

Administration
Environmental Licensing Programme,
Office of Climate, Licensing & Resource Use,
Environmental Protection Agency
Headquarters
PO Box 3000
Johnstown Castle Estate
County Wexford.

27th June 2008

RE:- WWDL FOR RINGASKIDDY REF NO.D0057-01.

Response to Notice in accordance with Regulation 18(3)(b) of the Waste Water Discharge (Authorisation) Regulations 2007 – dated 04 April 2008

Dear Ms Donlon,

I refer to your letter of the 4th April 2008 concerning above. The following is our reply to your request for further information in accordance with Regulation 18(3) (b) dealing in numbered sequence with the points raised.

- 1. Confirm the name of the agglomeration to which this Waste Water Discharge License application relates.*

Response:

The name of the agglomeration is: **Crosshaven-Carrigaline-Ringaskiddy**

- 2. Reassess the information submitted in relation to the extent of the agglomeration, having regard to the definition of agglomeration provided in the regulations. Submit a revised map as specified in the application form with a justification for the boundaries of the agglomeration. Revise the application as necessary where changes to the agglomeration are proposed.*

Response:

The information submitted in relation to the extent of the Crosshaven-Carrigaline-Ringaskiddy agglomeration is based on the extent of the existing collection system, controlled by Cork County Council, which has its discharge point in the Cork Lower Harbour i.e. the Primary discharge Point.

The extent of the agglomeration does not take into account any changes proposed to the collection system or wastewater treatment in the Lower Harbour Main Drainage Scheme and therefore does not include areas proposed to be connected to the collection system e.g. Ringaskiddy Village, Passage West, Monkstown, and Cobh. Accordingly the Maps submitted – attachments B1 have not been revised.

3. Confirm whether a foreshore licence(s) exists in relation to discharges.

Response:

We are not aware if an active foreshore licence exists in relation to the primary discharge. It appears from the old files in this office that a foreshore licence was granted to the IDA for the discharge pipe in July 1982. The licence was to remain in force for a period of 10 years. We do not know if the licence was renewed or transferred to Cork County Council.

See attachment no. 1:- List of foreshore licences for the Ringaskiddy Area from the Dep. of Communications and Natural Resources.

4. Where planning permission has been granted for development(s), but said development has not been commenced or completed to date, within the boundary of the agglomeration and this development is being, or is to be, served by the waste water works provide the following;

- a. information on the calculated population equivalent (p.e.) to be contributed to the waste water works as a result of those planning permissions granted,**
- b. the percentage of the projected p.e. to be contributed by the non-domestic activities, and**

the ability of the waste water works to accommodate this extra hydraulic and organic loading without posing an environmental risk to the receiving water habitat.

Response:

For developments not completed the estimated population equivalent is 900 of which 10% will be non-domestic.

It is proposed to construct a new WWTP at Shanbally which will treat all the Wastewater from the Lower Harbour Area as detailed in the EIS

5. State whether Regulation 17 applies to the application. If Regulation 17 applies submit a copy of the environmental impact statement (EIS) for the Lower Harbour Sewage Scheme and approval or provide details of the likely environmental consequences of discharges.

Response:

Regulations 17 applies. A copy of EIS was sent to EPA in March 2008. The EIS is currently with An Bord Pleanala for their consideration and assessment

6. *Based on existing monitoring data and assessments, give details of the current quality of Cork Harbour in the vicinity of discharges.*

Response:

See Attachment No. 2:-Tables and Maps.

7. *Complete Table D.I(i)(a), (b) and (c) for the proposed primary discharge and Table D.I.(ii) (a), (b) and (c) for any proposed secondary discharges.*

Response:

See Attachment No.3:- Table D1 revised

8. *Give details of protected areas in the vicinity of discharges and assess the impact of discharges on such protected areas. Provide details of any correspondence engaged in with the National Parks and Wildlife Service in relation to a determination as to the likelihood of discharges from the waste water works having a significant effect on a European site. If the discharges are deemed likely to have a significant effect an appropriate assessment of the implications for the designated site in view of the sites conservation objectives must be carried out. Any assessment, should it be deemed necessary, shall be submitted as part of the reasoned response to this notice.*

Response:

See Attachment No. 4:- Maps and copy of correspondence

9. *Give particulars of the location of the nearest bathing and shellfish waters or other designated areas and assess the impact of discharges on such areas.*

Response:

Drawing No 15 attached is a location map showing the location of the nearest waters used by members of the public for bathing. With the possible exception of White Bay these are not generally recognised. I am not aware of any environmental impact associated with the discharge at these locations. The bathing area in Fountainstown is only one designated bathing waters in Cork Harbour.

There are no designates shellfish water in Cork Harbour. Drawing No 16 shows the location of proposed designated shellfish waters and the areas used for shellfish production.

See attachment No.5: Drawing No's 15 and 16

10. *Describe existing or proposed measures to prevent unintended waste water discharges.*

Response:

The new WWTP, not yet designed, will include measures to prevent unintended waste water discharges.

11. Provide a proposed monitoring of discharges programme.

Response:

See attachment No.6:- Copy of E2

12. Provide information that demonstrates that the existing and proposed storm water overflows will comply with the DoEHLG 'Procedures and Criteria in Relation to Storm Water Overflows, 1995'. Where the storm water overflow does not comply with these guidelines, give details of the plans for improvement.

Response:

This query does not apply to the existing system. "Formula A" was examined in relation to all relevant pumping stations and a pump forward of 6 DWF was adopted in all cases. Where necessary due to the location of the pumping station or the sensitivity of the receiving waters, separate storage tanks are proposed to store the "first foul flush" volume.

13. Give details of necessary work to meet the discharge standard and a timeframe and schedule for such work.

Response:

The recommendation for the Ringaskiddy catchment, including Shanbally and Coolmore, require 7.4km of new foul gravity sewers ranging in diameter from 225mm to 525mm at an estimated cost of €1.8million.

An 80,000 p.e. conventional activated sludge treatment plant will treat the waste water. The plant, to be constructed in Shanbally, will include an anaerobic sludge digestion unit and a sludge drying unit. The total cost of the plant is estimated at €26.0 million and is due for completion in 2013.

I trust the above answers the queries you have raised

Yours sincerely,

Patricia Power
Director of Services

List of Attachments

- A Revised Executive Summary (Section A)
- B
 - 1 List of Foreshore Licences in Ringaskiddy Area
 - 2 Tables of monitoring data as supplied by EPA together with map of monitoring locations.
 - 3 Table D revised
 - 4 Maps and copy of correspondence with National Parks & Wildlife Service.
 - 5 EPA bathing water maps – Drawing No. 15 & 16
 - 6 Copy of E2

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Section A – Non-Technical Summary **Revised**

Revised 19 May 2008.

1. Description of Crosshaven-Carrigaline-Ringaskiddy Agglomeration

The agglomeration, for which this application is sought, comprises a number of distinct areas linked by one sewer collection system. The agglomeration is made up of the village of Crosshaven, the town of Carrigaline, the village of Shanbally and also includes treated trade effluent from a number of industries in the Ringaskiddy area. It does not include the village of Ringaskiddy which has a separate collection system and discharge point.

