

Cork County Council

Wastewater Discharge Licence Application under S.I. 684 of 2007 Regulations

Scheme Kgglomeration Name : Blarney

Submission Date :14th December 2007

Environmental Protection Agency Licensing				
1 4 DEC 2007				
Initials				

Location - Blarney

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SECTION A: NON-TECHNICAL SUMMARY

Advice on completing this section is provided in the accompanying Guidance Note.

A non-technical summary of the application is to be included here. The summary should identify all environmental impacts of significance associated with the discharge of waste water associated with the waste water works. This description should also indicate the hours during which the waste water works is supervised or manned and days per week of this supervision.

The following information must be included in the non-technical summary:

A description of:

- the waste water works and the activities carried out therein,
- the sources of emissions from the waste water works,
- the nature and quantities of foreseeable emissions from the waste water works into the receiving aqueous environment as well as identification of significant effects of the emissions on the environment,
- the proposed technology and other techniques for preventing or, where this is not possible, reducing emissions from the waste water works,
- further measures planned to comply with the general principle of the basic obligations of the operator, i.e., that no significant pollution is caused;
- measures planned to monitor emissions interthe environment.

A Description of the Waste Water Works and the Activities Carried Out Therein

The wastewater in the twin settlement of Blarney - Tower is collected in a partially combined foul and separated foul sewage drainage network. The wastewater drains drains from the settlements to the Waste Water Treatment Plant.

There are two trunk sewers discharging to the inlet works at the Blarney Waste Water Treatment Plant, one from Tower and the other from Blarney village.

Tower to Treatment Plant Sewer; -

The gravity trunk main serves the Tower area and runs along parallel to the river to the inlet of the treatment plant.

It is proposed to pump the catchment that is presently served by Cloghroe Waste Water Treatment Plant to Tower. It is also proposed to discharge sewage from Bawnafinny to the sewer by crossing the river.

Village to Treatment Plant Sewer; -

This gravity sewer serves the village and Station Road areas. There are three pumping stations discharging to the gravity sewer in Station Road, two from housing estates and one from Blarney Business Park. The Killard area discharges to a pumping station at the Gothic Bridge from where it is pumped to the gravity sewer in the village.

It is proposed to pump the sewage from the Kerry Pike catchment to this line.

Treatment Plant

The Blarney WWTP is designed for a Population Equivalent (PE) of 13,000PE and BOD loading of 780Kg/day. The maximum hydraulic capacity of the Blarney WWTP is 384m³/h which is 2.7 Dry Weather Flow (2.7DWF). In order to cope with flows above 2.7DWF storm storage has been provided at the WWTW. The volume of storm storage at the WWTW is approximately 366m³. In the event that the storm water holding tanks are filled and the storm continues, the storm water tanks are operated as a pre-clarification tank without sludge removal. The overflow from the storm water storage tank is connected to the final effluent outlet pipe.

The treatment plant treats all flows that arrive at the works to secondary standards in accordance with the Urban Waste Water Directive 1994 as shown in the following table:

Parameter	Effluent Limit		
BOD	25 mg/l		
COD	125 mg/l		
Suspended Solids	35 mg/l		
Phosphate	2 mg/l		
Ammonia	3 mg/l		
Total Nitrogen	25 mg/l		
Sludge	18% or greater		
Table 1 – Effluent Limits discharge			

The existing WWTW were upgraded with an additional stream. The flow is split after the wastewater passes through the new inlet works. 50% of the flow is diverted to the existing wastewater treatment stream. The remaining 50% is directed to a new treatment system. The existing stream has an aeration phase, a secondary settlement phase and return activated sludge phase. The new stream has an anaerobic, anoxic and aeration phase, a secondary settlement phase and return activated sludge phase.

Sludge is wasted separately from each stream to a common storage sludge blend tank, common Picket Fence Thickener and common dewatering plant.

A summary of the treatment process is presented below:

Inlet works	2Duty/1Standby pumps, 2 No. mech	anical screens with aerated grit and			
	grease removal system, flow measurement and grit classifier.				
	EXISTING STREAM	NEW STREAM			
Biological Treatment	1 No. aeration tank with 3 No.	- 1 No. Anaerobic tank with			
	surface aerators.	3 No. mixers.			
		- 1 No. Anoxic tank			
		- 1 No. aeration tank with fine			
		bubble disc aeration			
Phosphorus	Ferric Sulphate dosing				
Removal					
Secondary Settling	1 No. 19m diameter final	1 No. 17m diameter final			
	settlement tanks with half bridge	e			
	sludge scraper. sludge scraper.				
	Sludge settled within the settlement tanks is withdrawn by gravity from				
	each central sludge hopper to the return sludge pump sump.				
	Surplus Activated Sludge (SAS) is pumped by 2 No. pumps				
	(Duty/Standby) from the pump sump to the sludge blend/holding tank. Return Activated Sludge (RAS) is pumped 2 No. pumps (Duty/Standby)				
	from the pump sumpand is mixed with the incoming influent.				
	ion de pump stangand is inved with the meeting influent.				
Sludge Treatment	- 1 No. sludge acceptance tank, 45m ³ , 1 No. mixer and sludge pump				
Shuage Treatment	sump equipment with 2 No. Pumps.				
	- 1 No. Sludge Blend/Holding tank, 192m ³ , 1 No. mixer and sludge				
	pump				
	sump equipment with 2 No. Pumps.				
	- 1 No. Picket Fence Thickener for thickening from 0.5% to 2% Dry				
	Solids,				
	192m ³ .				
	- 2 No. Sludge Belt Presses with 2 No. sludge transfer pumps, 1 No.				
	poly				
	make-up unit with 3 No. dosing pumps.				
Effluent Discharge	1 No. 450mm gravity outfall pipe to River Shournagh.				

Ancillary equipment at the WWTP also includes the following:

- Odour Treatment Unit with 2 No extractor fans.
- Standby Generator and SCADA system covering all the plant including sludge treatment process.
- Buildings Inlet and sludge building, electricity transformer building, laboratory and control room building with fire alarm and security alarm systems.

The Blarney WWTP is currently operated by Cork County Council staff. The plant is manned during the working week 8.30am - 5.00pm (Monday - Friday) by a

Wastewater Curator and general operatives as required. An Environmental Technician is fully employed between Ballincollig and Blarney WWTPs. During out of hours the SCADA system can send alarms to a mobile phone of the person on standby.

The Sources of Emissions from the Waste Water Works

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

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

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

The domestic population of Blarney has grown over the last three censuses owing to its development as a town within the Cork Metropolitan area. The most recent Census figures show that Blarney Town and environs now has a population in excess of 5,226. (Census, 2006). Other sources of influent that contribute to the UNIN PUTPOSES ON D' ANY sewage scheme would be:

- **Commercial premises**
- Schools
- Tourism

The nature and quantities of foreseeable emissions from the waste water works into the receiving aqueous environment as well as identification of significant effects of the emissions on the environment.

The final effluent is discharged into the River Shournagh. At design capacity the WWTW will discharge $3,357m^3/d$ to the river.

The effluent quality will be according Table 1. (above)

Environmental Impacts

An Environmental Impact Statement was carried out for the Expansion and Upgrading of Blarney Sewage Treatment Works in April 2000 by T.J. O'Connor & Associates. This report stated:

"The most significant long-term impact will be the improvement in aquatic habitat to the extent that during the heavy rains, storm water overflow occurrences and volumes will be minimised and the storm overflows that do occur will be screened. The final effluent discharged to the river will meet the discharge criteria laid down in the relevant standards and directives. The quantity of suspended solids will be reduced and the oxygen levels during flood should remain high.

As the bulk of the waste is to remain composed primarily of municipal wastewater and therefore does not contain significant quantities of materials that would be toxic to the flora and fauna of the stream. If the upgrading of the works is not undertaken, the suitability of the aquatic environment for salmonid populations will noticeably decrease. Oxygen levels may tend to below 40 % of saturation, bacteria and algae will tend to flourish as the conditions tend towards septic. However, with the proposed works, the river has every chance to retain its current status of Q4-5 and its diversity of species."

It is necessary to consider that the effluent quality will meet the requirements stated in the Urban Waste Water Directive 1994.

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

Technologies

In the WWTW at Blarney a sufficient number of standby pumps, fans, etc. is provided in order to ensure continuation of the wastewater and sludge treatment and to comply with all environmental standards in case of equipment failures or breakdowns. Standby equipment is installed, ready for take over, or available in stock on site.

Standby diesel generators or generator sockets in control panels are provided to enable the plant to operate during mains electric power failure thereby preventing Purposes of f untreated emissions from entering the receiving aqueous environment.

Techniques

A Performance Management System (PMS) will be put in place at the Blarney Wastewater Treatment Plant. The Water Services National Training Group (WSNTG) is developing this Performance Management System. The PMS will provide a uniform approach to dealing with all relevant performance management issues, including Independent Compliance Audits, Management of Change, Dispute Resolution, Public Relations, Emergency Procedures and Reporting Procedures.

Cork County Council performs the Operation of the WWTP in accordance with the Operation Manual procedures and maintains the design performance capability of the existing treatment plant.

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

Prevention of pollution

Any alteration upgrading of the existing infrastructure undertaken by Cork County Council shall not increase the potential to cause pollution in the environment. In particular any alterations to the wastewater treatment plant will be designed to enable any operator of the facility to prevent pollution of the environment by the following potential contaminants:

- Surface water run-off
- **Spillages**
- Solid Waste .

Toxic Substances

Cork County Council shall ensure that any modification or alterations to the plant do not increase the impact by any toxic substances. All chemicals and dangerous substances must be stored safely at all times and all appropriate safety measures must be taken to ensure against leakage and spillage in accordance with the relevant Health and Safety Legislation.

Measures planned to monitor emissions into the environment

Cork County Council, as current operator monitors the treatment plant in accordance with the Urban Waste Water Treatment Regulations. The analysis undertaken by the monitoring body (Cork County Council Environment Dept) is done in accordance with the latest edition of the Standard Methods for the Examination of Water and Wastewater. The American Public Health Association publishes these methods.

This lab is ISO 17025 accredited under the unbrella of the Irish National Accreditation Board (INAB).

To monitor compliance with the regulations the inlet and discharge samples tested are 24-hour composite samples either flow proportional or time based.

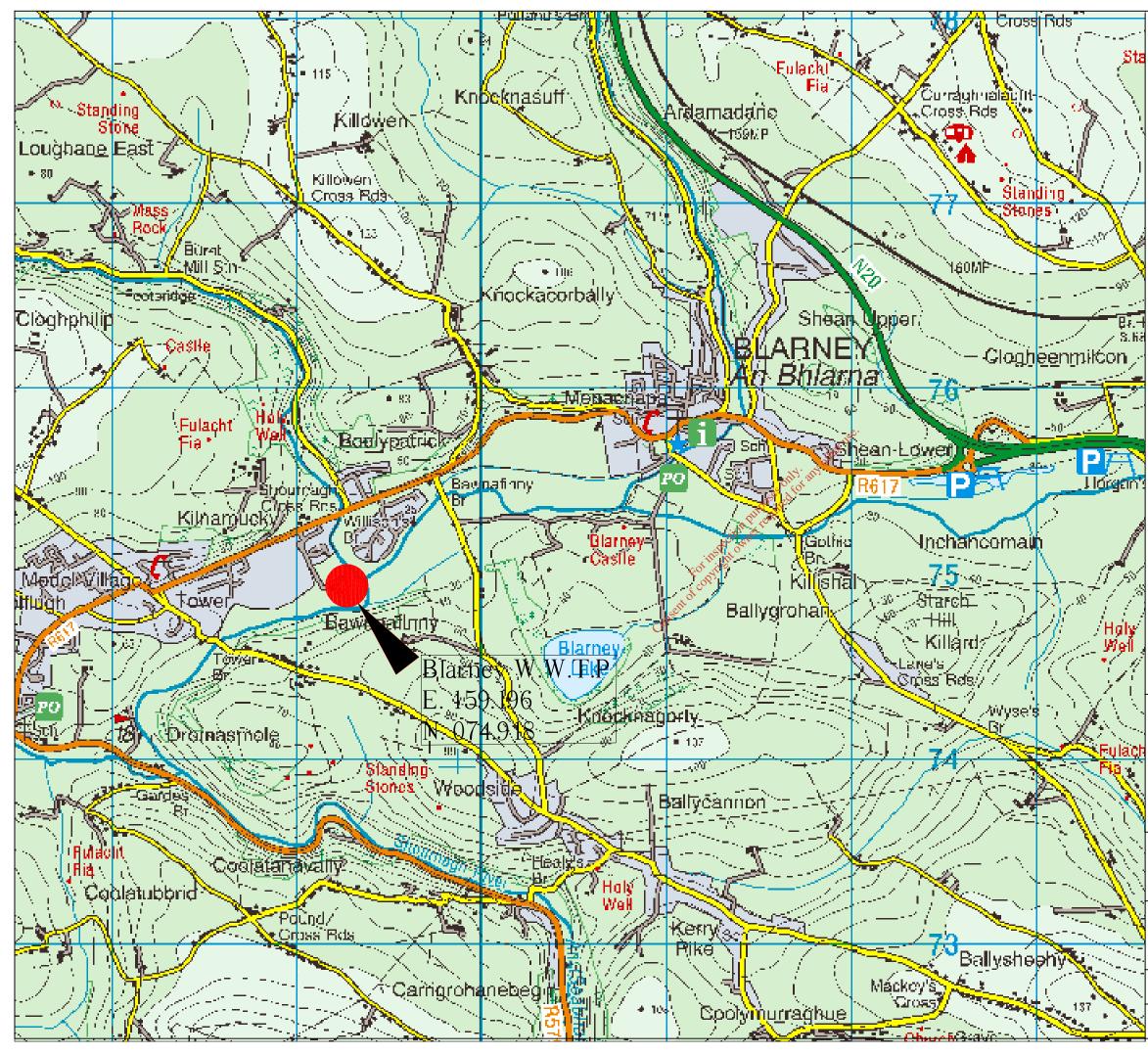
A refrigerated sampler minimizes degradation between collection and analysis. Analysis is undertaken within 24 hours of the sample being taken.

Non-regulatory analysis is politinely carried out using standard laboratory procedures.

There is planned for the coming year the introduction of a PMS system. This system will set out a control system for procedures and processes for running the treatment plant.

Heavy metal analysis is determined on de-watered sludge. This analysis is part of the licence at the receiving facility. This analysis is done as part of the 'Sewage Sludge in Agriculture regulations'.

Supporting information should form Attachment N° A.1



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DO NOT SCALE. Use figured dimensions only. If in doubt ask.

All dimensions to be checked on site.

Drawing to be read in conjunction with Licence Application Form attached.

