 4.6.

Table 4.6 Contracts in the North Docklands Sewerage Scheme

Contract Number	Description	Status
1	Spencer Dock Pumping Station	Construction commenced August 2011 Scheduled to be commissioned by end 2012
2	Rising Main and Pumping Station	Complete
3	Liffey Services Installation Contract	Complete
4	Provision of new sewers	Tenders are expected to be invited by Q2 2012

4.3.6. Infiltration of estuarine water into the drainage network

A study into the potential backflow of estuarine waters into the drainage network is underway. Research at the Wastewater Treatment Works suggests that the inflow to the Works is significantly impacted by estuarine water, which affects the hydraulic loading on the Works and also impacts on the treatment processes within the Works.

It is envisaged that, by preventing the flow of estuarine waters into the drainage networks, the hydraulic load on the Works will be reduced and the treatment processes within the Works will no longer be impacted on by estuarine waters.

A programme to replace non-return valves along the Liffey quay wall is currently being developed. To date, a number of non-return valves have been purchased to replace the existing non-return valves. It is necessary to carry out a risk assessment of each individual non-return valve and determine whether it is possible to replace it. As a consequence of the floods of 24th October 2011, which required staff to be assigned to the remediation and other follow-up works, this project has not advanced any further. It is intended to resume this project at the first available opportunity, subject to staff and resources availability.

5. Environmental Liability and Financial Provision

5.1. Statement of Measures

Dublin City Council is responsible for managing the infrastructure necessary for the collection, treatment and disposal of wastewater from all of its functional area and from parts of the functional areas of Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council. The City Council Divisions that maintain this infrastructure are Drainage Services Division and Wastewater Services Division. The Drainage Services Division is comprised of four sections; (Drainage) Planning & Development Control, Maintenance, Reconstruction and Pollution Control. Wastewater Services Division has responsibility for the management of the Ringsend Waste Water Treatment Plant Operation & Maintenance Contract and all pumping stations throughout the network. Infrastructural assessment and programme improvements are undertaken by the Council's Strategic Planning and Project Management Division.

In general terms, environmental risks associated with operation of the Treatment Plant and drainage network are mitigated by the following measures:-

- An Environmental Management System compliant with ISO 14001 is in place for the operation of Ringsend Treatment Works
- Comprehensive monitoring/sampling regime for the Works
- Major Emergency Plans in place, including procedures to deal with environmental incidents
- Resources deployed to operate and maintain the drainage network in an effective manner.

5.2. Environmental Liabilities Risk Assessment

Attached is a copy of the public liability insurance policy issued by Irish Public Bodies (IPB) to Dublin City Council. Dublin City Council is currently endeavouring to determine if any amendments are required to this policy arising out of the ELRA required under the discharge license.

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.

Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.

It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

To Whom It May Concern

Insured	Dublin City Council
Public Liability Policy number	IPL0000001
Employers Liability Policy number	IEI0000002
Renewal Date	1st February 2013

This is to confirm that the above numbered Policies are in force to cover all the activities of the Insured.

The Public/Products Liability limit of indemnity provided is not less than €12,700,000 any one occurrence and aggregated in any one period of insurance in respect of Products liability.

The Employers Liability limit of indemnity provided is not less than €12,700,000 any one occurrence and unlimited any one period of insurance.

Cover provided is subject to the Terms, Conditions, Exceptions and Endorsements of the Policy.

Signed Liability Underwriter
31 January 2012
(For and on Behalf of Irish Public Bodies Mutual Insurances Ltd

6. Licence Specific Reports

Licence Specific Report	Required in 2011 AER	Included in 2011 AER	Location in 2011 AER
Priority Substances Assessment	Yes	Yes	Section 6.1 Appendix 5
Drinking Water Abstraction Point Risk Assessment	No	No	N/A
Habitats Impact Assessment	No	No	N/A
Shellfish Impact Assessment	No	No	N/A
Toxicity / Leachate Management	Yes	Yes	Section 6.5
Report of Mass Loadings and Removal Efficiencies	Yes	Yes	Section 6.6

Section 6.1 Priority Substances Assessment

See detailed assessment report in Appendix 5.
The EPA recommended Priority Substances Assessment summary table is presented below :

Does the review use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA Guidance (date of issue 17/01/11) ?	Yes - Screening Analysis (as recommended for plants >50,000 PE)
Does it include a review of Trade inputs to the works?	All trade effluent licences and consents issued in the Dublin agglomeration in 2011 took into account priority substances.
Does it include a review of other inputs to the works ?	Yes – tankered wastes including leachates / saline infiltration / surface water and mains water leakage inclusion from combined sewers in the City Centre
Does it contain an assessment of the significance of the results where a listed material is present in the discharge ? (e.g. impact on the relevant EQS standard for the receiving water)	Yes – to a limited extent – the Licensee has not monitored priority substances in the receiving waters
Does the investigation identify that a priority substance is impacting the receiving waters ?	Note that a mixing zone has not been defined for SW1. See Table 6.1.5 in Appendix 5 report
List priority substances identified	See Table 6.1.5 in Appendix 5 for substances detected > EQS for specific pollutants : Copper / Glyphosate / Zinc
Where relevant are there corrective actions identified to eliminate / minimise the substances identified in the discharge ?	Yes – ongoing review of trade effluent licences and consents.
Is there a timeframe given to implement the corrective action for each substance identified ?	Yes – by 31/12/2014
List corrective actions	Reduce loading of relevant parameters in licensed discharges
List completion date	31/12/2014

Section 6.5 Toxicity / Leachate Management

6.5.1 Toxicity

It is planned to test the effluent toxicity in 2012 following agreement with the EPA.

6.5.2 Leachate Management 2011

Tankered leachates from the following 3 sources were received at the Main Lift Pumping Station and the Ringsend Wastewater Treatment Plant during 2011:

Source	2011 Volume (cubic metres)
Celtic Anglian, Greenstar, Connaught Regional Landfill, Ballinasloe	15,347
Fingal County Council, Baleally Landfill	37,325
Kerdiffstown Landfill, County Kildare	9,531
Total	**62,203**

The total volume of leachate disposed of by tanker in 2011 was 62,203 cubic metres.
This represents 15.55 % of one days average flow to the works or 0.043% of the total annual flow.
Leachates arriving for disposal are sampled and tested to check compliance with the conditions included in the terms of disposal.

Section 6.6 Summary Report of Mass Loadings Received at the Ringsend Wastewater Treatment Plant and Removal Efficiencies in 2011

Mass Loadings 2011

The mass influent and effluent loadings are based on the daily mean influent and effluent flows multiplied by the mean parameter concentrations for 2011 . See summary table below:

Parameter	2011 Influent Load (tonnes)	2011 Effluent Load (tonnes)	2011 Removal Efficiency (%)
BOD	39,613	2,649	93.32
COD	79,660	11,951	85.0
TSS	34,969	5,072	85.50
TN	5,613	2,743	51.13
TP	793	529	33.29
Annual Flow (cubic metres)	145,099,540	144,744,596	

Comment:

Efficiency of load removal for 2011 shows that the Ringsend Wastewater Treatment Plant complied well with the Urban Waste Water Treatment Regulations (2001 and 2004) requirements for minimum percentage reductions for the BOD and COD parameters.
The percentage reductions required for TSS (90%), TP (80%) and TN (70%-80%) were not complied with during 2011.

7. Certification and Sign Off

Does the AER include an executive summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and/or Environmental Quality Standards	Yes
Is there a need to advise the EPA of any modifications to the existing WWDL	Yes
List Reason	See Request for Technical Amendment
Has this process commenced	Yes – Request for Technical Amendment Submitted
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	No outstanding issues exist

I hereby certify that the Annual Environmental Report for the Dublin City Council portion of the Greater Dublin Area Agglomeration, Waste Water Discharge Licence No. D00034-01 for 2011 is accurate.

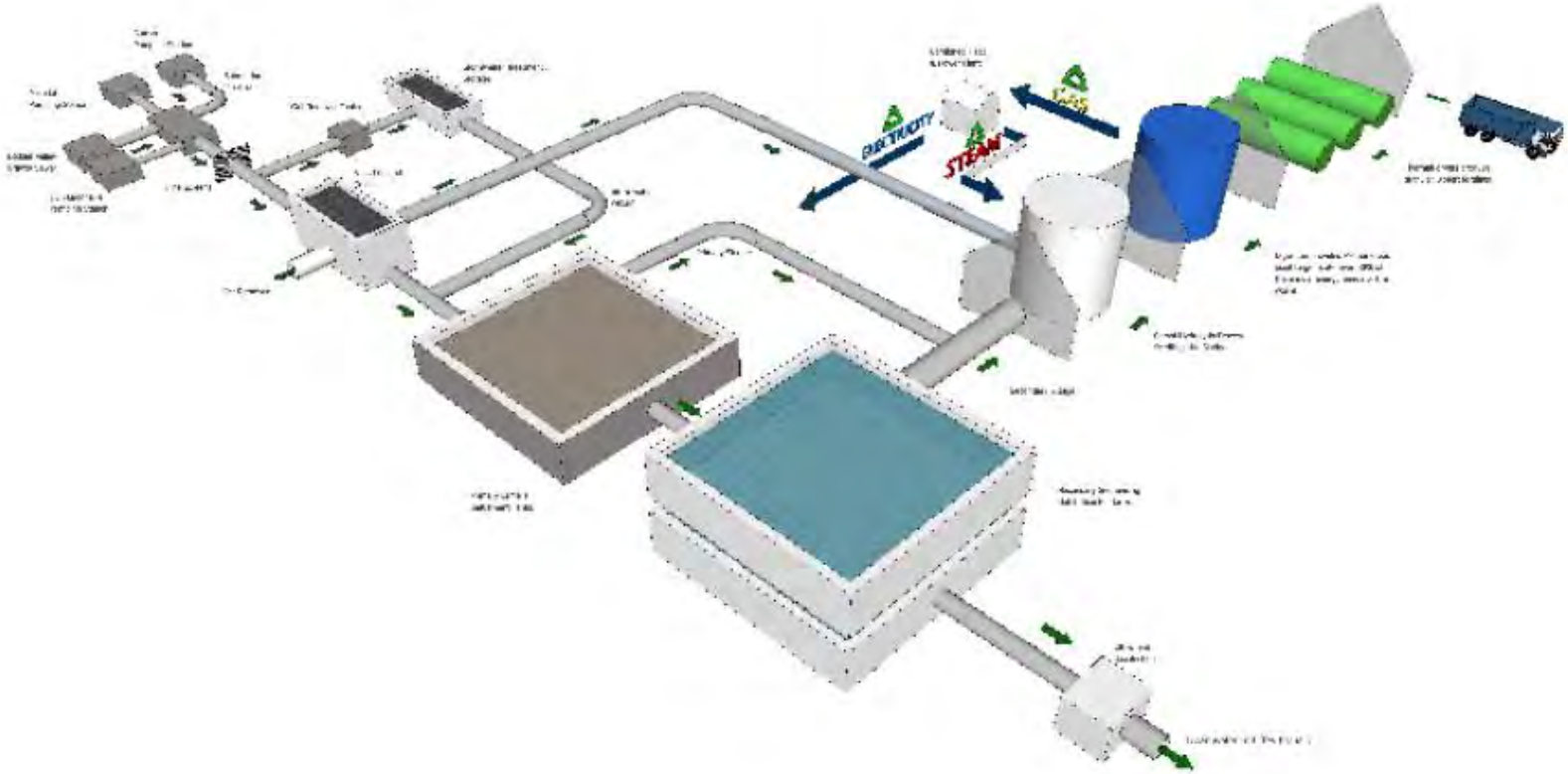
P. Cronin
Executive Manager (Engineering)
Dublin City Council

Appendices

Appendix 1 Celtic Anglian Water Schematic

celtic anglian water

Ringsend Waste Water Treatment Works, Dublin City



Appendix 2 Celtic Anglian Water Report

Ringsend Operations Review November 2010 – February 2011

Dr. Ciaran McCausland

Operations Engineer, Celtic Anglian Water

cmccausland@caw.ie

TABLE OF CONTENTS

INTRODUCTION

This report outlines the performance of Ringsend Wastewater Treatment Plant during the period November 2010 – February 2011, and describes factors which reduced the ability of the secondary treatment facility to achieve the effluent standards for a sustained number of days during this period.

Section 1 of the report gives an overview of recent plant performance; sludge management, effluent compliance and odour.

Section 2 describes how the prolonged period of cold weather in November/December 2010 affected treatment, and in particular the acute deterioration in secondary treatment following the extreme conditions of the thaw from December 26th/27th onward.

Section 3 examines the continued overloading of the secondary treatment works at Ringsend, showing how this limits the maximum MLSS that can be maintained in the SBRs.

Section 4 gives a detailed chronological report of the effects of low temperature and loss of nitrification on the MLSS and SVIs and how this led to non-compliance in the following weeks.

Finally, Section 5 presents the methodologies which are in place to recover compliance at Ringsend as soon as possible, and preventative measures to mitigate such cold events in future.

1. PLANT PERFORMANCE 2010

The sludge stream at Ringsend was expanded in 2010. The capacity of the thermal-hydrolysis stream at Ringsend was increased to 120 tDS/day following the commissioning of a 3rd CAMBI hydrolysis stream, and 4th anaerobic digester in January 2010. In addition, dryer capacity was increased with the finishing of the Dryer C ATEX upgrade in the final quarter of 2010. The figures below give an overview of sludge management at Ringsend.

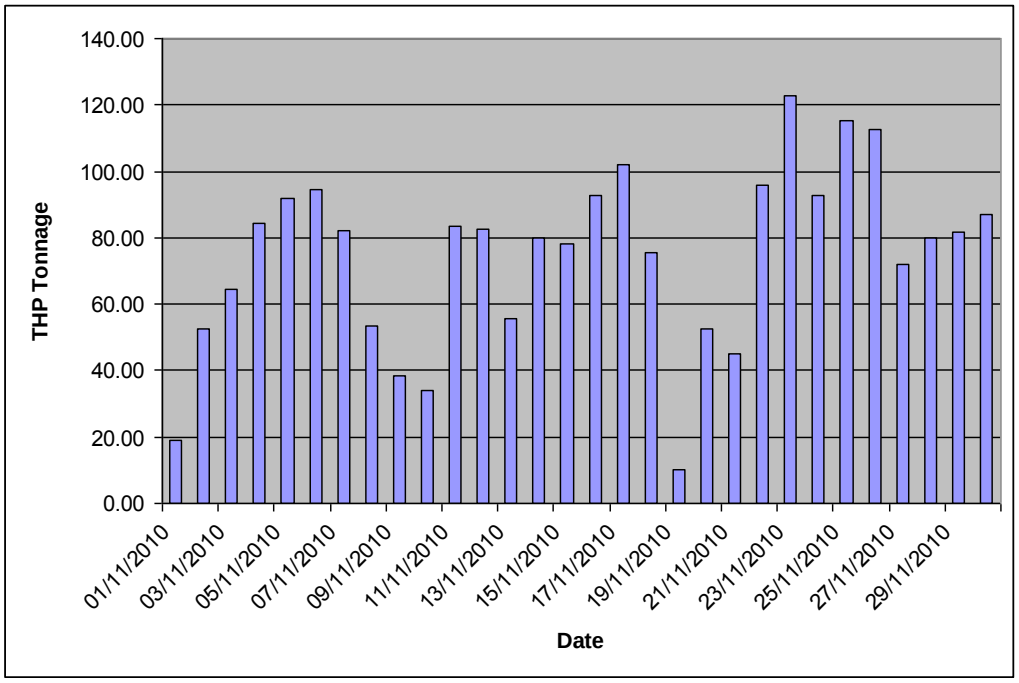


Figure 1: THP throughput (tDS) November 2010

Figure 1 shows the daily CAMBI hydrolysis throughput (tDS) during November 2010. Full desludging from the primary settlement tanks was maintained throughout this period, and the hydrolysis streams were able to respond to fluctuations in sludge loading with ease; to a maximum of 120 tDS processed on November 24th.

Figures 2 and 3 (below) show the maximisation of Biofert production during the second half of 2010. Production exceeded the agreed production target of 1200 t/day and this corresponded to a reduction in Class A Cake production, as a higher proportion of digested sludge was diverted to the driers.

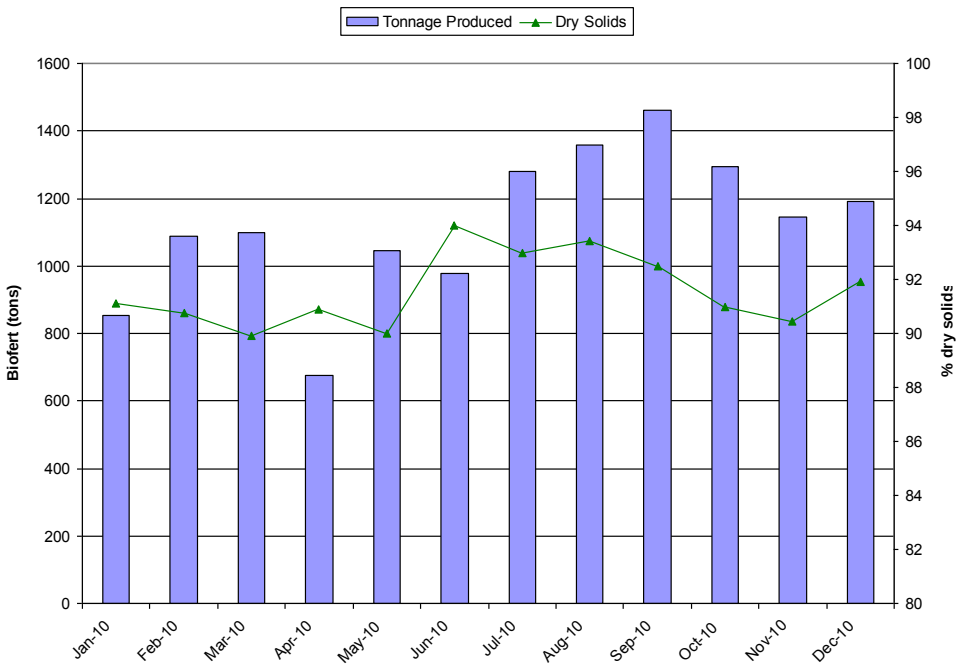


Figure 2: Biofert production (tonnes) 2010

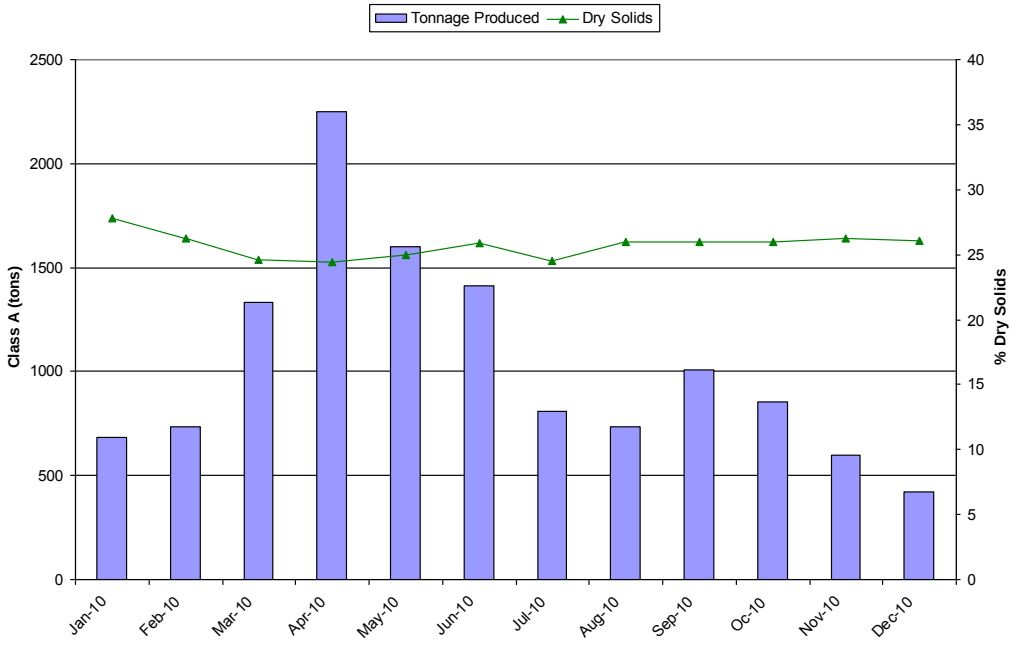


Figure 3: Class A Cake production (tonnes) 2010

There was 99% compliance on the effluent stream at Ringsend for the 3 months preceding November 2011. There was one non-compliance on October 29th, following a major storm event. Odour complaints dropped significantly in 2010, for the 3rd consecutive year.

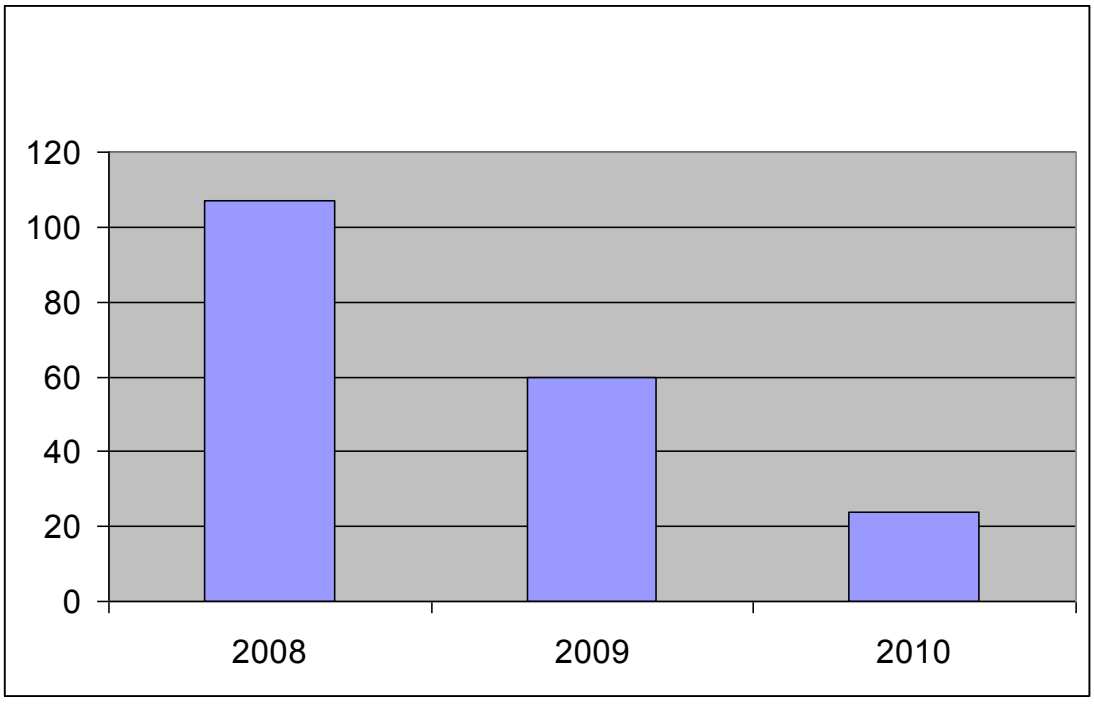


Figure 4 Odour complaints by year at Ringsend WWTP

The plant faced into the winter months with almost 100% compliance on the effluent stream during the bathing season, and with full capacity to process all sludge on site as needed. However, despite the flexibility of the sludge stream, non-compliance on the effluent stream began to occur in November 2010, and effluent compliance then deteriorated rapidly in December 2010 and throughout January and February 2011.

This report outlines how the extreme low temperatures of the influent at Ringsend constituted a major and extremely unusual event as outlined by the Urban Wastewater Directive 91/271/EEC. This Directive states 'Extreme values for the water quality in question shall not be taken into consideration when they are the result of unusual situations such as those caused by heavy rain'. The extreme weather conditions reduced the treatment capacity of the SBRs, and the low temperatures also resulted in inactivation and loss of the nitrifying bacteria. The effects of the loss of nitrification on the activated sludge settling properties (as measured by SVI) are then examined.

2. TEMPERATURE AND EFFLUENT COMPLIANCE

Prolonged periods of low influent sewage temperatures can significantly reduce the treatment capacity of secondary sewage treatment. These are outlined below.

- Bacterial growth kinetics change as a function of temperature.
- Low temperatures, slower growing bacteria, higher MLSS required for treatment.
- Low temperatures increase water viscosity hindering sludge floc settlement.
- Nitrification ***ceases*** at 6^{o}C. In our experience nitrifictaion is extremely compromised below 10^{o}C. We found nitrification rates reduced to 17% of normal during similarly low temperatures in February 2010.
- To recover nitrification
  - temperatures must recover above 11^{o}C for a prolonged period of time.
  - MLSS must be increased to above 2000 mg/l to reduce F/M ratio and increase sludge age to encourage the nitrifiers.

December 2010 was the coldest month since records began in Ireland 150 years ago. The long term December mean air temperature at Dublin airport is 5.9 ^{o}C (www.met.ie). The mean air temperature in December 2010 was -0.1^{o}C. The consequences of such low atmospheric temperatures quickly became evident on the influent sewage at Ringsend, especially following snow-melt events on December 9th and on the 27th December (major thaw). Influent sewage temperature fluctuated between 9 and 11^{o}C for most of December. On December 27th sewage temperatures dropped to a minimum of 6.8 ^{o}C (Figure 5). On the basis of historical precedents the plant design specified that treatment to the prescribed effluent standards could be achieved with incoming sewage temperatures between 9 ^{o}C and 19 ^{o}C. Therefore temperature of the incoming sewage was outside the design specifications following the thaw on December 27th.

Figure 5: Temperature of effluent December 2011

This effect of the low temperature was exacerbated by large flows, the plant accepting 1,775,572 m^3 of wastewater (mostly constituting snowmelt) between the 27th and 28th December. The mean temperature of the incoming sewage was 7.5 °C. This wiped out the nitrifying biomass in the SBRs (which was already struggling following weeks of temperatures below 11 °C) and greatly hindered BOD removal.

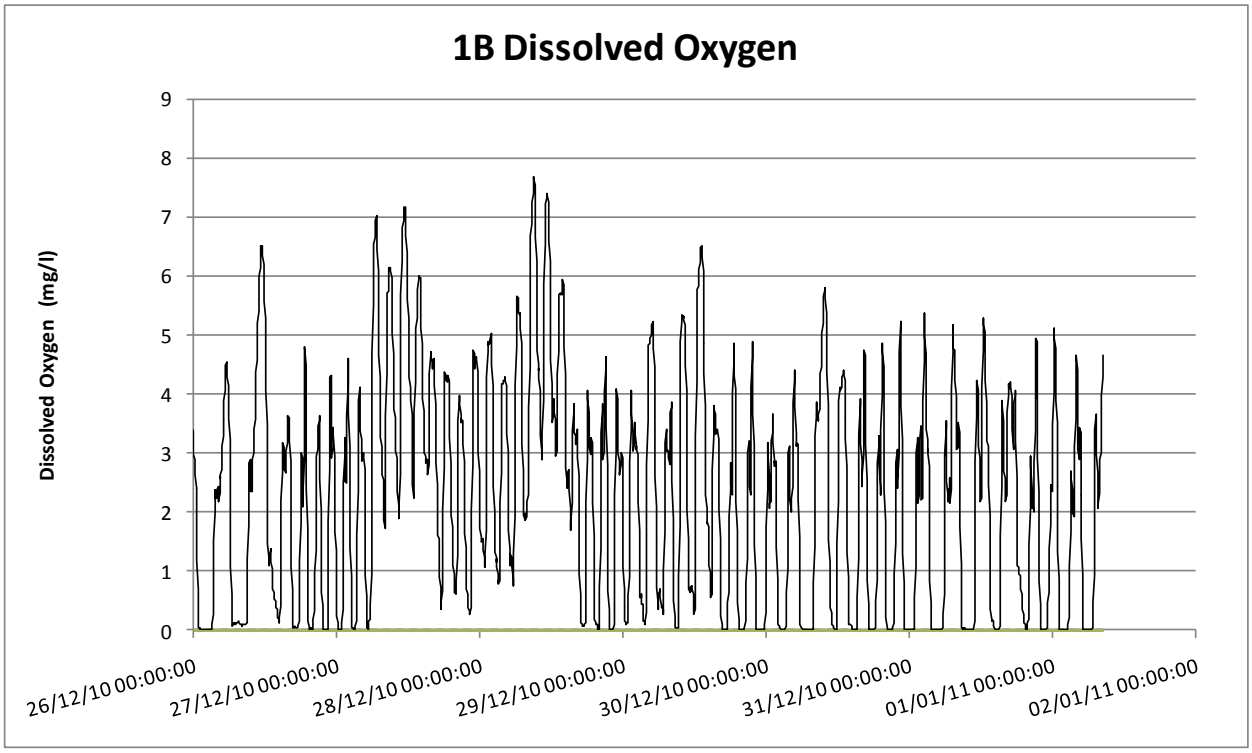


Figure 6: Dissolved Oxygen SBR 1B 26/12/10 – 2/1/11

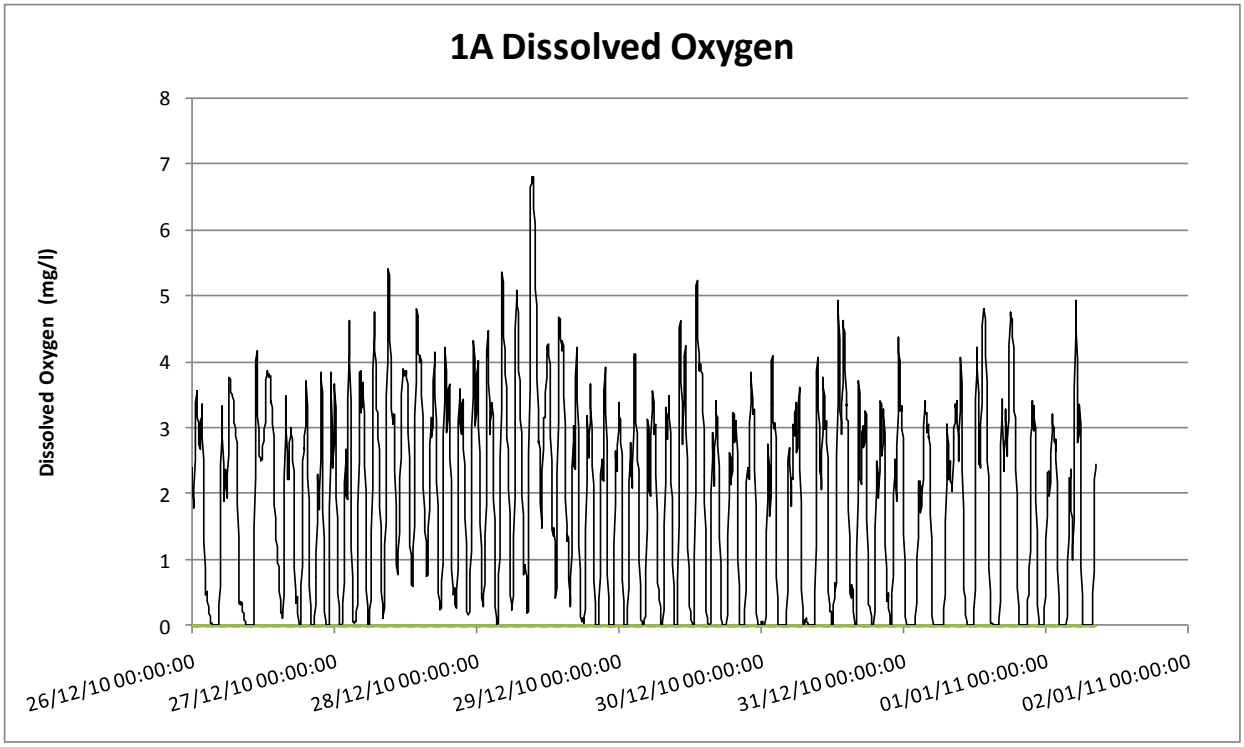


Figure 7: Dissolved Oxygen SBR 1A 26/12/10 – 2/1/11

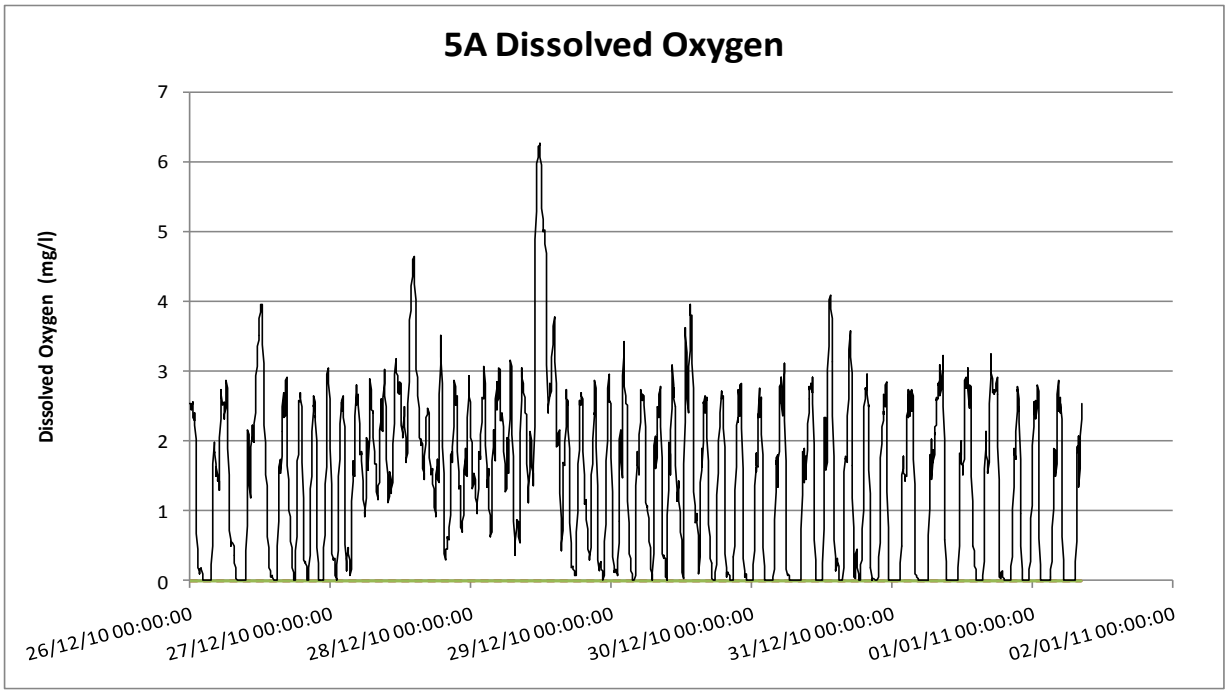


Figure 8: Dissolved Oxygen SBR 3C 24/12/10 – 24/1/11

Figures 6, 7 and 8 give dissolved oxygen concentration in SBRs 1A, 1B and 5A for December 26th 2010 to January 2nd 2011. These values show the degree of oxygen utilisation by the bacteria in the SBRs. From the 28th December, following the flush of snowmelt through the

SBRs, it is evident that oxygen is well in excess of microbial requirements up until 30th December. This clearly shows how the activity of the microbes was severely reduced by the low ambient temperature of the wastewater. During this period overall treatment was reduced, nitrification completely ceased, and filamentous organisms became more abundant in the SBRs. This is described in more detail in Section 4.