Wastewater collected in Crosshaven is pumped to the sewerage system in Carrigaline. All wastewater collected in Carrigaline [including Crosshaven] is pumped through the Coolmore Pumping Station at Church road, Carrigaline to a trunk sewer at Raheens, where it is flows by gravity to the discharge point in Lower Cork Harbour. The outfall pipe extends approximately 2.6 km from the shore to the discharge point which is at a depth of approximately 30 m below sea level.

There is also a small collection system and pumping station in Shanbally village [PE approximately 360] which conveys effluent to the trunk sewer.

A number of industrial plants also discharge treated effluent into this sewer before discharge.

1.1. Crosshaven.

Crosshaven is located at the mouth of the Owenboy River estuary and the lower reaches of Cork Harbour. It has a population of 1,669 [Census 2006]. Prior to the recent Crosshaven Sewerage Scheme being constructed, no effluent treatment was provided in the area, resulting in several main outfalls as well as an additional 30 minor outfalls discharging untreated sewage to the Owenboy River. In order to deal with this problem Cork County Council have constructed interception sewers and pumping facilities which connect Crosshaven to the Carrigaline sewer network system at Kilnaglery bridge.

1.1.1. Pumping Station 1 at The Square, Crosshaven PS1

All incoming flows from east of Crosshaven village gravitate to PS1 at The Square and are pumped forward to an existing sewer manhole. There is a gravitational flow from this point to Pumping Station 2 at The Glen. Storm holding facilities are incorporated in the design of pumping station PS1, with storm pumps to cater for excess flows, with discharge to the estuary.

1.1.2. Pumping Station 2 at The Glen, Crosshaven. PS2

Flows from the catchment west of Crosshaven village and from PS1 are connected to PS2 by gravity sewers. Wastewater is pumped through twin rising mains from PS2 to Kilnaglery Bridge in Carrigaline where it enters a gravity sewer and flows to Coolmore Pumping Station.

Storm holding facilities are incorporated in the design of PS2, with a high level emergency overflow. Screens are in place prior to overflow. No overflow events have been experienced since the pumping station was commissioned.

1.2. Carrigaline

The town of Carrigaline is situated approximately 12 km from Cork City at the eastern end of the Owenboy River and covers an area of approximately 375 ha. The current population according to Census 2006 is 12,835. The town has experienced rapid growth over the last fifteen years due to its proximity to Cork City and Ringaskiddy, which are the main centres of employment.

The existing collection basically comprises a northern interceptor sewer and a southern interceptor sewer, running east on both sides of the Owenboy river to the main pumping station at Church Road viz. 'Coolmore Pumping Station'.

The northern interceptor sewer collects wastewater from north of the Owenboy river. The southern interceptor conveys wastewater from the southern side of the river and crosses the estuary to join the northern interceptor sewer approximately 1.3 km east of Carrigaline Bridge. This sewer then enters the Coolmore Pumping Station at Church Road.

There are two smaller pumping stations in Carrigaline which pump central low lying catchments on both sides of the Owenboy river into the interceptor sewers i.e. Old Waterpark SPS on the northern side and Crosshaven road SPS on the southern side.

All wastewater from Carrigaline and Crosshaven is pumped from the Coolmore pumping station via twin rising mains to the main gravity sewer serving the Industrial Development Authority (IDA) industrial lands at Ringaskiddy ['IDA sewer'].

1.2.1. Old Waterpark Pumping Station

The Old Waterpark Pumping Station has 2 Duty/standby foul pumps and 2 Duty/standby storm pumps and a 70 m³ storm holding tank. The pumping station is intended to operate so that influent flows in excess of the capacity of the foul pumps, would overflow into the storm holding tank. A flap valve is incorporated in the holding tank to return stored effluent to the foul sump when the level in the foul sump returns to normal operating levels. An overflow from the storm holding tank discharges to the storm pump sump. During low tide any overflow would discharge directly to the river. At high tides the storm pumps are intended to lift the overflow to a header chamber above high tide level.

1.2.2. Crosshaven Road Pumping Station

The Crosshaven Road Pumping Station serves the south-central portion of the town. The pumping station pumps the incoming flow via a 200mm diameter rising main to a manhole on the southern interceptor sewer. The pumping station has a wet well/dry well arrangement with two foul pumps (1 duty, 1 standby). There is an emergency overflow from the wet well.

1.2.3. Coolmore Pumping Station

Coolmore Pumping Station is the main pumping station serving Carrigaline. It is located on the northern side of the Owenboy River on the eastern outskirts of the town. Flows entering the pumping station are pumped through twin 500 mm diameter rising mains to the main gravity foul sewer serving the I.D.A industrial estate at Ringaskiddy.

The pumping station is a wet well/dry well structure with a Comminutor chamber immediately upstream of the wet well. There are four foul pumps which operate as 2 duty and 2 standby.

1.3. Shanbally.

A pumping station at Shanbally conveys effluent from the village [PE 360] to a 225mm diameter sewer which gravitates to the 'IDA sewer'. The pumping station consists of a duty/standby set of submersible pumps.

1.4. Ringaskiddy

Ringaskiddy is situated approximately 16km from Cork City, in the south-west of the Lower Harbour. Development of the Industrial Development Authority [IDA] land in the catchment, an area of approximately 400ha, has resulted in a number of pharmaceutical companies locating there. Discharges from industries in the area are governed by IPC licences issued by the EPA or licences issued by Cork County Council. Treated trade effluent from a number of industries in the area discharges into the common IDA trunk sewer which flows by gravity through the Ringaskiddy screening plant and discharges through a long sea outfall pipe in Cork Harbour. The screening plant was enclosed in a building in the late 1980s in order to eliminate odour problems.

The outfall pipe consists of a 1400 mm internal diameter continuously welded steel pipe with diffuser discharge. The outfall pipe discharges approximately 2.6 km from the shore near the Dognose Bank at a depth of approximately 30 m below sea level. There is also a flushing system to keep the outfall pipe clear. This consists of a flushing pump which extracts sea water and pumps it at a rate of 1200 litres per second into the trunk sewer upstream of the outfall. At present the flushing pump is operated for one hour each day at high tide thus pumping approximately 4320 m³ of sea water per day.

As part of the Lower Harbour Main Drainage Scheme it is proposed to provide a Wastewater Treatment Plant to treat all wastewater in the agglomeration as well as wastewater from Ringaskiddy Village, Monkstown, Passage West and Cobh. It is proposed to discharge the treated effluent into the existing IDA sewer to discharge through the existing long sea outfall pipe into Cork Lower Harbour.

2. Sources of Emissions

Emissions from this agglomeration arise from the following areas:

Domestic Loading

-Existing Population

Non Domestic Loading

-Commercial

-Industrial

-Institutional

2.1. Domestic Loading/ Emissions.

The following Population figures are used to estimate the domestic loading:

Crosshaven: 1,669 [Census 2006]

Carrigaline: 12,835. [Census 2006]

Shanbally: 360 [estimated from house count].