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Cork County Council

South Cork Division

N. O'Keeffe, B.Eng., C.Eng., Eur.Ing., F.I.E.I., M.I.C.E., Acting County Engineer County Hall, Cork.

P. Power Director of Services South Cork.

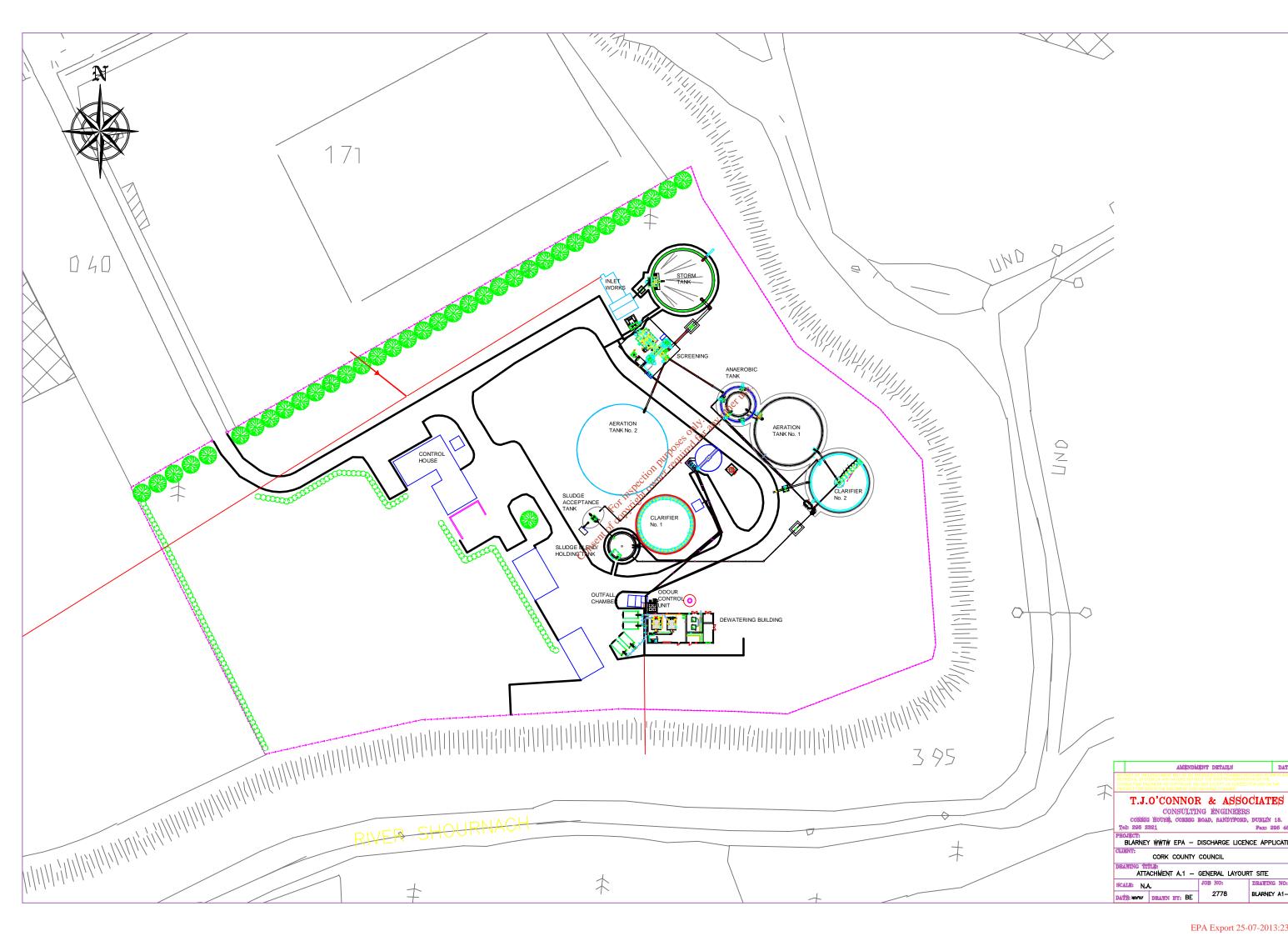
Project:

EPA LICENCE APPLICATION

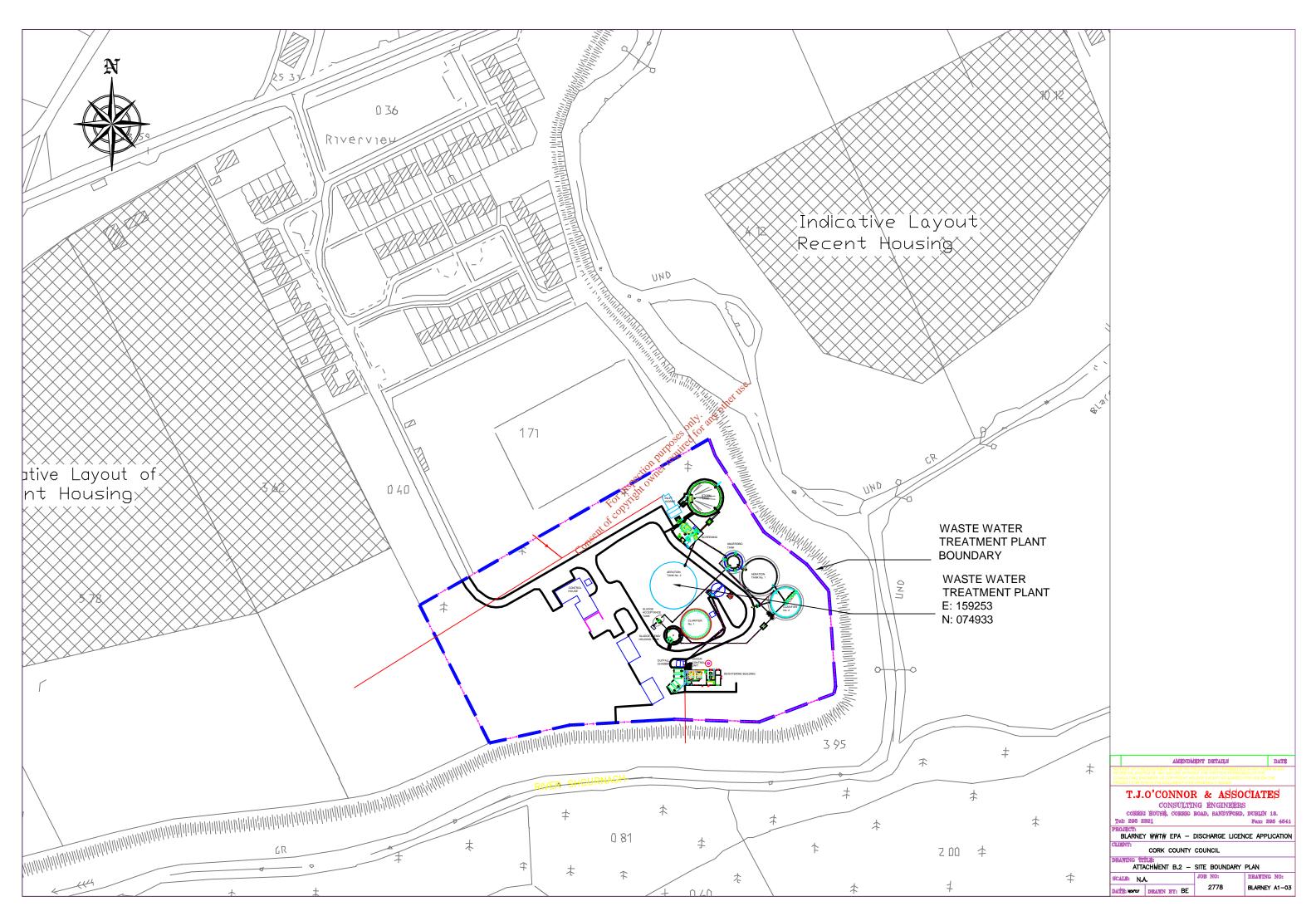
Title:

Section A1-Site Location Map.

Designed:LL	Checked: MM		Drawing No. A1-01-Blarney
Drawn:LL	Approved:MM	Date:Dec 07	



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$ / / \mp $	PROJECT FOR WHICH THE DOCUMENT WAS		
	T.J.O'CONNOL	K & ASSO	CIATES
	CORRIG HOUSE, CORRIG	NG ÈNGINEÈRS Boad, sandyford,	DUBLÍN 18.
	Tel: 295 2321 PROJECT:		Fax: 295 4541
	BLARNEY WWTW EPA -	DISCHARGE LICEN	CE APPLICATION
	CORK COUNTY	COUNCIL	
	DRAWING TITLE: ATTACHMENT A.1 -	GENERAL LAYOUR	RT SITE
	SCALE: N.A.	JOB NO:	DRAWING NO:
	A	2778	BLARNEY A1-02



SECTION B: GENERAL

Advice on completing this section is provided in the accompanying Guidance Note.

B.1 Applicant's Details*

Name and Address for Correspondence

Only application documentation submitted by the applicant and by the nominated person will be deemed to have come from the applicant. Provide a drawing detailing the agglomeration to which the licence application relates. It should have the boundary of the agglomeration to which the licence

application relates <u>clearly marked in red ink</u>.

Name**:	Cork County Council Southern Division
Address:	County Hall,
	Carrigrohane Road,
	Cork
	ç,
Tel:	021 2476891 _{x1¹⁵}
Fax:	021 4276321
e-mail:	ally all

*This should be the name of the water services authority in whose ownership or control the waster water works is vested.

**Where an application is being submitted on behalf of more than one water services authority the details provided in Section B.1 shall be that of the lead water services authority.

Name*:	Patricia Power
Address:	Director of Services
	Floor 5
	County Hall, 🛇
	Cork
Tel:	021 4285285
Fax:	021 4276321
e-mail:	patricia.power@corkcoco.ie

*This should be the name of person nominated by the water services authority for the purposes of the application.

Co-Applicant's Details

Name*:	Not Applicable	
Address:		
Tel:		
Fax:		
e-mail:		

*This should be the name of a water services authority, other than the lead authority, where multiple authorities are the subject of a waste water discharge (authorisation) licence application.

Design, Build & Operate Contractor Details

Name*:	Not Applicable
Address:	
Tel:	
Fax:	
e-mail:	

*Where a design, build & operate contract is in place for the waste water works, or any part thereof, the details of the contractor should be provided.

Attachment B.1 should contain appropriately scaled drawings / maps (≤A3) of the agglomeration served by the waste water works showing the boundary clearly marked in red ink. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g., ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. These drawings should be provided to the Agency on a separate CD-Rom containing sections B.2, B.3, B.4, B.5, C.1, D.2, E.3 and F.2.

Attachment included	only any	Yes	No
	Postica le	*	
	ection Perfect		
	Re ON		

B.2 Location of Associated Waste Water Treatment Plant(s)

Give the location of the waste water treatment plant associated with the waste water works, if such a plant or plants exists.

	C
Name*:	Michael Murphy
Address:	Blarney WWTP
	Riverview Estate
	Kilnamucky, Tower
	Co Cork
Grid ref	E159196 N74918
(6E, 6N)	
Level of	Tertiary
Treatment	
Primary	021 4875643
Telephone:	
Fax:	021 4289868
e-mail:	mick.murphy@corkcoco.ie

 $\ensuremath{^{\star}}\xspace{This}$ should be the name of the person responsible for the supervision of the waste water treatment plant.

Attachment B.2 should contain appropriately scaled drawings / maps (\leq A3) of the site boundary and overall site plan, including labelled discharge, monitoring and sampling points. These drawings / maps should also be provided as georeferenced digital drawing files (e.g., ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. These drawings should

be provided to the Agency on a separate CD-Rom containing sections B.1, B.3, B.4, B.5, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
	*	

B.3 Location of Primary Discharge Point

Give the location of the primary discharge point, as defined in the Waste Water Discharge (Authorisation) Regulation, associated with the waste water works.

Type of	Pipe to river.
Discharge	
Unique	SW01-Blarney
Point Code	
Location	Kilnamucky, Tower
Grid ref	E159261 N074835
(6E, 6N)	

Attachment B.3 should contain appropriately scaled drawings / maps (\leq A3) of the discharge point, including labelled monitoring and sampling points associated with the discharge point. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing the drawings and tabular data requested in sections B.1, B.2, B.4, B.5, C.1, D.2, E.3 and F.2.

Attachment included	tachment included		No
	to At	*	

B.4 Location of Secondary Discharge Point(s)

Give the location of **all** secondary discharge point(s) associated with the waste water works. Please refer to Guidance Note for information on Secondary discharge points.

Type of	Emergency overflow to outfall.
Discharge	
Unique	SW01-Blarney
Point Code	
Location	Kilnamucky, Tower
Grid ref	E159261 N074835
(6E, 6N)	

Type of	Emergency.
Discharge	
Unique	SW02-Blarney
Point Code	
Location	Shean Lower, Blarney
Grid ref	E161602 N075245
(6E, 6N)	

_	
Type of	Emergency overflow.
Discharge	
Unique	SW03-Blarney
Point Code	
Location	Woodside Kerry Pike
Grid ref	E160341 N073241
(6E, 6N)	
Type of	Emergency overflow.
Discharge	
Unique	SW04-Blarney
Point Code	
Location	Coolflugh, Tower
Grid ref	E157548 N074040
(6E, 6N)	

Attachment B.4 should contain appropriately scaled drawings / maps (\leq A3) of the discharge point(s), including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.5, C.1, D.2, E.3 and F.2.

	- (O)		
Attachment included	1110 stired t	Yes	No
	ction per red	*	
	20° 05*		

B.5 Location of Storm Water Overflow Point(s)

Give the location of **all** storm, water overflow point(s) associated with the waste water works.

Type of	Pipe
Discharge	
Unique	SW01-Blarney
Point Code	
Location	Kilnamucky, Tower
Grid ref	E159261 N074835
(6E, 6N)	

Attachment B.5 should contain appropriately scaled drawings / maps (\leq A3) of storm water overflow point(s) associated with the waste water works, including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
	*	

B.6 Planning Authority

Give the name of the planning authority, or authorities, in whose functional area the discharge or discharges take place or are proposed to take place.

Name:	Cork County Council
Address:	County Hall,
	Carrigrohane Road,
	Cork
Tel:	021 2476891
Fax:	021 4276321
e-mail:	

Planning Permission relating to the waste water works which is the subject of this application:- (tick as appropriate)

has been obtained	*	is being processed	
is not yet applied for		is not required	

 Local Authority Planning File Reference N²:
 Part 9 of the 1994 local Government Regs

 May 2000
 Note: 100 - 1

Attachment B.6 should contain *the most recent* planning permission, including a copy of *all* conditions, and where an EIS was required, copies of any such EIS and any certification associated with the EIS, should also be enclosed. Where planning permission is not required for the development, provide reasons, relevant correspondence, *etc.*

Attachment included	FO PIE	Yes	No
	EIS attached	*	

B.7 Other Authorities

B.7 (i) Shannon Free Airport Development Company (SFADCo.) area

in the

The applicant should tick the appropriate box below to identify whether the discharge or discharges are located within the Shannon Free Airport Development Company (SFADCo.) area.