Nitrification is achievable below 10°C but once knocked out by extreme cold (6.8 °C) temperatures need to recover above 11°C for prolonged time to recover it (Metcalf and Eddy, 2001). Continuing cold sewage temperatures during January and February have presented major difficulties in recovering effluent stream compliance at Ringsend. Figure 9 (below) shows ammonia (mg/l) in the effluent at Ringsend during the period in question. The ammonia compliance limit of 18.75 mg/l is also shown. The depressed ammonia values in late January are not a temporary return of nitrification, but are instead due to dilution of the effluent during large flushes.

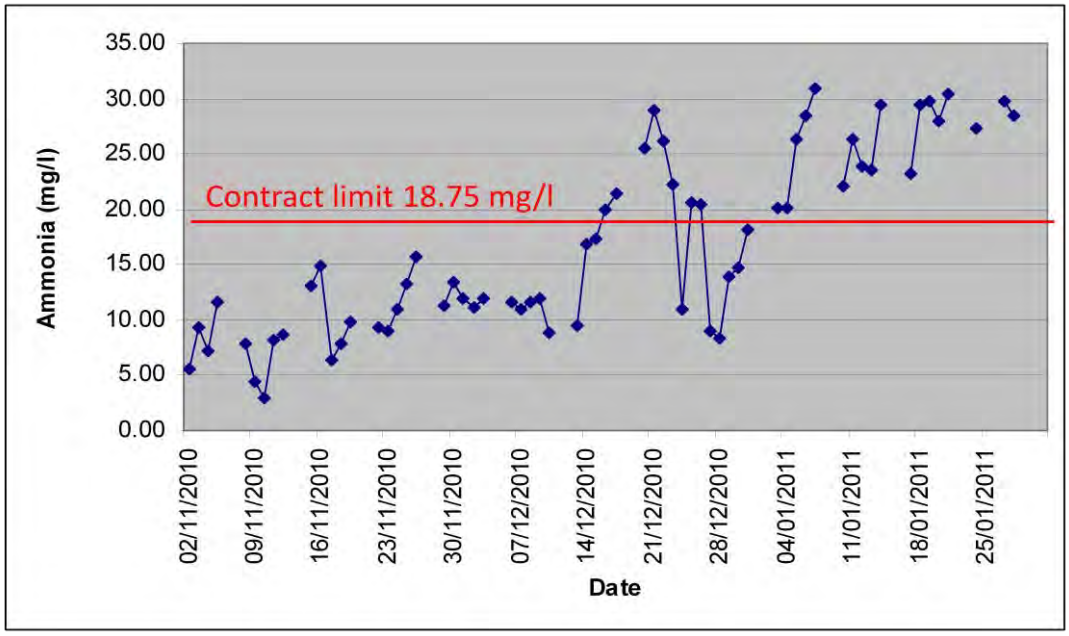


Figure 6: Effluent ammonia (mg/l) November 2010 – January 2011

There was no recovery in nitrification by January 27th 2011. There is evidence to suggest that the loss of nitrification in the SBRs has led to adverse effects on sludge settlement as ammonia is no longer converted to nitrates/nitrites, resulting in sludge settlement problems as floc morphology changes. The absence of nitrate and nitrite also constitutes a nutrient deficiency which can lead to the development of excessive filamentous organisms. This is detailed in Section 4.

3. LOAD AT RINGSEND

Load at Ringsend consistently exceeds the design criteria on all parameters, and varies greatly from day to day. Since commissioning measured average BOD and TSS loads have consistently exceeded the 2020 design limits of 98.4 and 101.1 tonnes respectively. 95%ile loads are also regularly

exceeded in shock loading events. As a result mixed liquor suspended solids (MLSS) must be maintained at a sufficiently low level to buffer for large load variations.

Table 1: 2020 design loads (tonnes) and actual loads

	2020	2010	Nov -10	Dec -10	Jan -11
NH_3	9.5	11.14	11.83	11.45	12.81
BOD	98.4	108.92	104.09	110.62	100.55
COD	225	231.4	222	243	210.96
TSS	101.1	103.64	92.19	103.78	84.56

Table 1 gives the 2020 design loads for key influent loading parameters at Ringsend, and compares these with the 2010 averages and the monthly averages for winter 2011. It is notable that the plant is overloaded on all parameters for 2010, with ammonia loading increasing significantly during the winter months. The 95%ile load for ammonia is 12.8 tonnes. This was exceeded in January 2011. High ammonia loads put additional pressures on the secondary treatment which had lost the nitrifying biomass. Ammonia in the SBRs has increased to levels at which the ammonium ion (a monovalent cation) hinders floc settlement.

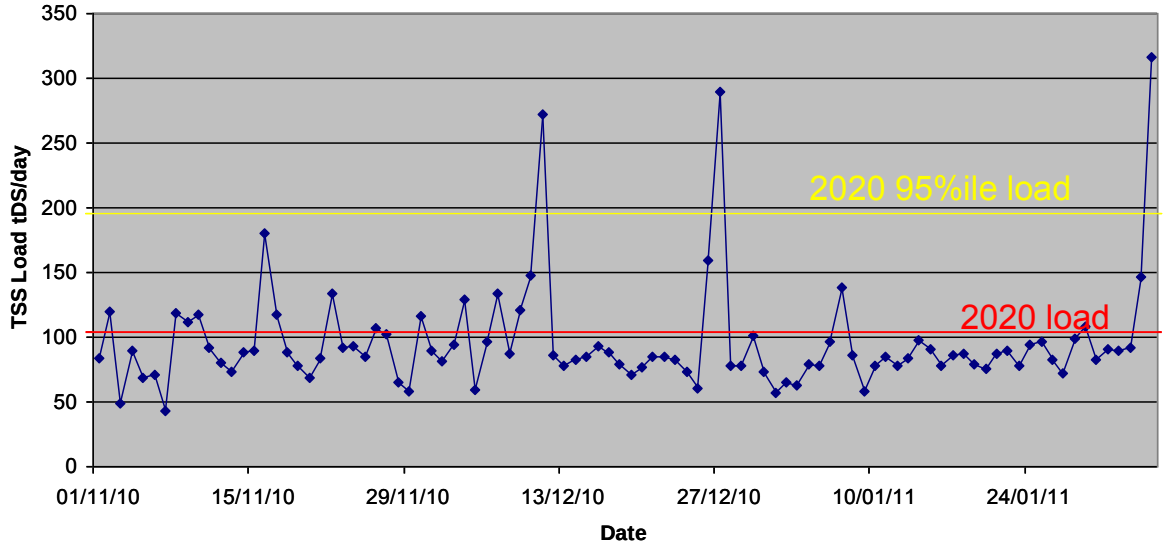


Figure 7: Daily TSS loading (tDS) to Ringsend WWTP December 2010

Figure 10 gives the daily TSS loading to Ringsend for November 2010 to January 2011. Large spikes in load are evident, and the load is highly variable. The 95%ile load was breached on 3 occasions, and two of these breaches resulted in upper tier non-compliances. The load is regularly exceeding the 2020 design load for the period in question. The consequence of regularly occurring shock loads that breach the 95%ile load is that there is limited scope to increase the MLSS in the SBRs at Ringsend.

4. SVI, MLSS AND NON COMPLIANCE

Sludge Volume Index (SVI) is a measure of how well activated sludge settles, and as such it is the key measurable parameter to indicate how well the sludge is settling in the SBRs.

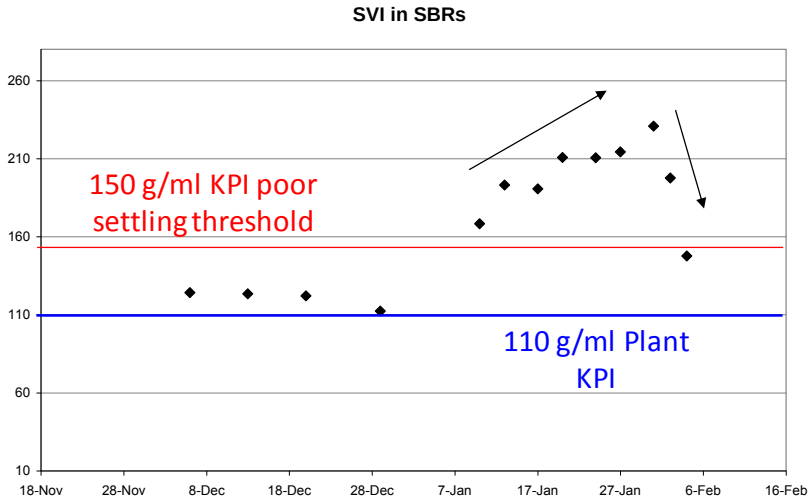


Figure 8: Average SVI in SBRs (November 2010 – February 2011)

Following the major flush of snowmelt on December 27th, and the loss of nitrifying bacteria the SVIs increased linearly in the subsequent weeks (Figure 11), as the structure of the flocs in the SBRs deteriorated. It is known that cold temperatures have a marked effect on settleability of activated sludge, and this is not necessarily linked to the presence of abundant filamentous bacteria. Activated sludge settlement can be significantly better in periods of warm weather than during cold weather. Several factors are thought to influence this (Jones and Schuler, 2010). These include: increased water viscosity at low temperatures (water viscosity is maximum at 4 ^{o}C). Increased viscosity will have a pronounced effect on activated sludge flocs which are just slightly more dense than the surrounding water. In addition, research has shown that density of sludge flocs can decrease during the winter months (Jones and Schuler, 2010). These effects are believed to be linked to the bacteria increasing production of extracellular polymers, and decreased phosphorous uptake.

By the beginning of February SVIs were decreasing, however, a flush on February 4th brought 316 tonnes TSS (161% of 95%ile load) through the works resulting in an upper tier non-compliance.

In the case of the SBRs at Ringsend, the evidence is increasingly suggesting a link between the loss of nitrification and poorly settling sludge. The ammonia load to the SBRs has increased during the winter months. Following the loss of nitrification ammonia is no longer being converted to the bio-available forms of nitrite and nitrate. Because of this, there has been a marked build-up of ammonia in the SBRs, clearly shown in the quantities of ammonia now found in the effluent.

Ammonia dissociates to ammonium depending on the pH of the surrounding solution. Ammonium ions disrupt activated sludge settling (Novak, 2001). In cases where nitrification is lost, the ammonium ions increase in concentration, become incorporated in the sludge floc and both hinder settlement and disrupt floc structure. Ammonia concentrations of over 20 mg/l can have extremely pronounced effects on activated sludge settlement. Average ammonia concentration in the effluent at Ringsend has been 23.5 mg/l from December 27th to January 31st, and has been peaking above 30 mg/l on several days. Following recovery of nitrification the settlement can take significantly longer to recover, as the recovery of the settlement requires the replacement of flocs rather than simply growing more biomass, hence it can take 2 – 3 sludge ages for complete recovery.

The SBRs are sampled weekly for microscopic investigation of the microbial communities. Filamentous organisms began to be reported as ‘very common’ from mid January. The filaments present were *Nocardia sp.* and *Sphaerotilus natans*. These filaments can be linked to numerous conditions, including overloading, reduced nutrient availability and low dissolved oxygen. There were no oxygen deficiencies in the SBRs. Figure’s 6 – 8 show available oxygen to be well in excess of microbial requirements. However, the dissolved oxygen set-points were increased by 1.0 mg/l in all basins on the 15th January to further ensure adequate supply of oxygen for treatment. Chemical treatment (chlorination) was considered as an option, but this was not considered viable, as whatever nitrifying biomass remained would be susceptible to chemical treatment, and the filaments were not at an ‘excessive’ level. It is likely the filamentous bacteria developed following the loss of nitrification, due to overloading of the washed out SBRs, and nitrate/nitrite deficiencies. Filamentous organisms are no longer abundant in the SBRs and the presence of elevated ammonia is the most likely factor affecting settlement.

The MLSS are the key measurable parameter for calculating the quantity of the biomass, and the MLVSS (mixed liquor volatile suspended solids) allow us to assess the quality of the biomass. The MLVSS were consistent during the period in question, showing high organic content in the MLSS (>90%).

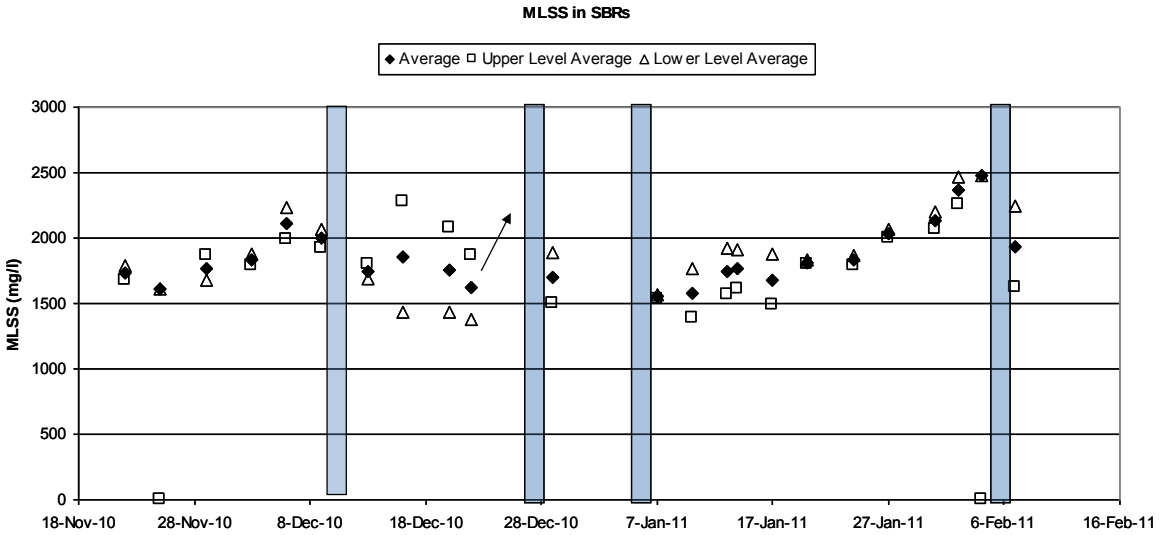


Figure 9: Average MLSS (mg/l) in SBRs November 2010 – February 2011

Figure 12 shows the average MLSS (mg/l) in the SBRs from November 18th 2010 until 6th February 2011. Values for the upper deck and lower deck are shown. The blue columns represent storm events. With the onset of cold weather, and the long term forecast for extremely cold conditions, desludging of the SBRs was reduced to build up the MLSS in late November. The decision to do this was based on experience of the similar cold conditions in February 2010. Building up MLSS increases the amount of respiring biomass, mitigating against the reduced activity of the biomass, in particular the nitrifying bacteria.

On the 9th, 10th and 11th December, a large volume of snow melt was accepted by the works, effluent flows averaged 815,000 m^3/day for the 3 days. This resulted in lower tier non-compliance on the 9th and 10th December. Desludging of the SBRs was further reduced over the Christmas period to rebuild the MLSS as the cold weather continued. At this stage the plant was accepting very low loads (75t TSS/day), and the flows were returning to average, the effluent was in compliance for TSS and BOD, but nitrification was decreasing throughout this period.

On December 27th, the extreme snow-melt occurred, as outlined earlier. It was evident the SBRs were already under some stress before this occurred, and following this treatment was extremely reduced on all parameters for several days. This was reflected on non-compliance on the effluent stream, and can be seen in the reduced oxygen uptake in Figures 6, 7 and 8.

Throughout January the MLSS were increased toward the target of 2300 mg/l in an attempt to recover nitrification. Several operational changes were made to achieve this. Desludging was reduced, and co-settling was virtually ceased. Thickener throughput was maximised to 30 t/day. This ensured that the MLSS were increased, and that poor settling sludge was removed from the SBRs via the thickeners and not recycled through the works by co-settling. The increase in MLSS left the plant more vulnerable to non-compliance as the SVIs also increased during this period (Figure 11).

By 17th February 2011 MLSS were maintained at 2300 mg/l and SVIs had dropped to 148 g/ml and were somewhat stabilised. Influent sewage temperature had not recovered above 11 °C, and there was some improvement on compliance on the effluent stream. The following Section outlines the ongoing programme to recover nitrification, good settlement and effluent compliance at Ringsend.

5. RECOVERY PROGRAMME AND FUTURE PREVENTATIVE MEASURES

Based on experience from early 2010, MLSS were built up in the SBRs in November to provide adequate biomass to maintain some level of nitrification during cold weather. Despite this the severity of the weather conditions resulted in the loss of nitrification and subsequent poor settling and non-compliance in December, January and February. A comprehensive programme for recovery is in place, including the following operational changes and sampling/assessment procedures:

- MLSS target set to 2300 mg/l
- Drum thickener throughput maximised to 30 tDS/day
- Co-settling ceased
- Daily measurement of MLSS and SVIs
- SBR decant arms assessed for damage and alignment
- Large scale maintenance involving decommissioning of an SBR is postponed until compliance recovered
- Decant arms to be levelled across all basins weather permitting
- Flows managed carefully by returning from storm only during low flows (if possible) ensuring SBR cycle time is maintained above 4 hours (allowing longer for settlement).

In early February, the evidence increasingly suggested that poor settlement was resulting from elevated ammonia levels rather than abundant filamentous organisms. In light of this, the following steps were taken to recover nitrification and improve settling in late February.

- Effluent from all individual basins now being tested daily for ammonia concentration to determine if nitrification occurring in any basins.
- Cationic polyelectrolyte (ZETAG 8165) being dosed into all SBRs at a dose of 1kg/tDS to improve settleability
- MLSS target now set at 2700 mg/l for SBRs exhibiting good settlement.
- Desludging completely stopped from basins with good settlement, to build up a nitrifying biomass.

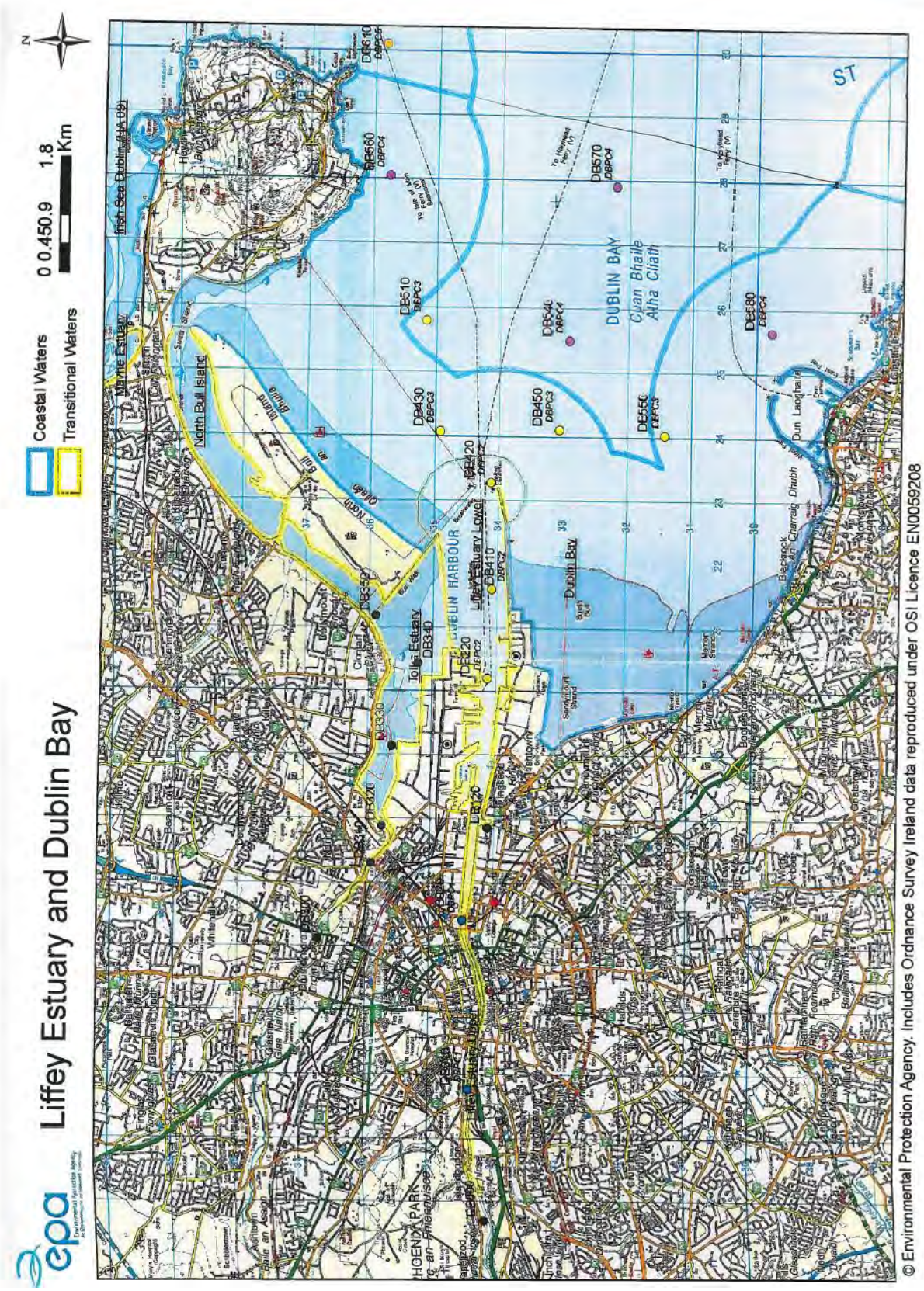
Moving forward, based on the experimental results, any basins exhibiting nitrification will have SAS recycled through the other basins as a ‘seed’ to encourage nitrification throughout the other basins. Polymer dosing will continue until the influent temperatures increase above 12 ^{o}C and good settling of the activated sludge has been attained.

It is suggested that an on-line ammonia probe be purchased for the final effluent stream at Ringsend. MLSS should be maintained at 2,300 mg/l or above during the winter months in case of future extreme cold events. And finally, a nitrifying regeneration side-stream could be considered as an option to maintain a viable nitrifying biomass throughout the year.

REFERENCES

- Jones, P. A. and Schuler, A. J. (2010) *Seasonal variability of biomass density and activated sludge settleability in full-scale wastewater treatment systems*, Chemical Engineering Journal (2010), **164,** pp 16 - 22
- Metcalf, Eddy, Tchobanoglouos, G., Stensel, H. D. and Burton, F. (2001) *Wastewater Engineering: Treatment Disposal, Reuse*, McGraw-Hill, Toronto.
- Novak, J. (2001) *The Effect of the Ammonium Ion on Activated-Sludge Settling Properties*, Water Environment Research Vol. **73**, No. 4 (Jul. - Aug., 2001), pp. 409-414

Appendix 3 EPA Map of Ambient Monitoring Points



Appendix 4 Storm Water Overflow Prioritisation Table

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	STC25 Ref	Address	EASTING	NORTHING	Volume Emitted	Cumulative Flows	% Cumulative Flow
CSO186DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17328507	Shelbourne Road on school grounds	317881	232507	521299		
CSO88DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17346807	East Wall Pumping Station	317683	234884	394401		
CSO180DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18321802	At railway bridge, Beatty's Avenue, Ballsbridge, D4	318106.6	232850	325145		
CSO171DCC	Storm Water Overflow	Dublin City Council	River	River Dodder (via Swan Culvert)		SO17325401	10 Clyde Road, Ballsbridge, D4	317550	232447	284186		
CSO36DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17342203	Jcn. Sir John Rogerson's Quay and Cardiff Lane	317234	234294	237469		
CSO176DCC	Storm Water Overflow	Dublin City Council	River	River Dodder (via Swan Culvert)		SO17326503	Opp. 38 Elgin Road	317639	232519	196982		
CSO168DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18331407	Side of 60 Derrynane Gardens, off Bath Avenue	318139	233413.1	194860		
CSO156DCC	Storm Water Overflow	Dublin City Council	Transitional	Santry River		SO22371604	Watermill Road near James Larkin Road	322127.4	237600.7	163715		
CSO49DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO13346404	Opp. 27 Parkgate Street	313699	234415	156055		
CSO84DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15341109	Adj. O'Donovan Rossa Bridge, Wood Quay	315139	234124	126886	2600998	60.6
CSO47DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15342204	Jcn. Orman Street Upper/Arran Street	315278	234216	106797		
CSO51DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey, via Poddle culvert		SO15331433	Jcn. Dean Street/Patrick Street	315102	233451	105743		
CSO69DCC	Storm Water Overflow	Dublin City Council	River	River Liffey		SO10339801	Adj. St. Laurence Glen, St. Laurence Road	310913	233836	96482		
CSO184DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17328405	O/S 176 Merrion Road	317824	232486	96123		

CSO34DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16359411	Jcn. Guildford Place/North Strand Road	316933	235409	86542		
CSO1DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14347206	Jcn. Arran Quay/Lincoln Lane	314772	234232	77274		
CSO118DCC	Storm Water Overflow	Dublin City Council	River	Tolka River		SO16369104	Jcn. Richmond Road/Richmond Avenue (Tolka River)	316968	236195	76157		
CSO48DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15341117	Ormond Quay Upper, beside O'Donovan Rossa Bridge	315133	234184	61269		
CSO33DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17341601	Jcn. Mayor Street Lower/Guild Street	317191	234633	55865		
CSO103DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO10327207	Bluebell Ind. Est. O/S Braun Goods Entrance	310784.4	232217.7	53954	3417204	79.7
CSO128DCC	Storm Water Overflow	Dublin City Council	River	Naniken River		SO21371602	O/S 46 All Saints Road	321115.9	237636.4	52398		
CSO188DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO14304105	Jcn. Terenure Road/Terenure Place	314450.6	230169.9	51707		
CSO72DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12332506	Emmet Road, Adj. Stanley Racing	312285.9	233530.1	48727		
CSO102DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO10327205	Old Naas Road, O/S Brooks	310740.7	232269.8	47762		
CSO89DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17347411	Jcn. Castleforbes Road/North Wall Quay	317775	234427	40352		
CSO14DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16348302	Jcn. City Quay/Creighton Street	316849	234337	37777		
CSO153DCC	Storm Water Overflow	Dublin City Council	River	Finglas River (via SW sewer)		SO13383501	Car Park North of Sports Ground, Finglas Road (opposite Finglas Place)	313415	238521	34201		
CSO164DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO23386705	Kilbarrack Pumping Station	323610.5	238743.9	30268		
CSO173DCC	Storm Water	Dublin City	River	River Dodder		SO17318310	Donnybrook Road at Anglesea	317827	231358	23522		

	Overflow	Council					Bridge					
CSO80DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14342204	Victoria Quay	314205	234270	22269	3806187	88.7
CSO5DCC	Storm Water Overflow	Dublin City Council	Transitional	River Tolka		SO17350908	Jcn. Poplar Row/Ballybough Road	317054	235998	21414		
CSO11DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16341310	Jcn. Burgh Quay/Hawkins Street	316107	234398	20870		
CSO73DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO17354303	Opp. 20 Strangford Road East	317455	235389	20351		
CSO2DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14346214	Jct. Arran Quay/Arran Street West	314663	234263	19504		
CSO181DCC	Storm Water Overflow	Dublin City Council	Transitional	GCTS (SW)		SO15328193	Opposite Richmond Hill, Mountpleasant Avenue	315892	232164	18722		
CSO152DCC	Storm Water Overflow	Dublin City Council	Coastal	N Lagoon (via ditch)	NHA, SAC, SPA	SO2130202	Opp. 167 Seafield Road East, Clontarf	321003.5	236216.9	18664		
CSO169DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17329403	O/S 4 Beatty's Avenue, Ballsbridge, Dublin 4	317909.4	232497.3	17822		
CSO112DCC	Storm Water Overflow	Dublin City Council	River	Tolka River		SO15373102	Jct. Botanic Avenue/Addison Place	315347	237184.2	17082		
CSO134DCC	Storm Water Overflow	Dublin City Council	River	Wad River		SO18378205	Clontarf Golf Club	318903.1	237248.1	16565		
CSO66DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO13347206	O/S Heuston Station, St. John's Road West	313731	234212	15862	3993043	93.1
CSO83DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO13349307	Jcn. Wolfe Tone Street/Temple Street West (front of Civil Defence)	313953	234344	15850		
CSO81DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO17353415	West Road, adjacent to Bridge, Top of Crosbie's Yard	317303	235416	15783		
CSO142DCC	Storm Water Overflow	Dublin City Council	Coastal	North Lagoon	NHA, SAC, SPA	SO23381414	Adj. 264 Greendale Road	323128.6	238498.6	14623		

CSO177DCC	Storm Water Overflow	Dublin City Council	River	River Poddle		SO14314503	O/S 68 Kimmage Road	314416.2	231520.7	13220		
CSO62DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17343203	Jcn. Forbes Street/Sir John Rogerson's Quay	317394	234266	13208		
CSO93DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO19313502	O/S 19 St. Albans	319319	231456	13075		
CSO94DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO10323401	O/S 493 Bluebell Avenue	310380.3	232486.3	12894		
CSO7DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		???		314962	223226	12300		
CSO15DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO12349203	Rear of Clancy Barracks, near railway bridge of Liffey	312958	234298	9437		
CSO125DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO18360302	On Howth Road at junction with Fairview	318032	236337	8827	4122260	96.1
CSO147DCC	Storm Water Overflow	Dublin City Council	Coastal	North Lagoon	NHA, SAC, SPA	SO223787104	James Larkin Road at Foxes Lane	322791	238174.1	8765		
CSO190DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17301604	Footpath adjacent to River Dodder, rear of Ramleh Park	317176	230639	8315		
CSO65DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO13348206	Jcn. St. John's Road West/Steeven's Lane (front of Heuston Station)	313820	234224	8095		
CSO60DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey, via Poddle culvert		SO15333701	Ship Street Great	315398	233788	7698		
CSO119DCC	Storm Water Overflow	Dublin City Council	Transitional	Tolka River (via SW system)		SO17364203	O/S 2 Fairview Avenue	317476	236267	7618		
CSO87DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16348607	Jcn. Common Street/Mayor Street Lower	316865	234654	7568		
CSO35DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16338601	Jcn. Denzill Lane/Holles Street	316885	233670	6895		
CSO10DCC	Storm Water	Dublin City	River	River Camac		SO13335804	Bow Bridge, Cromwell's	313533	233809	6890		

	Overflow	Council					Quarters, Front of Tahony House					
CSO182DCC	Storm Water Overflow	Dublin City Council	Transitional	GCTS (SW)		SO14328311	Adj. 1 Parnell Road	314819.9	232376.7	5838		
CSO71DCC	Storm Water Overflow	Dublin City Council	River	River Liffey		SO10345001	In park, St. Laurence Road	310510	234079	5315	4195257	97.8
CSO32DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO17341607	Jcn. Guild Street/Mayor Street Lower	317182	234623	5313		
CSO26DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12336604	Rear 11 Emmet Road	312632.1	233616.3	5241		
CSO140DCC	Storm Water Overflow	Dublin City Council	River	Mayne River		SO22413202	The Hole in the Wall Road	322305.9	241250.1	5047		
CSO107DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18327003	O/S 64 Wilfield Road	318741	232076	4946		
CSO46DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15347306	Jcn. Ormond Quay Lower/Liffey Street Lower	315717	234317	4911		
CSO29DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15344205	Ormond Quay at Grattan Bridge	315417	234244	4680		
CSO23DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16341406	Jcn Eden Quay/Marlborough Street	316108	234474	3561		
CSO141DCC	Storm Water Overflow	Dublin City Council	River	Santry River		SO21381202	Lein Park - grass area beside Santry River	321150.1	238284.2	3345		
CSO146DCC	Storm Water Overflow	Dublin City Council	River	Claremont Stream		SO15373801	Opposite 23 Ballymun Road	315371.4	237860.2	3287		
CSO76DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO11337206	Outside 11 Tyrconnell Street	311756.9	233212.2	3272	4238860	98.8
CSO161DCC	Storm Water Overflow	Dublin City Council	River	Wad River system (assumed)		???		315285	239290	3182		
CSO45DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15345206	Jcn. Ormond Quay Lower/Swift's Lane	315551	234270	2909		
CSO30DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12330604	Jcn. Grattan Crescent/Sarsfield Road/Inchicore Road	312009.9	233526.7	2863		