Total Population for the Agglomeration: 14,864.

2.2. Non domestic loading/emissions.

Non Domestic Loading arises from discharges from industry.

A number of industries in the catchment are licensed to discharge effluent - either by the EPA or by Cork County Council.

The Population Equivalent [PE] of the licensed discharges is estimated to be 82,692
The total PE of current discharges is 97,556.

3. The Nature and Quantities of Foreseeable Emissions

It is expected that the domestic loading will increase with the further development of land zoned for housing and consequent increase in population in the agglomeration. There is also potential for further industrial development in zoned land and consequent increase in non domestic emissions. As part of the Cork Harbour Main Drainage Scheme it is proposed to increase the discharge through the primary discharge [existing outfall pipe] by incorporating the sewerage schemes from Passage West , Monkstown, and Cobh areas. However, as a wastewater treatment plant is proposed, it is expected that overall BOD loadings will be reduced.

4. Environmental Impacts

There is no observed long term impacts associated with the discharges from this agglomeration. It is estimated that there is approximately 1,300 dilutions available in the receiving waters at the lowest tide level for the current average daily discharge flow for the primary discharge point.

McDonald Pettit, Consulting Engineers for Cork County Council have prepared an Environmental Impact Statement for the proposed wastewater treatment plant. Cork County Council has submitted the EIS to An Bord Pleanala.

5. Proposed Technology and Other Techniques for Preventing or, Where This Is Not Possible, Reducing Emissions from the Waste Water Works.

Cork County Council recognises the need for improvement in the existing sewerage system and facilities. In 2000, Cork County Council appointed E G Pettit & Company to prepare a Preliminary Report for the Cork Lower Harbour Area which would make recommendations concerning the collection and treatment of wastewater from the population centres of Cobh, Passage West, Monkstown, Carrigaline and Ringaskiddy. A central part of the Cork Harbour Main Drainage Scheme is the proposal to provide a Wastewater Treatment Plant to treat all currently untreated wastewater arising in this agglomeration as well as wastewater from Ringaskiddy Village, Monkstown, Passage West and Cobh. It is proposed to discharge the treated effluent into the existing foul sewer to discharge through the existing long sea outfall pipe into Cork Lower Harbour. An advance contract of this scheme has already been put in place i.e. the collection and pumping of wastewater from Crosshaven to Carrigaline, which has eliminated a number of discharge points.

6. Further measures planned to comply with the general principle of the basic obligations of the operator, i.e., that no significant pollution is caused

Some upgrading of existing pumping stations and screening is proposed. Nutrient removal is not being proposed as the receiving waters are not designated sensitive.

7. Measures planned to monitor emissions into the environment

The flow of the primary discharge is monitored. There is also a refrigerated composite sampler located at the outfall building.

FileRef	Dated	County	Location	Section	Particulars	Customer	term	EffectiveFrom	Rental1	Rental2
MS51/8/322	04/11/1953	Cork	Crosshaven	Licence	sewage outfall pipe on state foreshore.	Cork County Council	99	04/11/1953	€ 0.63	Per annum
MS51/8/1194	03/07/2003	Cork	Crosshaven, Co. Cork	Licence	usage and maintenance of two emergency	Cork County Council	35 years	03/07/2003	€ 10,693.75	Once-off
MS51/8/1194	03/07/2003	Cork	Crosshaven, Co. Cork	2	Crosshaven Sewerage Scheme	Cork County Council	35 years	03/07/2003	€ 10,693.75	payment plus €1.00 p/a if
MS51/8/1198		Cork	Loughbeg, Ringaskiddy	Licence	protection works, & maintenance of	Ireland Parmaceutic als	35 years		€ 950.00	payment plus €1.00 p/a if
MS51/8/1174	14/05/2002	Cork	Raffeen, Co. Cork	10	Raffeen Landfill Site - Sea Outfall Pipe	Cork County Council	n/a	14/05/2002	€ 0.00	
MS51/8/902	11/05/1995	Cork	Ringaskiddy	2	waste water treatment plant and storm water	Ireland Parmaceutic als	35 years	01/05/1995	€ 317.43	Pe yr with 5-yr reviews
MS51/8/249	04/11/1953	Cork	Ringaskiddy	Licence	sewage outfall pipe on state foreshore.	Cork County Council	99	04/11/1953	€ 0.63	Per annum
MS51/8/393	14/06/1966	Cork	Ringaskiddy	Licence	tank wall and laying sewage pipe at foreshore	Cork County Council	99	15/10/1965	€ 1.27	Per annum
MS51/8/1069	01/09/1998	Cork	Ringaskiddy	Licence	surface water from 2 outfall pipes to be	Lambert Export Limited	10 years	01/09/1998	€ 1,269.73	payment plus €1.26 p/a if
MS51/8/931	30/09/1992	Cork	Ringaskiddy,	Licence	maintaining a storm water outfall pipe	ADM - Ringaskiddy	35 years	30/09/1992	€ 10.15	with 5-yearly reviews
MS51/8/715	20/07/1982	Cork	Ringaskiddy,	Licence	maintaining & using a flushing water intake	Industrial Development Authority	10 years	20/07/1982	€ 1.26	with 7-yearly reviews

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Waterbody	RBD	Typology	Monitoring	Location	Site	X	Y			
Cork Harbour	SWRBD	CW8	SM	Ringaskiddy	LE380	178455.9	65093.0	51° 50' 16.080" N	8° 18' 45.360" W	
Cork Harbour	SWRBD	CW8	SM	Adjacent to Aghada	LE610	183315.7	65374.9	51° 50' 25.800" N	8° 14' 31.560" W	
Cork Harbour	SWRBD	CW8	SM	E Spike Island	LE620	181853.1	64946.1	51° 50' 11.760" N	8° 15' 47.880" W	
Outer Cork Harbour	SWRBD	CW5	OP	Adjacent to Carlisle Fort	LE630	181449.5	62043.8	51° 48' 37.800" N	8° 16' 8.400" W	
Outer Cork Harbour	SWRBD	CW5	OP	Roches Point	LE810	181703.2	59751.0	51° 47' 23.640" N	8° 15' 54.720" W	
Outer Cork Harbour	SWRBD	CW5	OP	Myrtleville	LE820	181055.2	58051.2	51° 46' 28.560" N	8° 16' 28.200" W	
Cork Harbour	SWRBD	CW8	SM	Ringaskiddy	LE380	178455.9	65093.0	16.080" N	45.360" W	