Attachment B.7(i) should contain details of any or all discharges located within the SFADCo. area.

Within the SFADCo Area	Yes	No
		*

B.7 (ii) Health Services Executive Region

The applicant should indicate the **Health Services Executive Region** where the discharge or discharges are or will be located.

Name:	HSE Southern Division
Name.	
Address:	Slanta House
	Wilton Road
	Cork
Tel:	021-4545011
Fax:	021-4545748
e-mail:	Not available

B.7 (iii) Other Relevant Local Authorities

Regulation 13 of the Waste Water Discharge (Authorisation) Regulations, 2007 requires all applicants, not being the local authority in whose functional area the relevant waste water discharge or discharges, to which the relevant application relates, takes place or is to take place, to notify the relevant local authority of the said application.

Name:	Not Applicable				
Address:					
Tel:					
Fax:			Ø.1*		
e-mail:			ortist		
			othe		
Relevant A	uthority Notified	ally	Yes	No	

Attachment B.7(iii) should contain a copy of the notice issued to the relevant local authority.

Attachment included	Yes	No
Conser		*

B.8 Notices and Advertisements

Regulations 10 and 11 of the Waste Water Discharge (Authorisation) Regulations, 2007 require all applicants to advertise the application in a newspaper and by way of a site notice. See *Guidance Note*.

Attachment B.8 should contain a copy of the site notice and an appropriately scaled drawing (\leq A3) showing its location. The original application must include the original page of the newspaper in which the advertisement was placed. The relevant page of the newspaper containing the advertisement should be included with the original and two copies of the application.

Attachment included	Yes	No
	*	

B.9 (i) Population Equivalent of Agglomeration

TABLE B.9.1 POPULATION EQUIVALENT OF AGGLOMERATION

The population equivalent (p.e.) of the agglomeration to be, or being, served by the waste water works should be provided and the period in which the population equivalent data was compiled should be indicated.

Population Equivalent	13,000
Data Compiled (Year)	2007
Method	Design capacity

B.9 (ii) FEES

State the relevant Class of waste water discharge as per Column 1 of the Second Schedule, and the appropriate fee as per Columns 2 or 3 of the Third Schedule of the Waste Water Discharges (Authorisation) Regulations 2007, S.I. No. 684 of 2007.

Class of waste water discharge F	Fee (in €)
Greater than 10,000 pe 3	30,000

Appropriate Fee Included		Yes	No
		other *	
	only, ar		

B.10 Capital Investment Programme 5

State whether a programme of works has been prioritised for the development of infrastructure to appropriately collect, convey, treat and discharge waste water from the relevant agglomeration. If a programme of works has been prioritised provide details on funding, (local or national), allocated to the capital project. Provide details on the extent and type of work to be undertaken and the likely timeframes for this work to be completed.

Attachment B.10 should contain the most recent development programme, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

The Council has recently completed an upgrade of the wastewater treatment plant at Blarney to 13,000 p.e. and has no immediate proposals to increase that capacity. The plant at Blarney has two independent secondary treatment processes with the wastewater load being split approximately evenly between them. One stream has biological nutrient removal and the other has chemical nutrient removal. There is concern in relation to the nutrient levels in the river catchments north of Cork City and the Council has obtained approval to carry out a drainage study , the City Environs (CASP) Drainage Study which is being funded under the Water Services Investment Programme 2007-2009. This study will consider the drainage options available for the catchment concerned having regard to existing and planned developments in the area . The Council is currently preparing a brief for the appointment of a consultant and expects to advertise the appointment in early January 2008 and to have the study completed in approx six months thereafter.

It is proposed to pump the catchment that is presently served by Cloghroe Waste Water Treatment Plant to the gravity sewer at Tower.

It is proposed to pump the sewage from the Kerry Pike catchment to the trunk sewer from the village to the treatment plant.

Attachment included WSIP	Yes	No
Kerry Pike SS & Cloghroe SS	*	

B.11 Significant Correspondence

Provide a summary of any correspondence resulting from a Section 63 notice issued by the Agency in relation to the waste water works under the Environmental Protection Agency Acts, 1992 and 2003, as amended by Section 13 of Protection of the Environment Act, 2003.

Attachment B.11 should contain a summary of any relevant correspondence issued in relation to a Section 63 notice.

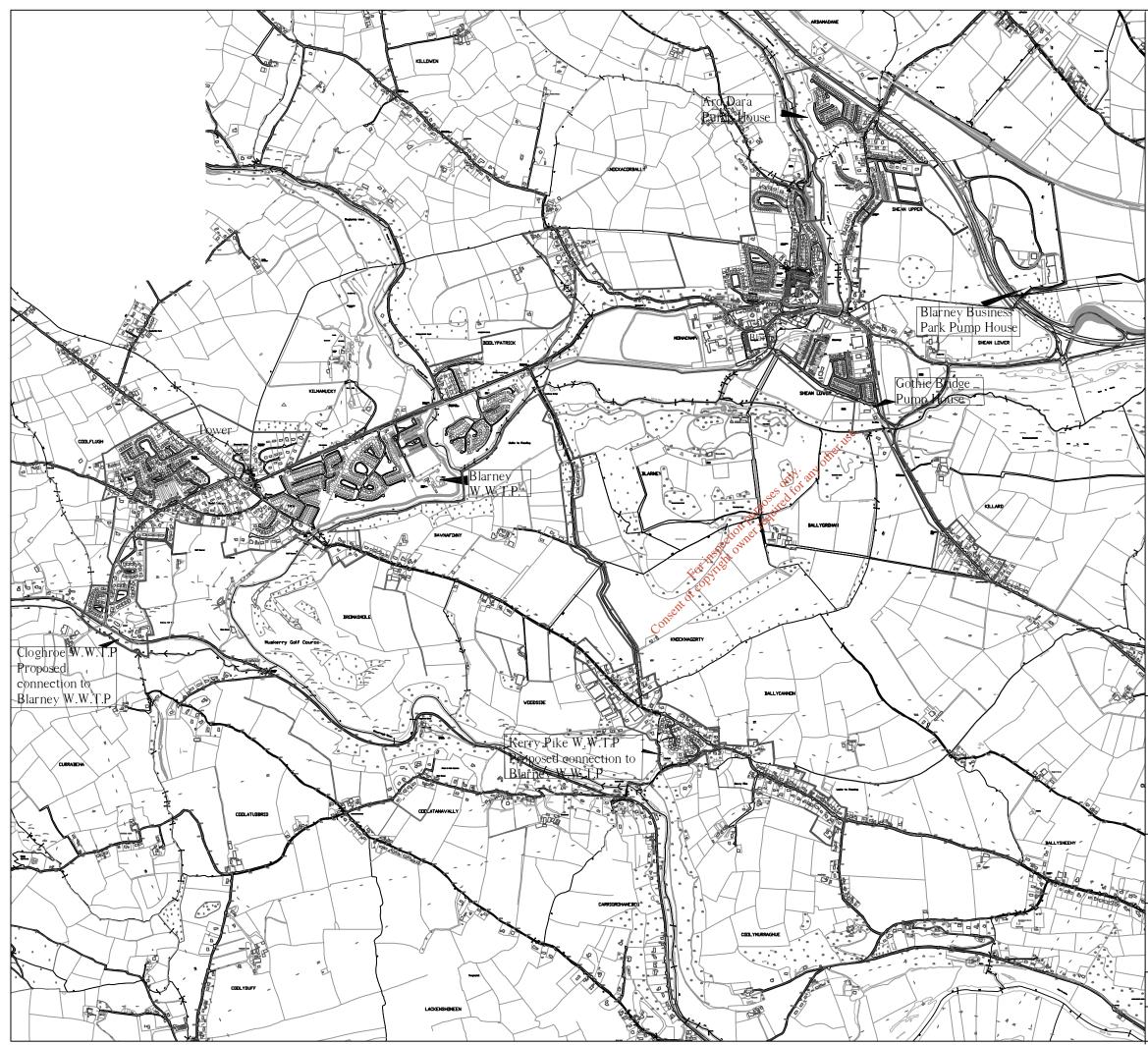
Attachment included Not applicable		Yes	No
Not applicable		· USC.	*
		oy other	
B.12 Foreshore Act Licences.	es only r	<u>.</u>	

Provide a copy of the most recent Foreshore Act licence issued in relation to discharges from the waste water works issued under the Foreshore Act 1933.

Attachment B.12 should contain the most recent licence issued under the Forsehore Act 1933, including a copy of *all* conditions attached to the licence and any monitoring returns for the previous 12-month period, if applicable.

Attachment included	Yes	No
Not applicable		*

5



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DO NOT SCALE. Use figured dimensions only. If in doubt ask.

All dimensions to be checked on site.

Drawing to be read in conjunction with Licence Application Form attached.

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Cork County Council

South Cork Division

N. O'Keeffe, B.Eng., C.Eng., Eur.Ing., F.I.E.I., M.I.C.E., Acting County Engineer County Hall, Cork.

P. Power Director of Services South Cork.

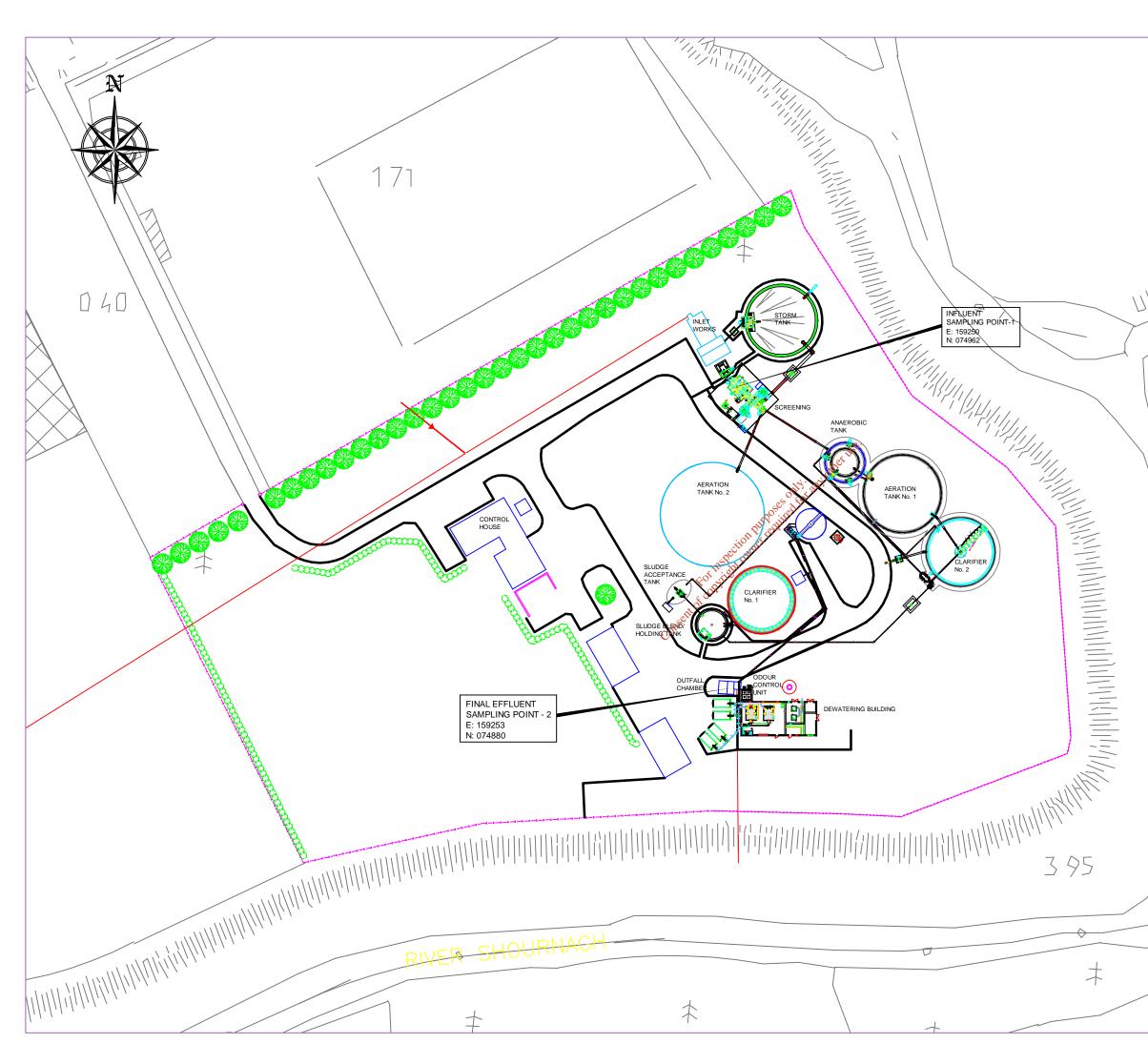
Project:

EPA LICENCE APPLICATION

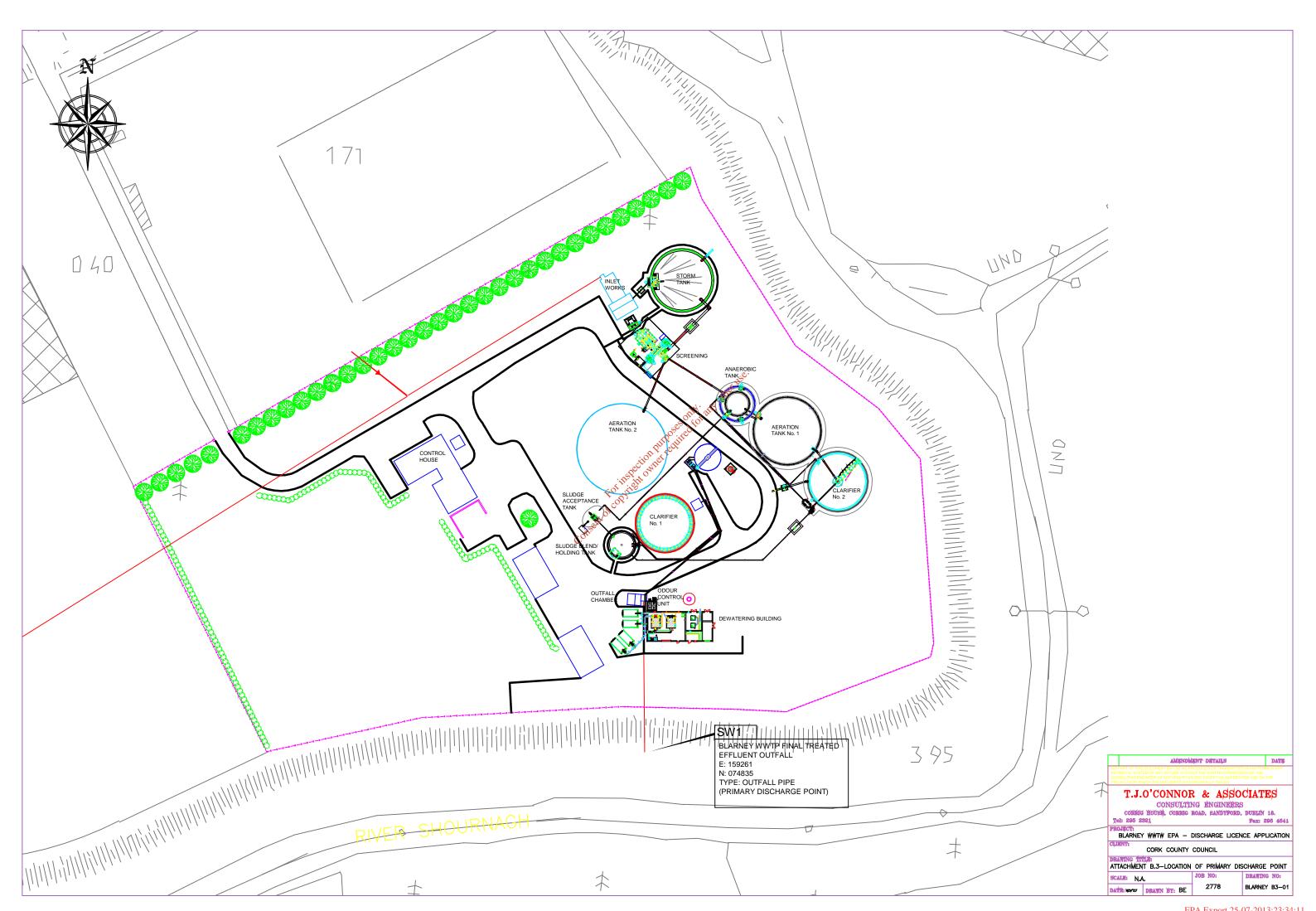
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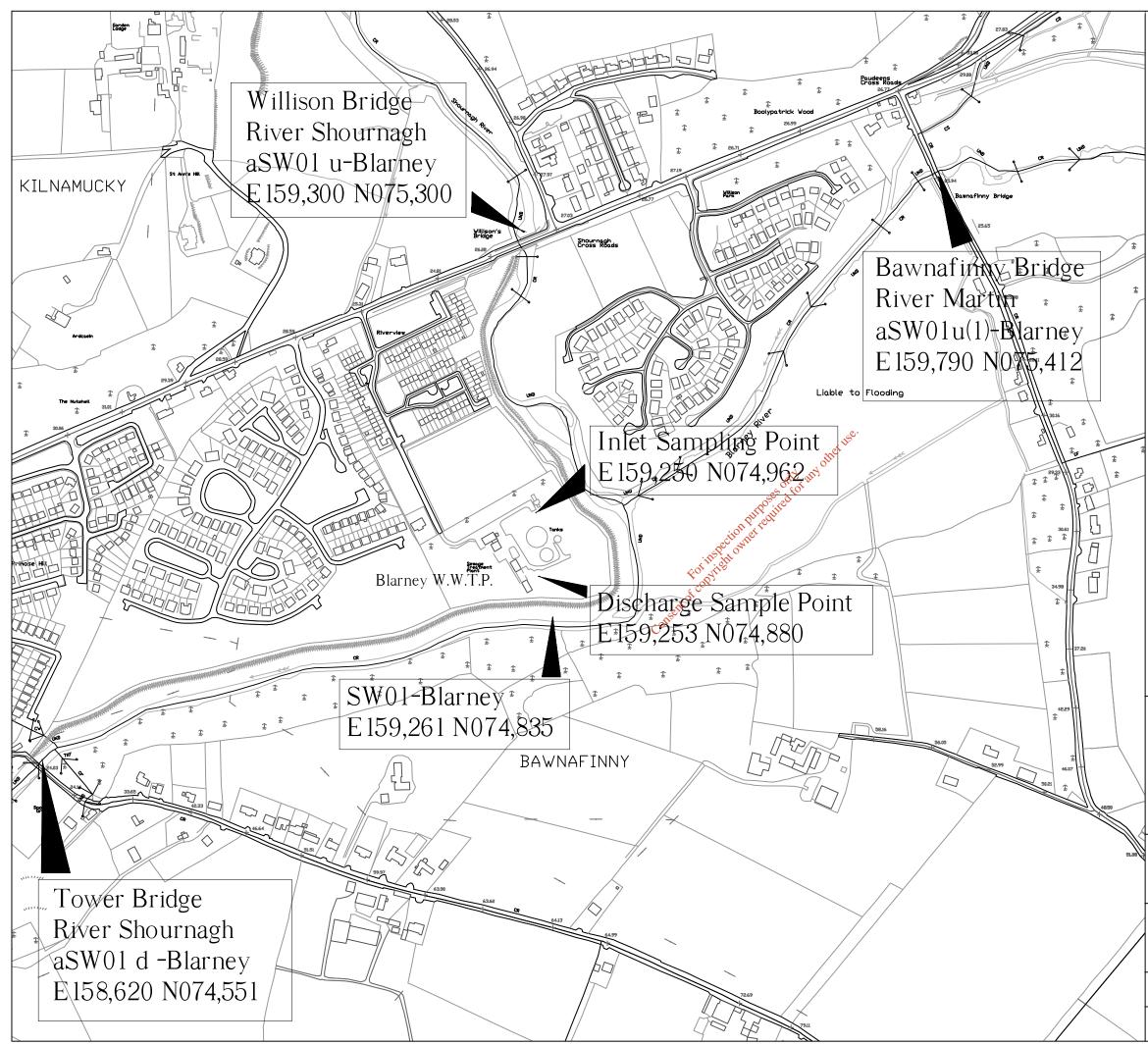
Section B1-The agglomeration served by the Waste Water Works.

Designed:LL	Checked: MM		Drawing No. B1-01-Blarney
Drawn:LL	Approved:MM	Date:Dec 07	



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	T.J.O'CON	INOR & ASSO	CIATES
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	PROJECT: BLARNEY WWTW EI	PA - DISCHARGE LICEN	
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#### Cork County Council

#### South Cork Division

N. O'Keeffe, B.Eng., C.Eng., Eur.Ing., F.I.E.I., M.I.C.E., Acting County Engineer County Hall, Cork.

P. Power Director of Services South Cork.

Project:

EPA LICENCE APPLICATION

Title:

#### Primary Discharge Points.

Designed:LL	Checked: MM		Drawing No. B3-02-Blarney
Drawn:LL	Approved:MM	Date:Dec 07	



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P. Power Director of Services South Cork.

Project:

EPA LICENCE APPLICATION

Title:

#### Secondary Discharge Points.

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#### Cork County Council

#### South Cork Division

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P. Power Director of Services South Cork.

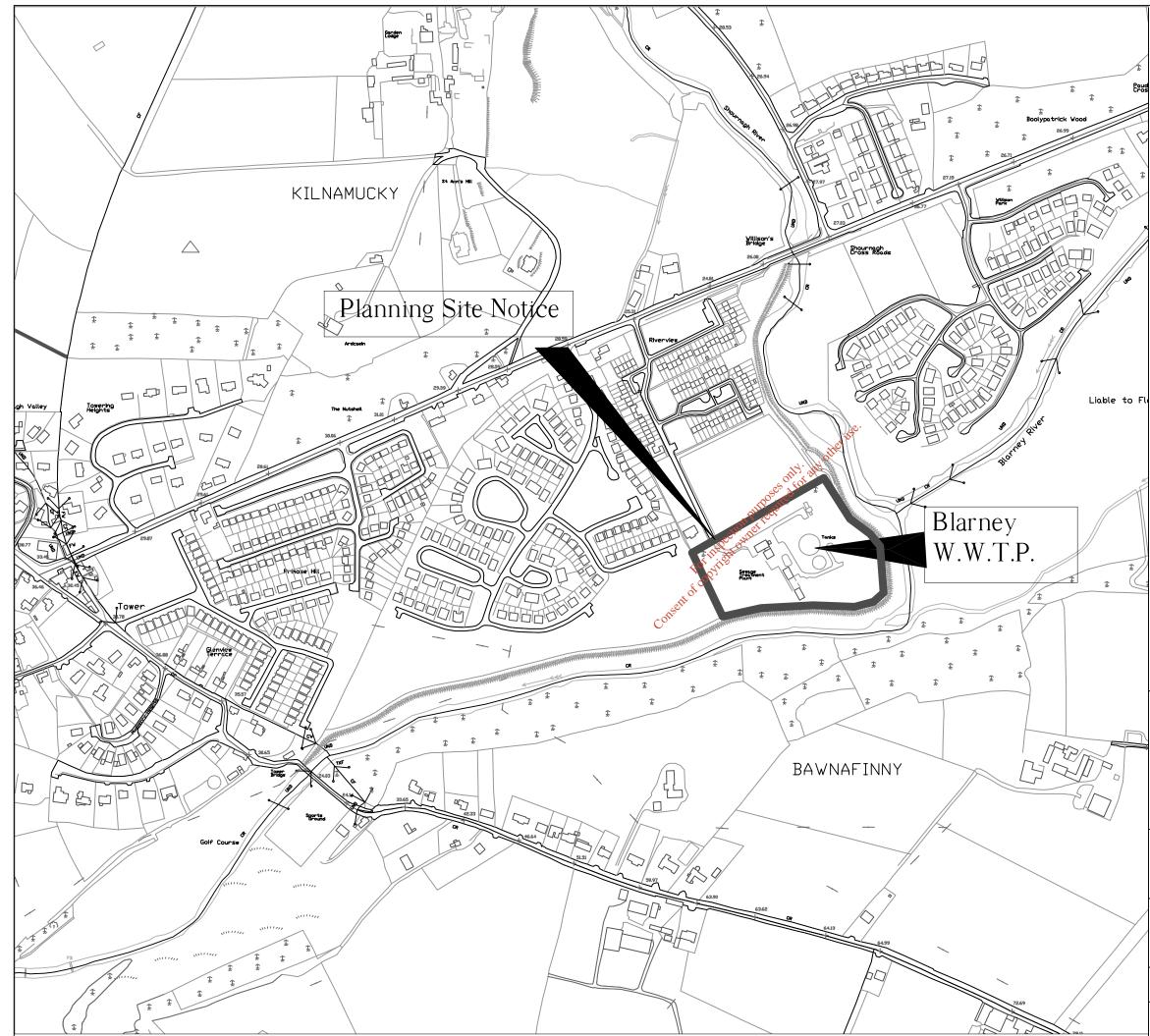
Project:

EPA LICENCE APPLICATION

Title:

#### Storm Water Overflow Points.

Designed:LL	Checked: MM		Drawing No. B5-01-Blarney
Drawn:LL	Approved:MM	Date:Dec 07	



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#### Cork County Council

#### South Cork Division

N. O'Keeffe, B.Eng., C.Eng., Eur.Ing., F.I.E.I., M.I.C.E., Acting County Engineer County Hall, Cork.

P. Power Director of Services South Cork.

Project:

EPA LICENCE APPLICATION

Title:

Site Notice Location.

Designed:LL	Checked: MM		Drawing No. B8-01-Blarney
Drawn:LL	Approved:MM	Date:Dec 07	

# Cork County Council Southern Division

# APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007 SI No. 684 of 2007, Water Services Southern Division of Cork County Council, County Hall, Carrigrohane Road, Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence in respect of Blarney Wastewater Treatment Plant serving the agglomeration of Blarney

Plant Name	Location	National Grid Ref.
Blarney	Riverview Estate, Tower ,Co. Cork	E159196 N74918
WWTP	Townland of Kilnamucky	

Discharge	Function	Townland	Receptor	Grid Reference
Primary	Main	Kilnamucky	River	E159,261 N74,835
	Outfall		Shournagh of USC.	
Secondary	Emergency	Woodside	River Shournagh	E160,341 N73,241
Secondary	Emergency	Coolflugh	Qwennagearagh	E157,548 N74,040
Secondary	Emergency	Shean Lower	Mill Race to	E161,602 N75,245
		ection	River Martin	

It is intended to submit the Environmental Impact Statement associated with the recent upgrading of the Waste Water Treatment Plant to the Agency along with the Application.

A copy of the application for the Waste Water Discharge Licence, the Environmental Impact Statement and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall as soon as is practicable after receipt by the Agency be available for inspection or purchase at the

• Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335599 Telephone: 053-9160600 Fax: 053-9160699 Email:info@epa.ie

and at

• Cork County Council Offices, Water Services South, Co Hall Carrigrohane Road, Co. Cork, Telephone: 021-4276891 Fax: 021-4276321.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above



# CORK COUNTY COUNCIL

# SITE NOTICE

## APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007 SI No. 684 of 2007, Water Services Southern Division of Cork County Council, County Hall, Carrigrohane Road, Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence in respect of Blarney Wastewater Treatment Plant serving the agglomeration of Blarney

Plant Name	Location
Blarney WWTP	Riverview Estate, Tower ,Co. Cork E159196 N74918 Townland of Kilnamucky
	Do ited

Discharge	Function	Townland	Receptor	Grid Reference
Primary	Main	Kilnamucky	River	E159,261 N74,835
•	Outfall	or install	Shournagh	
Secondary	Emergency	Woodside	River	E160,341 N73,241
-		and to to	Shournagh	
Secondary	Emergency	Coolflugh	Owennagearagh	E157,548 N74,040
Secondary	Emergency	Shean Lower	Mill Race to	E161,602 N75,245
·		•	<b>River Martin</b>	

It is intended to submit the Environmental Impact Statement associated with the recent upgrading of the Waste Water Treatment Plant to the Agency along with the Application.