CSO19DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO16368009	Opposite 49 Clonliffe Road	316857	236017	2733		
CSO97DCC	Storm Water Overflow	Dublin City Council	Coastal	Elm Park Stream		SO19303601	Overflow in Elm Park Golf Course	319373	230608	2566		
CSO178DCC	Storm Water Overflow	Dublin City Council	River	River Poddle		SO14314501	Jcn. Kimmage Road Lower/Kenilworth Park	314413.1	231520.5	2447		
CSO25DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14345210	Jcn. Ellis Quay/Queen Street	314580	234294	2263		
CSO28DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO13332616	Opposite 3 Old Kilmainham	313210	233631	2117		
CSO50DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey, via Poddle culvert		SO15331414	Jcn. Deans Street/Kevin Street Upper	315113.2	233446	2088		
CSO167DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17318301	Traffic Island, Anglesea Road	317890	231357	1990	4264018	99.4
CSO22DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO11325805	Davitt Road beside Landsdowne Valley Park	311515.7	232829.5	1972		
CSO27DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey, via Poddle culvert		SO15345113	Opposite 35-36 Essex Street East	315533	234142	1792		
CSO124DCC	Storm Water Overflow	Dublin City Council	Transitional	Marino Stream		SO17365601	Adjacent 1 Croydon Park Avenue	317564	236640	1486		
CSO21DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey, via Poddle culvert		SO15344004	Opposite 79 Corn Hill Gate, Dame Street	315487	234037	1477		
CSO187DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO16303302	Opposite 38 Temple Road	316306	230383	1415		
CSO150DCC	Storm Water Overflow	Dublin City Council	River	Santry River (via SW sewer)		SO21382304	Lough Derg Road, in park opposite playground	321216.2	238351.5	1185		
CSO136DCC	Storm Water Overflow	Dublin City Council	River	Wad River		SO18375603	Green at end of Collins Park (Malahide Road end)	318558.7	237698.9	1145		
CSO170DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17316403	Opposite St. Mary Magdalene's Home, Donnybrook	317699	231474	1092		

CSO82DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO17353415	West Road, adjacent to Bridge, Top of Crosbie's Yard	317299.2	235411.1	1060		
CSO4DCC	Storm Water Overflow	Dublin City Council	Transitional	River Tolka		SO17350906	Opposite 1-209 Poplar Row	317065	235991	1052	4277694	99.7
CSO114DCC	Storm Water Overflow	Dublin City Council	River	Tolka River (via SW system)		SO15379403	Outside 96 Home Farm Road	315933.2	237458.9	1007		
CSO120DCC	Storm Water Overflow	Dublin City Council	River	Grace Park Stream		SO17372001	Outside 197 Philipsburgh Avenue	317288	237032	966		
CSO18DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO16368001	Opposite 58 Clonliffe Road	316852	236022	945		
CSO189DCC	Storm Water Overflow	Dublin City Council	River	River Dodder				316956	230477	898		
CSO131DCC	Storm Water Overflow	Dublin City Council	River	Naniken River (via SW sewer)		SO20371802	Rear of 12 Brookwood Rise	320166.1	237863.4	889		
CSO75DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12335605	Turvey Avenue, adjacent to River Camac	312544.7	233667.4	865		
CSO63DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey				314704	234412	848		
CSO8DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO16361609	Park, Junction Botanic Avenue/Drumcondra Road Upper	316161	236672	704		
CSO175DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17317302	Junction Eglinton Road/Brookvale Road	317743	231303	697		
CSO74DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12335506	Jcn. Emmet Road/Turvey Avenue	312533.3	233579.4	651	4286164	99.9
CSO151DCC	Storm Water Overflow	Dublin City Council	River	Surface Water Sewer		SO13362202	Outside St. Joseph's School for Deaf Boys, Ratoath Road	313201	236289	549		
CSO70DCC	Storm Water Overflow	Dublin City Council	River	River Liffey		SO10342201	Opposite 26 St. Laurence Road	310244.3	234243.1	521		
CSO139DCC	Storm Water Overflow	Dublin City Council	River	Finglas River (via SW sewer)		SO13386401	Adj. 85 Glenhill Road	313685	238438	427		

CSO101DCC	Storm Water Overflow	Dublin City Council	Transitional	Dublin Bay	NHA, SAC, SPA	SO19309504	Outside Hotel, Rock Road	319921	230594	369		
CSO90DCC	Storm Water Overflow	Dublin City Council	River	Walkinstown Stream		SO11315707	Outside 86 Drimnagh Road	311588.6	231730.6	247		
CSO98DCC	Storm Water Overflow	Dublin City Council	Coastal	Elm Park Stream		SO19303603	Overflow in Elm Park Golf Course	319373	230608	236		
CSO126DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO19359806	Opp 173 Clontarf Road	319927	235869	223		
CSO68DCC	Storm Water Overflow	Dublin City Council	River	River Liffey, via SW system		SO10343105	Adj. 78 St. Laurence Road	310354.6	234122	190		
CSO78DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14346205	Jcn. Usher Street/Ushers Quay	314686	234201	153		
CSO197DCC	Storm Water Overflow	Dublin City Council	River	Tolka River (via SW system)		SO16372001	Jcn. Drumcondra Road Upper/Church Avenue	316297	237050	120	4289199	100.0
CSO24DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14344316	Jcn. Ellis Quay/Blackhall Place	314430	234315	119		
CSO43DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO13333602	Adj. 7 Mount Brown	313387	233674	97		
CSO6DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14339210	Jcn. Blackpitts/Fumbally Lane	314959	233223	82		
CSO130DCC	Storm Water Overflow	Dublin City Council	River	Tolka River (via SW sewer)		SO16383101	Rear of 22 Iveragh Road	316652	238118	72		
CSO31DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO15368802	Griffith Park off Botanic Avenue	315899	236808.9	64		
CSO135DCC	Storm Water Overflow	Dublin City Council	River	Tolka River		SO13378401	Lagan Road - Finglas Siphon House	313840.1	237483.7	47		
CSO61DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey, via Poddle culvert		SO15333801	Ship Street Little, outside Chief State Solicotors Office	315322	233808	41		
CSO129DCC	Storm Water Overflow	Dublin City Council	River	Claremont Stream		SO14386402	Outside 100 Ballygall Road East	314692.1	238454	37		
CSO20DCC	Storm Water	Dublin City	Transitional	River Camac		SO13335709	Cromwell's Quarters, side of	313539.2	233798.2	30		

	Overflow	Council					Tathony House					
CSO38DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO12346305	Pumping Station, Sarah Place, Chapelizod Road	312689.5	234345.9	7	4289795	100.0
CSO13DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14348209	Jcn. Arran Quay/Church Street	314893	234204	6		
CSO9DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO16360601	Opp. 26 Botanic Avenue	316043	236686	6		
CSO157DCC	Storm Water Overflow	Dublin City Council	River	Finglas River		SO13382701	Jcn. Finglas Road/Wellmount Road	313270	238784	5		
CSO100DCC	Storm Water Overflow	Dublin City Council	Transitional	Docks (via GCTS)		SO13324701	Opp. 62 Herberton Road	313420.7	232720.8	0		
CSO104DCC	Storm Water Overflow	Dublin City Council	Transitional	Docks (via GCTS)		SO13324801	Jcn. Dolphin Road/Herberton Road	313402.8	232802.7	0		
CSO105DCC	Storm Water Overflow	Dublin City Council	Transitional	River Dodder		SO17338807	Opp. 95 Ringsend Road	317843	233804	0		
CSO106DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO19313502	Outside 19 St. Albans	319384	231534	0		
CSO109DCC	Storm Water Overflow	Dublin City Council	River	Wad River		SO17384504	Opp. 81 Beaumont Road	317414	238590	0		
CSO122DCC	Storm Water Overflow	Dublin City Council	River	Santry River		SO19394906	Stardust Memorial Park	319420	239940	0		
CSO12DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO16340308	Outside. O'Connell House, Burgh Quay	316024	234360	0	4289812	100.0
CSO132DCC	Storm Water Overflow	Dublin City Council	River	Finglas River (via SW sewer)		?		312746	239249	0		
CSO133DCC	Storm Water Overflow	Dublin City Council	River	Finglas River (via SW sewer)		SO13381805	Church Street, opp. Church in ruins	313170	238854	0		
CSO143DCC	Storm Water Overflow	Dublin City Council	River	Finglas River (via SW sewer)		SO14383203	Outisde 56 Griffith Road	314316	238253	0		
CSO144DCC	Storm Water Overflow	Dublin City Council	River	Santry River (via SW sewer)		SO20387301	Opp. 13 Lein Road	320761.3	238396.4	0		
CSO149DC	Storm	Dublin	River	Finglas		SO13381805	Church Street,	313240.1	238953.6	0		

C	Water Overflow	City Council		River (via SW sewer)			opp. Church in ruins					
CSO154DCC	Storm Water Overflow	Dublin City Council	Coastal	North Lagoon (via SW sewer)	NHA, SAC, SPA	SO22391501	Path adjacent to 56 St. Donagh's Road	322129.6	239548.4	0		
CSO155DCC	Storm Water Overflow	Dublin City Council	River	Santry River (via SW sewer)		SO21375901	Raheny Valve House, Jcn. Watermill Drive/Road	321528.6	237973.6	0		
CSO158DCC	Storm Water Overflow	Dublin City Council	River	Mayne River		?	Near railway line, discharging to Mayne River - unable to locate on MapDrain	323132	241110	0		
CSO160DCC	Storm Water Overflow	Dublin City Council	River	Tolka River		SO13377607	Ballyboggin Pumping Station, Rear of Glasnevin Woods	313720.8	237668.9	0		
CSO162DCC	Storm Water Overflow	Dublin City Council	Coastal	North Lagoon	NHA, SAC, SPA	SO21355703	Bull Wall Pumping Station, near Bull Wall Cottages	321555	235735.1	0		
CSO163DCC	Storm Water Overflow	Dublin City Council	River	Tolka River		SO14371501	Finglas Road Pumping Station	314105.8	237565	0		
CSO165DCC	Storm Water Overflow	Dublin City Council	Coastal	Dublin Bay	NHA, SAC, SPA	SO20351704	Vernon Avenue Pumping Station	320130	235782.3	0		
CSO166DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17305702	Beech Hill Road, Clonskeagh, front of Jefferson Smurfit PLC	317562.2	230766.8	0		
CSO16DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO12349202	Rear of Clancy Barracks, near railway bridge of Liffey	312966	234298	0		
CSO174DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO17318310	North Bank of Dodder, start of Syphon, Anglesea Bridge	317852	231363	0		
CSO179DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		SO18331410	Adj. 60 Derrylane Gardens, off Bath Avenue	318131.7	233429.2	0		
CSO17DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO12349202	Rear of Clancy Barracks, near railway bridge of Liffey	312966	234298	0		
CSO183DCC	Storm Water	Dublin City	River	River Dodder		?	Patrick Doyle Road	316789.6	230086.1	0		

	Overflow	Council										
CSO185DCC	Storm Water Overflow	Dublin City Council	Transitional	GCTS (SW)		SO16325007	Front of 17A Sallymount Avenue	316609.1	232018	0		
CSO195DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		?	Dodder Road Lower	314827.7	229636.6	0		
CSO196DCC	Storm Water Overflow	Dublin City Council	River	River Dodder		?	Dodder Road Lower	314816.5	229635.4	0		
CSO37DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12330604	Jcn. Inchicore Road/Sarsfield Road	312015.3	233664.8	0		
CSO3DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15348308	Jcn. Litton lane/Bachelors Walk	315862	234379	0		
CSO40DCC	Storm Water Overflow	Dublin City Council	River	River Liffey, via SW system		SO09347603	Front of 128 Lucan Road	309727.8	234677.8	0		
CSO41DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14349101	Outside Marshalsea Court, Merchant's Quay	314987	234131	0		
CSO42DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO15369902	Opp. School, Millbourne Avenue (shares same chamber as SO15369901)	315977.8	236911.8	0		
CSO44DCC	Storm Water Overflow	Dublin City Council	River	River Tolka		SO16369001	Opp. 11 Orchard Road	316904	236073	0		
CSO52DCC	Storm Water Overflow	Dublin City Council	Transitional	River Dodder		SO17338807	Opp. 95 Ringsend Road	317843	233804	0		
CSO53DCC	Storm Water Overflow	Dublin City Council	River	River Liffey, via SW system		SO09346312	In park near Jcn. Rossmore Road/Lough Conn Drive	309604.2	234375.7	0		
CSO54DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12339609	Factory yard at top end of Kearn's Place	312990	233670	0		
CSO55DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO12339609	Factory yard at top end of Kearn's Place	312990	233670	0		
CSO56DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO13330605	In factory, off Kearn's Place	313022	233676	0		
CSO57DCC	Storm	Dublin	River	River		SO13330605	In factory, off	313022	233676	0		

	Water Overflow	City Council		Camac			Kearn's Place					
CSO58DCC	Storm Water Overflow	Dublin City Council	River	River Camac		SO13330604	At rear inside factory, top end of Kearn's Place	313064	233680	0		
CSO59DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14342308	Jcn. Sarsfield Quay/Liffey Street West	314244	234324	0		
CSO64DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14347510	Outside Market Square, Smithfield	314700	234516	0		
CSO67DCC	Storm Water Overflow	Dublin City Council	River	River Liffey		SO10343107	Adj. 78 St. Laurence Road	310350.4	234127.5	0		
CSO77DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14344202	Opp. Day Centre, Usher's Island	314492	234246	0		
CSO79DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO14343207	Rory O'Moore Bridge, Usher's Island	314322	234267	0		
CSO85DCC	Storm Water Overflow	Dublin City Council	Transitional	River Liffey		SO15341103	Jcn. Wood Quay/Winetavern Street	315136	234112	0		
CSO91DCC	Storm Water Overflow	Dublin City Council	River	Walkinstown Stream		??	Opposite Cherryfield Road - County Side	311397.9	230549.3	0		
CSO92DCC	Storm Water Overflow	Dublin City Council	Transitional	Docks (via GCTS)		SO13324405	Opp. 1 Herberton Road	313440	232440.5	0		
CSO95DCC	Storm Water Overflow	Dublin City Council	Transitional	Dublin Bay		SO18338911	Main Pumping Station, Pigeon House Road	318879.5	233947.3	0		
CSO96DCC	Storm Water Overflow	Dublin City Council	Transitional	GCTS (SW)		SO13327607	Outside Garage, Crumlin Road/Parnell Road jcn.	313724.7	232628.4	0		
CSO99DCC	Storm Water Overflow	Dublin City Council	River	River Poddle (via SW system)		SO13292801	Jcn. Fortfield Road/Greenlea Road	313291	229848	0		
SW1Dublin	Waste Water Treatment Works	Dublin City Council	Transitional	Liffey Estuary			Wastewater Treatment Work Ringsend	321073	233814			
SW2Dublin	Storm Water Overflow	Dublin City Council	Transitional	Liffey Estuary			Wastewater Treatment Work Ringsend	320332	233800			
									Cumulative Total		4289812	

Appendix 5 Priority Substances Assessment

Ringsend Influent and Effluent Priority Substances Screening, 2010 and 2011

To comply with condition **4.11.1** of Licence D0034-01, 4 sub-samples of the Ringsend composite influent and effluent were analysed during 2010 and 2011 for a comprehensive suite of parameters from :

- PRTR test suite
- EPA's 54 parameter test suite (Appendix 1, EPA Guidance on the Screening for Priority Substances for Waste Water Discharge Licences) which was issued on 17/01/11.

Summary of Effluent Screening Results :

2010 – Effluent Sample Reference 548568 of 03/11/10

See Table 6.1.1. Many of the parameters tested for the PRTR suite in this effluent sub-sample were reported as below the detection limit.
Parameters from the EPA's Guidance document detected in this effluent sample included low (sub-microgram per litre) levels of 3 PAH's,(Fluoranthene, Benzo(b)fluoranthene and Benzo(a)pyrene), a pesticide compound (Dichlobenil), Phenols, Arsenic, Copper, Zinc, Selenium, Barium, Boron and Nickel (see highlighted parameters in Table 6.1.1).
Results for general parameters and additional tests were in the normal range for effluent sewage.

2011 – Effluent Sample Reference 569462 of 10/02/2011

See Table 6.1.2. This sample was tested for a number of parameters listed in the EPA Guidance Document issued on 17/01/2011. Many of the parameters in the effluent sub-sample were reported as below the detection limit.
Parameters detected in this effluent sample included Dichloromethane and Trichloromethane, Glyphosate, Dichlobenil and Molybdenum (see highlighted parameters in Table 6.1.2). Additional tests were in the normal range for effluent sewage.

2011 – Effluent Sample Reference 508766 of 23/03/2011

See Table 6.1.3. This sample was tested for the PRTR test suite. Many of the parameters in the effluent sub-sample were reported as below the detection limit.
Parameters from the EPA's Guidance document detected in this effluent sample include low (sub-microgram per litre) levels of the pesticide compounds Mecoprop, 2,4-D and Dichlobenil.
Phenols, Lead, Arsenic, Copper, Zinc, Cadmium, Chromium, Selenium, Barium, Boron and Nickel. were detected at the ug/l level (see highlighted parameters in Table 6.1.3).
Results for general parameters and additional tests were in the normal range for effluent sewage.

2011 – Effluent Sample Reference 589512 of 13/12/2011

See Table 6.1.4. This sample was tested for the PRTR test suite supplemented by the EPA test suite. Many of the parameters in the effluent sub-sample were reported as below the detection limit.
Parameters from the EPA's Guidance document detected in this effluent sample included a significant level of Glyphosate and low (sub-microgram per litre) levels of the pesticide compounds Mecoprop and MCPA.
Arsenic, Copper, Zinc, Chromium, Selenium, Barium and Boron were detected at the ug/l level. (see highlighted parameters in Table 6.1.4).
Results for general parameters and additional tests were in the normal range for effluent sewage.

Table 6.1.1.

EPA Appendix 1 – Ringsend Effluent Sample 548568 - 2010 Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	N/A*	**VOC's**
2.	Carbon Tetrachloride	N/A*	(*see 2011 analyses)
3	1,2-Dichloroethane	N/A*	
4	Dichloromethane	N/A*	
5	Tetrachloroethylene	N/A*	
6	Trichloroethylene	N/A*	
7	Trichlorobenzenes (sum)	<60 ug/l	
8	Trichloromethane	N/A*	
9	Xylenes (all isomers)	N/A*	
10	Ethyl Benzene	N/A*	
11	Toluene	N/A*	
12	Naphthalene	<0.01 ug/l	**PAH's**
13	Fluoranthene	**0.033 ug/l**	
14	Benzo(k)fluoranthene	<0.01 ug/l	
15	Benzo(ghi)perylene	<0.01 ug/l	
16	Indeno(1,2,3-c,d)pyrene	<0.01 ug/l	
17	Benzo(b)fluoranthene	**0.019 ug/l**	
18	Benzo(a)pyrene	**0.012 ug/l**	
19	Di(2-ethylhexyl)phthalate (DEHP)	<5.0 ug/l	**Plasticiser**
20	Isodrin	<8 ng/l	**Pesticides**
21	Dieldrin	<8 ng/l	
22	Diuron	<0.20 ug/l	
23	Isoproturon	<0.05 ug/l	
24	Atrazine	<0.04 ug/l	
25	Simazine	<0.04 ug/l	
26	Glyphosate	N/A*	(*see 2011 analyses)
27	Mecoprop	N/A*	
28	2,4-D	<0.05 ug/l	
29	MCPA	<0.05 ug/l	
30	Linuron	<0.05 ug/l	
31	Dichlobenil	**20 ng/l**	
32	2,6-Dichlorobenzamide	N/A*	
33	PCB's (Sum of 7)	<28 ng/l	**PCB's**
34	Phenols	**1.99 ug/l**	**Phenols**
35	Lead	<5 ug/l	**Metals**
36	Arsenic	**2.9 ug/l**	
37	Copper	**9 ug/l**	
38	Zinc	**27 ug/l**	
39	Cadmium	<0.6 ug/l	
40	Mercury	<0.1 ug/l	
41	Chromium	<0.7 ug/l	
42	Selenium	**17.5 ug/l**	
43	Antimony	N/A*	(*see 2011 analyses)

44	Molybdenum	N/A*	**Metals continued**
45	Tin (Total)	N/A*	
46	Barium	**13.2 ug/l**	
47	Boron	**0.28 mg/l**	
48	Cobalt	N/A*	
49	Vanadium	N/A*	
50	Nickel	**6 ug/l**	
51	Fluoride	0.5 mg/l	**General**
52	Chloride	259 mg/l	
53	TOC	N/A*	
54	Cyanide	<0.009 ug/l	
55	Conductivity	1220 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.5	

Table 6.1.2.

EPA Appendix 1 – Ringsend Effluent Sample 569462 - 2011 Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	<0.10 ug/l	**VOC's**
2.	Carbon Tetrachloride	N/A due to AQC Breach	
3	1,2-Dichloroethane	<1.0 ug/l	
4	Dichloromethane	**14.3 ug/l**	
5	Tetrachloroethylene	<1.0 ug/l	
6	Trichloroethylene	<1.0 ug/l	
7	Trichlorobenzenes (sum)	<60 ng/l	
8	Trichloromethane	**1.5 ug/l**	
9	Xylenes (all isomers)	<0.30 ug/l	
10	Ethyl Benzene	<0.10 ug/l	
11	Toluene	<0.10 ug/l	
12	Naphthalene	N/A	**PAH's**
13	Fluoranthene	N/A	
14	Benzo(k)fluoranthene	N/A	
15	Benzo(ghi)perylene	N/A	
16	Indeno(1,2,3-c,d)pyrene	N/A	
17	Benzo(b)fluoranthene	N/A	
18	Benzo(a)pyrene	N/A	
19	Di(2-ethylhexyl)phthalate (DEHP)	N/A	**Plasticiser**
20	Isodrin	<8 ng/l	**Pesticides**
21	Dieldrin	<8 ng/l	
22	Diuron	N/A	
23	Isoproturon	N/A	
24	Atrazine	N/A	
25	Simazine	N/A	
26	Glyphosate	**0.272 ug/l**	
27	Mecoprop	N/A	
28	2,4-D	N/A	
29	MCPA	N/A	
30	Linuron	N/A	
31	Dichlobenil	**9 ng/l**	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	N/A	**PCB's**
34	Phenols	N/A	**Phenols**
35	Lead	N/A	**Metals**
36	Arsenic	N/A	
37	Copper	N/A	
38	Zinc	N/A	
39	Cadmium	N/A	
40	Mercury	N/A	
41	Chromium	N/A	
42	Selenium	N/A	
43	Antimony	<1.6 ug/l	

44	Molybdenum	**73 ug/l**	**Metals continued**
45	Tin (Total)	<5 ug/l	
46	Barium	N/A	
47	Boron	N/A	
48	Cobalt	<0.6 ug/l	
49	Vanadium	<2.0 ug/l	
50	Nickel	N/A	
51	Fluoride	N/A	**General**
52	Chloride	N/A	
53	TOC	9.64	
54	Cyanide	N/A	
55	Conductivity	1085 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.8	

Table 6.1.3.

EPA Appendix 1 – Ringsend Effluent Sample 508766 - 2011 PRTR Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	N/A	**VOC's**
2.	Carbon Tetrachloride	N/A	
3	1,2-Dichloroethane	N/A	
4	Dichloromethane	N/A	
5	Tetrachloroethylene	N/A	
6	Trichloroethylene	N/A	
7	Trichlorobenzenes (sum)	<60 ng/l	
8	Trichloromethane	N/A	
9	Xylenes (all isomers)	N/A	
10	Ethyl Benzene	N/A	
11	Toluene	N/A	
12	Naphthalene	<0.01 ug/l	**PAH's**
13	Fluoranthene	<0.01 ug/l	
14	Benzo(k)fluoranthene	<0.01 ug/l	
15	Benzo(ghi)perylene	<0.01 ug/l	
16	Indeno(1,2,3-c,d)pyrene	<0.01 ug/l	
17	Benzo(b)fluoranthene	<0.01 ug/l	
18	Benzo(a)pyrene	<0.01 ug/l	
19	Di(2-ethylhexyl)phthalate (DEHP)	<10.0 ug/l	**Plasticiser**
20	Isodrin	<8 ng/l	**Pesticides**
21	Dieldrin	<8 ng/l	
22	Diuron	<0.50 ug/l	
23	Isoproturon	<0.50 ug/l	
24	Atrazine	<0.040 ug/l	
25	Simazine	<0.040 ug/l	
26	Glyphosate	N/A	
27	Mecoprop	**0.19 ug/l**	
28	2,4-D	**0.34 ug/l**	
29	MCPA	<0.05 ug/l	
30	Linuron	<0.50 ug/l	
31	Dichlobenil	**5 ng/l**	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	<28 ng/l	**PCB's**
34	Phenols	**2.54 ug/l**	**Phenols**
35	Lead	**14.5 ug/l**	**Metals**
36	Arsenic	**3.3 ug/l**	
37	Copper	**32 ug/l**	
38	Zinc	**111 ug/l**	
39	Cadmium	**0.7 ug/l**	
40	Mercury	<0.1 ug/l	
41	Chromium	**2.3 ug/l**	
42	Selenium	**7.0 ug/l**	
43	Antimony	N/A	

44	Molybdenum	N/A	**Metals continued**
45	Tin (Total)	N/A	
46	Barium	**41.90 ug/l**	
47	Boron	**0.44 mg/l**	
48	Cobalt	N/A	
49	Vanadium	N/A	
50	Nickel	**11 ug/l**	
51	Fluoride	0.6 mg/l	**General**
52	Chloride	714 mg/l	
53	TOC	N/A	
54	Cyanide	<10.0 ug/l	
55	Conductivity	2660 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.7	

Table 6.1.4.

EPA Appendix 1 – Ringsend Effluent Sample 589512 - 2011 PRTR Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	<1 ug/l	**VOC's**
2.	Carbon Tetrachloride	<1 ug/l	
3	1,2-Dichloroethane	<1 ug/l	
4	Dichloromethane	<1 ug/l	
5	Tetrachloroethylene	<1 ug/l	
6	Trichloroethylene	<1 ug/l	
7	Trichlorobenzenes (sum)	<60 ng/l	
8	Trichloromethane	<1 ug/l	
9	Xylenes (all isomers)	<2 ug/l	
10	Ethyl Benzene	<1 ug/l	
11	Toluene	<1 ug/l	
12	Naphthalene	<0.04 ug/l	**PAH's**
13	Fluoranthene	<0.04 ug/l	
14	Benzo(k)fluoranthene	<0.04 ug/l	
15	Benzo(ghi)perylene	<0.04 ug/l	
16	Indeno(1,2,3-c,d)pyrene	<0.04 ug/l	
17	Benzo(b)fluoranthene	<0.04 ug/l	
18	Benzo(a)pyrene	<0.04 ug/l	
19	Di(2-ethylhexyl)phthalate (DEHP)	<5.0 ug/l	**Plasticiser**
20	Isodrin	<8 ng/l	**Pesticides**
21	Dieldrin	<8 ng/l	
22	Diuron	<0.10 ug/l	
23	Isoproturon	<0.15 ug/l	
24	Atrazine	<0.04 ug/l	
25	Simazine	<0.04 ug/l	
26	Glyphosate	**4.04 ug/l**	
27	Mecoprop	**0.07 ug/l**	
28	2,4-D	<0.05 ug/l	
29	MCPA	**0.13 ug/l**	
30	Linuron	<0.15 ug/l	
31	Dichlobenil	<4 ng/l	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	<28 ng/l	**PCB's**
34	Phenols	<0.5 ug/l	**Phenols**
35	Lead	<5.0 ug/l	**Metals**
36	Arsenic	**3.1 ug/l**	
37	Copper	**60 ug/l**	
38	Zinc	**118 ug/l**	
39	Cadmium	<0.6 ug/l	
40	Mercury	<0.1 ug/l	
41	Chromium	**1.6 ug/l**	
42	Selenium	<1.6 ug/l	
43	Antimony	<1.6 ug/l	

44	Molybdenum	<2 ug/l	**Metals continued**
45	Tin (Total)	<5 ug/l	
46	Barium	**29.0 ug/l**	
47	Boron	**256 ug/l**	
48	Cobalt	<0.6 ug/l	
49	Vanadium	**3 ug/l**	
50	Nickel	<2 ug/l	
51	Fluoride	0.5 mg/l	**General**
52	Chloride	389 mg/l	
53	TOC	N/A	
54	Cyanide	<10.0 ug/l	
55	Conductivity	1631 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.5	

Assessment of the Significance of the Discharge SW1 on Receiving Water Quality.

A summary of effluent screening results is presented below with a limited assessment of the significance of the discharge on receiving water. Note that the effluent results are at the licensed point of discharge (SW1) and that a mixing zone boundary has not been defined in WWDL D0034-01. Effluent from SW1 receives a significant dilution within the undefined near field mixing zone before receiving water standards are applicable.

Table 6.1.5 Assessment of the Significance of the Discharge SW1 on Receiving Water Environmental Quality Standards for Specific Pollutants (Table 10, SI 272 of 2009).

Specific Pollutant Parameter	AA-EQS (ug/l)	Effluent 548568 03/11/10	Effluent 569462 10/02/11	Effluent 508766 23/03/11	Effluent 589512 13/12/11
		SW1	SW1	SW1	SW1
Arsenic	20	2.9	-	3.3	3.1
Chromium VI	0.6	< 0.7*	-	2.3*	1.6*
Copper	5	9.0	-	32	60
Cyanide	10	<0.009	-	<10.0	<10.0
Diazinon	0.01	<0.006	-	<0.006	<0.006
Dimethoate	0.8	-	-	<0.040	<0.040
Fluoride	1,500	500	-	600	500
Glyphosate	-	-	0.272	-	4.04
Linuron	0.7	< 0.05	-	<0.50	<0.15
Mancozeb	2	-	-	-	-
Monochlorobenzene	25	-	<1	-	<1
Phenols	8	1.99	-	2.54	<1
Toluene	10	-	<0.10	-	<1
Xylenes	10	-	<0.30	-	<2
Zinc	40	27	-	111	118

*= Total Chromium which is > Chromium VI

Ringsend Influent Screening, 2010 and 2011

To comply with condition **4.11.2 of Licence D0034-01**, 4 sub-samples of the Ringsend composite influent were analysed during 2010 and 2011 (on the same dates as the effluent samples reported above) for agglomeration regulation purposes.
Investigation of the sources of any dangerous substances detected in monitoring of the influent was carried out by monitoring the 4 incoming lines to the plant in December, 2011.
Samples were tested for :

- PRTR test suite
- EPA's 54 parameter test suite (Appendix 1, EPA Guidance on the Screening for Priority Substances for Waste Water Discharge Licences) issued on 17/01/11.

Summary of Influent Screening Results :

2010 – Influent Sample Reference 548567 of 03/11/10.

See Table 6.1.6. Many of the parameters tested for the PRTR suite in this influent sub-sample were reported as below the detection limit.
Parameters from the EPA's Guidance document detected in this influent sample included low (microgram and sub-microgram per litre) levels of the 7 PAH's listed, pesticides Mecoprop and Dichlobenil (sub microgram/ litre), Phenols (54.9 ug/l) and metals Lead, Arsenic, Copper, Zinc, Chromium Selenium, Barium, Boron and Nickel (see highlighted parameters in Table 6.1.6).
Results for general parameters and additional tests were in the normal range for influent sewage.

2011 – Influent Sample Reference 569461 of 10/02/2011

See Table 6.1.7. This sample was tested for a number of parameters listed in the EPA Guidance Document issued on 17/01/2011. Many of the parameters in the influent sub-sample were reported as below the detection limit.
Parameters detected in this influent sample included BTEX compounds at low microgram and sub-microgram per litre levels, Dichloromethane (20.5 ug/l) and Trichloromethane (1.9 ug/l), metals Molybdenum (180 ug/l) and Cobalt (1.3 ug/l). See highlighted parameters in Table 6.1.7).
Additional tests were in the normal range for influent sewage.

2011 – Influent Sample Reference 508765 of 23/03/2011

See Table 6.1.8. This sample was tested for the PRTR test suite. Many of the parameters in the influent sub-sample were reported as below the detection limit.
Parameters from the EPA's Guidance document detected in this influent sample included low (microgram and sub-microgram per litre) levels of 6 PAH's listed, the pesticide Mecoprop (sub microgram/ litre), Phenols (189 ug/l) and metals Arsenic, Copper, Zinc, Cadmium, Chromium Selenium, Barium, Boron and Nickel (see highlighted parameters in Table 6.1.8).
Additional tests were in the normal range for influent sewage.

2011 – Influent Sample Reference 589511 of 13/12/2011

See Table 6.1.9. This sample was tested for the PRTR test suite. Many of the parameters in the influent sub-sample were reported as below the detection limit.
Parameters detected in this influent sample included the VOC's Dichloromethane (2.4 ug/l), Tetrachloroethylene (3.2 ug/l) and Trichloromethane (2.6 ug/l), low (microgram and sub-microgram per litre) levels of 3 PAH's listed, the pesticides Mecoprop and MCPA (sub microgram/ litre), Phenols (62.8 ug/l) and metals Lead, Arsenic, Copper, Zinc, Chromium, Antimony, Barium, Boron, Vanadium and Nickel (see highlighted parameters in Table 6.1.9).
Additional tests were in the normal range for influent sewage.