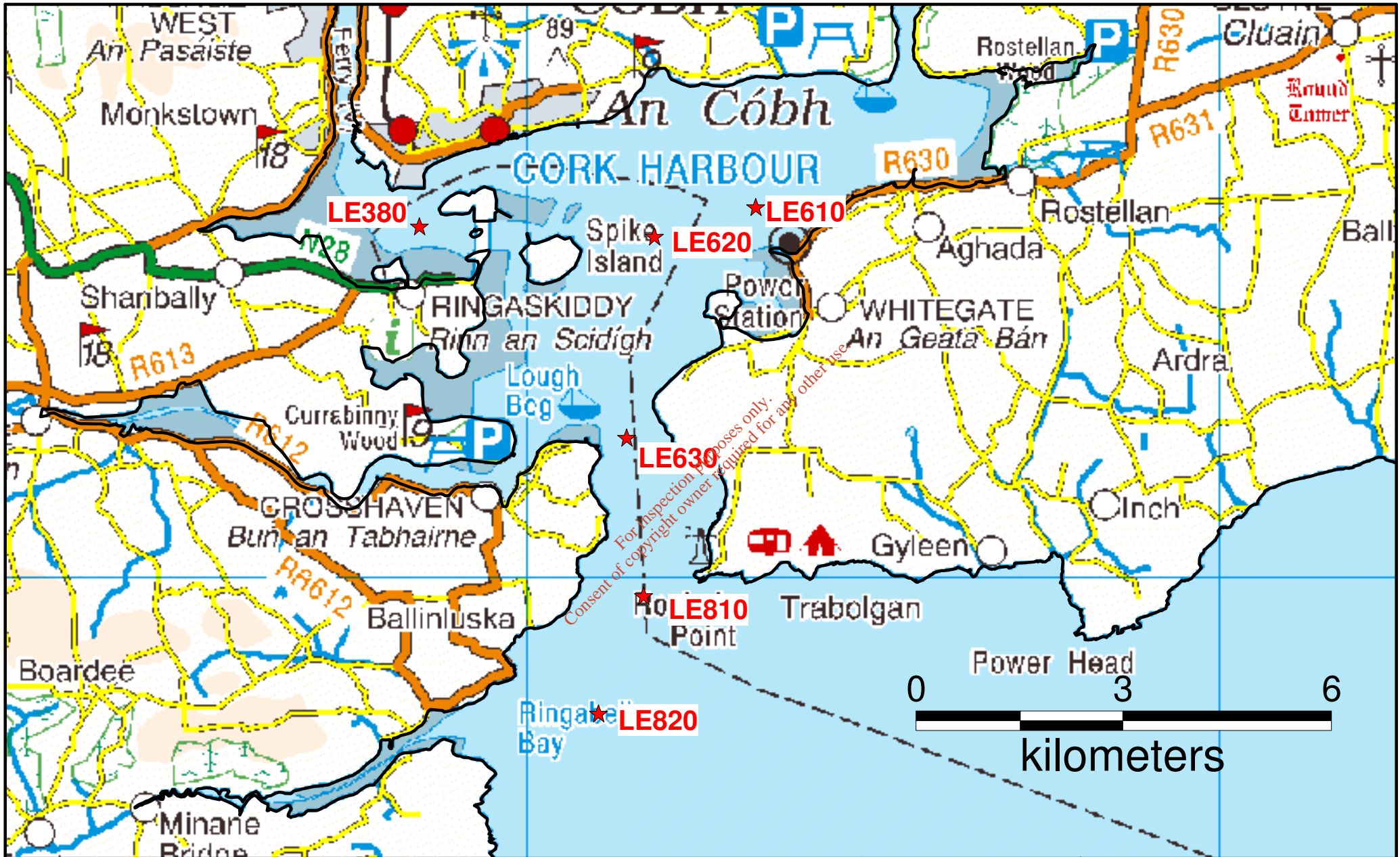
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Cork Harbour		SWRBD	CW8	SM Ringaskiddy LE380		178455.9	65093.0	51° 50' 16.080° N	8° 18' 45.360° W		
Station No	Sample Label	Survey Date	Salinity S ‰		DO S % Sat	B.O.D. mg/l O2	DIN mg/l N	PO4 µg/l P	Chlorophyll a mg/m	Season	
LE380	LE380/S	05/07/2004	32.46		81.8		0.198	9.99	3.2432432	S	
LE380	LE380/B	05/07/2004	32.72		82.7		0.2	9.99	4.972973	S	
LE380	LE380/R/S	05/07/2004	30.07		91	1.9	0.453	13	2.4864865	S	
LE380	LE380/R/B	05/07/2004	32.8		90.7	1.3	0.209	9.99	5.4594595	S	
LE380	LE380/S	01/06/2005	29.69		93.4		0.705	33	4	S	
LE380	LE380/B	01/06/2005	33.8		95.7				5.8	S	
LE380	LE380R/S	01/06/2005	31.63		96.3				5.1	S	
LE380	LE380R/S	01/06/2005	33.52		96.4		1.207	34	n/a	S	
LE380	LE380/S	11/07/2005	33.3			1.7	0.371	30	6.7	S	
LE380	LE380/B	11/07/2005	33.5				1.155	9.99	4.7	S	
LE380	LE380/SR	11/07/2005	31.2			1.4	0.382	13	11.2	S	
LE380	LE380/BR	11/07/2005	32.9				0.48	9.99	7.9	S	
LE380	LE380C	22-May-06	19.67		91.1	0.999	0.73	176	4.4	S	
LE380	LE380C	22-May-06	33.67		89		0.73	176	4.4	S	
LE380	LE380SR	22-May-06	24.78		91.8	1	0.718	170	7.4	S	
LE380	LE380BR	22-May-06	32.86		89.2	0.999	0.246	9.9	6.4	S	
LE380	LE380S	21-Jun-06	32.02		94	2.6	0.842	10	16.2	S	
LE380	LE380B	21-Jun-06	34.42		91.5	2.1	0.069	9.9	8.1	S	
LE380	LE380SR	21-Jun-06	33.17		99.1	2.5	0.149	9.9	2.3	S	
LE380	LE380BR	21-Jun-06	34.25		94.4	2.3	0.069	9.9	1.1	S	
LE380	LE380S	19-Jul-06	33.92		112.8	2.5	0.0379	9.9	7.4	S	
LE380	LE380B	19-Jul-06	34.18		108.5	1.4	0.0469	9.9	7.2	S	
LE380	LE380SR	19-Jul-06	33.4		118.6	2.8	0.053	9.9	9	S	
LE380	LE380BR	19-Jul-06	33.6		113.3	1.8	0.045	9.9	6.4	S	
LE380	LE380C	11-Jun-07	32.3		120.1	1.4	0.123	9.9	15.6	S	
LE380	LE380SR	11-Jun-07	33.02		119.2	2.4	0.073	9.9		S	
LE380	LE380BR	11-Jun-07	33.62			2.1	1.329	9.9		S	
LE380	LE380C	09-Jul-07	30.62		113.8	1.2	0.1999	9.9	5.7	S	
LE380	LE380C	09-Jul-07				1.2	0.1999	9.9	5.7	S	
LE380	LE380SR	09-Jul-07	32.08		113.9	1.9	0.1699	9.9	2.5	S	
LE380	LE380BR	09-Jul-07	33.05		108		0.0899	9.9	2	S	
LE380	LE380S	20-Aug-07	32.14		104.2	0.99	0.276	16		S	
LE380	LE380B	20-Aug-07	34.13		100.3	0.99	0.188	11		S	
LE380	LE380CR	20-Aug-07	29.54		111.5	0.99	0.444	18		S	
LE380	LE380CR	20-Aug-07	31.76		102	0.99	0.444	18		S	
		Average	32.05264706		100.4894	1.65832	0.3828	27.7712121	6.1915058		
		Median	32.83		96.4	1.4	0.209	9.99	5.7		
		95%			89.22						
		5%			88.96						
		90%							2.4305405		
LE380	LE380C	28-Feb-07	23.09		93		1.23	28	1.2	W	
LE380	LE380C	28-Feb-07	31.48		89.9		1.23	28	1.2	W	
		Average	27.285		91.45		1.23	28	1.2		
		Median	27.285		91.45		1.23	28	1.2		
		95%			90.055						
		5%			92.845						
		90%							1.2		
Cork Harbour		SWRBD	CW8	SM Adjacent to Aghada LE610		51° 50' 25.800° N	8° 14' 31.560" W	51.840500	-8.242100		
Station No	Sample Label	Survey Date	Salinity S ‰		DO S % Sat	B.O.D. mg/l O2	DIN mg/l N	PO4 µg/l P	Chlorophyll a mg/m	Season	
LE610	LE610/C	11/07/2005	34.4				0.309	9.99	2.5	S	
LE610	LE610/SR	11/07/2005	33.2				0.24	9.99	10.9	S	
LE610	LE610/BR	11/07/2005	34.2				0.243	9.99	3.4	S	
LE610	LE610C	21-Jun-06	33.66		94.2		0.066	9.9		S	
LE610	LE610C	21-Jun-06	34.43		92		0.066	9.9		S	
LE610	LE610C	19-Jul-06	34.87		99.1	1.1	0.1089	9.9	8	S	
LE610	LE610C	19-Jul-06					0.1089	9.9	8	S	
LE610	LE610S	09-Jul-07	33.87		107.8		0.0499	9.9		S	
LE610	LE610B	09-Jul-07	34.65		103.7		0.0699	9.9		S	
LE610	LE610S	20-Aug-07	34.15		100.4		0.1369	10	153	S	
LE610	LE610B	20-Aug-07	35.1		nr		0.0909	13	0.8	S	
		Average	34.253		99.53333	1.1	0.1354	10.2154545	26.657143		
		Median	34.3		99.75	1.1	0.1089	9.9	8		
		95%			92.55						
		5%			106.775						
		90%							1.82		