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• Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335599 Telephone: 053-9160600 Fax: 053-9160699 Email:info@epa.ie

and at

• Cork County Council Offices, Water Services South, Co Hall Carrigrohane Road, Co. Cork, Telephone: 021-4276891 Fax: 021-4276321.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above



# CORK COUNTY COUNCIL COMHAIRLE CONTAE CHORCAÍ

PI ANNING PUBLIC NOTICES CONT'D CORK COUNTY COUNCIL (NORTH) NOTICE UNDER SECTION 179 OF THE PLANNING & DEVELOPMENT ACT 2000 & PART 8, ARTICLE 81 AND ARTICLE 83 OF THE PLANNING & DEVELOPMENT REGULATIONS 2001 (AS AMENDED BY ARTICLES 17 AND 19 OF THE PLANNING & DEVELOPMENT REGULATIONS 2006) APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A In accordance with the Waste Water Discharge (Authorisation) Regulations 2007 SI No. 684 of 2007 Services Northern Division, of Cork County Council, Annabella, Mallow, Co. Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for Fernary Waste Water Treatment Plant, Courthouse Road, Permoy at the Gloiving locations: nt to the requirements of Part 8 of the Planning & Development Regulations 2001 (as amended by s 17 and 19 of the Planning and Development Regulations 2006), notice is hereby given that Cork Council (North) proposes to carry out a development, particulars of which are set out in the Plans and per fixulars of the proposed development will be available for inspection processes at the Will be Service. Vingerment, Control Offices, Annabella, Mallow from S00 ann. 65 00 pm and at the Control offices are open for the transaction of business (excluding Bank Holdson) for a period ending 18th January 2008. binisions or observations with regard to the proposed development, dealing with the proper planning of development of the area in which the development would be situated, may be made in writing to the entor Engineer, Water Services Department, Coric County Council (North), Annabella, Mallow, Co. Cork in Just tanta 500 m. 5th February 2008. SCHEDULE Location Coolroe More, Nature and Extent of Development. Construction of a new 700n? over ground precast concrete water storage reservoir, pump house, site fencing and associated works Emergency Fermoy Blackwater E180936 N09849 Lyre, Millstreet, Co.Cork. Mr. Tom Stritch, Director of Services, Annabella, Mallow, Co. Cork. 30th November 2007 The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Weatrod, Lo Call 1890 335 599 Telephone: 053-9160600 Par: 053-9160699 Email:info@eyaite ind at Cork County Council Offices, Annabella, Mallow, Co. Cork, Telephone: 022 21123 Par: 022 21982. CORK COUNCY COUNCIL (NORTH) NOTICE UNDER SECTION 179 OF THE PLANNING & DEVELOPMENT ACT 2000 & PART 8, AKTICLE &I AND ARTICLE &S OF THE PLANNING & DEVELOPMENT REGULATIONS 2001 (AS AMENDED BY ARTICLES 17 AND 19 OF THE PLANNING & DEVELOPMENT REGULATIONS 2006) Pursuant to the requirements of Part 8 of the Planning & Development Regulations 2001 (as amended by Articles 17 and 19 of the Planning and Development Regulations 2006), notice is hereby given that Cork County Council (North) proposes to carry out a development, particulars of which are set out in the Cork County Council Southern Division APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE Plans and particulars of the proposed development will be available for inspection or purchase at the Wat Services Department, Council Offices, Annabella, Mallow from 9:00 am. to 5:00 p.m. on each day during which said offices are open for the transaction of business (excluding Bank Hokdays) for a period ending Bh. January 20:08. In accordance with the Waste Water Discharge (Authorisation) Regulations 2007 SI No. 684 of 2007, Wate Services Southern Division of Cork Councy Council, County Hall, Carrigrohaae Road, Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence in respect of Biarney Waterwater Transment Plant serving the agglomeration of Blarney. Submissions or observations with regard to the proposed development, dealing with the proper planning and development of the area in which the development would be situated, may be nucle in writing to the Senior Engineer, Water Services Department, Cork County Council (North), Annabella, Mallow, Co. Cor not later than 500 pm. 501 before way 2008. SCHEDULE Location Knockavaddra, Nature and Extent of Development Construction of a new 450m3 over ground precast coucrete water storage reservoir, denolition of existing concrete reservoir, site fencing and associated works. Bweeng Mallow Co.Cork Keondary Emergency Woodside River Shournage E160341 N73241 Secondary Emergency Coolfugh Owenagearage E157548 N74040 Secondary Emergency Shean Lower Mills Rase to E161602 N75245 Emergency Shean Lower Mills Rase to E161602 N75245 Mr. Tom Stritch, Director of Services, Annabella, Mallow, Co.Cork. 30th November 2007 It is intended to submit the Environmental Impact Statement associated Waste Water Treatment Plant to the Agency along with the Application CORK COUNTY COUNCIL (NORTH) NOTICE UNDER SECTION 179 OF THE PLANNING & DEVELOPMENT ACT 2000 & PART 8, ARTICLE 81 AND ARTICLE 80 OF THE PLANNING & DEVELOPMENT REGULATIONS 2001 (AS, AMENDED BY ARTICLES 17 AND 19 OF THE PLANNING & DEVELOPMENT REGULATIONS 2006) The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599 Telephone: 053-9160600 Fax: 053-9160699 Emailtinf@vero.ie.aud at Parsiant to the requirements of Part 8 of the Planning & Development Regulations 2001 (as a sneeded Articles 17 and 19 of the Planning and Development Regulations 2000), notes is hereby given that Cerk County Council (North) proposes to carry out a development, particulars of which are set out in the schedule hereunder. Cork County Council Offices, Water Services South, County Hall, Carrigrohane Road, Co. Cork, Telephone: 021-4276891 Faz: 021-4276321. Submiss beadqua as and particulars of the proposed development will be available for inspection or purchase at the V vices Department, Council Offices, Annabella, Mallow from 500 a.m. to 500 p.m. and at the Count cees, Millstreet from 900 a.m. to 150 p.m. and 200 p.m. to 500 p.m. on each day during which sais ce are open for the transaction of business (excluding Baik Moldivay) for a period enting 18th Cork County Council Southern Division Service, Millou Offices, Millou offices are oper "souary 2008. APPLICATION TO THE ENVIRONMENTAL PROTECTION ACENCY FOR A WASTEWATER DISCHARGE LICENCE Submissions or observations with regard to the proposed development, dealing with the proper planning and development of the area in which the development would be satuated, may be made in writing to the Sense Engineer, Water Services Department, Cork County Council (North), Annabelia, Mallow, Co. Cor uo later than 500 m. 541 (February 2006). SCHEDULE Nature and Extent of Development Construction of a new 700m² over ground precast concrete waterstorage reservoir, demolition of existing concrete reservoir, site, fencing and associated works cation ockduff Upper, Culien, Mallow Co.Cork Discharge Function Trevaland Receptor Grid Reference Primary Main Oullage State Waters E1806500 N72278 Secondary Sinfrance Tullagrees Barryscourt E181731 N72685 Mr. Tom Stritch, Director of Services, Annabella, Mallow, Co. Cork. 30th November 2007 ROADS It is intended to submit the Environmental Impact Statement associated with the proposed upgrading of the Waste Water Treatment Plant to the Agency along with the Application. CORK NORTHERN RING ROAD SCHEME PART 1 Public Exhibition - Preferred Route Corridor (Western Section - Part I) December 2007 A copy of the toplication for the Waste Water Discharge Licence, the Environmental Impact Statement and such farther information relating to the application as may be furthshed to the Agency in the cours the Agency consideration of the Application shall, as soon as is practicable after receipt by the Agency available of inspection or purchase at: Cork County Council and Cork City Council, in consultation with the National Roads Authority, are holding a public exhibition for the above project to outline the preferred roate corridor for the Western section of the scheme (Part 1 - V23 Eulinoling) psystem to 320 Cork to Malow Road, which has been developed by the Cork National Roads Office in conjunction with the Scheme Consultants Fehily Timosey Glord/Fehily Timorey tamboli. To afford an opportunity for the public to be fully informed of the scale and extent of the preferred route corridor option chosen, you are invited to attend a Public Exhibition Session to be held at the following Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above. TIME DATE TIME VENUE Wednesday Kingsley Hotel, 5th December 2007 2.00pm to 8.00pm Victoris Cross Cork County Council Southern Division APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE Cork County Council and Cork City Council are seeking the general co-operation and u public in relation to the advancement of the Scheme. n accordance with the Waste Water Discharge (Authorisation) Regulations 2007 SI No. 684 of 2007, Water NDP Trans 🧳 🥐 maran 🖓 🛛 🎆 Road Traffic Act 2004 Road Works Speed Limits-Macroom Notice is hereby given that in exercise of the powers vested under Section 10 of the Road Traffic Act, 200 and in the interests of road safety, Cork County Council has made a Road Works Speed Limit Order in respect of the following road: Discharge Primary Secondary 
 Function
 Townland
 Receptor

 Main Outfail
 Ballincollig
 River Lee

 Emergency
 Ballincollig
 River Maglin

 Emergency
 Ballincollig
 River Maglin

 Emergency
 Ballincollig
 River Maglin

 Emergency
 Carrigrohane
 River Lee
 L3402-Reananerree to Ballingeary Road Extending the existing 50kph zone approximately 800m west. This is to facilitate road improvement works. The Road Works Speed Limit shall be S0kph and will apply from 30th November 2007 to 31st August 2008 inclusive, or until such earlier dates as may be determined by Cork County Council. Loopy of the application for the Waste Water Discharge Licence and further information relating to the pplication as may be familished to the Agency in the course of the Agency's consideration of the opplication ability as soon as is practicable after receipt by the Agency, be available for inspection or, Representations in this matter may be made in writing to Claire O'Neill, A/Staff Officer, Roads Department, Ploor 5, County Hall, Cork. ctor of Services, South Cork Area Operations The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599 Telephone: 053-9160600 Fax: 053-9160699 Emailtinfo@enx.ie and at PUBLIC NOTICES Cork County Council Offices, Water Services South, County Hall, Carrigrohane Road, Co. Cork, Telephone: 021-4276891 Fax: 021-4276321. Cork County Council Northern Division APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE Cork County Council Southern Division In accurdance with the Waste Water Discharge (Authorisation) Reputations 2007 SI No. 681 of 2007, Servicen Northern Division. of Cork County Council, Annabella, Mallow, Co. Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for Mallow Waste Water Treatment Plant, Ballyellin, Mallow at the following locations: APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE Plant Name Location Mallow WWTP Ballyellis, Mallow Towniand of Ballyellis National Grid Ref. E157318 N097988 Discharge Primary Function Townland Main Ballyellis Receptor Locator E15753( N98140 Bearfores Emergency Bearforest Blackwate Lower Bearforest Summerhill Secondary Emergency Blackwater Lower Spa Glen Ballydahin Ballylough Cross Secondary Blackwater Emergency Railway Bridge Lower Beecher Secondary Lacknalooha Blackwater Emergency Davis St/Shambles Lane West End Secondary Emergency Castlelands Street Cork Harbour Kilgarvan Secondary Emergency Mallow Blackwater

Plant Name Midleton WWTP		Location Ballyannan, Midleton Townland of Garryduff		National Grid Ref. E187505 N72801	
Discharge	Function	Townland	Receptor	Grid Reference	
Primary Main	Outfall	Rathcoursey West	Ballynacorra River /Estuary	E186177 N69506	
Secondary	Emergen	cy Ballynacorra West	Ballynacorra Rv	E188366 N71791	
Secondary	Emerger	cy Ballynacorra west	Ballynacorra Rv	E188520 N71783	
Secondary	Emergen	cy Townparks (ED Midleton)	Ballynacorra Rv	E187973 N73127.2	
Secondary	Emergen	cy Townparks (ED Midleton)	Ballynacorra Rv	E188045 N72513.8	
Secondary	Emergen	cy Townparks (ED Midleton)	Ballynacorra Rv	E188268 N72058	

t is intended to submit the Environmental Impact Statement associated with the prov Vater Treatment Plant to the Agency along with the Application.

upy of the application for the Waste Water Discharge Licence, the Environmental Impact Statement and in further information relating to the application as may be formished to the Agency is the course of the my's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be lable for impection or purchase at:

The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599 Telephone: 053-9160600 Fax: 053-9160699 Emsil:info@epa.ie and st

Emailinuoseepaile anu n. Cork County Council Offices, Water Services South, County Hall, Carrigrobane Road, Co. Cork, Telephone: 021-4276891 Fax: 021-4276321. ubmissions in relation to the application may be made to the Environmental Protection Agency at its eadquarters described above.

Cark County Council Southern Division

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007, S.I. No. 684 of 2007, Water Services Southern Division of Cork County Council, County Hall, Carrigenhaue Road, Cork is Replying to the Environmental Protection Agency for a Water Water Dechargen Leonce in respect of Ringasidady outfall which includes the agglemeration of Carrigaline and Crossbawn, and trade effluent discharges from the Ringasidody area.

Discharge	Function	Townland	Receptor	Grid Refer	ence
Primary	Main Outtall	Ringaskiddy	Cork Harbour	E181358	N062521
Secondary	Emergency	Crosshaven	Owenboy River	E179639	N061145
Secondary	Emergency	Crosshaven	Owenboy River	E178816	N061285
Secondary	Emergency	Carrigaline	MiddleOwenboy River		N062352
Secondary	Emergency	Carrigaline	MiddleOwenboy River	E173131	N062418
Secondary	Emergency	Carrigaline	EastOwenboy River	E174443	N062603
Secondary	Emergency	Shanbally	Monkstown Creek	E175770	N064679

It is intended to submit the Environmental Impact Statement associated with the proposed pro Waste Water Treatment Plant in the Lower Harbour to the Agency along with the Application.

A copy of the application for the Waste Water Discharge Licence, the Environmental Impact Statement and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at:

The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335599 Telephone: 053-9160600 Fax: 053-9160699 Email:infc@epa.ie and at Cork County Council Offices, Water Services South, County Hall, Carrigrohane Road, Cork, Telephone: (121-4276891 Fax: 021-4276321)

Submissions in relation to the application may be made to the Environmental Protection Ag headquarters described above.

#### Cork County Council Western Division

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Waste Water Discharger (Authoritation) Regulations 2007 SI No. 684 of 2007, Water Services Western Division, of Cork County Council. Courthouse: Sichhereen, Co. Cork is applying to the Environmental Potestion Agency for a Waste Water Declarge Licence for Clonakily Waste Water Trostment Plant, Youghala, Clonakily at the following locations:

Discharge	Function	Townland	Receptor	Grid Reference
Primary	Main	Youghals	Clonakilty harbour	E139030 N041311
Secondary	Emergency	Scartagh	Clonakilty harbour	E138859 N041382
Secondary	Emergency	Youghais	Clonakilty harbour	E138667 N041336
Secondary	Emergency	Gallanes	Ground	E140690 N042600
Secondary	Emergency	Inchydoney	Muckruss Strand	E139612 N038533
Secondary	Emergency	Inchydoney	Muckruss Strand	E139373 N038612

 Plant Name
 Location
 National Grid Ref.

 Clonakilty
 WWTP
 Youghals, Clonakilty
 E139030 N041311

It is intended to submit the Environmental Impact Statement associated with the proposed upgrading of the Waste Water Treatment Plant to the Agency along with the Application. A copy of the application for the Water Water Discharge Licence, the Environmental Impact Statement and a such turber information relating to the application as may be furthered to the Agency is the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase as

The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335599 Telephone: 053-9160600 Fax: 053-9160699 Email:info@epa.je

and at Cork County Council Offices, Emmet Square, Clonskilty, Co. Cork, Telephone: 023-33347 Fax: 023-33147. Submissions in relation to the application may be made to the Environmental Protection Agency at its readquarters described above.

#### TENDERS

ull details on www.etenders.gov.ie

rk County Council in partnership with Bandon Action Group javites lenders from suita alifed town planning ennsultants to manage a Bandon Action Programme. osing date for receipt of tenders is 4.00 pm Friday 4th January 2008.

Cork County Council (Western Division) seeks tenders from competent Consulting Engineering Firms for consulting services in relation to Final Capping and Gas Management at Derryconnell Landfül, , Co Cori ng date i

orse. In for receipt of tenders is 4.00 pm Fridsy 18th January 2008.