Table 6.1.6

EPA Appendix 1 – Ringsend Influent Sample 548567 - 2010 PRTR Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	N/A*	**VOC's**
2.	Carbon Tetrachloride	N/A*	(*see 2011 analyses)
3	1,2-Dichloroethane	N/A*	
4	Dichloromethane	N/A*	
5	Tetrachloroethylene	N/A*	
6	Trichloroethylene	N/A*	
7	Trichlorobenzenes (sum)	<120 ng/l	
8	Trichloromethane	N/A*	
9	Xylenes (all isomers)	N/A*	
10	Ethyl Benzene	N/A*	
11	Toluene	N/A*	
12	Naphthalene	**1.39 ug/l**	**PAH's**
13	Fluoranthene	**0.869 ug/l**	
14	Benzo(k)fluoranthene	**0.066 ug/l**	
15	Benzo(ghi)perylene	**0.108 ug/l**	
16	Indeno(1,2,3-c,d)pyrene	**0.061 ug/l**	
17	Benzo(b)fluoranthene	**0.257 ug/l**	
18	Benzo(a)pyrene	**0.205 ug/l**	
19	Di(2-ethylhexyl)phthalate (DEHP)	<100.0 ug/l	**Plasticiser**
20	Isodrin	<16 ng/l	**Pesticides**
21	Dieldrin	<20 ng/l	
22	Diuron	<0.10 ug/l	
23	Isoproturon	<0.75 ug/l	
24	Atrazine	<0.08 ug/l	
25	Simazine	<0.08 ug/l	
26	Glyphosate	N/A*	(*see 2011 analyses)
27	Mecoprop	**0.16 ug/l**	
28	2,4-D	<0.10 ug/l	
29	MCPA	<0.10 ug/l	
30	Linuron	<3 ug/l	
31	Dichlobenil	**41 ng/l**	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	<56 ng/l	**PCB's**
34	Phenols	**54.9 ug/l**	**Phenols**
35	Lead	<5 ug/l	**Metals**
36	Arsenic	**1.8 ug/l**	
37	Copper	**14 ug/l**	
38	Zinc	**22 ug/l**	
39	Cadmium	<0.6 ug/l	
40	Mercury	<0.1 ug/l	
41	Chromium	**1 ug/l**	
42	Selenium	**23.3 ug/l**	
43	Antimony	N/A*	(*see 2011 analyses)

44	Molybdenum	N/A*	**Metals continued**
45	Tin (Total)	N/A*	(*see 2011 analyses)
46	Barium	**18.7 ug/l**	
47	Boron	**171 ug/l**	
48	Cobalt	N/A*	
49	Vanadium	N/A*	
50	Nickel	**7 ug/l**	
51	Fluoride	0.4 mg/l	**General**
52	Chloride	304 mg/l	
53	TOC	N/A	
54	Cyanide	<0.009 ug/l	
55	Conductivity	1,299 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.4	

Table 6.1.7.

EPA Appendix 1 – Ringsend Influent Sample 569461 - 2011 Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	**0.17 ug/l**	**VOC's**
2.	Carbon Tetrachloride	N/A due to AQC Breach	
3	1,2-Dichloroethane	<1.0 ug/l	
4	Dichloromethane	**20.5 ug/l**	
5	Tetrachloroethylene	<1.0 ug/l	
6	Trichloroethylene	<1.0 ug/l	
7	Trichlorobenzenes (sum)	<300 ng/l	
8	Trichloromethane	**1.9 ug/l**	
9	Xylenes (all isomers)	**0.76 ug/l**	
10	Ethyl Benzene	**0.16 ug/l**	
11	Toluene	**1.59 ug/l**	
12	Naphthalene	N/A	**PAH's**
13	Fluoranthene	N/A	
14	Benzo(k)fluoranthene	N/A	
15	Benzo(ghi)perylene	N/A	
16	Indeno(1,2,3-c,d)pyrene	N/A	
17	Benzo(b)fluoranthene	N/A	
18	Benzo(a)pyrene	N/A	
19	Di(2-ethylhexyl)phthalate (DEHP)	N/A	**Plasticiser**
20	Isodrin	<40 ng/l	**Pesticides**
21	Dieldrin	<40 ng/l	
22	Diuron	N/A	
23	Isoproturon	N/A	
24	Atrazine	N/A	
25	Simazine	N/A	
26	Glyphosate	<0.006 ug/l	
27	Mecoprop	N/A	
28	2,4-D	N/A	
29	MCPA	N/A	
30	Linuron	N/A	
31	Dichlobenil	<20 ng/l	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	N/A	**PCB's**
34	Phenols	N/A	**Phenols**
35	Lead	N/A	**Metals**
36	Arsenic	N/A	
37	Copper	N/A	
38	Zinc	N/A	
39	Cadmium	N/A	
40	Mercury	N/A	
41	Chromium	N/A	
42	Selenium	N/A	

43	Antimony	<1.6 ug/l	**Metals continued**
44	Molybdenum	**180 ug/l**	
45	Tin (Total)	<5 ug/l	
46	Barium	N/A	
47	Boron	N/A	
48	Cobalt	**1.3 ug/l**	
49	Vanadium	<2.0 ug/l	
50	Nickel	N/A	
51	Fluoride	N/A	**General**
52	Chloride	N/A	
53	TOC	44.2	
54	Cyanide	N/A	
55	Conductivity	1040 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.6	

Table 6.1.8

EPA Appendix 1 – Ringsend Influent Sample 508765 - 2011 PRTR Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	N/A	**VOC's**
2.	Carbon Tetrachloride	N/A	
3	1,2-Dichloroethane	N/A	
4	Dichloromethane	N/A	
5	Tetrachloroethylene	N/A	
6	Trichloroethylene	N/A	
7	Trichlorobenzenes (sum)	<600 ng/l	
8	Trichloromethane	N/A	
9	Xylenes (all isomers)	N/A	
10	Ethyl Benzene	N/A	
11	Toluene	N/A	
12	Naphthalene	**2.47 ug/l**	**PAH's**
13	Fluoranthene	**0.339 ug/l**	
14	Benzo(k)fluoranthene	<0.04 ug/l	
15	Benzo(ghi)perylene	**0.046 ug/l**	
16	Indeno(1,2,3-c,d)pyrene	**0.051 ug/l**	
17	Benzo(b)fluoranthene	**0.055 ug/l**	
18	Benzo(a)pyrene	**0.052 ug/l**	
19	Di(2-ethylhexyl)phthalate (DEHP)	<200.0 ug/l	**Plasticiser**
20	Isodrin	<80 ng/l	**Pesticides**
21	Dieldrin	<80 ng/l	
22	Diuron	<0.10 ug/l	
23	Isoproturon	<1.00 ug/l	
24	Atrazine	<0.400 ug/l	
25	Simazine	<0.400 ug/l	
26	Glyphosate	N/A	
27	Mecoprop	**0.25 ug/l**	
28	2,4-D	<0.40 ug/l	
29	MCPA	<0.10 ug/l	
30	Linuron	<0.50 ug/l	
31	Dichlobenil	<40 ng/l	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	<280 ng/l	**PCB's**
34	Phenols	**189 ug/l**	**Phenols**
35	Lead	**14.1 ug/l**	**Metals**
36	Arsenic	**3.0 ug/l**	
37	Copper	**42 ug/l**	
38	Zinc	**142 ug/l**	
39	Cadmium	**1.3 ug/l**	
40	Mercury	<0.1 ug/l	
41	Chromium	**2.9 ug/l**	
42	Selenium	**6.5 ug/l**	
43	Antimony	N/A	

44	Molybdenum	N/A	**Metals continued**
45	Tin (Total)	N/A	
46	Barium	**51.1 ug/l**	
47	Boron	**0.45 mg/l**	
48	Cobalt	N/A	
49	Vanadium	N/A	
50	Nickel	**45 ug/l**	
51	Fluoride	0.6 mg/l	**General**
52	Chloride	716 mg/l	
53	TOC	N/A	
54	Cyanide	<10.0 ug/l	
55	Conductivity	2700 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.4	

Table 6.1.9.

EPA Appendix 1 – Ringsend Influent Sample 589511 - 2011 PRTR Screening.

EPA Parameters Screened for in Waste Water Discharges

No.	Compound	Result	Group of Compounds
1.	Benzene	<2 ug/l	**VOC's**
2.	Carbon Tetrachloride	<2 ug/l	
3	1,2-Dichloroethane	<2 ug/l	
4	Dichloromethane	**2.4 ug/l**	
5	Tetrachloroethylene	**3.2 ug/l**	
6	Trichloroethylene	<2 ug/l	
7	Trichlorobenzenes (sum)	<120 ng/l	
8	Trichloromethane	**2.6 ug/l**	
9	Xylenes (all isomers)	<4 ug/l	
10	Ethyl Benzene	<2 ug/l	
11	Toluene	<2 ug/l	
12	Naphthalene	**3.82 ug/l**	**PAH's**
13	Fluoranthene	**0.453 ug/l**	
14	Benzo(k)fluoranthene	<0.10 ug/l	
15	Benzo(ghi)perylene	<0.10 ug/l	
16	Indeno(1,2,3-c,d)pyrene	<0.10 ug/l	
17	Benzo(b)fluoranthene	<0.10 ug/l	
18	Benzo(a)pyrene	**0.109 ug/l**	
19	Di(2-ethylhexyl)phthalate (DEHP)	<50.0 ug/l	**Plasticiser**
20	Isodrin	<16 ng/l	**Pesticides**
21	Dieldrin	<16 ng/l	
22	Diuron	<0.60 ug/l	
23	Isoproturon	<0.80ug/l	
24	Atrazine	<0.08 ug/l	
25	Simazine	<0.08 ug/l	
26	Glyphosate	<0.10 ug/l	
27	Mecoprop	**0.23 ug/l**	
28	2,4-D	<0.20 ug/l	
29	MCPA	**0.30 ug/l**	
30	Linuron	<0.10 ug/l	
31	Dichlobenil	<8 ng/l	
32	2,6-Dichlorobenzamide	N/A	
33	PCB's (Sum of 7)	<56 ng/l	**PCB's**
34	Phenols	**62.8 ug/l**	**Phenols**
35	Lead	**11.2 ug/l**	**Metals**
36	Arsenic	**3.3 ug/l**	
37	Copper	**37 ug/l**	
38	Zinc	**150 ug/l**	
39	Cadmium	<0.6 ug/l	
40	Mercury	<0.1 ug/l	
41	Chromium	**2.8 ug/l**	
42	Selenium	<1.6 ug/l	
43	Antimony	**2.8 ug/l**	

44	Molybdenum	<2 ug/l	**Metals continued**
45	Tin (Total)	<5 ug/l	
46	Barium	**42.3 ug/l**	
47	Boron	**361 ug/l**	
48	Cobalt	<0.6 ug/l	
49	Vanadium	**5 ug/l**	
50	Nickel	**4 ug/l**	
51	Fluoride	0.4 mg/l	**General**
52	Chloride	549 mg/l	
53	TOC	N/A	
54	Cyanide	<10.0 ug/l	
55	Conductivity	2,080 uS/cm (20 degrees C)	**Additional Tests**
56	Hardness (mg/l CaCO3)	N/A	
57	pH	7.2	

Summary of Influent Lines Screening Results :

2011 – Influent Lines - Sample References 589517, 589518, 589519 and 589520 of 13/12/2011

To isolate the source of parameters detected in the Influent samples, samples were taken from the 4 main influent feeder lines on 13/12/2011 as follows :

589517 : Dun Laoghaire – West Pier
589518 : Dodder Valley Sewer - UCD FM-10
589519 : North Dublin Drainage System – Sutton Sump
589520 : Ringsend – Main Lift Pumping Station

See Table 6.1.10. These sample was tested for the PRTR test suite. Many of the parameters in the influent feeder line samples were reported as below the detection limit.

Parameters detected in the 4 feeder lines have been compared with those detected in the influent sample taken on the same date (see Table 6.1.9 above).

589517 : Dun Laoghaire – West Pier

Parameters detected in this sample included the VOC Trichloromethane (2.6 ug/l), the pesticides Glyphosate and Dichlobenil (low microgram and sub microgram / litre concentrations), Phenols (9.33 ug/l) and metals Lead, Arsenic, Copper, Zinc, Chromium, Antimony, Barium, Boron, Vanadium and Nickel (see highlighted parameters in Table 6.1.10).
Additional tests were in the normal range for influent sewage.

589518 : Dodder Valley Sewer - UCD FM-10

Parameters detected in this sample included the VOC Dichloromethane (2.5 ug/l),, Phenols (15.1 ug/l) and metals Arsenic, Copper, Zinc, Mercury, Chromium, Antimony, Barium, Boron, Vanadium and Nickel (see highlighted parameters in Table 6.1.10).
Additional tests were in the normal range for influent sewage.

589519 : North Dublin Drainage System – Sutton Sump

Parameters detected in this sample included the VOCs Tetrachloroethylene (4.1 ug/l) and Trichloromethane (3.2 ug/l), xylenes (5 ug/l), 3 PAH's in the sub-microgram per litre range, Phenols (57.1 ug/l) and metals Lead, Copper, Zinc, Chromium, Barium, Boron, Vanadium and Nickel (see highlighted parameters in Table 6.1.10).
Additional tests were in the normal range for influent sewage.

589520 : Ringsend – Main Lift Pumping Station

Parameters detected in this sample included the VOCs Dichlormethane (2.9 ug/l), Tetrachloroethylene (6.7 ug/l) and Trichloromethane (2.7 ug/l), toluene (2.5 ug/l), Naphthalene (6.06 ug/l) and 3 other PAH's in the sub-microgram per litre range, pesticides Mecoprop (0.13 ug/l) and MCPA (0.43 ug/l), Phenols (60.5 ug/l) and metals Lead, Arsenic, Copper, Zinc, Chromium, Barium, Boron, Vanadium and Nickel (see highlighted parameters in Table 6.1.10).
Note the elevated conductivity (2,670 uS/cm) indicating saline infiltration upstream of the Main Lift Pumping Station. Additional tests were in the normal range for influent sewage.

Measures to Reduce Detected Priority Substances

Ongoing reviews of trade effluent licenses and consents will be carried out in the catchments upstream of the 4 influent lines to the Ringsend WWTP to reduce detected priority substances.

Table 6.1.10.

EPA Appendix 1 – Ringsend Influent Inflows - Samples 589517 /589518 / 589519 / 589520 - 2011 PRTR Screening.

EPA Parameters Screened for in 4 Waste Water Influent Lines to the Ringsend WWTP

No.	Compound	589517 Dun Laoire West Pier	589518 UCD FM 10 (Dodder)	589519 Sutton Sump	589520 Ringsend Main Lift
1.	Benzene	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l
2.	Carbon Tetrachloride	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l
3	1,2-Dichloroethane	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l
4	Dichloromethane	<2.0 ug/l	**2.5 ug/l**	<2.0 ug/l	**2.9 ug/l**
5	Tetrachloroethylene	<2.0 ug/l	<2.0 ug/l	**4.1 ug/l**	**6.7 ug/l**
6	Trichloroethylene	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l	<2.0 ug/l
7	Trichlorobenzenes (sum)	<60 ng/l	<60 ng/l	<120 ng/l	<120 ng/l
8	Trichloromethane	**2.6 ug/l**	<2.0 ug/l	**3.2 ug/l**	**2.7 ug/l**
9	Xylenes (all isomers)	<4 ug/l	<4 ug/l	**5.0 ug/l**	<4 ug/l
10	Ethyl Benzene	<2 ug/l	<2 ug/l	<2.0 ug/l	<2 ug/l
11	Toluene	<2 ug/l	<2 ug/l	<2.0 ug/l	**2.5 ug/l**
12	Naphthalene	<0.10 ug/l	<0.34 ug/l	<0.10 ug/l	**6.06 ug/l**
13	Fluoranthene	<0.10 ug/l	<0.10 ug/l	**0.158 ug/l**	**0.648 ug/l**
14	Benzo(k)fluoranthene	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l
15	Benzo(ghi)perylene	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l
16	Indeno(1,2,3-c,d)pyrene	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l
17	Benzo(b)fluoranthene	<0.10 ug/l	<0.10 ug/l	**0.169 ug/l**	**0.127 ug/l**
18	Benzo(a)pyrene	<0.10ug/l	<0.10 ug/l	**0.119 ug/l**	**0.121 ug/l**
19	Di(2-ethylhexyl)phthalate (DEHP)	<50.0 ug/l	<50.0 ug/l	<50.0 ug/l	<50.0 ug/l
20	Isodrin	<8 ng/l	<8 ng/l	<16 ng/l	<16 ng/l
21	Dieldrin	<8 ng/l	<8 ng/l	<16 ng/l	<16 ng/l
22	Diuron	<0.15 ug/l	<0.75 ug/l	<0.30 ug/l	<0.50 ug/l
23	Isoproturon	<0.40ug/l	<0.55 ug/l	<1.60 ug/l	<1.00 ug/l
24	Atrazine	<0.040 ug/l	<0.040 ug/l	<0.080 ug/l	<0.080 ug/l
25	Simazine	<0.040 ug/l	<0.040 ug/l	<0.080 ug/l	<0.080 ug/l
26	Glyphosate	**2.37 ug/l**	<0.10 ug/l	<0.10 ug/l	<0.10 ug/l
27	Mecoprop	<0.08 ug/l	<0.16 ug/l	<0.04 ug/l	**0.13 ug/l**
28	2,4-D	<0.10 ug/l	<0.20 ug/l	<0.05 ug/l	<0.05 ug/l
29	MCPA	<0.10 ug/l	<0.20 ug/l	<0.05 ug/l	**0.43 ug/l**
30	Linuron	<0.25 ug/l	<0.30 ug/l	<0.05 ug/l	<0.10 ug/l
31	Dichlobenil	**7 ng/l**	<4 ng/l	<8 ng/l	<8 ng/l
32	2,6-Dichlorobenzamide	N/A	N/A	N/A	N/A
33	PCB's (Sum of 7)	<28 ng/l	<28 ng/l	<56 ng/l	<56 ng/l
34	Phenols	**9.33 ug/l**	**15.1 ug/l**	**57.1 ug/l**	**60.5 ug/l**
35	Lead	**8.4 ug/l**	<5.0 ug/l	**5.2 ug/l**	**5.7 ug/l**
36	Arsenic	**2.2 ug/l**	**1.6 ug/l**	<1.4 ug/l	**3.8 ug/l**
37	Copper	**55 ug/l**	**31 ug/l**	**86 ug/l**	**34 ug/l**
38	Zinc	**75 ug/l**	**79 ug/l**	**111 ug/l**	**69 ug/l**
39	Cadmium	<0.6 ug/l	<0.6 ug/l	<0.6 ug/l	<0.6 ug/l

40	Mercury	<0.1 ug/l	**0.1 ug/l**	<0.1 ug/l	<0.1 ug/l
41	Chromium	**1.3 ug/l**	**1.3 ug/l**	**1.0 ug/l**	**2.2 ug/l**
42	Selenium	<1.6 ug/l	<1.6 ug/l	<1.6 ug/l	<1.6 ug/l
43	Antimony	<1.6 ug/l	<1.6 ug/l	<1.6 ug/l	<1.6 ug/l
44	Molybdenum	<2 ug/l	<2 ug/l	<2 ug/l	<2 ug/l
45	Tin (Total)	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l
46	Barium	**30.6 ug/l**	**23.6 ug/l**	**32.2 ug/l**	**29.0 ug/l**
47	Boron	**173 ug/l**	**191 ug/l**	**204 ug/l**	**403 ug/l**
48	Cobalt	<0.6 ug/l	<0.6 ug/l	<0.6 ug/l	<0.6 ug/l
49	Vanadium	**3 ug/l**	**3 ug/l**	**3 ug/l**	**4 ug/l**
50	Nickel	**3 ug/l**	<2 ug/l	**3 ug/l**	**3 ug/l**
51	Fluoride	0.4 mg/l	0.4 mg/l	0.4 mg/l	0.5 mg/l
52	Chloride	166 mg/l	56.8 mg/l	151 mg/l	733 mg/l
53	TOC	N/A	N/A	N/A	N/A
54	Cyanide	<10.0 ug/l	<10.0 ug/l	<10.0 ug/l	<10.0 ug/l
55	Conductivity	871 uS/cm (20 degrees C)	636 uS/cm (20 degrees C)	1145 uS/cm (20 degrees C)	2670 uS/cm (20 degrees C)
56	Hardness (mg/l CaCO3)	N/A	N/A	N/A	N/A
57	pH	7.5	7.6	7.7	7.5

Annual Environmental Report

For

Greater Dublin Area Agglomeration,

Fingal Section

Waste Water Discharge Licence No. D0034-01

2011

Table of Contents

1 Introduction and Background to 2011 AER

Executive Summary

The Greater Dublin Area Agglomeration includes all of the geographical area of Dublin City Council and parts of Fingal County Council functional area, South Dublin County Council functional area, Dun Laoghaire Rathdown County Council functional area and Meath County Council functional area. The agglomeration is served by one waste water treatment plant (WWTP) at Ringsend (Ringsend Treatment Works) close to Dublin City centre. The Greater Dublin Area agglomeration is the largest agglomeration in Ireland. the measured population equivalent (PE) loading received at the WWTP in 2007 was 2.871million. The existing WWTP has a design load capacity of c. l.64 million PE

Dublin City Council applied for a Waste Water Discharge Licence (WWDL) for the agglomeration under the Waste Water Discharge (Authorisation) Regulations (S.I. 684 of 2007). The Licence, D0034-01, was issued by the EPA on 27th July 2010.

Condition 6.10 of the Licence requires an Annual Environmental Report (AER) covering the previous calendar year to be submitted to the EPA, by the 28th February of each year.

This AER has been prepared for Fingal County Council's portion of the Agglomeration for the period 1st Jan 2011 to 31st Dec 2011 in accordance with Condition 6.10 and Schedule D of the Licence, and in accordance with the "Guidance on the Preparation & Submission of the Annual Environmental Report (AER) for Waste Water Discharge Licences".

No influent monitoring was carried out in Fingal portion of agglomeration and no monitoring of secondary discharges was carried out or is required, (Schedule B.2 of the Licence) therefore there is no discussion of results.

The results of the ambient water monitoring indicates that the discharge from the agglomeration is not affecting the ambient waters. There were 12 complaints received and no reported incidents in the agglomeration in 2011.

2. Summary of Monitoring Reports

2.1 Summary of Influent Monitoring

No influent monitoring was carried out in Fingal portion of agglomeration.

2.2 Discharges from the Agglomeration

No monitoring of secondary discharges was carried out or is required. (Schedule B.2 of the Licence)

2.3 Ambient Monitoring Summary

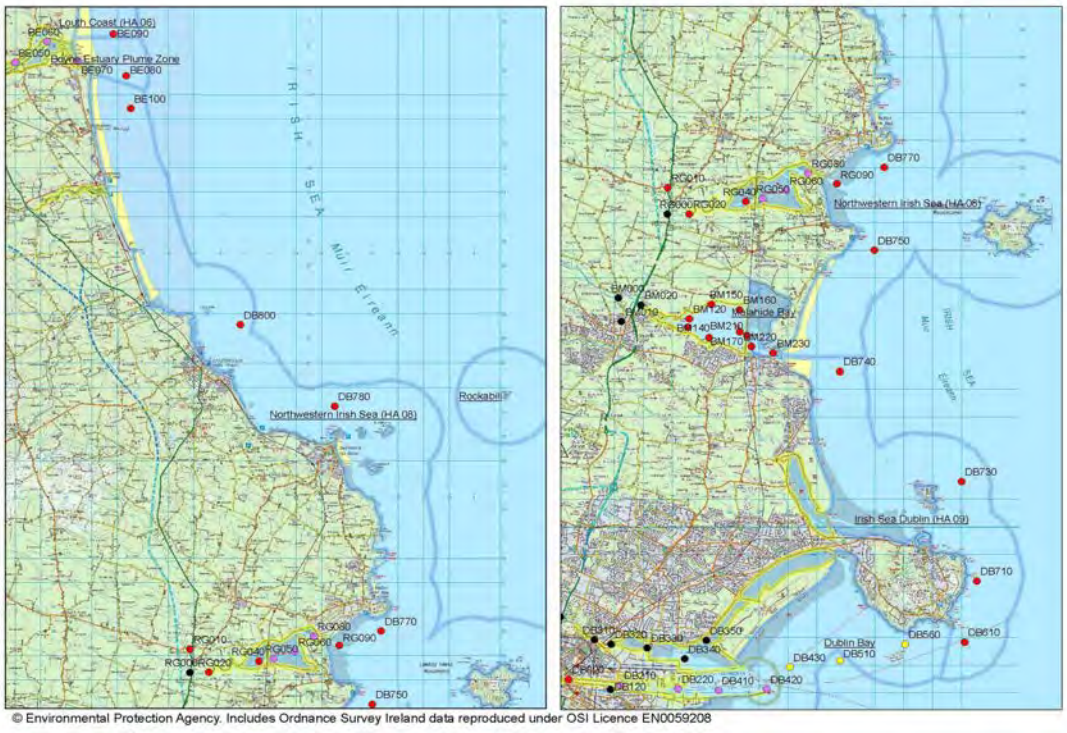
There was no ambient monitoring carried out by Fingal County Council in 2011.

The EPA usually carry out ambient monitoring in the area each year, however none was carried out in 2011 by the EPA. Below are the most recent results of the ambient monitoring carried out by the EPA in the area in 2010. The location of the sampling stations is also given below.

Station	Location	Survey Date	Depth of Bed	Sample Depth	Secchi	Salinity	Temp	DO Saturation	BOD
DB710	CASANA ROCK HOWTH HEAD	07/09/2010	14.9	14.3		33.91	15.08	99.2	FALSE
DB710	CASANA ROCK HOWTH HEAD	12/07/2010	28	27	4.0	34.04	14.35	100.1	FALSE
DB710	CASANNA ROCK HOWTH HEAD	27/05/2010	26	25.4	3.0	33.62	11.98	108	FALSE
DB710	CASANA ROCK HOWTH HEAD	01/02/2010	27.6	27.2	1.1	33.29	5.81	97.1	FALSE
DB710	CASANA ROCK HOWTH HEAD	07/09/2010	14.9	0		33.89	15.18	102.1	FALSE
DB710	CASANA ROCK HOWTH HEAD	12/07/2010	28	0	4.0	34.02	14.74	104.2	FALSE
DB710	CASANNA ROCK HOWTH HEAD	27/05/2010	26	0	3.0	33.6	12.08	106.7	FALSE
DB710	CASANNA ROCK HOWTH HEAD	01/02/2010	27.6	0	1.1	33.28	5.8	97.9	FALSE
DB730	IRELAND'S EYE	07/09/2010	27	25.8	2.1	33.9	15.07	97.6	TRUE
DB730	IRELAND'S EYE	12/07/2010	27	27	4.0	34.03	14.35	99.7	TRUE
DB730	IRELAND'S EYE	27/05/2010	26.1	25.9	3.0	33.62	11.98	108.5	TRUE
DB730	IRELAND'S EYE	01/02/2010	28	27.1	1.6	33.27	5.77	96.8	FALSE
DB730	IRELAND'S EYE	07/09/2010	27	0	2.1	33.79	15.31	102.1	TRUE
DB730	IRELAND'S EYE	12/07/2010	27	0	4.0	33.97	15.08	104.6	FALSE
DB730	IRELAND'S EYE	27/05/2010	26.1	0	3.0	33.59	12.22	11.2	TRUE
DB730	IRELAND'S EYE	01/02/2010	28	0	1.6	33.27	5.78	98.1	TRUE

Note: TRUE *indicates that a BOD sample was taken, but the result is not available yet.* FALSE *indicates that there was no sample taken.*

The location of the sampling stations is also given below.



The sample results were compared to the requirements of the Bathing Water Quality Regulations S.I. 79 of 2008, European Communities (Quality of Shellfish Waters) Regulations S.I. 268 of 2006 and the European Communities Environmental Objectives (Surface Water) Regulations S.I. 272 of 2009. The results of the testing as shown above indicate that the secondary discharges from the agglomeration are not affecting the ambient waters.

2.3.1 Shore Monitoring

No shore monitoring is to be carried out in Fingal County Council as specified in the licence.

2.4 Data Collection and Reporting requirements under the Urban Waste Water Treatment Directive.

No samples of the secondary discharges were taken. The returns as required by the Urban Waste Water Treatment Directive for the Fingal area have been returned electronically to the EPA

2.5 Pollutant Release and Transfer Register

Not necessary for the Fingal portion of the agglomeration.

2.6 PRTR – proposal for current year.

Not necessary for the Fingal portion of the agglomeration.

3. Operational Reports Summary

3.1 Complaints Summary

The following complaints were received in the Fingal portion of the agglomeration in 2011.

Number	Date	Nature of Complaint	Response	Closed
313	13th May 2011	Sewage Discharge	Drainage Ops dye tested SW system at Heathfield Cappagh Road. Foul sewer overflowing into SW drains and into the Scribblestown stream to Tolka river. S12 Notice to be sent to Manor Park Homes. New connection made to Sewer	Yes
325	15th August 2011	Discharge from Bob Davis Culvert	Drainage carried out series of dye tests to establish cause	Yes

3.2 Reported Incidents

There were no incidents to be reported in the Fingal portion of the agglomeration.

4. Infrastructural Assessments and Programme of Measures

4.1 Treatment Capacity

Not relevant to the Fingal portion of the agglomeration.

4.2 Storm water overflow identification and inspection report

4.2.1 Storm Water Overflows.

The number and volume of discharges from the SWOs was estimated for the Licence application using the local knowledge of the Area Inspector and the Area Engineer. It was intended that flow monitors would be used in 2011 to determine the actual flows and number of discharges and whether the SWOs complied with the definition of a SWO as set out in the publication of the DoEHLG: "*Procedures and Criteria in Relation to SWOs"*. **However delays due to staff shortages meant that this has not taken place yet. Fingal County Council propose to carry out the flow monitoring in 2012 instead and will report fully in the 2012 AER.**

4.2.2 Emergency overflows.

The emergency overflows are associated with pumping stations in the agglomeration. The PS's are all linked to the Regional Telemetry system and the number of overflows can be quantified from this. The volume of overflows is harder to estimate. **A trial was arranged with one PS in the County to attempt to measure the volume of overflow, but again due to staff shortages, the trial was not carried out. Fingal County Council proposes to implement monitoring of frequency and volume of emergency overflows in 2012 instead and will report fully in the 2012 AER.**

As discussed above, it was intended to determine whether the SWOs complied with the definition of an SWO as set out in the publication of the DoEHLG: "P*rocedures and Criteria in Relation to SWOs",* and the effectiveness of the emergency overflows, during 2011. **However delays due to staff shortages meant that this did not take place during 2011. Fingal County Council proposes to carry out these works in 2012 instead and will report fully in the 2012 AER.**

How many SWOs are listed in Schedule A4 of the WWDL	29
How many additional SWOs are listed in the agglomeration	zero
Total No of SWOs in the agglomeration	29 (Fingal Only)
How many SWOs are listed as compliant with the DoEHLG Guidance	Information not available
For each SWO identified as non compliant with DoEHLG Guidance is there a corrective action plan included in the Programme of Improvements	Information not available
Does the SWO assessment include the requirements of Schedule A3 & C3	Information not available
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7	Information not available

4.3 Report on progress made and proposals being developed to meet the improvements programme requirements

The discharge from the Nose of Howth, secondary discharge point S5 Fingal, ceased on 27th October 2010. The sewerage is now being directed to the Sutton P.S. for transfer and treatment in the Ringsend WWTP. As part of these works, Storm Water Overflow Fingal-SW48-Howth, at the junction of Abbey St and Harbour Road in Howth, was blocked up and is no longer in operation.

The discharge into Doldrum Bay, secondary discharge point S4 Fingal, has not ceased and did not cease by 31st December 2011. Funding for the construction of the scheme, estimated at €1.5m, was not included in the Water Services Investment Programme (WSIP) 2010-2012. However, it has been approved to move to planning stage under the Portmarnock Drainage Scheme in the 2010-2012 WSIP. It is envisaged that the discharge will cease by Q4 2013.

An Infrastructural Assessments & Programme of Improvements Report was included in the 2010 AER. Please see the following page for Schedules A3 & C Improvement Programme Summary Report.

Schedules A3 and C Improvement Programme Summary Report.

Specified Improvement Programmes (under Schedule A & C of WWDL)	Licence Schedule (A or C)	Licence Completion Date	Date Expired?	Status of Works	Comments	Licensee Timeframe for Completing the Works
Discharge from S4 Fingal shall cease from 31 December 2011	A3	31st Dec 2011	Y	Discharge has not been discontinued	Funding for the construction of the scheme, estimated at €1.5m, was not included in the Water Services Investment Programme (WSIP) 2010-2012. However, it has been approved to move to planning stage under the Portmarnock Drainage Scheme in the 2010-2012 WSIP	Q4 2013
Discharge from S5 Fingal shall cease 3 months from date of grant of licence	A3	27th December 2010	Y	Discharge ceased	N/A	N/A
Any other works notified in writing by the Agency.	C1	'As agreed'		None notified for Fingal County Council.	N/A	N/A

Preferred format for Schedule A4 and C Improvement Programme Summary report.