Station No	Sample Label	Survey Date	Salinity S ‰	DO S % Sat	B.O.D. mg/l O2	DIN mg/l N	PO4 µg/l P	Chlorophyll a mg/m ³	Season
Cork Harbour									
SWRBD CW8			SM E Spike Island LE260	51° 50' 11.760" N	8° 15' 47.880" W	51.836600	-8.263300		
LE620	LE620/S	05/07/2004	33.37	82.9		0.103	9.99	2.0810811	S
LE620	LE620/B	05/07/2004	34.64	85.2		0.049	9.99	2.8918919	S
LE620	LE620/R/S	05/07/2004	32.79	92.4		0.172	9.99		S
LE620	LE620/S	01/06/2005	33.22	96.1	1.4	0.387	21	1.3	S
LE620	LE620/B	01/06/2005	34.34	96.3	1.2	0.999	29	5.9	S
LE620	LE620C	22-May-06	32.21	90.9	1.2	0.255	9.9	4	S
LE620	LE620C	22-May-06	34.38	87.7		0.255	9.9	4	S
LE620	LE620C	11-Jun-07	33.95	115.8	2.7	0.0349	9.9	4.8	S
LE620	LE620C	11-Jun-07	34.03	11.8	2.7	0.0349	9.9	4.8	S
		Average	33.6588889	84.34444	1.84	0.25442222	13.2855556	3.7216216	
		Median	33.95	90.9	1.4	0.172	9.99	4	
		95%		40.24					
		5%		108					
		90%						1.8467568	
Outer Cork Harbour									
SWRBD CW5			OP Adjacent to Carisle Fort LE360	51° 48' 37.800" N	8° 16' 8.400" W	51.810500	-8.269000		
LE630	LE630/S	05/07/2004	34.39	88.8	1.1	0.03	9.99	0.9189189	S
LE630	LE630/B	05/07/2004	34.65	88.4	1.1	0.041	9.99	5.045045	S
LE630	LE630/R/S	05/07/2004	33.66	95.4		0.058	9.99	2.1621622	S
LE630	LE630/S	01/06/2005	34.55	96.9		0.33	17	5.2	S
LE630	LE630/B	01/06/2005				0.351	15	n/a	S
LE630	LE630/C	11/07/2005	34.3		2.4	0.141	9.99	2.3	S
LE630	LE630/CR	11/07/2005	34.3			0.031	9.99	4.5	S
LE630	LE630C	22-May-06	33.6	90.2	1	0.373	16	4.6	S
LE630	LE630C	22-May-06	34.88	88.3		0.373	16	4.6	S
LE630	LE630C	21-Jun-06	34.72	90	2.3	0.049	9.9	1.9	S
LE630	LE630C	21-Jun-06	34.79	90		0.049	9.9	1.9	S
LE630	LE630C	19-Jul-06	34.89	102.7	0.999	0.0759	9.9	9.9	S
LE630	LE630C	19-Jul-06	34.87	103.5		0.0759	9.9	9.9	S
LE630	LE630C	11-Jun-07	34.13	115.7	1.8	0.0298	9.9		S
LE630	LE630C	11-Jun-07	34.28	100.8	1.8	0.0298	9.9		S
LE630	LE630C	09-Jul-07	34.55	108.1	2.9	0.112	9.9		S
LE630	LE630C	09-Jul-07	34.6	107.1	2.9	0.112	9.9		S
LE630	LE630S	20-Aug-07	33.52	103.5	0.99	0.1739	10		S
LE630	LE630B	20-Aug-07	35.09	nr		0.092	16		S
		Average	34.4316667	97.96	1.753545455	0.13301579	11.5342105	4.4105105	
		Median	34.55	96.9	1.8	0.0759	9.99	4.55	
		95%		88.37					
		5%		110.38					
		90%						1.9	
Outer Cork Harbour									
SWRBD CW5			OP Roches Point LE810	51° 47' 23.640" N	8° 15' 54.720" W	51.789900	-8.265200		
LE810	LE810/S	05/07/2004	34.47	91		0.044	9.99	1.0810811	S
LE810	LE810/B	05/07/2004	34.53	93.7		0.044	9.99	2.954955	S
LE810	LE810/C	01/06/2005	34.28	100.9	1.2	0.206	9.99	5.6	S
LE810	LE810/C	11/07/2005	34.3			0.041	77	1.8	S
LE810	LE810S	19-Jul-06	34.88	100.7	1.3	0.0379	9.9	2.3	S
LE810	LE810B	19-Jul-06	34.86	105.9		0.1709	9.9	5.7	S
LE810	LE810C	11-Jun-07	34.14	118.6		0.0298	9.9	6.3	S
LE810	LE810C	11-Jun-07	34.52	95.5		0.0298	9.9	6.3	S
LE810	LE810C	09-Jul-07	34.43	115.6		0.0699	9.9	2	S
LE810	LE810C	09-Jul-07	34.87	100		0.0699	9.9	2	S
LE810	LE810B	20-Aug-07	34.56	100.8	0.99	0.1089	10	0.499	S
LE810	LE810B	20-Aug-07	35.19	nr		0.0849	12	0.499	S
		Average	34.5858333	102.27	1.163333333	0.07808333	15.6975	3.0861697	
		Median	34.525	100.75	1.2	0.05695	9.945	2.15	
		95%		92.215					
		5%		117.25					
		90%						0.5572081	
Outer Cork Harbour									
SWRBD CW5			OP Myrtleville LE820	51° 46' 28.560" N	8° 16' 28.200" W	51.774600	-8.274500		
LE820	LE820/C	11/07/2005	34.6		1.5	0.039	9.99	1.3	S
		95%							
		5%							
		90%						1.3	