Northern Division invites Tenders from competent Civil Engineering Contractors for the ruction of Carrigankigh Stage 1-Upgrading Works (Laying of water mains). ing date for receipt of Lenders is 4.00 pm Friday 11th January 2008.

ter Services Investment Programme Project Office invites lenders from suitably or tractors for the Bantry Water Supply Interim Scheme – Crivi Works, sing date for receipt of lenders is 4:00 pm Friday 11th January 2008.

Cork County Water Conservation Project invites Expressions of Interest from suitably qualified and experienced Contractors for the supply or supply, installation and commissioning of approximately 350 electromagnetic bulk form eners and approximately 400 henerity or installators across Cork County. *Closing date for receipt of Conters is 4:00 pm Friday 11th January 2008*.

The County Architects Department, Floor 9, County Hall, Cork requires the services of a suitably qualified architect led design team for the development of a new corporate head quarters for the Council quanties in source to using team for the development of a new corporate head quarters for the Council Fire Department at the Link Road, Ballineoling, Co. Cork. Closing date and time for, the return of Pre-Qualification Questionnaire is 4.00 p.m. on Friday 4th January 2008.

www.corkcocó.ie

It is intended to submit the Environmental Impact Statement associated with the recently completed Accord roth replication (ner T. Warner 1999). The statement of the herbits and the statement of the replication (ner T. Warner 1999). The statement of the herbits and such farther information relating the herbits and explication as may depend the Agency's consideration (ner Application and application as may be translated to be depend in the course of the Agency's consideration or the Application shall, as soon as is practicable aller recently by the Agency, be available for inspection or purchase as the

The Environmential Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wenford, Lo Call 1890 335 599 Telephone: 053-9160600 Fax: 053-9160699 Email:Info@ena.is.and-

Cork County Council Offices, Annabella, Mallow, Co. Cork, Telephone: 022 21123 Fax: 022 21983.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

Plant Name Location National Grid Ref. Fermoy WWTP Courthouse Road, Fermoy E182283 N098765

	TOWNIE	ind of Scrawhall		
Discharge	Function	Townland	Receptor	Grid Reference
Primary	Main	Strawhall	Blackwater	E182331 N098819
Secondary	Emergency	Strawhall	Blackwater	E182193 N098780
Secondary	Emergency	Carrignagroghera	Blackwater	E181462 N098719
Secondary	SW+Trade	Carrignagroghera	Blackwater	E181232 N098624
Secondary	Emergency	Carrignagroghers	Blackwater	E181191 N098622
Secondary	Emergency	Fermov	Blackwater	E181400 N098557
Secondary	Emergency	Fermoy	Blackwater	E181217 N098500
·	P	P	Ol deside	121 80026 MOON (04

It is intended to submit the Environmental Impact Statement associated with the recently completed norrading of the Waste Water Treatment Plant to the Agency along with the Application. oppriming to use vasues where i relativity is not to the agency appring the reproduction. A copy of the application for the Waster Water Discharger Larence, the Environmental Impact Statement and such their information relating to the application as may be furnished to the Agency in the course of the available for inspection or our relating to all the such as non-as to practicable after receipts the facency, be available for inspection or our relating each and the such as non-as to practicable after receipts the facency, be

ssions in relation to the application may be made to the Environmental Protection Agency at its narters described above

<u>Plant Name</u> Blarney WWTP	Locati Rivery Town	n ew Estate, Tower, and of Kilnamuc	Co. Cork kr	National E15919	
Discharge	Function Main Outfall	Townland	Recepto	r Journadh	Grid Reference

A copy of the application for the Waste Water Discharge Licence, the Environmental Impact Statement and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as noon as is practicable after receipt by lite Agency, be available for impection or purchase at:

ions in relation to the application may be made to the Environmental Protection Agency at its rears described above.

In accordance with the Waste Water Discharge (Authorication), Perulations 2007 SI No. 684 of 2007, Wate Services Southern Division of Cork County Councy Four Vergenzations (Node, Cork is applying to the Environmental Protection Agency for a Waster Water Dicharge Licence in respect of Carrigewohill Wasterwater Treatment Plant serving the aggrouperation accession, accessing

Plant Name	Location	National Grid Ref.
Carrigtwohill WWTP	Tullagreen Carrigtwohill, Co. Cark Townland of Carrigtwohill	E181177 N72228
	OO	

Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Werdord, Lo Call 1890 335 599 Telephone: 053-9160600 Fax: 053-9160699 allinfo@epaie and at

Cork County Council Offices, Water Services South, County Hall, Cerrigrohane Road, Co. Cork, Telephone: 021-4276891 Fax: 021-4276321.

Services Southern Division of Core County Council, County Hail, Carrigronane Road, Core is applying b the Euvronmental Protection Agency for a Waste Water Discharge Licence in respect of Ballincollig Wastewater Treatment Plant serving the agglomeration of Ballincollig

		National Grid Ref.
Ballin	ermills collig, Co. Cork and of Ballincollig	E159203 N71139

Grid Reference E159240 N71520 E159686 N70000 E159686 N70000 E161301 N71619

Submissions in relation to the application may be made to the Environmental Protection Agency at its freadjuarters described above.

Discharge	Function	Receptor	Townland	Grid Reference
Primary	Major Outfall	Cork Harbour	Ringmeen	E 178243 N 6555
Secondary	Minor Outfall	Cork Harbour	Ringacoltig	E 177547 N 66540
Secondary	Minor Outfall	Cork Harbour	Ringmeen	E 178593 N 65910
Secondary	Minor Outfall	Cork Harbour	Ringmeen	E 178699 N 66007
Secondary	Minor Outfall	Cork Harbour	Ballyvoloon	E 179676 N 66313
Secondary	Minor Outfail	Cork Harbour	Kilgaryan	E 179807 N 66372
Secondary	Minor Outfall	Cork Harbour	Kildarwan	E 180015 N 66/15

It is intended to submit the Environmental Impact Statement associated with the proposed provision of a Waste Water Treatment Plant in the Lower Harbour to the Agency along with the Application. A copy of the application for the Waste Water Discharge Licence, the Environmental Impact Statement and su further information relating to the application as may be formisable to the Agency in the course of the Agency consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for

special of purchase al: The Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599 Telephone: 053-9160600 Fax: 053-916069 EmailtindoRena.io.and at

Cork County Council Offices, Water Services South, County Hall, Carrigrohane Road, Co. Cork, Telephone: 021-4276891 Page 021-4276321. the Environmental Protection Agency at its head Submissions in relation to quarters described above

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007, S.I. No. 684 of 2007, Water Services Southern Division of Cork County Council, County Hall, Carrigrohane Road, Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for the agglomeration of Cobh Rural and Cobh Urban at the following locations:

CODE HED WE WING	cooli ci ona ai ai	tono wing tocation		Firms
Function	Receptor	Townland	Grid Reference	Schull
Major Outfall	Cork Harbour	Ringmeen	E 178243 N 65558	Closic
	Cork Harbour		E 177547 N 66546	
Minor Outfall	Cork Harbour	Ringmeen	E 178593 N 65910	
Minor Outfall	Cork Harbour	Ringmeen	E 178699 N 66007	CCC 2
	Cork Harbour		E 179676 N 66313	coastr
	Cork Harbour		E 179807 N 66372	Closin
Minor Outfall			E 180015 N 66415	

#### PUBLIC NOTICES CONT'D

Cork County Council Southern Di

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

cordance with the Waste Water Discharger (Authorisation) Regulations 2007, S.I. No. 684 of 2007, * Services Southern Division of Cork County Council, County Hall, Carrigrohane Road, Cork is right to the Environmental Protection, Agency for a Water Water Discharger Lience in respect of courses outfall which includes the agglomeration of Midleton and trade effluent discharges from

Plant Name	Location			National Grid Ref.	
Midleton WWI	WTP Ballyannan, Midleton Townland of Garryduff			E187505 N72801	
Discharge	Function	Townland	Receptor	Grid Reference	
Primary Main	Outfall	Rathcoursey West	Ballynacorra River /Estuary	E186177 N69506	
Secondary	Emergency	Ballynacorra West	Ballynacorra Rv	E188366 N71791	
Secondary	Emergency	Ballynacorra west	Ballynacorra Rv	E188520 N71783	
Secondary	Emergency	Townparks (ED Midleton)	Ballynacorra Rv	E187973 N73127.2	
Secondary	Emergency	Townparks (ED Midleton)	Ballynacorra Rv	E188045 N72513.8	
Secondary	Emergency	Townparks (ED Midleton)	Ballynacorra Rv	E188268 N72058	

# Kevin Sugrue

addressed them in the table to the best of my ability. You should attach a copy of the Assessment of Needs and the published WSIP. I have examined B.10 Capital Investment Programme and I have broken down the request to its constituent parts as shown below and have

Regards,

ROF

10th December 2007

# **B.10 Capital Investment Programme** Provide details of

'Assessment of Needs' study. 1/any proposed infrastructural development for the waster water works which has been prioritised in the water services authority Hoseson on the any other

2/ State whether this development work has been allocated funding where local or national Water Services Investment Plans.

If so, provide details

2a/ on the extent and type of work to be undertaken,

2b/ the likely timeframes for this work to be completed and

2c/ the level of funding being provided.

Table B10.

	AGGLOMERATION	ASSESSMENT	WATER SERVICES	EXTENT AND TYPE OF WORK		LIKELY TIMEFRAMES	LEVEL OF FUNDING
		OF INEEDS	INTEGRATI LAND			-	,
-	Blamey	No	oN	Blarney (Blarney/Tower) has recently been upgraded to 13,000 p.e. secondary treatment and <u>includes nutrient removal</u> . No additional upgrading is proposed at this time.	ly been upgraded to 13,000 <i>es nutrient removal</i> . No this time.	N/A	N/A
2	Crosshaven	Yes	Yes- works at Crosshaven completed under the	Forms an element of the proposed Lower Harbour SS. Crosshaven collection systems connected to Carrigaline SS from where it is pumped onwards to the 'IDA' outfall discharging at	Lower Harbour SS. lected to Carrigaline SS from IDA' outfall discharging at	Element is completed and commissioned.	E 5m 80% DEHLG grant
			WSIP 2005-2007.	the Dognose Bank.			, 20% local funding
3	Cobh	Yes	Yes	Forms part of the proposed Lower Harbour SS that includes	Harbour SS that includes	EIS for WWTP to be	€76m
			-	major upgrading of the Cobh collection system and transfer of the	tion system and transfer of the	submitted to An Bored	Estimated 80%
				wasterwater across Cork Harbour to a proposed new 80,000 p.e.	a proposed new 80,000 p.e.	Pleanala Jan .08. PK for	DEHLG grant and
		,		Ringaskiddy and which will discharge to the 'IDA' outfall.	r at Carrigatific East, irge to the 'IDA' outfall.	to be approved Sept.08,	
				Nutrient removal is not being proposed as discharge is not to a	sed as discharge is not to a	Construction to commence	-
				sensitive areas		March 2010, completion March 2012	
4	Carrigaline	Yes	Yes	Forms part of the proposed Lower Harbour SS. The effluent from	Harbour SS. The effluent from	As for Cobh	As for Cobh
				Carrigaline, which now includes Cro	osshave, discharges untreated		
	•			via the 'IDA' outfall at the possion Bank. It will be served by the	Bank. It will be served by the		
	•		-	proposed new 80,000 p.e. Secondary WWTP to be constructed at	y WWTP to be constructed at		<i>:.</i>
	×.			'UDA' outfall.	WITCH WILL UISCHALBE TO LINE	-	
5	Ringàskiddy	Yes	Yes	Forms part of the proposed Lower Harbour SS. Wastewater from	Harbour SS. Wastewater from	As for Cobh	As for Cobh
				Ringaskiddy will be pumped to the East Ringaskiddy	new W TP at Carrigaline		
9	Carrigtwohill	Yes	Yes	First phase proposal is to increase capacity to 45,000 p.e.	apacity to 45,000 p.e.	EIS to ABP March '08	E20m - To be
				secondary treatment. Nutrient removal is being proposed in the	val is being proposed in the		funded as an SLI
				EIS and PR as the discharge area is currently designated a	currently designated a		Scheme I.e. 40%
·	•.			sensitive area.			DEHLG funding
							and 60% local
							funding
Atta	Attachment included	ded		Yes No			
-	I/ Assessment of Needs 2/ Water Services Inves	s Investme	1/ Assessment of Needs 2/ Water Services Investment programme	Yes Yes			
200	2007-2009			~	-		ж. л.

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#### SECTION C: INFRASTRUCTURE & OPERATION

Advice on completing this section is provided in the accompanying Guidance Note.

#### C.1 Operational Information Requirements

Provide a description of the plant, process and design capacity for the areas of the waste water works where discharges occur, to include a copy of such plans, drawings or maps, (site plans and location maps, process flow diagrams), and such other particulars, reports and supporting documentation as are necessary to describe all aspects of the area of the waste water works discharging to the aquatic environment. Maps and drawings must be no larger than A3 size.

#### **Treatment Plant**

The Blarney WWTP is designed for a Population Equivalent (PE) of 13,000PE and BOD loading of 780Kg/day. The maximum hydraulic capacity of the Blarney WWTP is 384m³/h which is 2.7 Dry Weather Flow (2.7DWF). In order to cope with flows above 2.7DWF storm storage has been provided at the WWTW. The volume of storm storage at the WWTW is approximately 366m³. In the event that the storm water holding tanks are filled and the storm continues, the storm water tanks are operated as a pre-clarification tank without sludge removal. The overflow from the storm water storage tank is connected to the final effluent outlet pipe.

The treatment plant treats all flows that arrive at the works to secondary standards in accordance with the Urban Waste Water Directive 1994 as shown in the following table:

CV MIL	
Parameter 15 2 10	Effluent Limit
BOD For yite	25 mg/l
COD Scot	125 mg/l
Suspended Solids	35 mg/l
Phosphate	2 mg/l
Ammonia	3 mg/l
Total Nitrogen	25 mg/l
Sludge	18% or greater

 Table 1 – Effluent Limits discharge

The existing WWTW were upgraded with an additional stream. The flow is split after the wastewater passes through the new inlet works. 50% of the flow is diverted to the existing wastewater treatment stream. The remaining 50% is directed to a new treatment system. The existing stream has an aeration phase, a secondary settlement phase and return activated sludge phase. The new stream has an anaerobic, anoxic and aeration phase, a secondary settlement phase and return activated sludge phase.

Sludge is wasted separately from each stream to a common storage sludge blend tank, common Picket Fence Thickener and common dewatering plant.