Not relevant to the Fingal portion of the agglomeration.

Does the Improvement Programme include an assessment of the integrity of the existing wastewater works (WWTP & network) for the following:	
Capacity of the works	N/A
Leaks from the works	N/A
What % of leakage is reported?	N/A
Misconnections between foul sewer to surface water drainage	N/A
What % of misconnection is reported?	N/A
Surface water infiltration	N/A
Groundwater infiltration	N/A
Comment	N/A
Does the Improvement Programme require an assessment of secondary Discharges (e.g. cease discharge/upgrade to meet requirements) for the following:	
Receiving water body designation	N/A
Downstream abstractions and uses of water	N/A
Water quality objectives for the water body	N/A
Comment	N/A
Are the findings of the SWO Identification and Inspection Report included in the Improvement Programme (upgrades to meet licence requirements)	N/A
Comment	N/A
For each improvement identified does the Improvement Programme include an implementation plan that:	
Identifies and describes each improvement including a timeframe for implementation? (Cond. 5.3)	N/A
Specifies the parameters that will be affected by the improvement?	N/A
Estimates the costs and source of the funding?	N/A
Estimates the water quality improvement associated with the Improvement?	N/A
Comment	N/A

5. Environmental Liability and Financial Provisions

5.1 Annual Statement of Measures

The following are a list of the measures taken to prevent environmental damage in the Fingal portion of the Greater Dublin Area Agglomeration:

a) Fingal County Council employs a Water Services Operational Section with a staff of 51 to maintain and service the sewer network.

b) Fingal County Council employs a Mechanical Section to maintain and service the pump stations in the agglomeration and the Telemetry system which monitors them.

c) Fingal County Council maintains an out-of-hours capability for dealing with mechanical breakdowns and sewer chokes/environmental incidents.

Fingal County Council does not maintain a specific financial provision in relation to underwriting of costs for remedial action following environmental incidents.

5.2 Environmental Liabilities Risk Assessment

Attached within Appendix 1 (Environmental Liability Risk Assessment) is a copy of the public liability insurance policy issued by Irish Public Bodies (IPB) to Fingal County Council.

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.

Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.

It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

6. Licence Specific Reports

Licence Specific Reports Summary Table:

Licence Specific Report	Required in 2011 AER	Included in 2011 AER	Location in 2011 AER
Priority Substance Assessment	**No**	**No**	**N/A**
Drinking Water Abstraction Point Risk assessment	**No**	**No**	**N/A**
Habitats Impact assessment	**No**	**No**	**N/A**
Shellfish Impact assessment	**No**	**No**	**N/A**
Toxicity/Leachate Management	**No**	**No**	**N/A**

6.1 Predicted Impacts Report

Not required in the Fingal County Council area under this licence.

6.2 Assessment of predicted impacts on habitats.

Not required in the Fingal County Council area under this licence.

6.3 Development infrastructural works summary.

Please see section 4.3

6.4 Toxicity report

Not required in the Fingal County Council area under this licence.

6.5 Environmental Liabilities Risk Assessment

Not required in the Fingal County Council area under this licence.

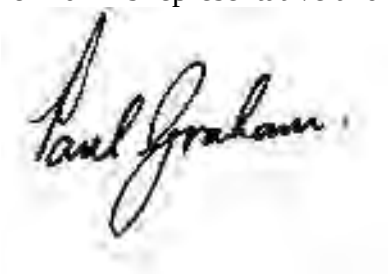
7. Certification & Sign Off

This AER contains the following:

- Introduction and background to 2011 AER
- Monitoring reports summary
- Operational reports summary
- Infrastructural Assessment and Programme of Improvements
- Environmental Liability and Financial Provision
- Licence specific reports
- Certification and sign off

Does the AER include an executive summary?	**Yes**
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and/or Environmental Quality Standards?	**Yes**
Is there a need to advise the EPA for consideration of a technical amendment/review of the Licence	**No**
Reason?	
Is there a need to request/advise the EPA of any modifications to the existing WWDL? (See Condition 1.7 (changes to works/discharges) & Condition 4 (changes to monitoring location, frequency etc))	**No**
List reason (e.g. failure to complete specified works within dates specified in the licence, changes to monitoring requirements)	
Have these processes commenced? (i.e. request for technical amendment/Licence review/change request)	
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER?	**N/A**

I hereby certify that this Annual Environmental Report for the Fingal portion of the Greater Dublin Area Agglomeration, Waste Water Discharge Licence No. D0034-01, for 2011 is representative and accurate.



Authorised under Manager's Order FWS/214/2011 to deputise on behalf of the DoS for the purposes of certifying reports submitted to the EPA as may be required under Waste Water Discharge Licences and Certificates.

Appendix 1

ELRA

Comhairle Contae Fhine Gall

Fingal County Council

Environmental Liability Risk Assessment

&

Statement of Measures

for

Greater Dublin Area Agglomeration

Fingal Area

2011

Urban Waste Water Discharge Licence D0034-01

Table of Contents

1 Introduction

A Waste Water Discharge Licence, D0034-01, was issued by the EPA under the Waste Water Discharge (Authorisation) Regulations 2007 to Dunlin City Council as lead Authority for the Greater Dublin Area Agglomeration on the 27th July 2010.

Condition 7.2.2 of the Licence states "The Licensee shall arrange for the completion …….. of a comprehensive and fully costed Environmental Liabilities Risk Assessment to address the liabilities from present and planned discharges."

This Environmental Liability Risk Assessment (ELRA) addresses the requirement under Condition 7.2.2 for the Fingal portion of the Agglomeration.

1.1 Background

The Greater Dublin Area Agglomeration includes all of the geographical area of Dublin City Council and parts of Fingal County Council functional area, South Dublin County Council functional area, Dun Laoghaire Rathdown County Council functional area and Meath County Council functional area. The agglomeration is served by one waste water treatment plant (WWTP) at Ringsend (Ringsend Treatment Works), close to Dublin City centre. The Greater Dublin Area agglomeration is the largest agglomeration in Ireland, the measured population equivalent (p.e.) loading received at the WWTP in 2007 was 2.87million. The existing WWTP has a design load capacity of c.l.64million p.e.

The primary discharge is into the Lower Liffey Estuary which is designated as a sensitive Waterbody under the Urban Waste Water Treatment Regulations 2001 (S.I. 254 of 2001). Currently emissions from the primary discharge do not comply with the Urban Waste Water Treatment Regulations.

Two identified secondary discharges in the application are to be discontinued in 2010 and 2011 following connection to the Ringsend W WTP.

One of the secondary discharges, S5Fingal, was discontinued in Oct 2010.

The other secondary discharge, S4Fingal, discharges untreated sewage from approx 40 houses (estimated 120 p.e.) into the sea at Doldrum Bay on the south east of the Howth peninsula. Funding for works to halt this discharge was not included in the 2010 – 2012 WSIP. Fingal County Council is pressing for funding and it is hoped that the discharge will cease at end of 2013 subject to agreement with the landowner and funding from the DoECLG.

2 Environmental Sensitivity and Risk Assessment

Having regard to the EPA's "Guidance on the Preparation & Submission of the Environmental Liability Risk Assessment (ELRA) for the Annual Environmental Report (AER) for Waste Water Discharge Licences", Revision 2 January 2012, an Initial Screening and Operational Risk Assessment has been carried out.

Environmental Sensitivity: See Table A below. Score is 4. This refers only to the Fingal portion of the Greater Dublin Area Agglomeration.

Table A: Environmental Sensitivity

Environmental Attribute	Attribute Score	Designated Score	Comment
Sensitivity of Receiving Water			
Class A	3		
Class B	2		
Class C	1		
Class D	0		
Designated Coastal and Estuarine Waters	2	2	North Dublin Bay SPA &SAC
Potentially Eutrophic Coastal Waters	1		
Groundwater Protection			
Regionally Important Aquifer	2		
Locally Important Aquifer	1		
Poor Aquifer	0	0	
Vulnerability Rating – Extreme	3		
Vulnerability Rating – High	2		
Vulnerability Rating – Moderate	1		
Vulnerability Rating - Low	0	0	
Protected Ecological Sites and Species			
Discharge within or directly bordering a designated site	2	2	North Dublin Bay SPA &SAC
<1km	1		
>1km	0		
Human Health			
Discharge within or directly bordering a designated shellfish area			
0 – 5km	1		
>5km	0	0	
Designated Bathing Water			
Within 0.5km	1		
>5km	0	0	.
Drinking Water source			
Within 0 – 10km	1		
>10km	0	0	None
Environmental Sensitivity Score		4	

Table B Site Specific ELRA: Using Risk Classification Tables in Clause 4.4.3.1 of EPA Guidance documents:

Risk ID	Process	Potential Hazards	Environmental Effect	Severity Rating	Basis of Severity	Occurrence rating	Basis of Occurrence	Risk Score (Severity x Occurrence)
A	Leaks from underground sumps	Sump failure	Groundwater pollution	3	Take worst case - Groundwater vulnerability rated as Extreme.	1	Regular inspection of sumps	3
B	Leaks from underground pipes	Pipe blockage/failure	Groundwater pollution	2	Take worst case - Groundwater vulnerability - Extreme. Leak unnoticed for long period.	4	Pipes are usually below water table and subject to pressure. Blockages tend to come to surface.	8
C	Overflow of untreated sewage	Power/mechanical/electrical failure at pump stations.	Discharge of untreated sewage to river/sea.	2	Dilution factor, very high in sea.	4	Mech/elec section on call; telemetry in PS's; routine maintenance ongoing.	8
D	Discharge to Doldrum Bay	-	Discharge of untreated sewage to sea.	3	Dilution factor, very high in sea. Low flow, area relatively isolated from receptors.	5	Ongoing.	15

Table C Risk Matrix:

Very High	**5**			**D**		
High	**4**		**B, C**			
Medium	**3**					
Low	**2**					
Very Low	**1**			**A**		
		Trivial	**Minor**	**Moderate**	**Major**	**Massive**
		1	**2**	**3**	**4**	**5**

Severity

	These are considered to be high-level risks requiring priority attention. These risks have the potential to be catastrophic and as such should be addressed quickly.
	These are medium-level risks requiring action, but are not as critical as a red coded risk.
	These are lowest-level risks and indicate a need for continuing awareness and monitoring on a regular basis. Whilst they are currently low or minor risks, some have the potential to increase to medium or even high-level risks and must therefore be regularly monitored and if cost effective mitigation can be carried out to reduce the risk even further this should be pursued.

3 Risk Prevention/Mitigation

The Risk Matrix above indicates that there is one medium level risk in the Fingal area of the Greater Dublin Area Agglomeration. This is the secondary discharge, S4Fingal, which discharges untreated sewage from approx 40 houses (estimated 120 p.e.) into the sea at Doldrum Bay on the south east of the Howth peninsula.

The proposed solution to this risk is to construct a pumping station and transfer the sewage to the GDA agglomeration. Funding for works to halt this discharge was not included in the 2010 – 2012 WSIP. Fingal County Council is pressing for funding and it is hoped that the discharge will cease at end of 2013 subject to agreement with the landowner and funding from the DoECLG.

4 Statement of Measures

See Table 4 below.

Table 4 Statement of Measures

Risk I.D.	Risk Score	Mitigation measure to be taken	Outcome	Action	Date for completion	Owner/Contact Person
A	Lowest level	Regular sump cleaning			2012	Paul Graham
B, C	Lowest level	Routine maintenance, provision			2012	Paul Graham
		and monitoring of telemetry				
		system, ongoing staff training.				
D	Medium level	New pumping station to be		Request funding from	2014	John Mulcahy
		installed.		DoECLG.		

Statement I confirm the above are the measures which will be taken by the Local Authority in 2010/2011

Signed: Date

Name Paul Graham S.E.E. *Authorised under Manager's Order FWS/214/2011 to deputise on behalf of the DoS for the purposes of certifying reports submitted to the EPA as may be required under Waste Water Discharge Licences and Certificates.*

5 Financial Provisions

5.1 Estimation of remediation costs.

Table D below outlines the estimated costs of remediation for different categories of events.

Rating	Severity		
	Category	Description	Cost of Remediation
1	Trivial	No damage or negligible change to the environment	€1,000
2	Minor	Minor impact/localised or nuisance	€5,000
3	Moderate	Moderate damage to the environment	€10,000
4	Major	Severe damage to the environment	€100,000
5	Massive	Massive damage to a large area, irreversible in medium term	€1,000,000

5.2 Details of Financial Provision/Insurance

See Appendix 1 for copy of Fingal County Council's Public Liability Policy which covers liability for sudden identifiable unintended and unexpected pollution incident.

Appendix 1

Documentary proof of financial provision/insurance

IRISH PUBLIC BODIES
MUTUAL INSURANCES LIMITED

HEAD OFFICE
1, 2 & 3
WESTMORELAND STREET
DUBLIN 2

PUBLIC LIABILITY POLICY

WHEREAS the Insured named in the Schedule herein (hereinafter called "the Authority") has applied to Irish Public Bodies Mutual Insurances Limited (hereinafter called "the Mutual") for the insurance hereinafter contained in respect of accidents arising out of the activities of the Authority stated in the Schedule and occurring during the Period of Insurance stated in the Schedule and has paid or agreed to pay the premium as consideration for such insurance.

NOW THIS POLICY WITNESSETH:-
That subject to the terms, exceptions and conditions contained herein or endorsed or otherwise expressed hereon

The Mutual will indemnify the Authority against all sums which the Authority shall become legally liable to pay as damages in respect of

1. Accidental bodily injury to any person.

2. Accidental loss of or damage to property.

Provided that the liability of the Mutual for all damages payable

(a) in respect of all bodily injury caused by faulty medical or surgical treatment or in respect of all loss of or damage to property caused by vibration or by the removal or weakening of support or by fire or by explosion sustained as a result of accidents occurring during any one Period of Insurance shall not exceed the limit of indemnity specified in the Schedule.

(b) to any claimant or any number of claimants in respect of or arising out of any one occurrence or in respect or arising out of all occurrences (including occurrences referred to in (a) above) of a series consequent on or attributable to one source or original cause shall not exceed the limit of indemnity specified in the Schedule.

The Mutual will in addition be responsible for all costs and expenses of litigation recovered by any claimant in connection with any accident to which the indemnity expressed in this policy applies and for costs and expenses of litigation incurred with the consent of the Mutual, provided that the liability of the Mutual for all damages costs and expenses of litigation in connection with any one occurrence shall not exceed the limit of indemnity stated in the Schedule.

MEMORANDA

1. If the Government issue an order bringing into operation Section 60 of the Civil Liability Act 1961 (abolishing the non-feasance defence for highway claims) the Mutual reserves the right to revise the terms/conditions/premium operating under the Policy in respect of the unexpired Period of Insurance.

2. The term "Authority" shall, at the request of the Authority, include all employees of the Authority.

   Provided that -

   1. The employee is acting at the time within the scope of his/her employment.

   2. The employee is not entitled to indemnity under any other policy or but for the existence of this extension would have been entitled to indemnity under any other policy.

   3. The Authority would have been legally liable if they had been sued.

   4. The employees shall observe, fulfil and be subject to the terms, conditions, exceptions and endorsements of this policy in so far as they can apply.

   5. The Mutual shall have the sole control and conduct of all claims.

   6. The liability of the Mutual is not in the aggregate increased hereby.

3. The term "Employee" shall mean:

   (a) any person under a contract of service or apprenticeship with the Authority.

   (b) any person hired to or borrowed by the Authority.

   (c) any person undertaking study or work experience with the Authority.

4. The term "Property" shall mean material property.

5. The indemnity provided by this policy in respect of liability relating to accidents arising in playgrounds or playcentres operates solely on the following conditions:

(i) the playgrounds/playcentres are operated directly under the control and management of the Authority.

(ii) the Authority is responsible for the maintenance and upkeep of the playgrounds/playcentres and all equipment therein.

(iii) weekly inspections of all equipment are carried out by suitably qualified employees of the Authority.

(iv) all defective/dangerous equipment is immediately removed.

(v) equipment is not reinstated unless satisfactorily repaired.

(vi) records are available of the inspections setting out the date of the inspection, name and qualifications of the person carrying out the inspection and the action taken.

6. The indemnity expressed in this policy shall not apply to or include any liability for -

(a) personal injury or bodily injury or financial loss or damage to or loss of use of property directly or indirectly arising out of the discharge. dispersal. release or escape of pollutants;

(b) the cost of removing, nullifying or cleaning up pollutants;

(c) fines, penalties, punitive or exemplary damages arising directly or indirectly out of the discharge, dispersal, release or escape of pollutants.

Notwithstanding the foregoing this policy shall cover liability otherwise excluded under paragraphs (a) and (b) above which arises from a sudden identifiable unintended and unexpected happening which takes place in its entirety at a specific time and place.

The liability of the Mutual for all sums which the Authority shall become legally liable to pay as damages arising out of the discharge, dispersal, release or escape of pollutants occurring during any one period of insurance shall not exceed the limit of indemnity specified in the Schedule.

For the purposes of this clause, "pollutants" mean any solid liquid gaseous or thermal irritant or contaminant, including but not limited to smoke vapour soot fumes acid alkalis chemicals and waste. Waste includes material to be recycled reconditioned or reclaimed.

7. Subject to payment of any additional premium due, the Policy extends to indemnify the DEPARTMENT of LABOUR, FAS and their agents in respect of legal liability attaching to them arising from Community Employment Schemes sponsored by the Authority and details of which have been given to the Mutual.

The indemnity provided by this extension relates solely to liability arising from the negligence of the Authority and/or its Employees.

Provided that the DEPARTMENT OF LABOUR, FAS and their agents shall observe, fulfil and be subject to the normal terms conditions and exceptions of the Policy in so far as they can apply.

8. For the purposes of any fireman's training courses organised by the Fire Services Council and any Fire Authority, the title of the Fire Authority, the title of the Insured under this policy this Policy is extended to include the Fire Services Council and any Fire Authority involved in the organisation of such courses.

The Fire Services Council and any Fire Authority shall be subject to terms, exceptions and endorsements of the Policy.

Annual Environmental Report

For

Greater Dublin Area Agglomeration

Dun Laoghaire Rathdown Section

Waste Discharge Licence No D0034-01

2011

Table of Contents

Section 1. Introduction and Background to 2011 AER

1.1 Summary Report on 2011

The Greater Dublin Area Agglomeration includes all the geographical area of Dublin City Council and parts of Fingal County Council functional Area, South Dublin County Council functional area and Dun Laoghaire Rathdown County Council area. This AER relates to Dun Laoghaire Rathdown's responsibilities under the licence for the period 1st January 2011 to 31st December 2011 in accordance with Condition 5.1 of the licence. Of note is the addition of a CSO at Windsor Terrace in 2011 and the inclusion of the emergency overflow at Coliemore two Pump Station omitted at the application stage. The EPA has been informed of these two items in a letter dated 24/02/12. This report contains a CSO Assessment report carried out by Capital Water Systems Ltd. The catchment is largely combined and incorporates 9 pumps stations and 28 CSOs.

Section 2. Monitoring Reports Summary

2.1Influent Monitoring
No influent monitoring is required to be carried out by Dun Laoghaire Rathdown County Council in the Licence.

2.2 Discharges from the Agglomeration
No monitoring of discharges from the agglomeration is required to be carried out by Dun Laoghaire Rathdown County Council in the Licence.

2.3 Ambient Monitoring Summary
No ambient monitoring is required to be carried out by Dun Laoghaire Rathdown County Council in the Licence.

2.4 Data Collection and reporting requirements under the Urban Waste Water Treatment Directive
Dun Laoghaire Rathdown County Council is not required to submit returns for the agglomeration in this licence under the Urban Waste Water Treatment Directive.

2.5 Pollutant Release and Transfer Register
Not necessary for the Dun Laoghaire portion of the agglomeration.

Section 3. Operational Reports Summary

3.1 Complaints Summary

All complaints regarding the Ringsend Catchment network are logged in the Council's CRM database. Below is a summary of all the complaints received in 2011. A large proportion of the complaints received relate to blockages on private pipes. The clearance of these blockages is the responsibility of the householder and so these complaints have not been included. The table includes complaints received via email, post and telephone calls.

Number	Nature/Cause of Complaint of Complaint	Actions taken to resolve issue	Closed (Y/N)
105	Smells in the sewer network	Blockage Clearance	Y
74	Blocked main sewer	Blockage Clearance	Y
12	Damaged/Loose Manhole	Manhole re-seated or repaired	Y
62	Other	Various	Y

3.2 Reported Incidents Summary

Incident Type	Incident Description	Cause	No incidents	Corrective Action	Reported to the EPA	Closed (Y/N)
Discharge of sewage to the surface water system	Emergency overflow from Pump Station	Blockage in the pump	10	Pump Cleared		Y
Discharge of sewage to the surface water system	Sewer Blockage that overflowed to the Surface water system	Sewer Blockage	3*	Sewer Cleared	0	3Y

*This figure is an estimate. This figure is low because the Ringsend catchment is largely combined. Consequently any flows resulting from sewer blockages that make their way to the surface are commonly picked up by the road gully system which is itself part of the combined system and so no flows enter the surface water system.

Number of Incidents in 2011	3
Number of Incidents in 2011 reported to the EPA in 2011	0
Explanation of any discrepancies between the numbers above	The Council did not appreciate that flows to surface water systems from sewer blockages were categorized as reportable incidents.

Section 4. Infrastructural Assessments and Programme of Improvements

4.1 Treatment Capacity

No report required.

4.2 Storm water overflow identification and inspection report

Assessment of Combined Sewer Overflows

Introduction

There are 27 overflows identified in the Council's licence. One of these overflow pipes leads directly to the sea namely DLRCC/B5/R/019 at Idrone Terrace in Blackrock. Investigations have shown that this outlet is fully blocked beneath the DART track on the south side of Blackcock DART Station and consequently that the effluent entering the overflow pipe does not makes its way to the sea. Rather it overflows onto the DART track. The Council has been in discussions with Iarnrod Eireann regarding a resolution to the matter.

In compliance with 4.12.2 of its Discharge Licence, the Council engaged Capital Water Systems Ltd to carry out an investigation for the identification and assessment of storm water overflows. The report is included in the Appendix A to this AER. 25 of the 27 licensed CSO's were visited and reported on. It was not possible to gain access to DLRCC/B5/R/005 and DLRCC/B5/R/008. Visits to these locations have been prioritised.

Internal and external photographs of the overflow manhole were taken. The condition of the manholes and pipes were reported on and technical options for monitoring of the manholes were proposed.

Monitoring

As a result of the survey carried out by Capital Water Systems, 4 overflows were chosen for monitoring for 12 months. An ultrasonic monitor was installed and the levels in the manhole were logged. An analysis of the levels could then show when the overflow level had been reached. It is intended that these monitors be connected to a telemetry system and also that when an overflow occurs that an alarm be sent to the relevant Council official via text message and email. There have been technical difficulties in getting this set up in relation to the gsm modems but a resolution is expected within the next 2 months. The following CSOs are being monitored.

Millmount Grove Dundrum	DLRCC/B5/R/013
Seafort Parade	DLRCC/B5/R/017
Lisalea Apartments, Blackrock	DLRCC/B5/R/018
Maretimo Gardens West, Blackrock	DLRCC/B5/R/026

All pumps stations are monitored except a small pump station at Rocklands, Dalkey which serves a small cul de sac.

Prioritisation

By choosing the 4 CSOs to monitor the Council has already prioritised CSOs that at this stage may need some works. The results of the monitoring will determine what works, if any, are needed.

Assessment of Licensed Overflows in relation to DOEHLG 'Procedures and Criteria in relation to Storm Water Overflows'

In Section 4 of the above document four criteria are proposed in relation to the assessment of the operation of an existing CSO.

1 Causes significant visual or aesthetic impact and public complaints
2 Causes deterioration in water quality in the receiving water
3 Gives rise to failure in meeting the requirements of national regulations on foot of EU Directives (Bathing Waters etc)
4 Operates in dry weather

In the cases of items 3 and 4, none of the licensed overflows contravene these requirements. Regarding number 2, all CSO's when operating, cause temporary deterioration of the receiving water. However, the Council has no evidence that this temporary deterioration is in any way significant. Similarly the Council does not have evidence to suggest that they are the cause of significant visual or aesthetic impact or public complaints. As yet, the Council does not have sufficient information on spill frequency to be absolutely certain of the threat, if any, to surface waters that the overflows contain. However, based on the experience of the Drainage Inspectors (who examine the manholes in heavy rain) the threat is very small. Consequently, at this stage, it is reasonable to say that to the best of the Council's knowledge, the licensed overflows are compliant with the criteria set out in the above-mentioned document.

How many SWOs are listed in the Schedule A4 of the WWDL?	28
How many additional SWOs are listed in the agglomeration?	1
Total number of SWOs in the agglomeration?	29
How many SWOs are listed as compliant with the DoEHLG Guidance?	29
For each SWO identified as non-compliant with DoEHLG Guidance is there a corrective action plan included in the Programme of Improvements?	NA
Does the SWO assessment include the requirements of Schedule A3 & C3	No
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	Yes Letter dated 24/02/12

Flooding at Glasthule
In August 2011, the construction of a new CSO was completed. The CSO is located on the 2.1m diameter 'tank' sewer at Windsor Terrace. The Glasthule Flood Relief Study, carried out by RPS Consulting Engineers, examined a number of options to relieve the severe flooding being experienced in Glasthule Village.

The West Pier East catchment makes its way to the West Pier Pump Station at Seapoint via the aforementioned 2.1m sewer. When the capacity of the pumps is beaten during a rain event, firstly the long sea outfall and then the short sea outfall come into operation at Seapoint. In very heavy rain conditions when the outfalls are operating, the 2.1m sewer leading to the West Pier Pump Station backs up and overflows at the cross roads in Glasthule Village causing sewage to enter various premises there. The study recommended the construction of a CSO on the 2.1m sewer upstream of Glasthule Village. The overflow directs the flow to sea adjacent to the old Dun Laoghaire Baths site. Since its completion in August 2011 it has operated 3 times. It is designed to operate a maximum of 5 times per year. The Council has plans to demolish the old Dun Laoghaire Baths and redevelop the site. As part of this project, the overflow pipe will be extended below the level of the low water mark of the mean spring tide. An A4 sketch of the new CSO is attached in Appendix B. It is entitled DLRCC/B5/R/027.

Pump Stations

West Pier Pump Station DLRCC_B4_R_005DL and DLRCC_B4_R_005DS

The West Pier Station has 2 overflows associated with it; the long sea outfall and the short sea outfall. In this licence these 2 outfalls are listed as emergency overflows. However the overflows at this station operate in a similar manner to a CSOs and not as emergency overflows. The overflows were designed to operate when flows into the station overcame the pumps to Ringsend Treatment Works and the capacity of the storage tanks situated at the West Pier. In 2011, the long sea outfall came into operation 20 times and the short sea outfall 6 times. When either overflow commences operation an electronic public display board operates to advise the public that an overflow is in operation and the display is maintained for a period of 12 hours after the overflow terminates. There is no screening to the outfalls (with the exception of some bars on the face of the short sea outfall to prevent access up the pipe from the beach.) Any screening of the overflows would reduce flows out of the station and further increase pressures in the 2 pipes that enter the station, one from the West Pier East catchment and one from the West Pier West catchment. The increased pressures in each of these lines would cause flooding in private households and road flooding with sewage, as manholes on the main sewers would open under the higher pressures.

Remaining Pump Stations

Below is a summary of the number of overflows at the reminder of the pump stations in the County.

Pump Station	Ref	No Overflows	Cause
Blackrock	DLRCC/B4/R/001D	2	Heavy Rain
Brighton Vale	DLRCC/B4/R/003D	0	Heavy Rain
Coliemore 1	DLRCC/B4/R/008D	1	Heavy Rain
Coliemore 2	DLRCC/B4/R/009D	10	Heavy Rain
St Helens	DLRCC/B4/R/004D	2	Heavy Rain
Tobernea	DLRCC/B4/R/002D	4	Heavy Rain
Bullock	DLRCC/B4/R/006D	10	Heavy Rain
Rocklands	DLRCC/B4/R/007D	Unmonitored	

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

There are no Specified Improvement Programmes for DLRCC detailed in Schedules A3 and C of the licence.

Programme of Infrastructural Improvements to maximise the effectiveness and efficiency of the waste water works

Condition 5.2b requires that DLRCC carry out a Programme of Infrastructural Improvements that shall include and assessment of the

i. capacity of the waste water works
ii. leaks from the waste water works
iii. misconnections between foul sewers fn surface water drainage network
iv. infiltration by surface water
v. infiltration by groundwater
vi. infiltration by sea-water
vii. all storm water overflows associated with the waste water works to determine the effectiveness of their operation and in particular to identify improvements necessary to comply with the requirements of the licence.

In the Greater Dublin Strategic Drainage Study Regional Policies Technical Document Volume 4 Inflow, Infiltration and Exfiltration the following figures are given for the Ringsend Catchment.

Catchment	Average DWF(l/s)	Infiltration (l/s)	%DWF
Dodder Valley	322	56	17%
Dun Laoghaire East	153	78	51%
Dun Laoghaire West	185	60	33%

The following Infrastructural Improvements (within the Shanganagh Catchment) are programmed in the current Water Service Investment Programme 2010-2012.

Schemes at Planning Stages 2010-2012
Dun Laoghaire Sewerage Scheme Phase II
Dodder Valley (Dun Laoghaire Rathdown) Sewerage Scheme

The portion of DLRCC County that is served by Ringsend Treatment Works is comprised of 3 catchments; West Pier East, West Pier East, Dodder Valley. The first 2 catchments are included in the first above scheme, the third catchment incorporates the second. Funding for these projects is awaited from the DOHELG. The requirements listed in condition 5.2b I) to vi) will be satisfied by these studies. The monitoring of CSOs currently ongoing addresses condition 5.2 vii).

Does the Improvement Programme include an assessment of the integrity of the existing wastewater works (WWTP & network)for the following:

Capacity of the works *	It will
Leaks from the works	It will
What % of leakage is reported?	% -to be assessed in proposed drainage study
Misconnections between foul sewer to surface water drainage	It will
What % of misconnections is reported?	% to be assessed in proposed drainage study
Surface water infiltration	It will
Groundwater infiltration	It will

Comment

Does the Improvement Programme require an assessment of Secondary Discharges (e.g. cease discharge /upgrade to meet requirements) for the following :

Receiving water body designation	No
Downstream abstractions and uses of water	No .
water quality objectives for the water body	No

Comment There are no secondary discharges.

Are the findings of the SWO Identification and Inspection Report included in the Improvement Programme (upgrades to meet licence requirements)? Yes

Comment The SWO Indentification and Inspection Report will be included in the proposed drainage studies.

For each improvement identified does the Improvement Programme include an implementation plan that :

Identifies and describe each improvement including a timeframe for implementation? (Cond. 5.3)	It will
Specifies the parameters that will be affected by the improvement?	It will
Estimates the costs and source of funding?	It will
Estimates the water quality improvement associated with the Improvement?	It will

Comment

Surface Water Separation Projects

In 2011 DLRCC carried out the following project to separate water from the combined network.

1. Mount Merrion Avenue Surface Water Sewers: Complete. Work carried out as part of the QBC. Cost: €150k

2. Hyde Road/Cuala: Construction of the joint Water Services/Parks project substantially complete. Water Services laid a 900mm diameter diversion sewer pipe around the club house and overflow/attenuation chambers. Parks Section laid an underground 'stormtech' attenuation/infiltration system. Cost: €600k

3. Glenageary Stormwater Separation Project: Purpose is to identify civil project(s) that will separate significant amounts of surface water from the combined systems. Report currently being reviewed.

4. Kill Lane Surface water Separation Project: Work as part of the QBC. Cost €160k.

5. Booterstown Avenue Stormwater Separation Project: Work carried out in advance of road resurfacing. Cost: €60k

6. Misc Smaller Surface Water Separation Projects: Combined total cost: €80k

- Completed projects:
    - Sandycove Ave East
    - Sandycove Ave West
    - Newtownsmith
    - Upper Georges Street
    - Booterstown Ave

7. Dun Leary Hill/Packenham Surface Water Sewer: Project complete and operating satisfactorily. Monkstown stream overflow now diverted out of the combined system and large areas of Packenham/The Hill. Total Cost: €150k

8. Rourke Park SW Separation Project: A 300mm diameter SW sewer was directing continuous infiltration/groundwater flow into the combined system. The line was diverted into a new dedicated SW system. Cost €60k

Section 5. Environmental Liability and Financial Provisions

5.1 Annual statement on prevention of environmental damage

The Annual Statement of Measures
The Dun Laoghaire Rathdown County Council Drainage Department includes a Director of Services, Senior Engineer, Senior Executive Engineers x 4, Area Engineers x 2, Supervising Inspectors x 2, Drainage Inspectors x 6. The separate Water Pollution Department consists of a Pollution Engineer, Supervising Inspector, Pollution Inspectors x 2 and a Foreman/Sampler and Drainage Maintenance Outdoor Crews capable of Emergency Response.

The Dún Laoghaire Rathdown County Council Water Services Investment Programme Assessment of Needs 2007-2014 outlines an overall Strategic Investment Plan for the medium to long term and to set out a programme of works to meet the identified drainage infrastructural needs.