Summary Sheet									
Summer									
Location	Salinity average	Salinity median	95% DO S % SAT	5% DO S % SAT	B.O.D. mg/l O2 Median	DIN mg/l N Median	PO4 µg/l P Median	Chlorophyll a mg/m 90%	
LE380	32.1	32.83	85.22	118.96	1.4	0.209	9.99	2.43	
LE610	34.3	34.3	92.55	106.8	1.1	0.11	9.9	1.82	
LE620	33.7	33.95	40.24	108	1.4	0.172	9.99	1.85	
LE630	34.4	34.6	88.37	110.38	1.8	0.0759	9.99	1.9	
LE810	34.6	34.5	92.2	117.3	1.2	0.057	9.945	0.557	
LE820	34.6	34.6			1.5	0.039	9.99	1.3	
Winter									
Location	Salinity average	Salinity median	95% DO S % SAT	5% DO S % SAT	B.O.D. mg/l O2 Median	DIN mg/l N Median	PO4 µg/l P Median	Chlorophyll a mg/m 90%	
LE380	27.3	27.3	90.06	92.85		1.23	28	1.2	

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Ringaskiddy WWDL Sampling Locations D0057-01



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Summary Sheet

Summer

Location	Salinity average	Salinity median	95% DO S % SAT	5% DO S % SAT	B.O.D. mg/l O2 Median	DIN mg/l N Median	PO4 µg/l P Median	Chlorophyll a mg/m 90%
LE380	32.1	32.83	85.22	118.96	1.4	0.209	9.99	2.43
LE610	34.3	34.3	92.55	106.8	1.1	0.11	9.9	1.82
LE620	33.7	33.95	40.24	108	1.4	0.172	9.99	1.85
LE630	34.4	34.6	88.37	110.38	1.8	0.0759	9.99	1.9
LE810	34.6	34.5	92.2	117.3	1.2	0.057	9.945	0.557
LE820	34.6	34.6			1.5	0.039	9.99	1.3

Winter

Location	Salinity average	Salinity median	95% DO S % SAT	5% DO S % SAT	B.O.D. mg/l O2 Median	DIN mg/l N Median	PO4 µg/l P Median	Chlorophyll a mg/m 90%
LE380	27.3	27.3	90.06	92.85		1.23	28	1.2

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**TABLE D.1(i)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Primary Discharge Point)**

Discharge Point Code: SW01 RING Revised

Source of Emission:	Crosshaven – Carrigaline – Ringaskiddy Agglomeration		
Location:	Cork Lower Harbour Townland Ringaskiddy		
Grid Ref. (12 digit, 6E, 6N):	E181358 N062521		
Name of receiving waters:	Cork Harbour		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		Tidal	m ³ .sec ⁻¹ Dry Weather Flow m ³ .sec ⁻¹ 95%ile flow

Emission Details:

(i) Volume emitted			
Normal/day	10,000m ³	Maximum/day	14,000m ³
Maximum rate/hour	800m ³	Period of emission (avg)	___ 60 ___ min/hr ___ 24 ___ hr/day ___ 365 ___ day/yr
Dry Weather Flow	9,000m ³ /day		

**TABLE D.1(i)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission
(Primary Discharge Point)**

Discharge Point Code: SW01 RING Revised

Number	Substance	As discharged	
		Max. daily average	
1	pH	8.04	
2	Temperature	Not available	
3	Electrical Conductivity(@20°C)	2100	
		Max. daily average (mg/l)	kg/day**
4	Suspended Solids	73.7	740.6
5	Ammonia (as N)	2.986*	30.02*
6	Biochemical Oxygen Demand	106	1065.6
7	Chemical Oxygen Demand	151.8	1525.5
8	Total Nitrogen (as N)	15.0	151.2
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	3.9	39.4
11	Total Phosphorus (as P)	3.9	39.5
12	Orthophosphate (as P) ^{Note 1}	5.9	60.3
13	Sulphate (SO ₄)	275.9	2773.8
14	Phenols (sum) ^{Note 2} (ug/l)	<0.10	<0.001

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on a 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

*note 3 values measured as less than LOD were recorded as ½ the LOD in order to generate statistical data

****Note 4 kg/day loadings results using average flow of 3716m³/day which is the average flow measured on the dates of sampling
Flow data recorded in Section E4**

TABLE D.1(i)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Primary Discharge Point - Characteristics of the emission

Discharge Point Code: SW01Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day**	kg/year**
1	Atrazine	<0.01	<0.0001	<0.0365
2	Dichloromethane	<1	<0.0100	<3.65
3	Simazine	<0.01	<0.0001	<0.0365
4	Toluene	<0.01	<0.0001	<0.0365
5	Tributyltin	<0.02	<0.0002	<0.0730
6	Xylenes	<0.01	<0.0001	<0.0365
7	Arsenic	7	0.0704	25.7
8	Chromium	10*	<0.100*	<36.5
9	Copper	55*	0.553*	201.8
10	Cyanide	<5	<0.0503	<18.4
11	Fluoride	660	6.6349	2421.7
12	Lead	10*	<0.100*	<36.5
13	Nickel	10*	<0.100*	<36.5
14	Zinc	10*	<0.100*	<36.5
15	Boron	5110***	51.3706***	18750.3***
16	Cadmium	10*	<0.100*	<36.5
17	Mercury	0.9	0.0090	3.3
18	Selenium	4	0.0402	14.7
19	Barium	10*	<0.100*	<36.5

*note 3 values measured as less than LOD were recorded as ½ the LOD in order to generate statistical data

****Note 4 kg/day loadings results using average flow of 10,052.95m3/day which is the average flow measured on the dates of sampling
Flow data recorded in Section E4**