A summary of the treatment process is presented below:

Inlet works	2Duty/1Standby pumps, 2 No. mech grease removal system, flow measured	•			
	EXISTING STREAM	NEW STREAM			
<b>Biological Treatment</b>	1 No. aeration tank with 3 No.	- 1 No. Anaerobic tank with			
	surface aerators.	3 No. mixers.			
		- 1 No. Anoxic tank			
		- 1 No. aeration tank with fine			
		bubble disc aeration			
Phosphorus	Ferric Sulphate dosing				
Removal					
Secondary Settling	1 No. 19m diameter final	1 No. 17m diameter final			
	settlement tanks with half bridge	e			
	sludge scraper.	sludge scraper.			
	Sludge settled within the settlement				
	each central sludge hopper to the retu	im sludge pump sump.			
	Surplus Activated Sludge (SAS)	is numped by 2 No numps			
	(Duty/Standby) from the pump sump				
	Return Activated Sludge (RAS) is pu				
	from the pump suppond is mixed with the incoming influent.				
	citon set				
Sludge Treatment	- 1 No. sludge acceptance tank, 45m ³ , 1 No. mixer and sludge pump				
	sump equipment with 2 No. Pumps.				
	- 1 No. Sludge Blend/Holding tank	x, 192m ³ , 1 No. mixer and sludge			
	pump of summent with 2 No. Pumps				
	sump equipment with 2 No. Pumps.				
	- 1 No. Picket Fence Thickener for thickening from 0.5% to 2% Dry				
	Solids, 192m ³ .				
	- 2 No. Sludge Belt Presses with 2	No. sludge transfer pumps, 1 No.			
	poly				
	make-up unit with 3 No. dosing pu	mps.			
Effluent Discharge	1 No. 450mm gravity outfall pipe to	River Shournagh.			

Ancillary equipment at the WWTP also includes the following:

- Odour Treatment Unit with 2 No extractor fans.
- Standby Generator and SCADA system covering all the plant including sludge treatment process.
- Buildings Inlet and sludge building, electricity transformer building, laboratory and control room building with fire alarm and security alarm systems.

**Attachment C.1** should contain supporting documentation with regard to the plant and process capacity, systems, storm water overflows, emergency overflows, etc., including flow diagrams of each with any relevant additional information. These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, D.2, E.3 and F.2.

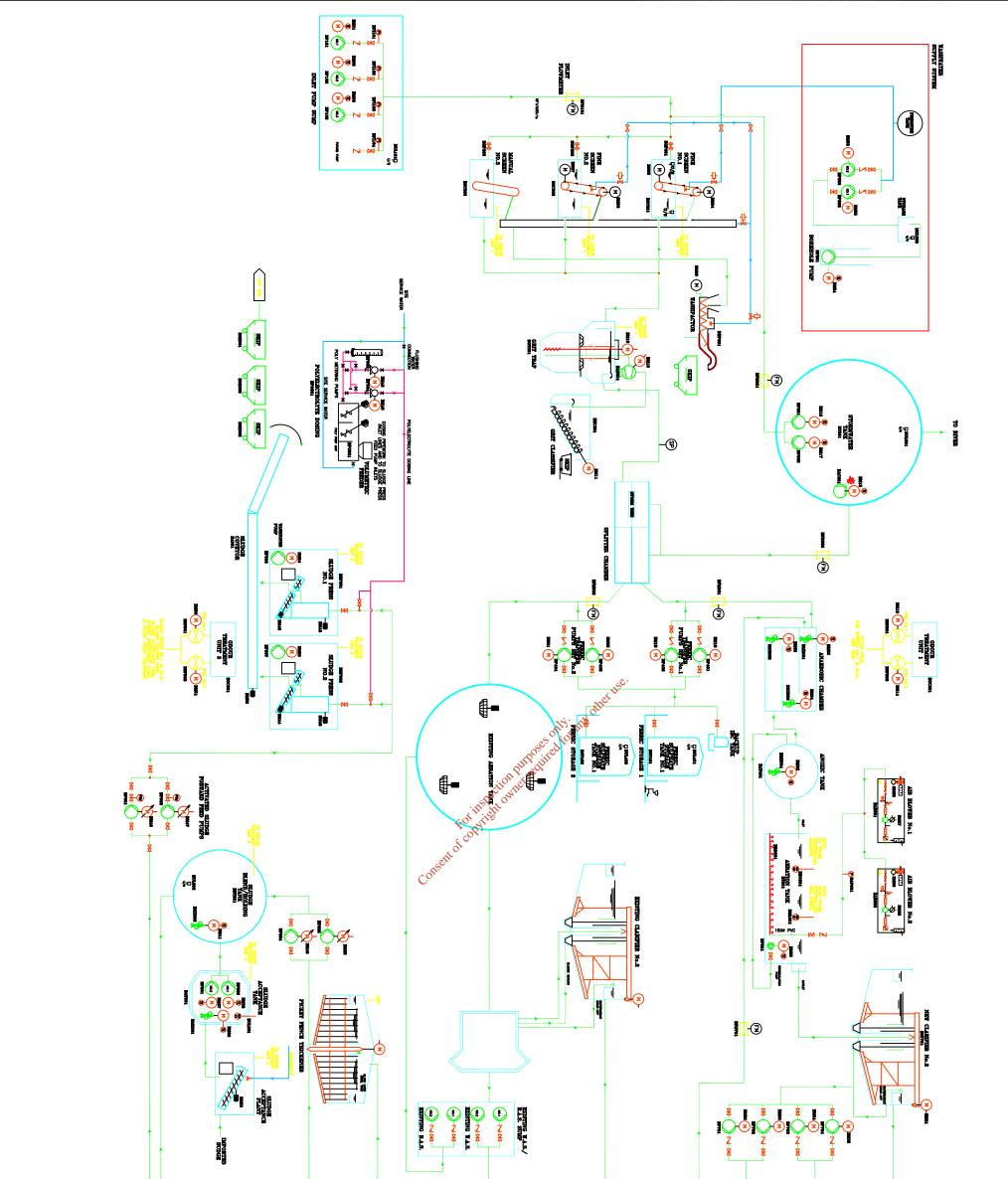
Attachment included	Yes	No
	*	

#### C.2 Outfall Design and Construction

Provide details on the primary discharge point & secondary discharge points and storm overflows to include reference, location, design criteria and construction detail.

Attachment C.2 should contain any supporting documentation on the design and construction of <u>any and all</u> discharge outfalls, including stormwater overflows, from the waste water works.

		ather its	
Attachment included	only an	Yes	No
	oses ato	*	
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Contract: CORK COUNCIL BLARNEY Drawing Title: Process & Instrumentation Diagram Scale: NTS Drawn By: M O'Shea Drawn By	FOR APPROVAL       Image: state s	1. ALL SUBMETSIBLE PUMPS TO HAVE A THERMISTOR 2. ALL MIXERS TO HAVE LOCAL CONTROL 2. ALL MIXERS TO HAVE LOCAL CONTROL

IF IN DOUBT ASK

DO NOT SCALE OFF THIS DRAWING

### SECTION D: **DISCHARGES TO THE AQUATIC ENVIRONMENT**

Advice on completing this section is provided in the accompanying Guidance Note.

Give particulars of the source, location, nature, composition, quantity, level and rate of discharges arising from the agglomeration and, where relevant, the period or periods during which such emissions are made or are to be made.

The applicant should address in particular all discharge points where the substances outlined in Tables D.1(i), (b) & (c) and D.1(ii), (b) & (c) of Annex 1 are emitted.

Where it is considered that any of the substances listed in Annex X of the Water Framework Directive (2000/60/EC) or any of the Relevant Pollutants listed in Annex VIII of the Water Framework Directive (2000/60/EC) are being discharged from the waste water works or are seen to be present in the receiving water environment downstream of a discharge from the works (as a result of any monitoring programme) the applicant shall screen the discharge for the relevant substance.

### **Discharges to Surface Waters D**.1

only, any other ne Details of all discharges of waste water from the agglomeration should be supplied. Tables D.1(i)(a), (b) & (c), should be completed for the primary discharge point from the agglomeration and Tables D.1(ii)(a), (b) & (c) of Annex 1 should be completed for **each** secondary discharge point, where relevant. Table D.1(iii)(a) should be completed for each storm water overflow. Individual Tables must be completed for each discharge point.

Supporting information should form Attachment D.1 . 8

Attachment included	Yes	No

### **D.2** Tabular Data on Discharge Points

Applicants should submit the following information for each discharge point:

Table D.2:

### See attached file: D2_Blarney

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING
Point Code Provide Iabel ID's	Point Type (e.g., Primary/ Secondary/ Storm Water Overflow)	Local Authority Name (e.g., Donegal County Council)	Receiving Water Body Type (e.g., River, Lake, Groundwater, Transitional, Coastal)	Receiving Water Body Name (e.g., River Suir)	Protected Area Type (e.g., SAC, candidate SAC, NHA, SPA etc.)	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference

An individual record (i.e. row) is required for each discharge point.

# TABLE D.1(i)(a):EMISSIONS TO SURFACE/GROUND WATERS<br/>(Primary Discharge Point)

m³/sec

# Discharge Point Code: SW01Blarney

Source of Emission:		Treated wastewater from Blarney wastewater treatment plant				
Location:		Townland of Kilnamucky				
Grid Ref. (12 digit, 6	E, 6N):	E159261 N74835				
Name of receiving wa	aters:	River Shournagh				
River Basin District:		South Western River Basin District				
Designation of receiv	ing waters:	NHA ,Shournagh is tributary of Salmonid River Lee				
Flow rate in receiving	y waters:		allos tiled to	m ³ .sec ⁻¹ Dry Weather Flow		
			ection Press	m ³ .sec ⁻¹ 95%ile flow		
Emission Details:		FOUN	ju			
(i) Volume emitted		attofcor				
Normal/day	2046m ³	Maximum/dayConse		5779m ³		
Maximum rate/hour	240m ³	Period of emission (avg)	24 hours per day per annum			

Dry Weather Flow

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

# Discharge Point Code:<u>SW01Blarney</u>

Number	Substance	As discharged		
		Max. daily average		
1	рН	7.37		
2	Temperature	Not available		
3	Electrical Conductivity(@20°C)	332		
		Max. daily average (mg/l)	kg/day	
4	Suspended Solids	13.5	27.6	
5	Ammonia (as N)	0.35	0.72	
6	Biochemical Oxygen Demand	8.6	17.5	
7	Chemical Oxygen Demand	44.8 oth	91.7	
8	Total Nitrogen (as N)	21.1 0113 2013	43.1	
9	Nitrite (as N)	Not available	Not available	
10	Nitrate (as N)	0.43	0.9	
11	Total Phosphorus (as P)	2.95 NOT 5 10	6.0	
12	Orthophosphate (as P) ^{Note 1}	1.76 0 ^{6C¹} 3 ^{NII}	3.6	
13	Sulphate (SO₄)	42	86.8	
14	Phenols (sum) Note 2 (ug/l)	<0.10	<0.0002	

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(i)(c):DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Primary Discharge Point - Characteristics of the emission

# Discharge Point Code:<u>SW01Blarney</u>

Number	Substance	As discharged		
		Max. daily average (μg/l)	kg/day	kg/year
1	Atrazine	< 0.01	<0.000021	<0.0077
2	Dichloromethane	<1		
3	Simazine	< 0.01	<0.000021	<0.0077
4	Toluene	< 0.01	<0.000021	<0.0077
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	< 0.01	<0.000021	<0.0077
7	Arsenic	6	0.0123	4.49
8	Chromium	<20	<0.041	<14.96
9	Copper	<20	<b>≤0</b> 041	<14.96
10	Cyanide	<5 🔊	<b>∢</b> 0.0102	<3.72
11	Fluoride	230	0.47	171.6
12	Lead	<20 👌	<0.041	<14.96
13	Nickel	<20 collisere	<0.041	<14.96
14	Zinc	30	0.06	21.9
15	Boron	<20	<0.041	<14.96
16	Cadmium	<20	<0.041	<14.96
17	Mercury	0.6	0.0012	0.44
18	Selenium	<0.7	<0.0015	<0.55
19	Barium	<20	<0.041	<14.96

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

# Discharge Point Code: SW02Blarney

ł – – – – – – – – – – – – – – – – – – –						
Source of Emission:		Emergency Outfall Blarney				
Location:		Townland of Shean Lower				
Grid Ref. (12 digit, 6	E, 6N):	E161602 N75245				
Name of receiving wa	iters:	Mill Race to River Mart	in			
River Basin District:		South Western River Basin District				
Designation of receiv	ing waters:	Not Available				
Flow rate in receiving	waters:	Not Availablem ³ .sec ⁻¹ Dry Weather F				
Emission Details:		ille				
(i) Volume emitte	ed Not Available	Forst				
Normal/day	Not Available m ³	Maximum/days ^{ont}	m³			
Maximum rate/hour	Not Available m ³	Period of emission (avg)	Not Availablemin/hrhr/dayday/yr			
Dry Weather Flow	Not Available m ³ /sec					

# 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: SW02Blarney

Number	Substance	ance As discharged		
		Max. daily average		
1	рН	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 ection net for	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)	Notavailable	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: SW02Blarney

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 ^{stre}	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):EMISSIONS TO SURFACE/GROUND WATERS<br/>(Secondary Discharge Point)(1 table per discharge point)

# Discharge Point Code: SW03Blarney

1					
Source of Emission:		Emergency Outfall Blarney			
Location:		Townland of Woodside			
Grid Ref. (12 digit, 6	E, 6N):	E160341 N73241			
Name of receiving wa	iters:	River Shournagh			
River Basin District:		South Western River Basin District			
Designation of receiv	ing waters:	Not available			
Flow rate in receiving	waters:	Not availablem ³ .sec ⁻¹ Dry Weathe Not availablem ³ .sec ⁻¹ 95%il			
			Not availableNot availableNot available	m ³ .sec ⁻¹ 95%ile flow	
Emission Details:		The	ecte and at		
(i) Volume emitte	ed Not available	FOR DY	ço		
Normal/day	Not available m ³	Maximum/day		m³	
Maximum rate/hour	Not available m ³	Period of emission (avg)	Not availablemin/hr	hr/dayday/yr	
Dry Weather Flow	Not available m ³ /sec				

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

Discharge	Point Co	de: <u> </u>	SW03Blarney

Number	Substance	As discharged		
		Max. daily average		
1	рН	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 of the second	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)	Notavailable	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: SW03Blarney

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 ^{ine}	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):EMISSIONS TO SURFACE/GROUND WATERS<br/>(Secondary Discharge Point)(1 table per discharge point)

# Discharge Point Code: SW04Blarney

1		P				
Source of Emission:		Emergency Outfall Blarney				
Location:		Townland of Coolflugh				
Grid Ref. (12 digit, 6	E, 6N):	E157548 N74040				
Name of receiving wa	iters:	River Owennagearagh				
River Basin District:		South Western River B	Basin District			
Designation of receiving waters: Not available		Not available	1. Nothers			
Flow rate in receiving waters:			Puposes off. and	Not available	m ³ .sec ⁻¹ Dry W	leather Flow
			Pupper required to	Not available	m ³ .sec ⁻¹	95%ile flow
Emission Details:		inst	ecticon and ection and			
(i) Volume emitte	ed Not available	FORM	<u>,</u>			
Normal/day	Not available m ³	Maximum/days ^{ont}				m ³
Maximum rate/hour	Not available m ³	Period of emission (avg)	Not a	vailablemin/hr	hr/day	day/yr
Dry Weather Flow	Not available m ³ /sec					