The following is a list of ongoing Measures in the Ringsend Catchment:

- Capital Investment, Maintenance and Rehabilitation Programmes.
- Proposed and ongoing Catchment Studies and surveys to relieve local lack of capacity resulting in overflows and flooding.
- On going monitoring and sampling on all surface water rivers throughout County.
- Comprehensive GIS spatial database mapping programme 'Mapdrain' incorporating the entire Drainage Network of the County.
- Section 16 FOG and Trade Effluent Licensing Programme (discharge conditions on industry using county foul sewers).
- Sampling, Environmental Inspections, Breach Investigation and Incident Investigations on the County's foul sewer network.
- Comprehensive Misconnection Programme in Place covering mainly Domestic Misconnection Issues.
- Professional Working relationship with Eastern River Fisheries Board(ERFB)
- Comprehensive Bathing Water and Coastal monitoring Programme and sampling all year round.
- CSO Monitoring Programme (Alarming of Overflows in County)
- SUDS are a requirement of Development Plant.
- Implementation of the ERBD River Basin Management Plan
- Involvement with the ERBD Liaison Group and the regional ERBD Senior Management Meetings.

5.2 Environmental Liabilities Risk Assessment

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.
Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.
It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

Section 6. Licence Specific Reports

The following reports are not required for all licences but some or all may be required in a specific licence.

6.1 Priority Substances Assessment

Not a condition of this licence.

6.2 Drinking Water Abstraction Point Risk Assessment

Not a condition of this licence.

6.3 Habitats Impact Assessment Report

Not a condition of this licence.

6.4 Shellfish Impact Assessment Report

Not a condition of this licence.

6.5 Toxicity/Leachate Management

Not a condition of this licence.

Section 7. Certification and Sign Off

Does the AER include an executive summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards?	No
Is there a need to advise the EPA for consideration of a technical amendment / review of the licence?	No
List reason: No	
Is there a need to request/advise the EPA of any modifications to the existing WWDL? (see Condition 1.7 (changes to works/discharges) & Condition 4 (changes to monitoring location, frequency etc.)	Yes
List reason A new CSO has been constructed at Windsor Terrace. A second Pump Station at Coliemore 2 (DLRCC/B4/R/008D) was not included in the original application. A sketch of the emergency overflow from this station is included in Appendix B.	
Have this processes commenced? (i.e. Request for Technical Amendment / Licence Review / Change Request)	Yes Letter dated 24/01/12
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER?	No outstanding issues for DLRCC.

I hereby certify that this Annual Environmental Report for the Dun Laoghaire Rathdown portion of the Greater Dublin Area Agglomeration Wastewater discharge Licence No D0034-01 for 2011 is representative and accurate.

29/3/2012

Frank Austin
Director of Services, Water Services

Dun Laoghaire Rathdown County Council

Section 8 Appendices

Appendix A
CSO Assessment

CSO Assessment Report

For

Dun Laoghaire Rathdown Co Co

Capital Water Systems Ltd
9A Centrepoint Business Park
Oak Road
Dublin 12
Tel: (01) 460 5912

April 2011

Site 01	Beech Hill Rd, Clonskeagh	**MH Ref**	DLRCC/B5/R/001
Location	On Road Opposite entrance to Smurfit.	**Coordinates**	317561.4E, 230765.6N

Comments:
Chamber consists of a 450 mm diameter incoming and outgoing pipe, with a 225mm side incoming. The overflow spill level is at 430mm above the channel invert level. The overflow consists of a concrete weir 3200mm wide and 215mm deep, and a culvert, 570mm (H) x 540mm (W).

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Outgoing Flow

Incoming Flow

MH Location

CSO Inspection

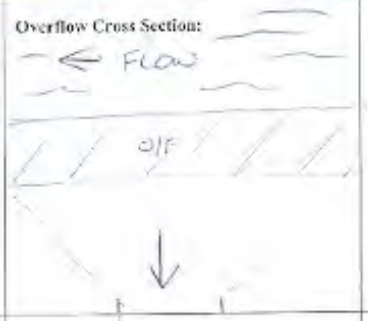
capital water systems ltd.

MH Ref:	DLRCC BS/R/001		
Project Name:			
Location:	Beech Hill Rd, Clonskeagh		
Traffic Conditions:	Light/Medium	Easting: 317561·4	Northing: 230765·6
Date/Time:	8/3/11 11.30 am	Photo No's: 12.40 > 12.46	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:



Size of Pipes:

Incoming no. 1 450 mm
Incoming no. 2 225 mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no. 5 ..... mm
Outgoing 450 mm
O/F 570(H) x 540(W) mm

Weir Details (if applicable)

Width 3200 mm
Depth 215 mm
Material BLOCK
Condition .....

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☒
Screened (Yes/No) .....
Other .....

Shaft Material:

Concrete Ring
In situ concrete
Brick ☒
Other .....

Chamber Material:

Concrete Ring ☒
In situ concrete
Brick
Other .....

Levels:

Cover Level 16·438
Cover to Channel invert 1720 mm
Cover to O/F Spill level 1290 mm
Invert to Spill Level 430 mm

Comments: SUITABLE FOR CSO MONITORING

Site 02	Whitethorn Road, Clonskeagh,	**MH Ref**	DLRCC/B5/R/002
Location	Rear garden of No. 76	**Coordinates**	316955.5E, 230475.4N

Comments:
Chamber consists of a 450 mm diameter incoming and outgoing pipe. The overflow spill level is at 210mm above the channel invert level. The overflow consists of a concrete weir 770mm wide, sloping down to a 300mm overflow pipe.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Pipe

Outgoing Pipe

MH Location

Inspection Sheet

MH Ref:	BS/R/002	**CSO Inspection**	capital water systems ltd
Project Name:	DLR CSO		
Location:	WHITETHORN RD, CLONSKEAGH, BEAR GARDEN OF NO 76		
Traffic Conditions:	N/A	Easting: 316955	Northing: 230475 4
Date/Time	21/4/11	Photo No's: 10:30-740	Weather Conditions: CLEAR

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

- Incoming no. 1: 450 mm
- Incoming no. 2: ..... mm
- Incoming no. 3: ..... mm
- Incoming no. 4: ..... mm
- Incoming no 5: ..... mm
- Outgoing: 450 mm
- O/F: 300 mm

Weir Details (if applicable)	Width: 770 mm Depth: sloping mm Material: conc Condition: good	**Flow Conditions (main flow)**	Fast:	**Overflow Type:**	Circular Pipe ☐ Culvert ☐ Weir → Pipe/Culvert ☑ Screened (Yes/No): no Other: .....
			Medium: ✓		
			Slow:		
			Steady: ✓		
			Turbulent:		
			Static:		
			None:		
Shaft Material:	Concrete Ring ☐ In situ concrete ☐ Brick ☑ Other:	**Chamber Material:**	Concrete Ring ☐ In situ concrete ☐ Brick ☑ Other:	**Levels:**	Cover Level: 18.52 Cover to Channel invert: 975 mm Cover to O/F Spill level: 765 mm Invert to Spill Level: ..... mm

Comments: O/F CHAMBER SURVEYED → MH O/S COMPLETELY OVERGROWN

Site 03	Rock Road/Bellevue Avenue	**MH Ref**	DLRCC/B5/R/003
Location	Left-hand lane of junction of Rock Road & Bellevue Avenue	**Coordinates**	319921.7E, 230592N

Comments:
Chamber consists of two 225 mm diameter incoming and a 225 mm diameter outgoing pipe. The overflow spill level is at 310 mm above the channel invert level.
The overflow consists of timber weir, 915 mm wide and 20 mm deep, and an overflow pipe 225 mm in diameter. There is a lot of debris present in the overflow chamber.

CSO Monitoring option: Ultra-sonic level monitoring of spill levels with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Pipe

Outgoing Pipe

Location

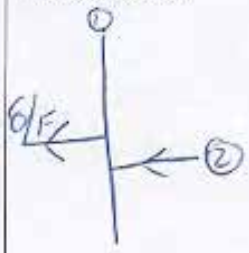
CSO Inspection

capital water systems ltd.

MH Ref:	BS/R/003		
Project Name:	DLR CSO SURVEY		
Location:	L.H. LANE, JUNCT OF ROCK ROAD / BELLEVUE AVE		
Traffic Conditions:	LIGHT	Easting: 319921.7	Northing: 230592.
Date/Time	21/6/11 05:30	Photo No's: 0638 → 0639	Weather Conditions: CLEAR.

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 225 mm
Incoming no. 2 225 mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 225 mm
O/F 225 mm

Weir Details (if applicable)

Width 915 mm
Depth 20 mm
Material Timber
Condition POOR

Flow Conditions (main flow)

Fast .....
Medium .....
Slow ✓
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☑
Screened (Yes/No) NO
Other .....

Shaft Material:

Concrete Ring
In situ concrete
Brick ☑
Other .....

Chamber Material:

Concrete Ring
In situ concrete
Brick ☑
Other .....

Levels:

Cover Level 2.939
Cover to Channel invert 1080 mm
Cover to O/F Spill level ..... mm
Invert to Spill Level 310 mm

Comments:

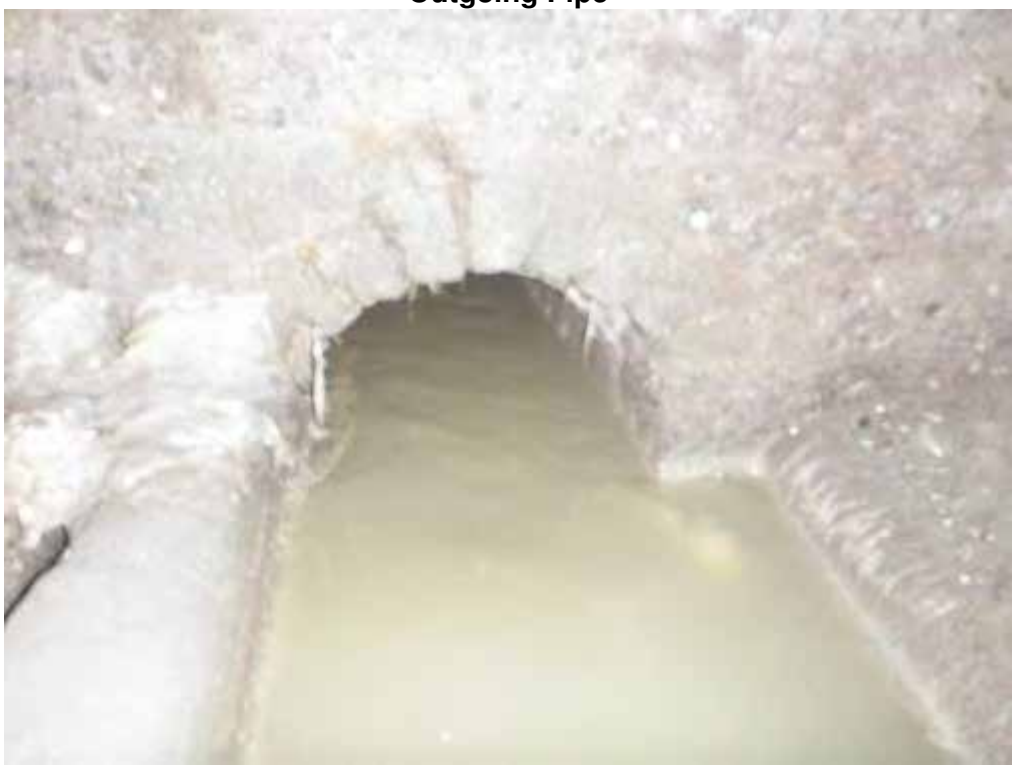
Site 04	Patrick Doyle Rd, Churchtown	**MH Ref**	DLRCC/B5/R/005
Location	On Pathway in park on Patrick Doyle Rd.	**Coordinates**	316788.5E, 230082.1N

Comments:
Chamber consists of a 375 mm diameter incoming and 450 mm diameter outgoing pipe, with two dry side incomings, with diameters of 150 mm and 300 mm. The overflow spill level is at 390 mm above the channel invert level.
The overflow consists of concrete weir, 1840 mm wide and 300 mm deep, and an overflow pipe 375 mm in diameter, There appears to be a concrete obstruction in the overflow pipe (see photos)
CSO Monitoring option: Pressure level monitoring of spill levels with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Pipe

Outgoing Pipe

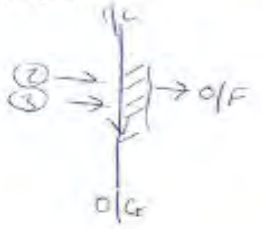


MH Location

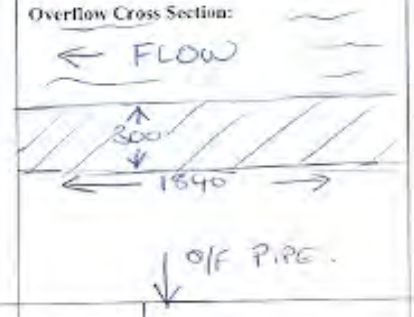
MH Ref:	SCREC BS/12/005	**CSO Inspection**	capital water systems ltd.
Project Name:			
Location:	IN PARK ON PATRICK Doyle Rd, CHURCHTOWN		
Traffic Conditions:	N/A	Easting: 316788.5	Northing: 230822.1
Date/Time	8/3/11 11.00 am	Photo No's: 12.11 → 12.14	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:



Size of Pipes:

Incoming no. 1 375 mm
Incoming no. 2 150 DRY mm
Incoming no. 3 300 DRY mm
Incoming no. 4 / mm
Incoming no 5 / mm
Outgoing 450 mm
O/F 375 mm

Weir Details (if applicable)	Width 1840 mm Depth 300 mm Material BRICK Condition OK	**Flow Conditions (main flow)**	Fast Medium / Slow Steady / Turbulent Static None	**Overflow Type:**	Circular Pipe Culvert Weir → Pipe/Culvert ☒ Screened (Yes/No) Other
Shaft Material:	Concrete Ring In situ concrete Brick ☒ Other	**Chamber Material:**	Concrete Ring In situ concrete ☒ Brick Other	**Levels:**	Cover Level 22.345 Cover to Channel invert 2350 mm Cover to O/F Spill level 1960 mm Invert to Spill Level 390 mm

Comments: SUITABLE FOR CSO MONITORING.

2350
1960
390

Site 05	Patrick Doyle Rd, Churchtown	**MH Ref**	DLRCC/B5/R/006
Location	In Pump Station on Patrick Doyle Rd.	**Coordinates**	316705.8E, 230000.9N

Comments:

Chamber consists of a 2250 X 2000(??) incoming culvert with a 2250 X 2000(??) outgoing culvert with a 5600 X 375 mm concrete weir leading to a 1050mm overflow pipe.

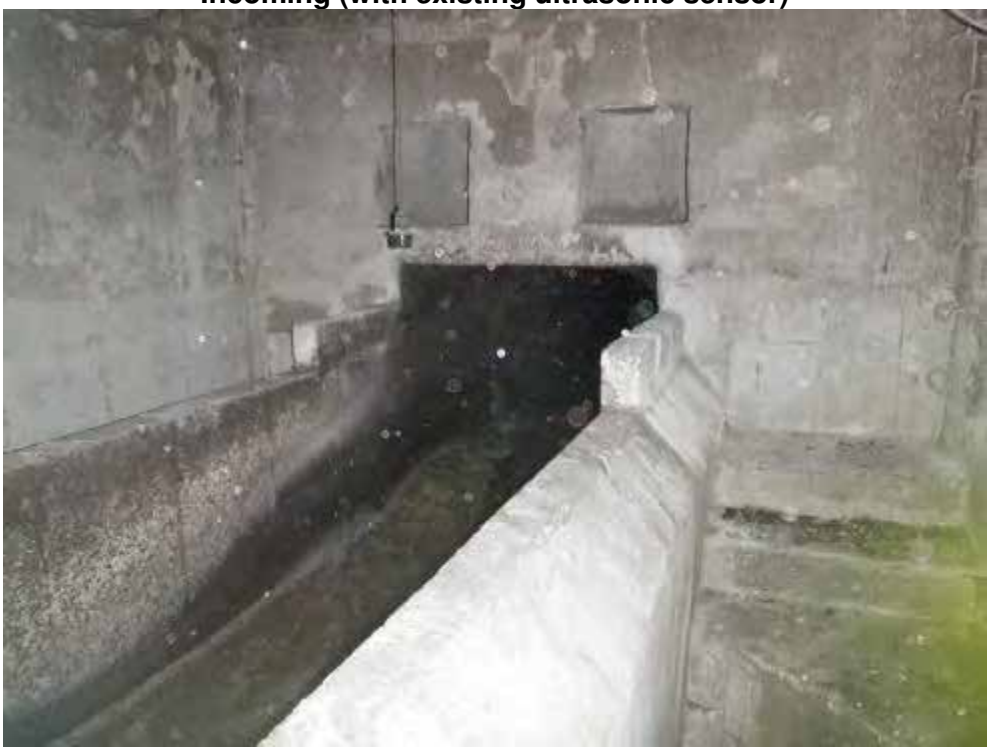
The estimated spill level is 1410mm above the channel – flow was too large to measure depth during inspection.

There is an existing ultrasonic sensor installed in the chamber – wired back to PS building?

CSO Monitoring option: Ultrasonic level monitoring of spill levels with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms.

Overflow

Incoming (with existing ultrasonic sensor)



Outgoing (with restrictor plate)

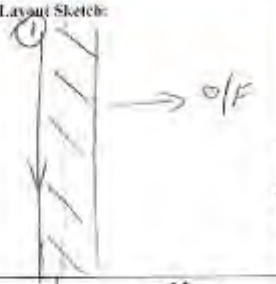
Location

Inspection Sheet

MH Ref:	DLRCC/BS/2006. **CSO Inspection**	capital	
Project Name:			
Location:	PATRICK Doyle Rd. P&S CHURCHTOWN.		
Traffic Conditions:	N/A	Easting: 316705-8	Northing: 230000-9.
Date/Time:	28/4/11	Photo No's: 11:37 → 12-06	Weather Conditions: GOOD.

Manhole Details:

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 2250 X 2000 mm ??
Incoming no. 2 ✓ mm
Incoming no. 3 ✓ mm
Incoming no. 4 ✓ mm
Incoming no. 5 ✓ mm
Outgoing 2250 X 2000 mm
O/F 1050 mm

Weir Details (if applicable):

Width 5600 mm
Depth 375 mm
Material CONCRETE
Condition GOOD

Flow Conditions (main flow):

Fast ✓
Medium
Slow
Steady ✓
Turbulent
Static
None

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☒
Screened (Yes/No) NO
Other

Shaft Material:

Concrete Ring
In situ concrete ☒
Brick
Other

Chamber Material:

Concrete Ring
In situ concrete ☒
Brick
Other

Levels:

Cover Level 26.97
Cover to Channel Invert 3850 mm ?
Cover to O/F Spill level 2440 mm
Invert to Spill Level 1410 mm ? (ESTIMATE)

Comments:

WEIR IS FORMED CONCRETE WITH ROW OF BLOCKS ON ONE CORNER.

WEIR WIDTH → 4100 + 1400 - BLOCKS

C→SL → 2220mm (BLOCKS).

WEIR DEPTH 150 × 275 → 375 overall

C–I 1850 + 2000 → 3850

LIMITED ACCESS DUE TO NATURE OF FLOW AND O/F.

Site 06	Dodder Road Lower, Rathfarnham	**MH Ref**	DLRCC/B5/R/007
Location	On road on Dodder Rd Lower	**Coordinates**	315567.5E, 229628.4N

Comments:

Chamber consists of a 1500 mm diameter incoming & outgoing pipe with an overflow spill level at 250 mm above the channel invert level.
The overflow consists of 400mm diameter clay pipe. There are also three letterbox culverts higher up in the chamber, which possibly come into use when there is significant surcharging in the manhole. (evidence of surcharging in manhole, see photos)

Overflow appeared to be active during site inspection.

Light to medium traffic conditions were noted during the inspection.

CSO Monitoring option: Pressure level monitoring of spill levels with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms.

Overflow Pipe

Incoming Flow

Outgoing flow (Surcharge evidence)

High Level Letterbox Culverts

Location Photos

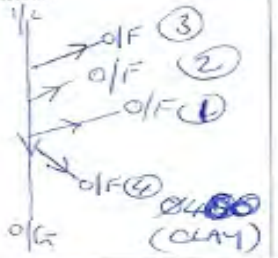
CSO Inspection

capital water systems ltd.

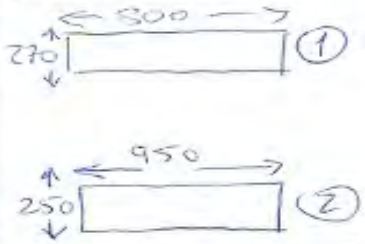
MH Ref:	DLRCC BS/R/007		
Project Name:			
Location:	DODDER Rd LWR, RATHFARNHAM		
Traffic Conditions:	LIGHT TRAFFIC	Easting: 315567.5	Northing: 229628.41
Date/Time	3/3/11 10:00 am	Photo No's: 10:44 → 11:24	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:



Size of Pipes:

- Incoming no. 1: 1500 mm
- Incoming no. 2: ✓ mm
- Incoming no. 3: ✓ mm
- Incoming no. 4: ✓ mm
- Incoming no 5: ✓ mm
- Outgoing: 1500 mm
- O/F: mm

Weir Details (if applicable)

- Width: mm
- Depth: mm
- Material:
- Condition: N/A

Flow Conditions (main flow)

- Fast: ✓
- Medium:
- Slow:
- Steady: ✓
- Turbulent:
- Static:
- None:

Overflow Type:

- Circular Pipe Culvert Weir → Pipe/Culvert ☑
- Screened (Yes/No):
- Other:

Shaft Material:

- Concrete Ring
- In situ concrete
- Brick ☑
- Other:

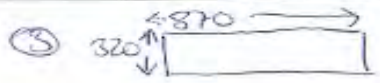
Chamber Material:

- Concrete Ring
- In situ concrete ☑
- Brick
- Other:

Levels:

- Cover Level: 29.38 ←
- Cover to Channel invert: 2720 mm
- Cover to O/F Spill level: see below
- Invert to Spill Level: see below mm

Comments:



C → SPILL
① 770 + 270 → 1040
② 770 + 290 → 1060
③ 770 + 330 → 1100
④ 770 + 1680 → 2450 mm

① 1950 − 270 I → SPILL → 1680
② 1940 − 290 I − SPILL → 1650
③ 1920 − 350 I − SPILL → 1570
④ 1930 − 1680 I − SPILL 250

1580 → 2720

No. 7

Site 07	Landscape Rd, Churchtown	**MH Ref**	DLRCC/B5/R/009
Location	At rear of 'Holme' house on Landscape Rd,	**Coordinates**	315529.7E, 229160.1N

Comments:

Chamber consists of a main 300 mm diameter incoming and outgoing pipe, with three other secondary incomings with diameters of 150 mm, 300 mm (blocked), and 100 mm (Dry).

No overflow in manhole.

Incoming Flow

Outgoing Flow

Blocked Pipe and Secondary Incomings.

Location

Note: Manhole in garden (No Overflow in manhole)

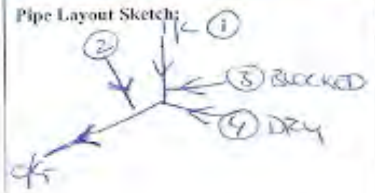
CSO Inspection

capital water systems ltd

MH Ref:	DLRCC BS/R/009		
Project Name:			
Location:	AT REAR OF 'HOLMES' ON LANDSCAPE RD. CHURCHTOWN		
Traffic Conditions:	N/A	Easting: 315529.7	Northing: 229160.1
Date/Time	8/3/11 10:30 am	Photo No's: 11:41 → 11:44	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 300 mm
Incoming no. 2 150 mm
Incoming no. 3 300 BLOCKED mm
Incoming no. 4 100 DRY mm
Incoming no 5 / mm
Outgoing 300 mm
O/F NONE mm

Weir Details (if applicable)

Width..... mm
Depth..... mm
Material.....
Condition.....
N/A

Flow Conditions (main flow)

Fast ✓
Medium.....
Slow.....
Steady ✓
Turbulent.....
Static.....
None.....

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert
Screened (Yes/No).....
Other NONE

Shaft Material:

Concrete Ring
In situ concrete
Brick
Other.....

Chamber Material:

Concrete Ring
In situ concrete
Brick
Other.....

Levels:

Cover Level 60.22
Cover to Channel invert 2450 mm
Cover to O/F Spill level N/A mm
Invert to Spill Level N/A mm

Comments:

NO O/F

Site 08	Farrenboy Park, Dundrum	**MH Ref**	DLRCC/B5/R/010
Location	Centre of road, at Farrenboy Park.	**Coordinates**	316965.7E, 229562N

Comments:

Chamber consists of a 150 mm diameter incoming and outgoing pipe with an overflow spill level at 150 mm above the outgoing invert level. The overflow consists of a 150 mm overflow pipe.

Road is narrow, but with light traffic volumes.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow Pipe

Incoming Flow

Outgoing Flow

Location Photos

CSO Inspection

capital water systems ltd.

MH Ref:	DLRCC BS/R/010		
Project Name:			
Location:	FARRENBOLY PARK DUNDRUM		
Traffic Conditions:	Light.	Easting: 316965-7	Northing: 229562
Date/Time	8/3/11 15:00.	Photo No's: 16:07 → 16:09	Weather Conditions: DRY

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1 150 mm
Incoming no. 2 — mm
Incoming no. 3 — mm
Incoming no. 4 — mm
Incoming no 5 — mm
Outgoing 150 mm
O/F 150 mm

Weir Details (if applicable)

Width ..... mm
Depth ..... mm
Material .....
Condition .....
N/A

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe ☒
Culvert
Weir → Pipe/Culvert
Screened (Yes/No) .....
Other .....

Shaft Material:

Concrete Ring ☒
In situ concrete
Brick
Other .....

Chamber Material:

Concrete Ring ☒
In situ concrete
Brick
Other .....

Levels:

Cover Level 32.35
Cover to Channel invert 1220 mm - O/F
Cover to O/F Spill level 1170 mm
Invert to Spill Level 150 mm

Comments:

DARROW ROAD.

Site 09	Mulvey Park, Dundrum	**MH Ref**	DLRCC/B5/R/011
Location	On Road at entrance to Mulvey Park.	**Coordinates**	316993.7E, 229357.1N

Comments:

Chamber consists of a 225 mm diameter incoming and outgoing with an overflow spill level at 260 mm above the channel invert level.
The overflow consists of a concrete weir structure 1200mmm wide and 50 mm deep leading to a 225mm.

Traffic is noted as being light, during site inspection.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Flow

Outgoing Flow

Location Photo

Site 10	Mulvey Park, Dundrum	**MH Ref**	DLRCC/B5/R/012
Location	Top of embankment, behind pub	**Coordinates**	317044.6E, 229343.4N

Comments:

Chamber consists of 300mm incoming and outgoing foul pipes with a high level 225mm overflow pipe. Channel invert to spill level is 1180mm.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming

Outgoing

Location

Inspection Sheet

MH Ref:	**CSO Inspection**	capital	
Project Name:	DLRCC C.S.O.		
Location:	MULVEY PARK AT TOP OF OVERFLOW EMBANKMENT BEHIND PUB.		
Traffic Conditions:	N/A	Easting: 317044.6	Northing: 229343.4
Date/Time	28/4/11 12:30	Photo No's: 12:17-12:34	Weather Conditions: GOOD.

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1	300 mm
Incoming no. 2	✓ mm
Incoming no. 3	✓ mm
Incoming no. 4	✓ mm
Incoming no 5	✓ mm
Outgoing	300 mm
O/F	225 mm

Weir Details (if applicable)

Width ..... mm
Depth ..... mm
Material .....
Condition .....

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe ☑
Culvert ☐
Weir → Pipe/Culvert ☐
Screened (Yes/No) NO
Other .....

Shaft Material:

Concrete Ring in situ concrete Brick ☐
Other BRICK

Chamber Material:

Concrete Ring in situ concrete Brick ☑
Other BRICK

Levels:

Cover Level 37.95
Cover to Channel invert 4600 mm
Cover to O/F Spill level 3420 mm
Invert to Spill Level 1150 mm

Comments:

O.K FOR C.S.O MONITORING

Site 11	Millmount Grove, Dundrum	**MH Ref**	DLRCC/B5/R/013
Location	On Road, at Millmount Grove	**Coordinates**	316969.6E, 229705.5N

Comments:

The chamber consists of 300mm diameter incoming and outgoing, with two secondary incomings, 300mm and 150 mm in diameter. The overflow spill level is at 560 mm above the invert level of the channel, and consists of a concrete weir 1530mm wide and 100mm deep, leading to a 300 mm pipe.

The road is vey narrow, but very quiet, and will need to be closed for a short period, whilst carrying out works.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Foul Pipe + incoming 150mm

Outgoing

Second 300mm incoming

Location Photo

MH Ref:	DLRCC BSR/013.	**CSO Inspection**	capital water systems ltd.
Project Name:			
Location:	MILLMOUNT GROVE, DUNDRUM		
Traffic Conditions:	LIGHT	Easting: 316969.6	Northing: 229705.5
Date/Time	8/3/11 15:20.	Photo No's: 16.20 → 16:23	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1 300 mm
Incoming no. 2 300 mm
Incoming no. 3 150 mm
Incoming no. 4 mm
Incoming no 5 mm
Outgoing 300 mm
O/F 300 mm

Weir Details (if applicable)

Width 1530 mm
Depth 100 mm
Material Concrete
Condition OK

Flow Conditions (main flow)

Fast
Medium ✓
Slow
Steady ✓
Turbulent
Static
None

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☒
Screened (Yes/No)
Other

Shaft Material:

Concrete Ring ☒
In situ concrete
Brick
Other

Chamber Material:

Concrete Ring ☒
In situ concrete
Brick
Other

Levels:

Cover Level 29.809
Cover to Channel invert 2020 mm
Cover to O/F Spill level 1460 mm
Invert to Spill Level 560 mm

Comments:

Site 12	St. Helens Rd	**MH Ref**	DLRCC/B5/R/014
Location	Outside no. 127, St. Helens Rd	**Coordinates**	319958.5E, 230418.3N

Comments:

The chamber consists of a 225 mm diameter main incoming and 375 mm diameter outgoing, with a secondary 150 mm diameter incoming.
The overflow spill level is at 260 mm above the invert of the channel and consists basically of shaped benching, approximately 700mm wide and 220 mm deep, leading to a 300 mm pipe.

The manhole is very shallow and in the middle of a narrow street, with relatively light traffic volumes. Works would be best carried out at night.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming flow, with secondary incoming (bottom right)

Outgoing Flow

Location Photos

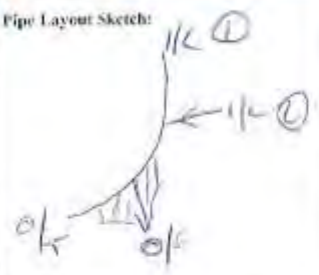
CSO Inspection

capital water systems ltd.

MH Ref:	DLRCC BS/12/014		
Project Name:			
Location:	O/S 127 St Helens Rd.		
Traffic Conditions:	Light → Possible Night.	Easting: 319955.5	Northing: 230418.3
Date/Time	8/3/11 12:00	Photo No's: 13:01 → 13:03	Weather Conditions: Dry

Manhole Details:

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 225 mm
Incoming no. 2 150 mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 375 mm
O/F 300 mm

Weir Details (if applicable)

Width 700 mm
Depth 220 mm
Material Concrete
Condition OK

Flow Conditions (main flow)

Fast .....
Medium .....
Slow ✓
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe Culvert
Weir → Pipe/Culvert ☒
Screened (Yes/No) .....
Other .....

Shaft Material:

Concrete Ring
In situ concrete
Brick ☒
Other .....

Chamber Material:

Concrete Ring
In situ concrete ☒
Brick
Other .....

Levels:

Cover Level 5.27
Cover to Channel invert 970 mm
Cover to O/F Spill level 660 mm
Invert to Spill Level 260 mm

Comments:

Site 13	Rock Road/Booterstown Ave	**MH Ref**	DLRCC/B5/R/015
Location	On footpath at junction, outside No 115	**Coordinates**	320277.8E, 230209.9N

Comments:

The chamber consists of a 375 mm diameter incoming and outgoing, with a secondary 150 mm diameter incoming. The overflow spill level is at 755 mm above the level of the channel, and consists of a 375mm diameter pipe.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming

Outgoing

Location Photos

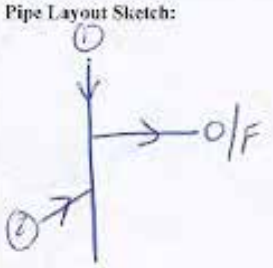
CSO Inspection

capital water systems ltd.

MH Ref:	BS/R/015		
Project Name:	DLR CSO SURVEY.		
Location:	ROCK ROAD / BOOTERSTOWN AVE, ON F/P O/S NO 115		
Traffic Conditions:	F/P	Easting: 320277.8	Northing: 230209.9
Date/Time	21/4/11 05:00.	Photo No's: 0613 → 19	Weather Conditions: CLEAR.

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 375 mm
Incoming no. 2 150 mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 375 mm
O/F 375 mm

Weir Details (if applicable)

Width N/A mm
Depth ..... mm
Material .....
Condition .....

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe ☑
Culvert ☐
Weir → Pipe/Culvert ☐
Screened (Yes/No) NO
Other .....

Shaft Material:

Concrete Ring ☐
In situ concrete ☐
Brick ☑
Other .....

Chamber Material:

Concrete Ring ☐
In situ concrete ☐
Brick ☑
Other .....