***** Possible Interference in Analytical Method**

**TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)**

Discharge Point Code: SW02RING

Source of Emission:	Shanbally Pumping Station		
Location:	Shanbally Townland Shanbally		
Grid Ref. (12 digit, 6E, 6N):	E175796, N064930		
Name of receiving waters:	Monkstown Creek		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	NHA		
Flow rate in receiving waters:		Tidal Waters _____ m ³ .sec ⁻¹	Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)**

Discharge Point Code: SW02Ring

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

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TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW02Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(ii)(a) cont. :

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Discharge Point Code: SW03RING Revised

Source of Emission:	Coolmore Pumping Station
Location:	Carrigaline Townland Carrigaline East
Grid Ref. (12 digit, 6E, 6N):	E174443, N062603
Name of receiving waters:	Owenboy River
River Basin District:	South Western River Basin District
Designation of receiving waters:	NHA
Flow rate in receiving waters:	<p style="text-align: right;">_Tidal Waters_____m³.sec⁻¹ Dry Weather Flow</p> <p style="text-align: right;">_____m³.sec⁻¹ 95%ile flow</p>

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)**

Discharge Point Code: SW03Ring

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

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TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW03Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(ii)(a) cont. :
Discharge Point Code: SW04RING Revised

Source of Emission:	Old Waterpark Pumping Station		
Location:	Carrigaline Townland Carrigaline		
Grid Ref. (12 digit, 6E, 6N):	E173131, N062418		
Name of receiving waters:	Owenboy River		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		Tidal Waters _____ m ³ .sec ⁻¹	Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)**

Discharge Point Code: SW04Ring

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW04Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(ii)(a) cont.. :
Discharge Point Code: SW05RING Revised

Source of Emission:	Crosshaven Road Pumping Station		
Location:	Carrigaline Townland Carrigaline		
Grid Ref. (12 digit, 6E, 6N):	E173070, N062352		
Name of receiving waters:	Owenboy River		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		Tidal Water _____ m ³ .sec ⁻¹	Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)**

Discharge Point Code: SW05Ring

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW05Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(ii)(a) cont. :
Discharge Point Code: SW06RING Revised

Source of Emission:	Crosshaven Road Pumping Station No.2
Location:	Crosshaven Townland Crosshaven
Grid Ref. (12 digit, 6E, 6N):	E178816, N061285
Name of receiving waters:	Owenboy River
River Basin District:	South Western River Basin District
Designation of receiving waters:	None
Flow rate in receiving waters:	_____ Tidal _____ m ³ .sec ⁻¹ Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m3/sec 95% for Owenboy River At Ballea Bdg= 0.17m3/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)**

Discharge Point Code: SW06Ring

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW06Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(ii)(a) cont. :
Discharge Point Code: SW07RING Revised

Source of Emission:	Crosshaven Pumping Station No 1		
Location:	Crosshaven Townland Crosshaven		
Grid Ref. (12 digit, 6E, 6N):	E179639, N061145		
Name of receiving waters:	Owenboy River		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		Tidal Water _____ m ³ .sec ⁻¹	Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)**

Discharge Point Code: SW07Ring

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW07Ring

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Storm Water Overflow) (1 table per discharge point)**

Discharge Point Code: SW02RING

Source of Emission:	Shanbally Pumping Station		
Location:	Shanbally Townland Shanbally		
Grid Ref. (12 digit, 6E, 6N):	E175796, N064930		
Name of receiving waters:	Monkstown Creek		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	NHA		
Flow rate in receiving waters:		Tidal Waters _____m ³ .sec ⁻¹	Dry Weather Flow _____m ³ .sec ⁻¹ 95%ile flow

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available

TABLE D.1(iii)(a) cont. :

Discharge Point Code: SW03RING Revised

Source of Emission:	Coolmore Pumping Station
Location:	Carrigaline Townland Carrigaline East
Grid Ref. (12 digit, 6E, 6N):	E174443, N062603
Name of receiving waters:	Owenboy River
River Basin District:	South Western River Basin District
Designation of receiving waters:	NHA
Flow rate in receiving waters:	Tidal Water _____ m ³ .sec ⁻¹ Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available

TABLE D.1(iii)(a) cont. :
Discharge Point Code: SW04RING Revised

Source of Emission:	Old Waterpark Pumping Station
Location:	Carrigaline Townland Carrigaline
Grid Ref. (12 digit, 6E, 6N):	E173131, N062418
Name of receiving waters:	Owenboy River
River Basin District:	South Western River Basin District
Designation of receiving waters:	None
Flow rate in receiving waters:	Tidal Waters _____m ³ .sec ⁻¹ Dry Weather Flow _____m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available

TABLE D.1(iii)(a) cont. :

Discharge Point Code: SW05RING Revised

Source of Emission:	Crosshaven Road Pumping Station 1
Location:	Carrigaline Townland Carrigaline
Grid Ref. (12 digit, 6E, 6N):	E173070, N062352
Name of receiving waters:	Owenboy River
River Basin District:	South Western River Basin District
Designation of receiving waters:	None
Flow rate in receiving waters:	Tidal Waters _____ m ³ .sec ⁻¹ Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m3/sec 95% for Owenboy River At Ballea Bdg= 0.17m3/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available

TABLE D.1(iii)(a) cont. :

Discharge Point Code: SW06RING Revised

Source of Emission:	Crosshaven Pumping Station No. 2		
Location:	Crosshaven Townland Crosshaven		
Grid Ref. (12 digit, 6E, 6N):	E178816, N061285		
Name of receiving waters:	Owenboy River		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		Tidal Waters _____ m ³ .sec ⁻¹	Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m3/sec 95% for Owenboy River At Ballea Bdg= 0.17m3/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available

TABLE D.1(iii)(a) cont. :

Discharge Point Code: SW07RING Revised

Source of Emission:	Crosshaven Pumping Station No. 1		
Location:	Crosshaven Townland Crosshaven		
Grid Ref. (12 digit, 6E, 6N):	E179639, N061145		
Name of receiving waters:	Owenboy River		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		Tidal Waters _____m ³ .sec ⁻¹	Dry Weather Flow _____m ³ .sec ⁻¹ 95%ile flow

Note DWF for Owenboy River At Ballea Bdg= 0.025m³/sec 95% for Owenboy River At Ballea Bdg= 0.17m³/sec

Emission Details:

(i) Volume emitted			
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available



To Licence Application File

Subject : NPWS Correspondence and Meeting

A meeting was held between The NPWS divisional area ecological staff on the 6th June 2008 between Cork County Council which was represented by Valerie Hannon of Environment Directorate and NPWS southern regional divisional staff in respect of licence applications that were submitted in December 2007 as part of the wastewater authorisation regulations SI 684 of 2007.

As a result of that meeting written correspondence was received by this office including the most up to date site synopsis reports on the 27th June 2008. As the date for response to the E.P.A. is the 30th June I have included a copy of all of the responses received on the 27th June by this office however Cork County Council will not be in a position to respond to the queries raised by N.P.W.S. until we have examined the correspondence and outlined any further information required and prepared a formal report and response to the NPWS. A copy of all correspondence will be sent to the agency in due course and any reports, documents and letters received by Cork County Council in this regard will also be forwarded to the agency.

Valerie Hannon
A/Senior Executive Scientist,
Environment Directorate
Cork County Council

SITE SYNOPSIS

SITE NAME: CORK HARBOUR SPA

SITE CODE: 004030

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas and Owenacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Lough Beg, Whitegate Bay and the Rostellan inlet.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva lactuca* and *Enteromorpha* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rosleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Sea Arrowgrass (*Triglochin maritima*). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Rostellan lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The five-year average annual core count for the entire harbour complex was 34,661 for the period 1996/97-2000/01. Of particular note is that the site supports an internationally important population of Redshank (1,614) - all figures given are average winter means for the 5 winters 1995/96-1999/00. A further 15 species have populations of national importance, as follows: Great Crested Grebe (218), Cormorant (620), Shelduck (1,426), Wigeon (1,750), Gadwall (15), Teal (807), Pintail (84), Shoveler (135), Red-breasted Merganser (90), Oystercatcher (791), Lapwing (3,614), Dunlin (4,936), Black-tailed Godwit (412), Curlew (1,345) and Greenshank (36). The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial. The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145), Golden Plover (805), Grey Plover (66) and Turnstone (99). Other species using the site include Bat-tailed Godwit (45), Mallard (456), Tufted Duck (97), Goldeneye (15), Coot (77), Mute Swan (39), Ringed Plover (51), Knot (31), Little Grebe (68) and Grey Heron (47). Cork Harbour is an important

site for gulls in winter and autumn, especially Common Gull (2,630) and Lesser Black-backed Gull (261); Black-headed Gull (948) also occurs.

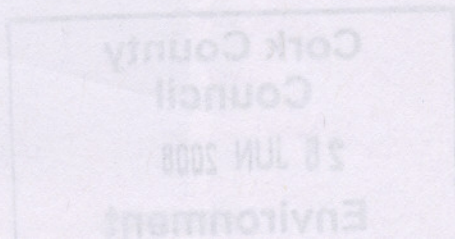
A range of passage waders occur regularly in autumn, including Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

The wintering birds in Cork Harbour have been monitored since the 1970s and are counted annually as part of the I-WeBS scheme.

Cork Harbour has a nationally important breeding colony of Common Tern (3-year mean of 69 pairs for the period 1998-2000, with a maximum of 102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Extensive areas of estuarine habitat have been reclaimed since about the 1950s for industrial, port-related and road projects, and further reclamation remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is a general threat. Recreational activities are high in some areas of the harbour, including jet skiing which causes disturbance to roosting birds.

Cork Harbour has is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its population of Redshank. In addition, there are at least 15 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.



Ringaskiddy SPA areas



Ringaskiddy SAC -areas



Ringaskiddy NHA areas



SITE SYNOPSIS

SITE NAME: WHITEGATE BAY

SITE CODE: 001084

This site is situated in the south-east corner of Cork Harbour, immediately to the west of Whitegate in County Cork. Geologically, Cork Harbour consists of several limestone basins separated from each other and from the sea by ridges of Old Red Sandstone. Recent muddy and silty deposits obscure much of the solid geology, however.

Most of the Whitegate Bay NHA comprises open marine water, with extensive mudflats exposed at low tide and is a haunt of a wide range of waterfowl, in particular Grebes, Diving Ducks and Waders. Many of these used to roost on Long Point, but this area is now occupied by the Aghada Power Station and so many of the birds spend the night in the vicinity of Corkbeg Island.

In the 1986 Report on the important conservation areas of County Cork, a number of figures were given as 'typical' for some bird species on a daily basis. They are as follows: Shelduck (15), Wigeon (220), Dunlin (500), Knob (200), Curlew (80), Redshank (30), Bar-tailed Godwit (75), Ternstone (25), Oystercatcher (120) and Ringed Plover (50).

The figures quoted above give the site a status of local conservation importance. However, Whitegate Bay is an integral part of Cork Harbour which is a wetland of international importance for its wintering populations of Black-tailed Godwit, Curlew and Redshank and its spring migration numbers of Whimbrel. Twelve species occur at nationally important levels, and Cork Harbour is one of only a few Irish wetlands to regularly hold over 20,000 waterfowl. Whitegate Bay usually holds about 10% of the winter waterfowl community of Cork Harbour.

The whole Harbour area is under pressure from industrial and urban development, pollution and from recreational useage. Run-off from the surrounding rich agricultural land poses a further pollution threat. Sewage is discharged directly into Whitegate Bay from the town of Whitegate. Excessive growth of Cord-grass (*Spartina* sp.) threatens to obscure parts of the mudflats.

Whitegate Bay is an NHA of local significance for its waterfowl. This status is enhanced, though, as the whole of Cork Harbour is of international importance and as such is a proposed Special Protection Area. Sections of the Harbour, such as Whitegate Bay, should not be considered in isolation as the bird populations are very mobile throughout the area. □

Attachment E2

Cork County Council operate a refrigerated composite sampler on the primary discharge outlet from the Ringaskiddy outfall to sea . This sampler operates on a 28 day rolling cycle and collects samples presently on a 24 hour basis per sample . There is no safe access to the discharge pipe at sea as the pipe discharges into deep water off the coast therefore the only location that is accessible and is safe for personnel is at the channel prior to discharge to sea . Samples have generally been collected on a fortnightly basis at this location from the composite sampler . It is proposed to continue with this arrangement as part of the licencing process .Samples are generally analysed for COD, Ammonia, pH ,Suspended Solids, Total Nitrogen Total Phosphorus ,Ortho phosphate(in recent times) and Sulphates. The samples are periodically checked for BOD but as the main component of the discharge is treated industrial wastewaters from the industries located in Ringaskiddy the principal focus has been on parameters that may be present in industrial effluents. There is a flow meter and pH meter installed in the outfall location however the reported pH results relate solely to the composite samples collected by the Environment directorate of Cork County Council.

The wastewater Laboratory of Cork County Council are accredited for a number of analytical tests under the Irish National Accreditation Board (INAB) under the ISO 17025 international standard . We currently are accredited for the following parameters under the ISO 17025 system

- pH
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Suspended Solids
- Ammonia
- Ortho Phosphate
- Total Phosphate
- Chloride
- Sulphate

The laboratory perform a number of analytical tests e.g. Fats Oil, Grease &Metals using an ICP-OES system and while we are not currently accredited for extra tests the analytical procedures and protocol are adhered to by the laboratory as if the tests are accredited,. The laboratory also participate in proficiency testing schemes which measure the accuracy of results and performance of the laboratory in both the EPA scheme and the WRC Aquacheck scheme from the UK. The performance of the laboratory in these schemes is excellent and the non accredited tests are within the performance criteria for the schemes as evaluated by the scheme coordinators.