Levels:

Cover Level 5.412
Cover to Channel invert 2420 mm
Cover to O/F Spill level 1665 mm
Invert to Spill Level 755 mm

Comments:

Site 14	Rock Road/Willow Terrace	**MH Ref**	DLRCC/B5/R/016
Location	Middle of bus lane at junction of Rock Road & Willow Terrace	**Coordinates**	320624.7E, 230016.7N

Comments:

The chamber consists of a 375 mm diameter main incoming with two 150mm side incoming pipe (one of which is a rising main from neighbouring pumping station) and a 375mm outgoing. The overflow spill level is at 1005 mm above the level of the channel, and consists of a pipe, 375mm diameter.

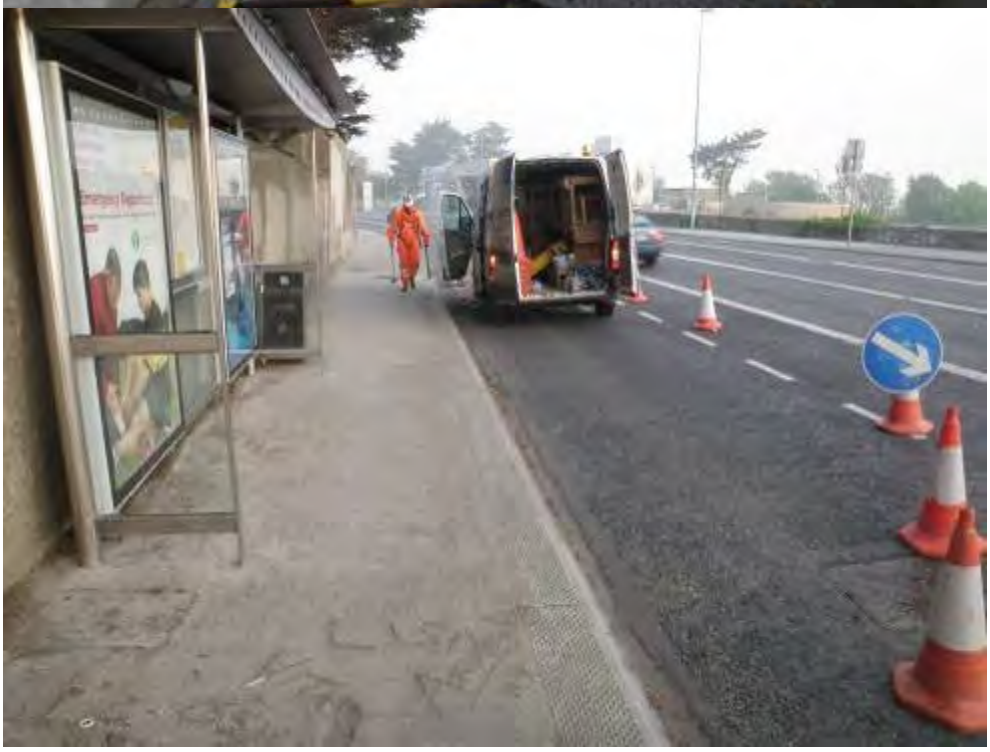
CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Flow (RM to left)

Outgoing Flow (second side incoming to right)

Location Photos



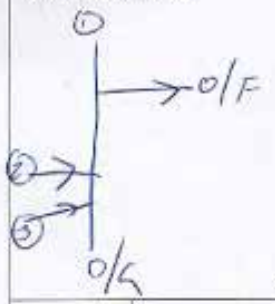
CSO Inspection

capital water systems ltd

MH Ref:	BS/R/016		
Project Name:	DLR CSO SURVEY		
Location:	ROCK ROAD/WILLOW TCE, MIDDLE OF BUS LANE		
Traffic Conditions:	LIGHT	Easting: 320624.7	Northing: 236016.7
Date/Time	21/4/11	Photo No's: 06:56 → 07:06	Weather Conditions: CLEAR

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 375 mm
Incoming no. 2 150 mm
Incoming no. 3 150 mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 375 mm
O/F 375 mm

Weir Details (if applicable)

Width N/A mm
Depth ..... mm
Material .....
Condition .....

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe ☑
Culvert ☐
Weir → Pipe/Culvert ☐
Screened (Yes/No) .....
Other .....

Shaft Material:

Concrete Ring ☐
In situ concrete ☒
Brick ☐
Other .....

Chamber Material:

Concrete Ring ☐
In situ concrete ☒
Brick ☐
Other .....

Levels:

Cover Level .....
Cover to Channel invert 2735 mm
Cover to O/F Spill level 1730 mm
Invert to Spill Level 1905 mm

Comments: HEAVY COVER → SMALL KEYHOLES + SPLIT.

Site 15	Seafort Parade, Blackrock	**MH Ref**	DLRCC/B5/R/017
Location	In park area at Seafort Parade.	**Coordinates**	320836.5E, 229937.2N

Comments:

The chamber consists of side by side foul and surface lines separated by baffle wall and a steel plate. The foul line is a 375mm incoming and outgoing pipe. The surface water is a 550 mm (W) x 660 mm (H) culvert.
The overflow spill level is at 400 mm above the invert level of the foul flow.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms.

Overflow

Incoming Pipe

Outgoing Pipe

Incoming Surface Water Pipe

Outgoing Surface water pipe

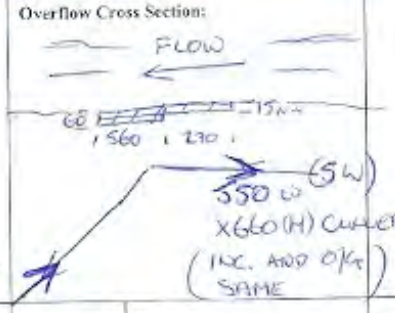
Location Photo

MH Ref:	EXRCC BS/R/017	**CSO Inspection**	capital water systems ltd.
Project Name:			
Location:	SEAFORT PARADE, BLACKROCK		
Traffic Conditions:	N/A	Easting: 320836-5	Northing: 229937-2.
Date/Time	8/3/11 12:20	Photo No's: 13:13 → 13.20	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:



Size of Pipes:

Incoming no. 1 ..375.. mm
Incoming no. 2 ..... mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing ..375.. mm
O/F ..350(W) X 660(H).. mm

Weir Details (if applicable)

Width ..890.. mm
Depth ..60/15.. mm
Material ..STEEL..
Condition ..O.K..

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe
Culvert ☒
Weir → Pipe/Culvert
Screened (~~Yes~~/No) No
Other .....

Shaft Material:

Concrete Ring
In situ concrete
Brick ☒
Other .....

Chamber Material:

Concrete Ring
In situ concrete ☒
Brick
Other .....

Levels:

Cover Level ..3.274..
Cover to Channel invert ..1520.. mm
Cover to O/F Spill level ..1120.. mm
Invert to Spill Level ..400.. mm

Comments:

SPILLS INTO SURFACE WATER.

Site 16	Rock Road/Mount Merrion Ave	**MH Ref**	DLRCC/B5/R/018
Location	Left hand lane of junction, 30m before traffic lights	**Coordinates**	321249.2E, 229477.7N

Comments:

Chamber consists of foul trough over a culverted stream. The foul incoming and outgoing pipes are 300mm. There is a 225mm incoming surface water line going to the stream. The overflow is a 900 X 110mm weir – damaged. Overflow spill level is 730mm at the highest point and 430mm at the damaged end of the weir.

There is no flow through the foul line – possibly re-directed upstream.

Suitable for some rehabilitation on the overflow weir.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming & Outgoing

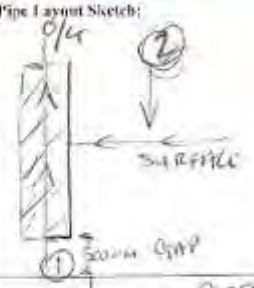
Location

Inspection Sheet

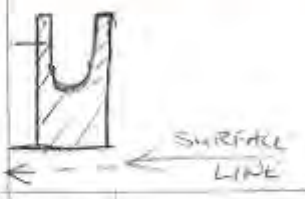
MH Ref:	DLRCC/35/R/018 **CSO Inspection**	capital	
Project Name:	D.L.R.D.C.C. C-50.		
Location:	ROCK ROAD AT JUNCTION WITH ~~CASTLEPARK~~ MOUNT MERRION AVE. ACROSS ROAD FROM LISAGEN APARTMENTS		
Traffic Conditions:	LIGHT / MODERATE	Easting: 321249 - 2	Northing: 229477 - 7
Date/Time:	28/4/11 06.20	Photo No's: 06.25 → 06.38	Weather Conditions: GOOD

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:



Size of Pipes:
- Incoming no. 1: 300 mm
- Incoming no. 2: 225 SURFACE mm
- Incoming no. 3: mm
- Incoming no. 4: ✓ mm
- Incoming no. 5: ✓ mm
- Outgoing: 300 mm
- or 2000 x 1000 SURFACE CULVERT mm

Weir Details (if applicable)
- Width: 900 mm
- Depth: 110 mm
- Material: Concrete
- Condition: GOOD

Flow Conditions (main flow)
- Fast:
- Medium:
- Slow:
- Steady:
- Turbulent:
- Static:
- None: ✓

Overflow Type:
- Circular Pipe ☐
- Culvert ☐
- Weir → Pipe/Culvert ☑
- Screened (Yes/No): No
- Other:

Shaft Material:
- Concrete Ring ☐
- In situ concrete
- Brick
- Other:

Chamber Material:
- Concrete Ring ☐
- In situ concrete
- Brick
- Other:

Levels:
- Cover Level: 13.47
- Cover to Channel invert: 2400 mm
- Cover to O/F Spill level: 1730 mm
- Invert to Spill Level: 730 mm
- A1 HIGHEST POINT 430 AT LOWEST POINT

Comments:

DRY LINE 2.

ONLY O/F WE FOUND IN VICINITY

Site 17	Sydney Avenue, Blackrock	**MH Ref**	DLRCC/B5/R/019
Location	On road on Sydney Avenue.	**Coordinates**	321034E, 229362N

Comments:

The chamber consists of a 300 mm diameter incoming and outgoing, with a secondary 150 mm diameter incoming. The overflow spill level is at 260 mm above the level of the channel, and consists of a rectangular culvert, 550mm (W) x 490mm (H), with the culvert turning to left and narrowing further up, measuring 330mm (W) and 190 mm (H).

This is not as records show.

Traffic was noted as being light during inspection.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow (turns to left)

Overflow Narrows

Incoming Flow, with secondary incoming flow (from right)

Outgoing flow

Location Photos

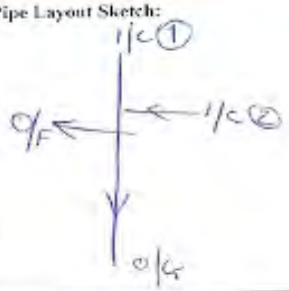
CSO Inspection

capital water systems ltd.

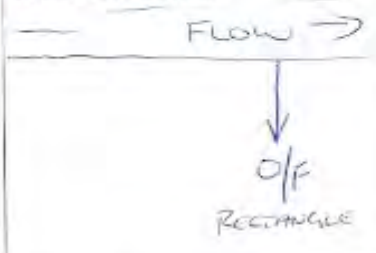
MH Ref:	DLRCC BS/R/019		
Project Name:			
Location:	SYDNEY AVE. BLACKROCK.		
Traffic Conditions:	Light	Easting: 321034	Northing: 229362
Date/Time	8/3/11 13:00.	Photo No's: 13:53 → 13:58	Weather Conditions: DRY

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:



Size of Pipes:

Incoming no. 1 300 mm
Incoming no. 2 150 mm
Incoming no. 3 ✓ mm
Incoming no. 4 ✓ mm
Incoming no 5 ✓ mm
Outgoing 300 mm
O/F 550 W x 490 H mm

Weir Details (if applicable)

Width..... mm
Depth..... mm
Material.....
Condition.....

N/A

Flow Conditions (main flow)

Fast.....
Medium.....
Slow..... ✓
Steady..... ✓
Turbulent.....
Static.....
None.....

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☒
Screened (~~Yes~~/No).....
Other.....

Shaft Material:

Concrete Ring
In situ concrete
Brick ☒
Other.....

Chamber Material:

Concrete Ring
In situ concrete
Brick ☒
Other.....

Levels:

Cover Level 17.09
Cover to Channel invert 1360 mm
Cover to O/F Spill level 1100 mm
Invert to Spill Level 260 mm

Comments:

330 x 190 WATER BOX FURTHER IN.
NOT AS RECORDS SHOW.

Site 18	Idrone Terrace, Blackrock	**MH Ref**	DLRCC/B5/R/020
Location	On Pedestrian plinth at Idrone terrace.	**Coordinates**	321559.4E, 229521.1N

Comments:

The chamber consists of an egg shaped incoming 1030mm (W) and 1425 (H), and a 450mm diameter outgoing pipe. The overflow spill level is at 1490 mm above the level of the channel, and consists of a baffle wall 1100mm wide and 280mm deep, leading to a pipe or culvert of unknown dimensions.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Flow

Outgoing Flow

Overview of Chamber

Location Photos

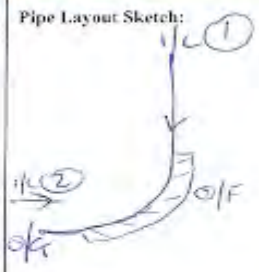
CSO Inspection

capital water systems ltd

MH Ref:	DLRCC BS/R/020		
Project Name:			
Location:	IDRONE TCE, BLACKROCK.		
Traffic Conditions:	N/A.	Easting: 321559·4	Northing: 229521·1
Date/Time	8/3/11 13:30	Photo No's: 13:39 - 13:41	Weather Conditions: DRY

Manhole Details:

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 ECR 1030 (W) X 1425 mm
Incoming no. 2 150 mm
Incoming no. 3 / mm
Incoming no. 4 / mm
Incoming no 5 / mm
Outgoing 450 mm
O/F mm

Weir Details (if applicable)

Width 1100 mm
Depth 280 mm
Material Concrete
Condition OK

Flow Conditions (main flow)

Fast
Medium
Slow /
Steady /
Turbulent
Static
None

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☑
Screened (Yes/No)
Other

Shaft Material:

Concrete Ring
In situ concrete
Brick ☑
Other

Chamber Material:

Concrete Ring
In situ concrete
Brick ☑
Other

Levels:

Cover Level 7.204
Cover to Channel invert 2380 mm
Cover to O/F Spill level 890 mm
Invert to Spill Level 1490 mm

Comments:

UNABLE TO MEASURE OVERFLOW PAST BAFFLE WALL.

Site 19	Dale Drive, Kilmacud.	**MH Ref**	DLRCC/B5/R/021
Location	At end of laneway behind houses on Dale Drive.	**Coordinates**	319144.4E, 227927N

Comments:

The chamber consists of 225 mm diameter incoming and a 300mm diameter outgoing. The overflow spill level is at 390 mm above the level of the channel, and consists of a 225 mm diameter pipe.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Flow

Outgoing Flow

Overview of Manhole

Location Photo (end of overgrown Laneway)

CSO Inspection

capital water systems ltd.

MH Ref:	DLRCC BS/R/021		
Project Name:			
Location:	DALE DR. KILMACUD.		
Traffic Conditions:	Light / NONE	Easting: 319144.4	Northing: 227927
Date/Time	8/3/11 14:20.	Photo No's: 15:21 -> 15:25	Weather Conditions: DRY.

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1 225 mm
Incoming no. 2 ..... mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 300 mm
O/F 225 mm

Weir Details (if applicable)

Width ..... mm
Depth ..... mm
Material .....
Condition ..... N/A.

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe Culvert ☑
Weir → Pipe/Culvert ☐
Screened (Yes/No) .....
Other .....

Shaft Material:

Concrete Ring ☑
In situ concrete ☐
Brick ☐
Other .....

Chamber Material:

Concrete Ring ☑
In situ concrete ☐
Brick ☐
Other .....

Levels:

Cover Level 61.47
Cover to Channel invert 1090 mm
Cover to O/F Spill level 700 mm
Invert to Spill Level 590 mm

Comments:

790
300
1090

Site 20	Stillorgan Park, Stillorgan	**MH Ref**	DLRCC/B5/R/022
Location	Left hand lane, oustside entrance to “Kinvara” house	**Coordinates**	322583.3E, 228363.5N

Comments:

The chamber consists of a 300mm diameter incoming pipes and a 300mm diameter outgoing. The overflow is a concrete weir 1485mm long and 100mm deep leading to a 300 mm diameter pipe. The spill level is 690mm. Very little flow in the chamber and heavy silting.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming

Outgoing

CSO Inspection

capital water systems ltd

MH Ref:	BS/R/022		
Project Name:	DLR CSO		
Location:	STILLORGAN PARK, STILLORGAN, LH LANE, O/S ENT TO "KINJARA" HOUSE		
Traffic Conditions:	LIGHT	Easting: 320721.2	Northing: 228209.7
Date/Time	21/6/11	Photo No's: 0800 → 0806	Weather Conditions: CLEAR

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1 300 mm
Incoming no. 2 ..... mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 300 mm
O/F 300 mm

Weir Details (if applicable)

Width 1495 mm
Depth 100 mm
Material CONC
Condition FAIR

Flow Conditions (main flow)

Fast .....
Medium .....
Slow .....
Steady .....
Turbulent .....
Static ✓
None .....

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☑
Screened (Yes/No) NO
Other .....

Shaft Material:

Concrete Ring
In situ concrete
Brick ☑
Other .....

Chamber Material:

Concrete Ring
In situ concrete ☑
Brick
Other .....

Levels:

Cover Level 34.201
Cover to Channel invert 2850 mm
Cover to O/F Spill level 2160 mm
Invert to Spill Level 690 mm

Comments: NO FLOW IN EITHER LINE → POOL CONNECTING D/S

Site 21	Avondale Park	**MH Ref**	DLRCC/B5/R/023
Location	Beside Tennis Courts	**Coordinates**	321702.5E, 228874.9N

Comments:

The overflow consists of a 225mm main incoming pipe with 4 other 150mm diameter incomings and a 225mm diameter outgoing. The overflow spill level is at 690mm above the level of the channel. The overflow consists of a 1370mm X 100mm concrete weir leading to a 225mm pipe.

General condition of MH is poor with a lot of roots and groundwater infiltration.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow (Right side of photo)

Incoming Pipes

Outgoing (Left side of photo)

Debris & Roots in Overflow

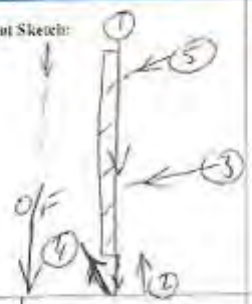
Location

Inspection Sheet

MH Ref:	DLRCC/BS/R/0025	**CSO Inspection**	capital
Project Name:	DLRCC CSO		
Location:	AVONDALE PARK BESIDE TENNIS COURTS		
Traffic Conditions:	N/A.	Easting: 321702.5	Northing: 229874.9
Date/Time	29/4/11 08.30	Photo No's: 08.29 - 08.33	Weather Conditions: GOOD

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1 225 mm
Incoming no. 2 150 mm
Incoming no. 3 150 mm
Incoming no. 4 150 mm
Incoming no. 5 150 mm
Outgoing 225 mm
O/F 225 mm

Weir Details (if applicable)

Width 1370 mm
Depth 100 mm
Material CONCRETE
Condition GOOD

Flow Conditions (main flow)

Fast
Medium ✓
Slow
Steady ✓
Turbulent
Static
None

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☒
Screened (Yes/No) NO
Other

Shaft Material:

Concrete Ring ☒
In situ concrete
Brick
Other

Chamber Material:

Concrete Ring ☒
In situ concrete
Brick
Other

Levels:

Cover Level 19.03
Cover to Chamber Invert 3570 mm
Cover to O/F Spill level 2880 mm
Invert to Spill Level 690 mm

Comments:

TREE ROOTS IN O/F

O.K FOR CSO MONITORING

Site 22	Avondale Park	**MH Ref**	DLRCC/B5/R/024
Location	In fenced off area, beside halting site	**Coordinates**	321693.3E, 228971.2N

Comments:

The chamber consists of a dual-line system, 225mm incoming foul pipe and a 300mm incoming surface pipe leading to a 225mm foul outgoing and a 300mm overflow/surface outgoing.

Overflow is a 1350 X 100 concrete weir with no screen.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming

Outgoing

Location

Inspection Sheet

MH Ref:	DLRCC/BS/R/024	**CSO Inspection**	capital
Project Name:	DLRCC CSO.		
Location:	ANOWDALE PARK, IN FENCED OFF AREA BESIDE HAYING SITE		
Traffic Conditions:	N/K	Easting: 326693.3	Northing: 228971.2
Date/Time	28/4/11 08:40	Photo No's 08:57 → 08:51	Weather Conditions: GOOD

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1	225 mm
Incoming no. 2 (SURFACE)	300 mm
Incoming no. 3	— mm
Incoming no. 4	— mm
Incoming no 5	— mm
Outgoing	225 mm
O/F	300 mm

Weir Details (if applicable)

Width 1350 mm
Depth 100 mm
Material CONCRETE
Condition GOOD

Flow Conditions (main flow)

Fast
Medium ✓
Slow
Steady ✓
Turbulent
Static
None

Overflow Type:

Circular Pipe
Culvert
Weir → Pipe/Culvert ☒
Screened (Yes/No) NO
Other

Shaft Material:

Concrete Ring ☒
In situ concrete
Brick
Other

Chamber Material:

Concrete Ring ☒
In situ concrete
Brick
Other

Levels:

Cover Level 14.89
Cover to Channel Invert 2090 mm
Cover to O/F Spill level 1690 mm
Invert to Spill Level 400 mm

Comments:

SITE OK FOR CSO MONITORING

Site 23	Maretimo Gardens West	**MH Ref**	DLRCC/B5/R/025
Location	Rear Garden of number 6	**Coordinates**	321808.3E, 229405.6N

Comments:

The overflow consists of a long double chamber with 450mm and 225mm diameter incoming pipes and a 600mm diameter outgoing. The overflow spill level in chamber 1 is at 1132mm above the level of the channel and in chamber 2 is 1060mm above the channel. The overflow is screen is in poor condition and is in need of repair (see photos).

An existing overflow monitor is located in chamber 1.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Main Incoming Pipe

Outgoing Pipe with side 225mm incoming

Existing CSO monitor on main incoming

Location

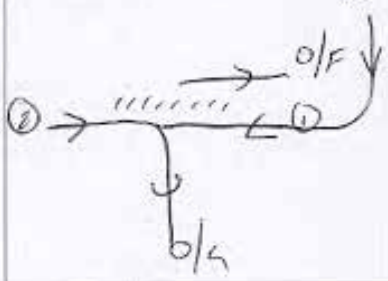
CSO Inspection

capital water systems ltd.

MH Ref:	BS/R/025		
Project Name:			
Location:	MARETIMO GARDENS WEST, BLACKROCK, REAR GARDEN OF NO 6(?)		
Traffic Conditions:	N/A	Easting: 321808.3	Northing: 229405.6
Date/Time	21/4/11	Photo No's: 952 → 58	Weather Conditions: CLEAR

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

- Incoming no. 1: 450 mm
- Incoming no. 2: 225 mm
- Incoming no. 3: ..... mm
- Incoming no. 4: ..... mm
- Incoming no. 5: ..... mm
- Outgoing: 600 mm
- O/F: 450 mm

Weir Details (if applicable)

- Width: ..... mm
- Depth: ..... mm
- Material: .....
- Condition: .....

Flow Conditions (main flow)

- Fast: .....
- Medium: ✓
- Slow: .....
- Steady: ✓
- Turbulent: .....
- Static: .....
- None: .....

Overflow Type:

- Circular Pipe
- Culvert
- Weir → Pipe/Culvert ☑
- Screened (Yes/No): Yes
- Other: .....

Shaft Material:

- Concrete Ring
- In situ concrete
- Brick ☑
- Other: .....

Chamber Material:

- Concrete Ring
- In situ concrete
- Brick ☑
- Other: .....

Levels:

- Cover Level: 4.576
- Cover to Channel invert: 1.500 mm
- Cover to O/F Spill level: 1060 mm
- Invert to Spill Level: 440 mm

Comments: O/F SCREEN

DOUBLE CHAMBER →

C→ SPILL CHAMBER ① 1Φ32

C→ SPILL CHABER ② 1060

Site 24	Newtown Park Avenue	**MH Ref**	DLRCC/B5/R/026
Location	Middle of road, outside No 38	**Coordinates**	322055.3E, 228443.3N

Comments:

The chamber consists of a 450mm diameter incoming pipes and a 450mm diameter outgoing. The overflow spill level is at 320mm above the level of the channel invert, and is a 450 mm diameter pipe.

The top of the main flow channel is roughly cut and would be suitable for some re-conditioning.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming

Outgoing

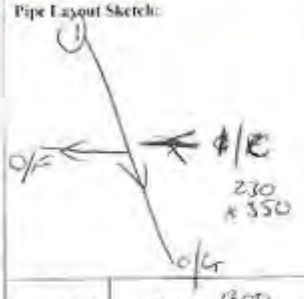
Location

Inspection Sheet

MH Ref:	DLRCC 185/R/024	**CSO Inspection**	capital
Project Name:	DLRCC C.S.O.		
Location:	NEWTOWN PARK AVENUE.		
Traffic Conditions:	MEDIUM	Easting: 322055.3	Northing: 228443.3
Date/Time	28/4/11	Photo No's: 11:23 → 11:26.	Weather Conditions: GOOD

Manhole Details

Pipe Layout Sketch:



Overflow Cross Section:

Size of Pipes:

Incoming no. 1	450 mm
Incoming no 2	BOX 230 X 350 mm
Incoming no. 3	✓ mm
Incoming no. 4	✓ mm
Incoming no 5	✓ mm
Outgoing	450 mm
O/F	450 mm

Weir Details (if applicable)	Width: 1300 mm Depth: 60 mm Material: CONCRETE Condition: O.K	**Flow Conditions (main flow)**	Fast Medium ✓ Slow Steady ✓ Turbulent Static None	**Overflow Type:**	Circular Pipe Culvert Weir → Pipe/Culvert ☐ Screened (Yes/No) Other
Shaft Material:	Concrete Ring In situ concrete Brick ☑ Other	**Chamber Material:**	Concrete Ring In situ concrete ☑ Brick Other	**Levels:**	Cover Level 81.123 Cover to Channel invert 1010 mm Cover to O/F Spill level 690 mm Invert to Spill Level 320 mm

Comments:

O/F CONSISTS OF CONCRETE PIPE WITH TOP ROUGHLY BROKEN OFF

SUITABLE FOR RE-CONDITIONING AND MONITORING

Site 25	The Beeches, Monkstown Valley	**MH Ref**	DLRCC/B5/R/027
Location	Green area to rear of No 40	**Coordinates**	322583.3E, 228363.5N

Comments:

The chamber consists of two 450mm diameter incoming pipes and a 450mm diameter outgoing. The overflow spill level is at 830mm above the level of the channel, and consists of a 450 mm diameter pipe.

CSO Monitoring option: Ultrasonic level monitoring of main flow with overflow spill alarms. Online data collection and monitoring with SMS/E-Mail alarms

Overflow

Incoming Flows

Outgoing Flow (left)

Location

CSO Inspection

capital water systems ltd.

MH Ref:	B5/R/027		
Project Name:	DLR CSO		
Location:	THE BEECHES, MONKSTOWN VALLEY, GREEN AREA TO REAR OF NO 40		
Traffic Conditions:	N/A	Easting: 322583.3	Northing: 228363.5
Date/Time	21/4/11	Photo No's: 0820 - 79.	Weather Conditions: CLEAR.

Manhole Details

Pipe Layout Sketch:

Overflow Cross Section:

Size of Pipes:

Incoming no. 1 450 mm
Incoming no. 2 450 mm
Incoming no. 3 ..... mm
Incoming no. 4 ..... mm
Incoming no 5 ..... mm
Outgoing 450 mm
O/F 450 mm

Weir Details (if applicable)

Width N/A mm
Depth ..... mm
Material .....
Condition .....

Flow Conditions (main flow)

Fast .....
Medium ✓
Slow .....
Steady ✓
Turbulent .....
Static .....
None .....

Overflow Type:

Circular Pipe ☑
Culvert ☐
Weir → Pipe/Culvert ☐
Screened (Yes/No) Yes
Other .....

Shaft Material:

Concrete Ring ☐
In situ concrete ☑
Brick ☐
Other .....

Chamber Material:

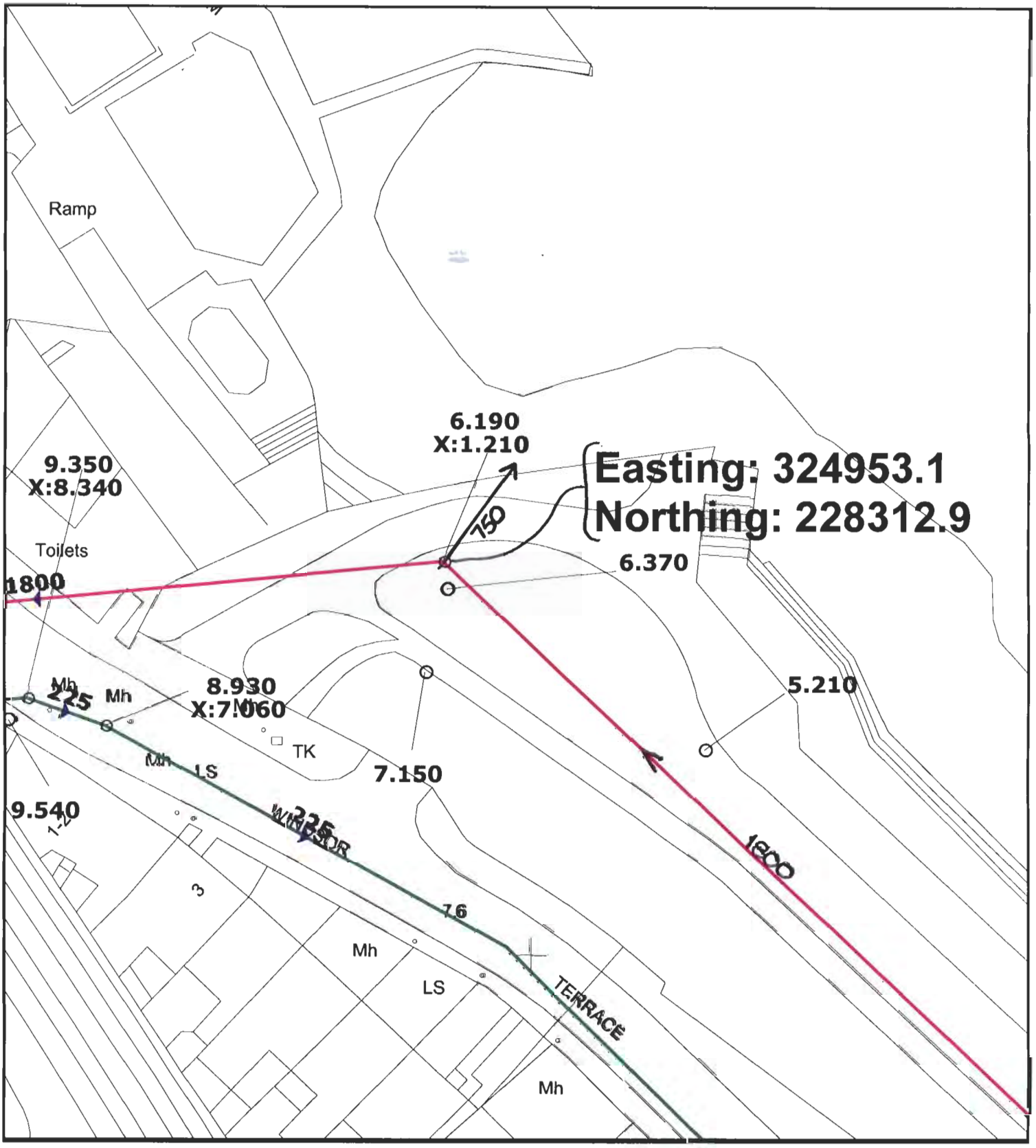
Concrete Ring ☐
In situ concrete ☑
Brick ☐
Other .....

Levels:

Cover Level .....
Cover to Channel invert 3130 mm
Cover to O/F Spill level 2300 mm
Invert to Spill Level 830 mm

Comments:

Appendix B
New CSO at Windsor Terrace
DLRCC/B5/R/027.
Coliemore 2 Pumps Station
DLRCC/B4/R/009D.



All levels are given in metres and are referred to Ordnance Survey Datum at Malin Head

The representation of a sewer or drain on this drawing does not warrant a right of connection

The position, level and ownership of a sewer or drain on this drawing should be verified on site and no responsibility will be accepted for any errors

DL Baths Windsor Terr. DLRCC/B5/R/028
O/F to Sea - O/F Level 3.80m
Scale: 1: 500
Date: 20 Feb 2012

LEGEND

Foul Drainage Pipe	Rising Main ('Pumping')	Pumping Station
Manhole	Overflow Pipe	Other Node
Combined Drainage Pipe	Inverted Siphon	Vent Column
Manhole	Trunk Main	Unknown Feature
Surfacewater Drainage Pipe		Rodding Eye
		Junction
		Outfall
		Storm Overflow

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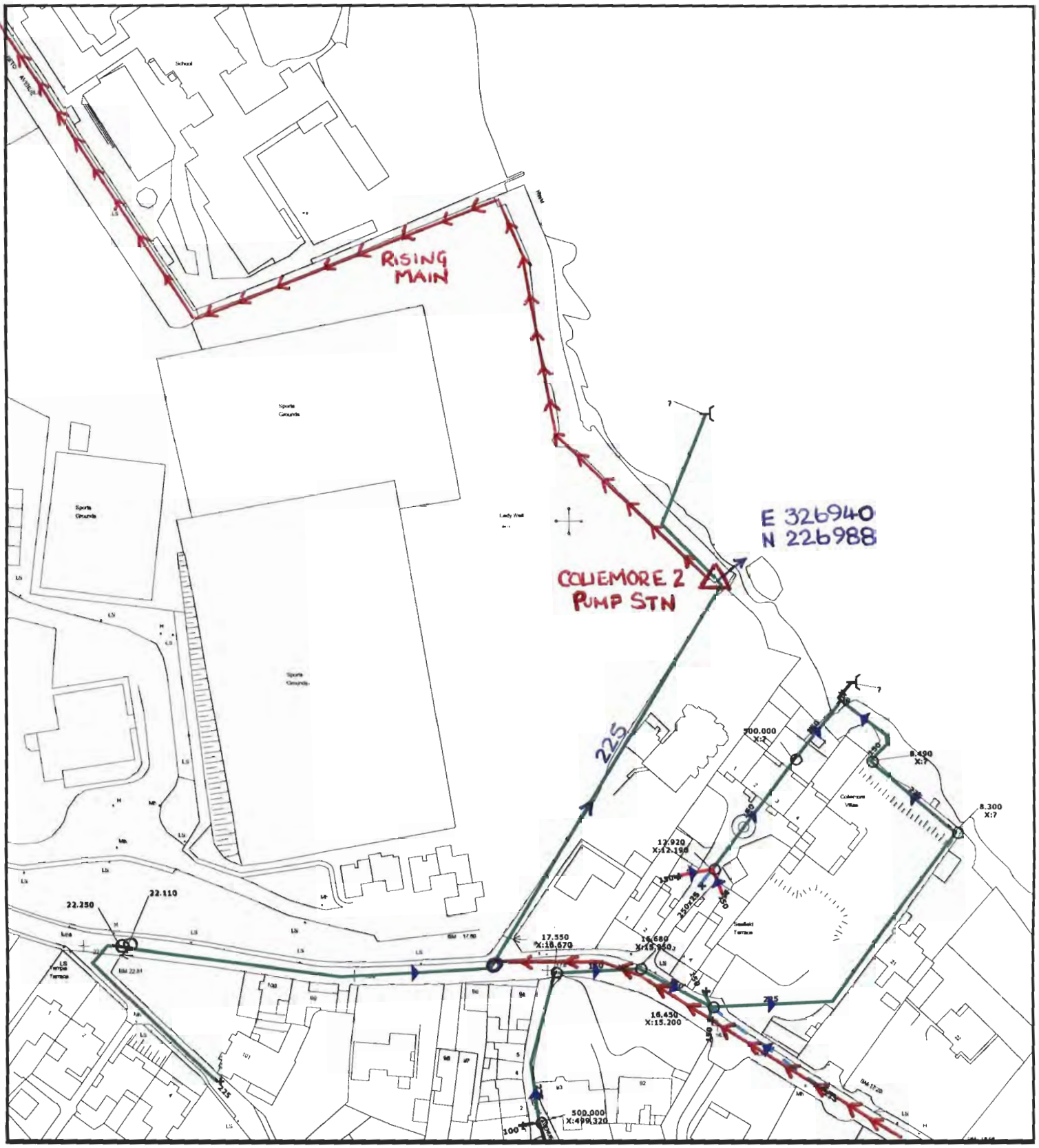
WATER SERVICES, DUN LAOGHAIRE RATHDOWN COUNTY COUNCIL, COUNTY HALL, MARINE ROAD, DUN LAOGHAIRE, COUNTY DUBLIN; PHONE 01 2054700



All levels are given in metres and are referred to Ordnance Survey Datum at Malin Head

The representation of a sewer or drain on this drawing does not warrant a right of connection

The position, level and ownership of a sewer or drain on this drawing should be verified on site and no responsibility will be accepted for any errors

Scale: 1: 1500
Date: 23 Feb 2012

COLIEMORE 2 PUMP STATION
DALKEY DLRCC/B4-/R/009

LEGEND

Foul Drainage Pipe	Rising Main (Pumping)	Pumping Station
Manhole	Overflow Pipe	Other Node
Combined Drainage Pipe	Inverted Siphon	Vent Column
Manhole	Trunk Main	Unknown Feature
Surfacewater Drainage Pipe		Rodding Eye
		Junction
		Outfall
		Storm Overflow

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Comhairle Contae County Council

South Dublin County Council

Annual Environmental Report

For
EPA Waste Water Treatment Discharge License Reg no :
http://www.epa.ie/terminalfour/wwda/wwda-view.jsp?regno=D0034-01

February 2012

Table of Contents

Introduction

South Dublin County Council Agglomeration –
Ringsend Waste Water Treatment Works –
D0034-01

The Drainage Maintenance and Operations Section is based at Deansrath Depot, Clondalkin. This Section is responsible for the South Dublin County Council Drainage System which comprises approximately 1,400 km of foul and surface water public sewers.
The Section is responsible for all Drainage Pumping Stations within the county.

Stations/Siphon Chambers. There are presently 22 Drainage Pumping Stations within the county;

Existing Drainage Pumping Stations	Type
Ard Mor, Tallaght	Submersible-Control Room
Ballymanaggin Pumping Station, Clondalkin	Submersible-Control Room
Belgard Fire Station Pumping Station	Submersible-Control Room
Dangan Park Pumping Station, Perrystown	Submersible-Kiosk
Esker Lane Pumping Station	Drywell
Grangecastle Pumping Station	Drywell
Johnstown (Palmerstown) Pumping Station	Drywell
Kings Hospital Pumping Station	Submersible-Control Room
Kishogue Pumping Station	Submersible-Control Room
Lucan Low Level Pumping Station	Drywell
Lucan Spa Pumping Station	Submersible-Control Room
Lynch's Lane Pumping Station	Submersible-Control Room
Newcastle Ejector Pumping Station	Submersible-Control Room
Newcastle Pumping Station	Drywell
Perrystown/Kimmage Storm Tank	Submersible-Kiosk
Quarryvale Pumping Station	Drywell
Rathcoole Pumping Station	**Submersible-Control Room**
Tay Lane (Commons) Pumping Station (Castlebrook)	**Submersible-Kiosk**
Spawell Pumping Station	Submersible-Kiosk
St. Brigid's Cottages Pumping Station	Submersible-Control Room
Whitehall Pumping Station Tobermaclugg	Submersible-Control Room Drywell

There are also 4No. siphon chambers (3No. are on the Dodder Valley Sewer Line – 1No. which is in the Dun Laoighaire Rathdown County Council jurisdiction - Belfield. This is owned and maintained by SDCC.

The siphon chamber at the Liffey in Lucan has a muncher unit which “chops up” all rags, cloths etc before entering the siphon.

The Saggart flowmeter is located on the site of the old Saggart Sewerage Treatment Works, and is merely for flow monitoring purposes on that sewer main.

Other:	
Belfield (UCD) Siphon Chamber	*Dodder Valley Line*
Kilvere (Tempelogue) Siphon Chamber	Dodder Valley Line
Owendoher Siphon Chamber	Dodder Valley Line
St. Ed's (Lucan)	Muncher Unit at Liffey Siphon

South Dublin County Council sewerage network has a total of 28 Overflows. 13 of these are associated with Pumping Stations and other infrastructure and strictly speaking are not for the purposes of relieving the system of excess stormwater flows, but rather are emergency overflows that would become active only in the event of a catastrophic failure of the pumping station. Pumping Stations, Siphons and Overflow Points

No	Pumping Stations	Overflow	Comments
SDCCPS01	Lucan Spa PS	SDCCPS01a	Emergency
SDCCPS02	Lucan Low Level PS	SDCCPS02a	Emergency
SDCCPS03	Esker Lane PS	SDCCPS03a	Emergency
SDCCPS04	Quarryvale PS	SDCCPS04a	Emergency
SDCCPS05	Johnstown PS	SDCCPS05a	Emergency
SDCCPS06	Grange Castle PS	SDCCPS06a	Emergency
SDCCPS07	Ballymanagan PS	SDCCPS07a SDCCPS07b	Emergency
SDCCPS08	Newcastle Ejector PS	SDCCPS08a	Emergency
SDCCPS09	Newcastle PS	SDCCPS09a	Emergency
SDCCPS10	Tay Lane PS	SDCCPS10a	Emergency
SDCCPS11	Whitehall PS	SDCCPS11a	Emergency
SDCCPS12	Spawell PS	N/A – 3 Dwellings	3 Dwellings
SDCCPS13	King's Hospital PS	N/A	
SDCCPS14	Lynches Lane PS	Halting Site	Halting Site – New PS
SDCCPS15	Kishogue PS	N/A – Halting Site	Halting Site
SDCCPS16	St Brigids PS	N/A – 6 Dwellings	6 Dwellings
SDCCPS17	Belgard PS	N/A – Fire Station	Fire Stn
SDCCPS18	Ard Mor PS	N/A	
SDCCPS19	College Drive	N/A	Private
SDCCPS20	Dangan Park PS	Surface Water	S/W only
SDCCPS21	Tobermaclugg	SDCCPS21a	Emergency

Siphons

SDCCSN01	Lucan Siphon (Liffey) - St Eds Muncher	SDCCSN01a	Emergency
SDCCSN02	Templeogue Siphon (Dodder)	N/A	
SDCCSN03	Owendoor Siphon	N/A	
SDCCSN04	UCD (Belfield) Siphon	N/A	
SDCCSN05	Ringsend Siphon	N/A	
SDCCSN06	Kilvere	SDCCSN06a	Emergency

Overflows

SDCCSW015	Milltown Overflow	SDCCSW015	Emergency
SDCCSWO01	Perrystown Tank	SDCCSWO01	Emergency
SDCCSWO02	Treepark Road	SDCCSWO02	
SDCCSWO03	Airton Road	SDCCSWO03	
SDCCSWO04	Avonmore Road	SDCCSWO04	
SDCCSWO05	Brookfield Cottage	SDCCSWO05a SDCCSWO05b	
SDCCSWO06	Harris Trucks	SDCCSWO06	
SDCCSWO07	St Peter's Road	SDCCSWO07	
SDCCSWO08	Castle View Road	SDCCSWO08	
SDCCSWO09	Aylmer Road	SDCCSWO09	
SDCCSWO10	Kimmage Road West	SDCCSWO10	
SDCCSWO11	Springfield Avenue	SDCCSWO11	
SDCCSWO12	Loretto Terrace	SDCCSWO12	
SDCCSWO13	Oldcourt Manor	SDCCSWO13	
SDCCSWO14	Stewarts Hospital	SDCCSWO14	
SDCCSW016	Glenvara	SDCCSW016	
SDCCSW017	Mount Carmel	SDCCSW017	

Section 2
Discharges from the Agglomeration

South Dublin County Council has no primary discharges, all public Wastewater Treatment Systems have been decommissioned and all Wastewater Discharges to Ringsend WWTP, operated and monitored by Dublin City Council.

Section 3
Summary Report on Influent Monitoring

South Dublin County Council, whilst it carries out monitoring at transboundary locations between South Dublin and Dublin City, does not carry out influent monitoring with regard to Ringsend WWTP.

Section 4
Data Collection and Reporting Requirements for the Urban Waste Waster Treatment Directive.

Section 5
Complaints Summary

As per condition 6.5 of it's license, South Dublin County Council will record in accordance with the National Environmental Complaints Procedure all complaints of an environmental nature relating to the discharge(s) to waters from the waste water works.

5.2. Environmental Liabilities Risk Assessment

South Dublin County Council has a public liability insurance policy issued by Irish Public Bodies (IPB). South Dublin County Council is currently endeavouring to determine if any amendments are required to this policy arising out of the ELRA required under the discharge license.

Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council

and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration.
Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved.
It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

Section 6
Pollutant Release and Transfer Register
Report for 2010

South Dublin County Council does not have any primary discharges in the County
The Primary discharge is monitored by Dublin City Council

Section 7
Pollutant Release and Transfer Register
Proposed for 2011

South Dublin County Council does not have any primary discharges in the County.
The Primary discharge is monitored by Dublin City Council

Section 8
Ambient Monitoring

N/A – The receiving waters are monitored by Dublin City Council

Section 9
Storm Water Overflows Identification and Inspection Report

A programme of inspections and surveys is being scheduled for March / April 2012 to examine each overflow with a view to upgrading and remediation.

No	Pumping Stations	Overflow	Comments
SDCCPS01	Lucan Spa PS	SDCCPS01a	Emergency
SDCCPS02	Lucan Low Level PS	SDCCPS02a	Emergency
SDCCPS03	Esker Lane PS	SDCCPS03a	Emergency
SDCCPS04	Quarryvale PS	SDCCPS04a	Emergency
SDCCPS05	Johnstown PS	SDCCPS05a	Emergency
SDCCPS06	Grange Castle PS	SDCCPS06a	Emergency
		SDCCPS07a	Emergency
SDCCPS07	Ballymanagan PS	SDCCPS07b	
SDCCPS08	Peamount PS	SDCCPS08a	Emergency

SDCCPS09	Newcastle PS	SDCCPS09a	Emergency
SDCCPS10	Tay Lane PS	SDCCPS10a	Emergency
SDCCPS11	Whitehall PS	SDCCPS11a	Emergency
SDCCPS12	Spawell PS	N/A – 3 Dwellings	3 Dwellings
SDCCPS13	King's Hospital PS	N/A	
SDCCPS14	Lynches Lane PS	N/A – Halting Site	Halting Site – New PS
SDCCPS15	Kishogue PS	N/A – Halting Site	Halting Site
SDCCPS16	St Brigids PS	N/A – 6 Dwellings	6 Dwellings
SDCCPS17	Belgard PS	N/A – Fire Station	Fire Stn
SDCCPS18	Ard Mor PS	N/A	
SDCCPS19	College Drive	N/A	Private
SDCCPS20	Dangan Park PS	Surface Water	S/W only
SDCCPS21	Tobermaclugg	SDCCPS21a	Emergency

Siphons

SDCCSN01	Lucan Siphon (Liffey) - St Eds Muncher	SDCCSN01a	Emergency
SDCCSN02	Templeogue Siphon (Dodder)	N/A	
SDCCSN03	Owendoor Siphon	N/A	
SDCCSN04	UCD (Belfield) Siphon	N/A	
SDCCSN05	Ringsend Siphon	N/A	
SDCCSN06	Kilvere	SDCCSN06a	Emergency

Overflows

SDCCSW015	Milltown Overflow	SDCCSW015	Emergency
SDCCSWO01	Perrystown Tank	SDCCSWO01	Emergency
SDCCSWO02	Treepark Road	SDCCSWO02	
SDCCSWO03	Airton Road	SDCCSWO03	
SDCCSWO04	Avonmore Road	SDCCSWO04	
SDCCSWO05	Brookfield Cottage	SDCCSWO05a SDCCSWO05b	
SDCCSWO06	Harris Trucks	SDCCSWO06	
SDCCSWO07	St Peter's Road	SDCCSWO07	
SDCCSWO08	Castle View Road	SDCCSWO08	
SDCCSWO09	Aylmer Road	SDCCSWO09	
SDCCSWO10	Kimmage Road West	SDCCSWO10	
SDCCSWO11	Springfield Avenue	SDCCSWO11	
SDCCSWO12	Loretto Terrace	SDCCSWO12	
SDCCSWO13	Oldcourt Manor	SDCCSWO13	
SDCCSWO14	Stewarts Hospital	SDCCSWO14	
SDCCSW016	Glenvara	SDCCSW016	
SDCCSW017	Mount Carmel	SDCCSW017	

Section 10
Reported Incidents

An incident is defined in the license as

(1) Any discharge that does not comply with the requirements of this license and,

(2) Any incident with the potential for the contamination of surface water or ground water, or posing an environmental threat to land, or requiring an emergency response by the relevant Water Services Authority.

Section 11
Improvements Programme

Pump Station	Description of Works	Benefits
Lucan Spa PS - Completed	Installation of Standby Generator (including extension to pump station to house generator)	Maintain pumping during mains power failure
Quarryvale PS - Completed	Upgrade of pump station. Replacement of pumps, installation of control room, new electrical panels, penstocks, inlet flowmeter, staircase, gas detection, lift equipment, air extraction.	More reliable pumping. Original pumps date back to 1984.
Lucan Low Level PS - Completed	Installation of Pump 3 (Chopper Type Pump).	Help prevent clogging at Lucan Low Level & Esker (as L.L.L. pumps directly into Esker.
Newcastle PS - Completed	Installation of Pump 3 (Chopper Type Pump).	Help prevent pump clogging at Newcastle
Rathcoole PS - Completed	Replacement of Pumps 1 & 2 with Chopper pumps	Help prevent pump clogging at Rathcoole
Ballymanaggin PS - Completed	Replacement of Pump 1 with Chopper pump	Help prevent pump clogging at Ballymanagan
Ballymanaggin PS - Completed	Replacement of Pump 2 with Chopper pump	Help prevent pump clogging at Ballymanaggin
St Brigid's Cottages PS - Completed	Replacement of Pumps 1 & 2 with Chopper pumps	Help prevent pump clogging at St Brigid's
Lucan Low Level PS – Out to Tender	Installation of Pump 4 (Chopper Type Pump).	Help prevent clogging at Lucan Low Level & Esker (as L.L.L. pumps directly into Esker.
Newcastle PS – Out to Tender	Installation of Pump 4 (Chopper Type Pump).	Help prevent pump clogging at Newcastle
Esker Lane PS— Out to Tender	Installation of 2 No. Macerators	Help prevent pumps clogging at Esker Lane
Whitehall Road PS—Out to Tender	Replace Pumps No.1 & 2	More reliable pumping. Existing pumps exceeded their economical life cycle.
Dodder Valley Trunk Sewer (DVS)-Completed	Diverted combined sewers from Butterfield Avenue at Kilvere Estate and Rathfarnham Shopping Centre to the DVS.	To prevent surcharge at manholes on Butterfield Ave. during heavy rain.
FOG (Fats, Oil & Grease) Programme-Started Feb. 2012	Licencing all Food Outlets ie restaurants, take-aways, canteens, etc	To prevent blockages and overflows in the foul sewerage network.

Section 12
Predicted Impacts Report

Section 13
Development / Infrastructure Works

Pump Station	Description of Works	Benefits
Various PS	**Rain Gauges**	**Design tool for future provision.**
Various CSOs	**CSO Overflow Monitoring - alarms at pumping stations & CSOs**	Monitoring sewerage overflows.
Various PS	**Inlet Flowmeters**	Monitoring purposes.
Ballymanaggin PS	**Standby Generator**	Maintain pumping during mains power failure
Quarryvale P.S	**Refurbishment - Phase 2**	Modernise equipment.

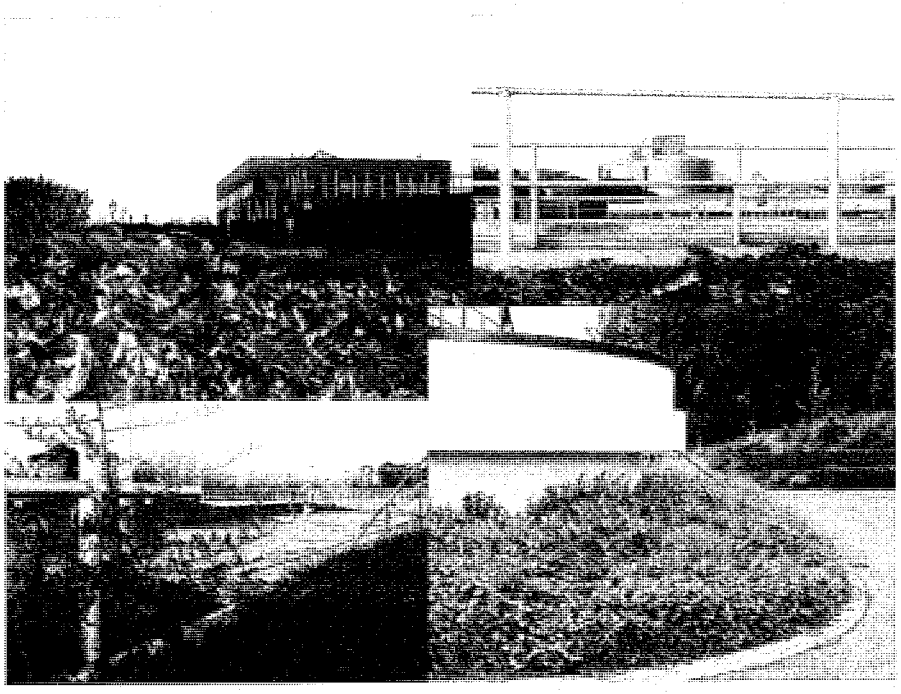
Section 14
Statement of Measures

Section 15
Predicted Impacts Assessment

Teresa Walsh
Director of Services

comhairle chontae na mí
meath county council

Ringsend
Waste Water Works



Annual Environmental Report

(Prepared by Joint licensee Meath County Council)

For

EPA Waste Water Discharge Licence D0034-01

01/01/2011 to 31/12/2011

Table of Contents

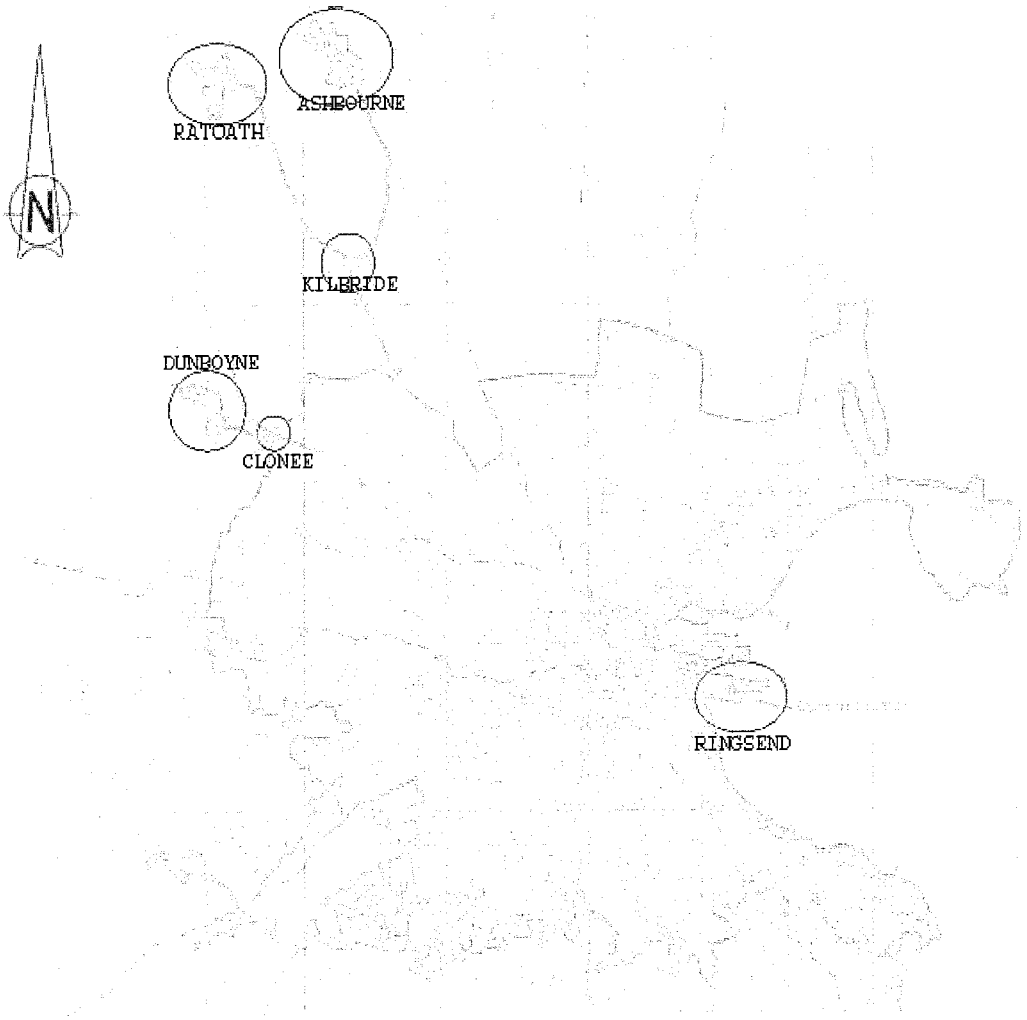
SECTION 1:
INTRODUCTION & BACKGROUND

SECTION 1: INTRODUCTION & BACKGROUND.

Meath County Council discharges waste water from Dunboyne, Clonee, Ashbourne, Ratoath and Kilbride into the Greater Dublin Area Agglomeration. For this reason it is joint licensee with Dublin City Council on EPA Waste Water Discharge licence D0034-01.

Waste water from Ratoath and Ashbourne is pumped to Kilbride and from Kilbride it is pumped into the Dublin Network. Dunboyne is gravity fed to Clonee and from Clonee it is gravity fed into the Dublin Network. The combined flows from Kilbride Pumping Station and the Clonee gravity sewer make up the "Total Meath Flow". For the purpose of this Annual Environmental Report (AER) only the "Total Meath Flow" will be reported.

MAP 1: Waste water from County Meath into the Greater Dublin Network.



SECTION 2:
MONITORING REPORTS SUMMARY.

SECTION 2: MONITORING REPORTS SUMMARY.

Section 2.1: Summary Report on Monthly Influent Monitoring.

The *Summary Report on Monthly Influent Monitoring* will be prepared by the Lead Licensee Dublin City County Council.

Section 2.2: Discharges from the Agglomeration Report.

The *Discharges from the Agglomeration Report* will be prepared by the Lead Licensee Dublin City County Council.

Section 2.3: Ambient Monitoring Summary Report.

The *Ambient Monitoring Summary Report* will be prepared by the Lead Licensee Dublin City County Council.

Section 2.4: Data Collection and Reporting Requirements under the Urban Waste Water Treatment Directive

The *Data collection and reporting requirements under the Urban Waste Water Treatment Directive* will be carried out by the Lead Licensee Dublin City County Council.

Section 2.5: Pollutant Release and Transfer Register (PRTR) Report 2010

The *Pollutant Release and Transfer Register (PRTR) Report 2010* will be prepared by the Lead Licensee Dublin City County Council.

SECTION 3:
OPERATIONAL REPORTS SUMMARY

SECTION 3: OPERATIONAL REPORTS SUMMARY

Section 3.1: Complaints Summary

There were no complaints recorded in the Meath catchment areas serving Ashbourne, Ratoath, Kilbride, Clonee and Dunboyne during the reporting period 01/01/11 to 31/12/11.

Section 3.2: Reported Incidents Summary

There were no incidents recorded in the Meath catchment areas serving Ashbourne, Ratoath, Kilbride, Clonee and Dunboyne during the reporting period 01/01/11 to 31/12/11.

SECTION 4:

INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

SECTION 4: INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

Section 4.1 Treatment Capacity (Meath County Council Contribution)

Table 1: Total Meath Flows (Influent and Storm)		
Start Date:	01/01/11	
End Date:	31/12/11	
Measurement Method:	Flow Meter	
Flows	***Kilbride*** Note 1	***Clonee*** Note 2
Total Annual Flow (m^3/a)	1,256,063	429,532
Total Annual Storm Flow (m^3/a) Note 3	125,606	42,953
Average Daily Flow (m^3/d)	3,441	1,177
Combined Flow – Total Meath Flow (m^3/d)	4,618	
Population Equivalent (p.e.)		
Estimated Influent BOD (mg/l)	240	
Capita Contribution (BOD/h/d)	60	
Population Equivalent (p.e.) Note 4	***18,472***	

Comments:

Note 1: *Total flows from Ashbourne, Ratoath & Kilbride Pumping Stations.*

Note 2: *Total flows from Clonee & Dunboyne Gravity Feed.*

Note 3: *Storm flows are estimated at 10% of the total influent flow.*

Note 4: *p.e. calculations = ((BOD x Daily Flow)/60)*

Section 4.2: *Storm water overflow identification and inspection report*

As part of future capital schemes Meath County Council hopes to prepare a *Storm water overflow identification and inspection report* for the following;

- Ashbourne, Ratoath and Kilbride wastewater scheme.
- Clonee and Dunboyne wastewater scheme.

When undertaken a copy of the resultant reports will be provided to Dublin City Council.

Section 4.3: *Report on progress made and proposals being developed to meet the improvement programme requirements.*

In 2010 Meath County Council completed a major capital upgrade project, the "Ashbourne / Ratoath / Kilbride Sewerage Scheme – Phase 2". Under this project approximately €14m was invested in a substantial upgrade of the sewer networks in both Ashbourne and Ratoath. Major works were carried out to the Ashbourne, Ratoath and Kilbride Pumping Stations. New storm detention tanks were also constructed at Ashbourne and Ratoath Pumping Stations. As a result, capacity has been substantially increased.

In relation to Ashbourne, Ratoath and Kilbride a major wastewater network rehabilitation contract valued at approximately €2m was recently awarded and work on this project is expected to be completed by mid 2013. Under this contract extensive sewer network repairs will be undertaken in an effort to significantly reduce infiltration and hence hydraulic loading . These works when complete will further improve capacity and further reduce the risk of hydraulic surcharging/overflow.

The Dunboyne and Clonee wastewater scheme generally functions satisfactorily with no significant capacity constraints. In this regard, Meath County Council has no plans to undertake any notable capital upgrade works to this scheme.

SECTION 5:
ENVIRONMENTAL LIABILITY AND FINANCIAL PROVISIONS

SECTION 5: ENVIRONMENTAL LIABILITY AND FINANCIAL PROVISIONS

Section 5.1: Statement of Measures

The *Annual Statement of Measures Report* will be prepared by the Lead Licensee Dublin City Council. If required Meath County Council will assist Dublin City Council in the preparation of this report.

Section 5.2: Environmental Liabilities Risk Assessment

Attached is a copy of the public liability insurance policy issued by Irish Public Bodies (IPB) to Meath County Council. Meath County Council is currently endeavouring to determine if any amendments are required to this policy arising out of the ELRA required under the discharge license. Following a recent meeting between the EPA and the Licensees (Dublin City Council, Dún Laoghaire Rathdown County Council, South Dublin County Council, Fingal County Council and Meath County Council), it was agreed that a unified approach was appropriate concerning the completion of the ELRA process for the agglomeration. Progress has been made by the Licensees in carrying out the ELRA pertaining to the portion of the agglomeration relating to their own functional areas. However a specific ELRA exercise has to be carried out for the Ringsend Wastewater Treatment Plant. Dublin City Council is currently liaising with the plant operator and expects shortly to arrive at an agreement on how this is to be achieved. It is then intended to arrange a meeting between the Licensees, the relevant insurance company and the EPA to agree on the most effective means of completing the ELRA process with a view to having the required measures for the agglomeration in place for the 2012 AER.

See Attachment 1: Public Liability Insurance Policy issued by Irish Public Bodies (IPB)

SECTION 6:
LICENCE SPECIFIC REPORTS

SECTION 6: LICENCE SPECIFIC REPORTS

Section 6.1: Priority Substances Assessment Report

The Lead Licensee (Dublin City County Council) is responsible from preparing the *Priority Substances Assessment Report*. If required Meath County Council will assists in the preparation of this report.

Section 6.2: Drinking Water Abstraction Point Risk Assessment Report

The Lead Licensee (Dublin City County Council) is responsible from preparing the *Drinking Water Abstraction Point Risk Assessment Report*. If required Meath County Council will assists in the preparation of this report.

Section 6.3: Habitats Impact Assessment Report

The Lead Licensee (Dublin City County Council) is responsible from preparing the *Habitats Impact Assessment Report*. If required Meath County Council will assists in the preparation of this report.

Section 6.4: Shellfish Impact Assessment Report.

The Lead Licensee (Dublin City County Council) is responsible from preparing the Priority *Shellfish Impact Assessment Report*. If required Meath County Council will assists in the preparation of this report.

Section 6.5: Toxicity / Leachate Management Report

The Lead Licensee (Dublin City County Council) is responsible from preparing the *Toxicity / Leachate Management Report*. If required Meath County Council will assists in the preparation of this report.

SECTION 7:
CERTIFICATION AND SIGN OFF

SECTION 7: CERTIFICATION AND SIGN OFF

As required under EPA Waste Water Discharge Licensing, I certify that the above report is true and accurate.

Prepared By:	**Enda Collins** A/O&M Manager Environment and Water Services Dept. Meath County Council	*Signed:* *Date:*
Approved By:	**Tadhg McDonnell** Director of Services Environment and Water Services Dept. Meath County Council	*Signed:* *Date:*

SECTION 8:
APPENDIX

SECTION 8: APPENDIX

a) Attachment 1: Public Liability Insurance Policy issued by Irish Public Bodies (IPB)

IRISH PUBLIC BODIES

Public Liability
Evidence of Cover

Client:	Meath County Council
Client Number:	00100830
Policy Number:	IPL0000850
Renewal Date:	1st January 2013

- To Whom It May Concern -

Insured: **Meath County Council**

This is to confirm that the above numbered policy is in force to cover all the activities of the Insured.

The limit of indemnity provided is € 9,600,000 any one accident.

Cover provided is subject to the Terms, Conditions, Exceptions and Endorsements of the Policy.

John Sheridan
Underwriter
T: +353 1 6395 549
F: +353 1 6395 510
Email: John.Sheridan@ipb.ie