# 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: SW04Blarney

Number	Substance	As discharged		
		Max. daily average		
1	рН	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	Not available	
10	Nitrate (as N)	Not available and	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)	Notavailable	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: SW04Blarney

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 ^{ine}	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: SW01Blarney

h		F			
Source of Emission:		Storm water Overflow	Blarney		
Location:		Townland of Kilnamuck	кy		
Grid Ref. (12 digit, 6E	, 6N):	E159261 N74835			
Name of receiving wa	ters:	River Shournagh			
River Basin District:		South Western River B	asin District	_گ·	
Designation of receivi	ng waters:	NHA ,Shournagh is trib	outary of Salmon	d River Lee	
Flow rate in receiving	waters:		npuppesited for an	Not available Not available	m ³ .sec ⁻¹ Dry Weather Flow m ³ .sec ⁻¹ 95%ile flow
Emission Details:		inst	ection net		
(i) Volume emitte	d Not available	FOR CONT	50 		
Normal/day	Not available m ³	Maximum/day and			m ³
Maximum rate/hour	Not available m ³	Period of emission (avg)		Not availablemin/hr	hr/dayday/yr

_____

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

# Discharge Point Code: SW02Blarney

Not Available

Source of Emission:		Storm water Overflow	Blarney	
Location:		Townland of Shean Lov	wer	
Grid Ref. (12 digit, 6	, 6N):	E161602 N75245		
Name of receiving wa	ters:	Mill Race to River Mart	in يې.	
River Basin District:		South Western River B	asin District	
Designation of receiving waters:		Not Available	ose offor att	
Flow rate in receiving waters:			ection purperior	m ³ .sec ⁻¹ Dry Weather Flow m ³ .sec ⁻¹ 95%ile flow
		For st		
Emission Details:		Lov.		
(i) Volume emitte	ed Not Available	Consent		
Normal/day	Not Available m³	Maximum/day		m³

m ³	(avg)	
		2

Period of emission

Maximum rate/hour

_Not Available_min/hr _____hr/day

_day/yr

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

Maximum/day

(avg)

Period of emission

Source of Emission:	Storm water Overflow Blarney		
Location:	Townland of Woodside		
Grid Ref. (12 digit, 6E, 6N):	E160341 N73241		
Name of receiving waters:	River Shournagh		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	Not available		
Flow rate in receiving waters:		Not available	m ³ .sec ⁻¹ Dry Weather Flow
	For institut	Not available	m ³ .sec ⁻¹ 95%ile flow
Emission Details:	attofcor		
(i) Volume emitted Not available	Cous		

# Discharge Point Code: <u>SW03Blarnev</u>

Not available

Not available

m³

m³

Normal/day

Maximum rate/hour

Blarney section d annex 1.doc

m³

_Not available__min/hr ____hr/day _____day/yr

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

# Discharge Point Code: SW04Blarney

Source of Emission:		Storm water Overflow	Blarney		
Location:		Townland of Coolflugh			
Grid Ref. (12 digit, 6E	, 6N):	E157548 N74040			
Name of receiving wa	ters:	River Owennagearagh			
River Basin District:		South Western River B	asin District		
Designation of receivi	ng waters:	Not available	offeres		
Flow rate in receiving	waters:		npupose official		m ³ .sec ⁻¹ Dry Weather Flow m ³ .sec ⁻¹ 95%ile flow
Emission Details:			ection it		
(i) Volume emitte	d Not available	FOR CONT	<del></del>		
Normal/day	Not available m³	Maximum/dayen			m ³
Maximum rate/hour	Not available m³	Period of emission (avg)	N	lot available_min/hr _	hr/dayday/yr

PT_CD	PT_TYPE	LA_NAME
SW01 BLARNEY	Primary, Secondary, Storm W	
SW04 BLARNEY	Emergency,	CORK COUNTY COUNCIL
SW03 BLARNEY	Emergency,	CORK COUNTY COUNCIL
SW02 BLARNEY	Emergency,	CORK COUNTY COUNCIL
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RWB_TYPE	RWB_NAME	DESIGNATION
River	RIVER SHOURNAGH	NHA
River	OWENNAGEARAGH	NHA
River	RIVER SHOURNAGH	NHA
River	MILL RACE TO RIVER MARTIN	NHA
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EASTING	NORTHING	VERIFIED
159,261	74,835	No
157,548	74,040	No
160,341	73,241	No
161,602	75,245	No
101,002	10,240	
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# TABLE E.1(i): WASTE WATER FREQUENY AND QUANTITY OF DISCHARGE – Primary and Secondary Discharge Points

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m ³ /annum)
SW01Blarney (P)	365 days per annum	746790(based on an average flow)
SW02Blarney	Not available	Not available
SW03Blarney	Not available	Not available
SW04Blarney	Not available	Not available
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# TABLE E.1(ii): WASTE WATER FREQUENY AND QUANTITY OF DISCHARGE – Storm Water Overflows

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m ³ /annum)	Complies with Definition of Storm Water Overflow
SW01Blarney	Not available	Not available	Not available
SW02Blarney	Not available	Not available	Not available
SW03Blarney	Not available	Not available	Not available
SW04Blarney	Not available	Not available	Not available
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### Attachment E2

### **Blarney** application

Cork County Council operate a composite sampler on the primary discharge outlet from the treatment plant to the river. The plant is currently monitored by the Environment Directorate of Cork County Council on a monthly basis to measure compliance with the requirements of the Urban wastewater Directive. Samples are also collected upstream and downstream of the discharge location at this time. The inlet and outlet are monitored by the water services section on a fortnightly basis in order to evaluate the performance of the plant. The river Lee which is the receiving water body is monitored in terms of the Salmonid Directive ,the Phosphorus Regulations by the Water laboratory of Cork County Council and in recent times the Water Framework Directive as part of the River basin project. It is proposed to continue with this multi- faceted approach to monitoring the treatment plant and the impacts of the discharge to waters.

The river is also monitored at the waterworks intake for the Cork City Council drinking water plant by both Cork County and Cork City council on a monthly basis as part of the salmonid programme by Cork County Council and in terms of the Abstraction directive by Cork City Council. The intake location is monitored by Cork City Council for both Cryptosporidium and Giardia and the results were acceptable. The city council have monitored the intake since the last date of results recorded on the spreadsheet in E4 and while the results were not available at this time in a spreadsheet for use in the application it has been confirmed that there have been no exceedances and the water at this location is suitable for abstraction purposes to produce drinking water for human consumption..

There are no designated shellfish waters or bathing waters downstream of the plant and the river downstream of the treatment plant is not designated sensitive under the urban wastewater directive.

Samples from the treatment plant discharge are analysed for BOD,COD, Ammonia, pH ,Suspended Solids, Total Nitrogen Total Phosphorus ,Sulphate ,Ortho phosphate(in recent times) and Metals (in recent times). Upstream and downstream samples were analysed in accordance with the urban waste water directive requirements for river samples.

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.



Table E 3					
PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
SW01blarney	Primary/storm overflow	sampling	159261	74835	У
SW02blarney	Secondary	Monitoring	161602	75245	
SW03blarney	Secondary	Monitoring	160341	73241	Y
SW04blarney	Secondary	Monitoring	157548	74040	Y
aSW01u(1)Blarney	upstream (Rv Martin)	sampling	159790	75412	V
aSW01u Blarnev	upstream(Shournagh Rv	sampling	159300	75300	v
aSW01d Blarney	downstream	sampling	158620	74551	ý
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# Monitoring by Cork City Council under the Abstarction Directive at the intake to Lee Road waterworks SURFACE WATER 2006 mg/l

(For Surface Water Directive)

			•	by Cork City	,						
DATE	Jan	Feb	Apr	May	Jun	July	Aug	Oct	Nov	(For Surface	Water Dir)
рН	7.11	6.85	6.8	7.11	7.15	7.35	7.46	7.22	7.35	N	g List
Čol	20H.U	20HU	30H.U	17H.U	15H.U	15H.U	18H.U	17H.U	20H.U	OCTOBER S	-
SS	17mgl	14mg/l	15mg/l	17mg/l	18mg/l	12mg/l	9mg/l	3	11mg/l		
TEMP	9.5.Č	10.1.C	10.5.C	16.5.C	18.1.C	21.Č	22.C	15.6.C	13.Č	Parameter	Result
COND.	187us	200us	138us	150us	220us	178us	168us	147us/cm	170us	Cyanide	<0.1
ODOUR	None	None	None	None	None	None	None	None	None	Phenol.	<0.005
Nitrate	22.3	20.4	25.2	26.1	27.2	17	12.3	11.4	13.5	COD.	22
Fluoride	0.009	0.11	0.15	0.008	0.12	0.05	other 12.3	0.03	0.04	<b>D.O</b> .	97%
Dis. Iron	0.007	0.01	0.05	0.01	0.02	0.015	0.025	0.03	0.02	BOD.	2.1
Mn	0.01	0.006	0.022	0.009	0.008	0:01/701	0.03	0.013	0.02	K.Nitrogen.	0.3
Cu	0.007	0.004	0.007	0.006	0.005	0.0170 1700003 100004 100004 100001 2.5 16.2 0.002	0.001	0.015	0.001	Ammonia.	0.07
Zn	0.007	0.004	0.005	0.003	0.009 🔬	× 0.004	0.001	0.002	0.002	Tot. Coli	2,000/100ml
Lead	0.001	0.001	<0.001	<.001	0.001	0.001	0.001	,0.001	0.001	F.Coli.	200/100ml
Sulphate	2.7	1.5	2.1	2.6	200	2.5	2	2	2.4	Boron.	<0.3
Chloride	21.7	24.1	15.7	16.1	CO 5 60	16.2	17	18.4	16.5	Arsenic.	<0.001
Surf.	0.001	0.001	0.002	0.001	0.001	0.002	0.003	<0.005	0.003	Selenium.	0.003
Tot.P	0.75	0.81	0.9	1 <0.005 12 Cons	x ^o 1.1	1	1.1	0.06	1.3	Mercury.	<0.1
Phenol	<0.005	<0.005	<0.005	<0.005 💉	<0.005	<0.005	<0.005		<0.005	Barium.	0.011
COD	9	7	15	12	9	9	10		12	PAH.	<0.01ug/l
DO	98%	97%	96%	96%	165%	125%	104%		90%	Tot.Pest.	<0.05ug/l
BOD	1.5	1	2	2.1	2.1	2	2.2		2.4	F.Strep.	47/100mls
K.Nitrogen	0.09	0.07	0.1	0.2	0.15	0.19	0.2		0.21	Salmonella.	ABSENT
Ammonia	0.01	0.03	0.15	0.08	0.11	0.15	0.12		0.17		
TOT COLI	2000/100ml	1750/100ml	1150/100ml	2000/100ml	2000/100ml	2748/100ml	2354/100ml		1500/100m	d.	
F. COLI	500/100ml	440/100ml	370/100ml	200/100ml	220/100ml	170/100ml	180/100ml		120/100m		

# Section E4 Cork City Council Monitoring Data at water works Intake

### CRYPTOSPORIDIUM/GIARDIA ANALYSIS IN RAW WATER Vol Analysed No. of Cryptosporidial

		Vol Analysed	No. of Cryptosporidial	
Sampling Point	Date Sample taken	(L)	Oocysts/L	No. of Giardial Cysts/L
Inlet, C.C.W.W.	28/01/1998	10	0	
Inlet, C.C.W.W.	30/03/1998	10	0	0
Inlet, C.C.W.W.	12/05/1998	10	0	0
Inlet, C.C.W.W.	18/06/1998	10	0	0
Inlet, C.C.W.W.	28/07/1998	10	0	0
Inlet, C.C.W.W.	01/09/1998	10	0.1	1
Inlet, C.C.W.W.	06/10/1998	5	0.2	0
Inlet, C.C.W.W.	03/11/1998	10	0	0
Inlet, C.C.W.W.	15/12/1998	5	0.2	0.6
Inlet, C.C.W.W.	19/01/1999	10	0	0
Inlet, C.C.W.W.	23/02/1999	10	0	0
Inlet, C.C.W.W.	30/03/1999	10	0.4	0
Inlet, C.C.W.W.	13/04/1999	10	0	0
Inlet, C.C.W.W.	11/05/1999	10	0.1	0.1
Inlet, C.C.W.W.	01/06/1999	10	0	0
Inlet, C.C.W.W.	06/07/1999	10	0	0
Inlet, C.C.W.W.	07/09/1999	10	0	0
Inlet, C.C.W.W.	02/11/1999	10	0 -	0
Inlet, C.C.W.W.	14/12/1999	10	O ^{ISE} .	0
Inlet, C.C.W.W.	01/02/2000	10	Med	0
Inlet, C.C.W.W.	14/03/2000	10	o seconty: any one price for any o o o o o o o o o o o o o o	0
Inlet, C.C.W.W.	11/04/2000	10	S TOL O	0
Inlet, C.C.W.W.	09/05/2000	10 0		0
Inlet, C.C.W.W.	20/06/2000	10 20150	× 0	0
Inlet, C.C.W.W.	24/07/2000	10 net v	0	0
Inlet, C.C.W.W.		A A A A A A A A A A A A A A A A A A A	0	0
-	23/08/2000	COLVER	0	0
Inlet, C.C.W.W.	27/09/2000		0	
Inlet, C.C.W.W.	24/10/2000	10	0 0	0
Inlet, C.C.W.W.	21/11/2000		-	0
Inlet, C.C.W.W.	05/12/2000	For 10 For 10 End CONTO 10 10	0.2	0
Inlet, C.C.W.W.	20/01/2001	10	0	0
Inlet, C.C.W.W.	20/02/2001	10	0	0
Inlet, C.C.W.W.	20/03/2001	10	0	0
Inlet, C.C.W.W.	29/05/2001	10	0	0
Inlet, C.C.W.W.	26/06/2001	10	0	0
Inlet, C.C.W.W.	24/07/2001	10	0	0
Inlet, C.C.W.W.	21/08/2001	10	0	0
Inlet, C.C.W.W.	18/09/2001	10	0	0
Inlet, C.C.W.W.	31/10/2001	10	0.3	0.2
Inlet, C.C.W.W.	20/11/2001	10	0	0
Inlet, C.C.W.W.	22/01/2002	10	0	0
Inlet, C.C.W.W.	19/03/2002	10	0	0
Inlet, C.C.W.W.	16/07/2002	10	0	0
Inlet, C.C.W.W.	13/08/2002	10	0	0
Inlet, C.C.W.W.	24/09/2002	10	0	0
Inlet, C.C.W.W.	31/10/2002	10	0	0
Inlet, C.C.W.W.	29/01/2003	10	0	0
Inlet, C.C.W.W.	01/04/2003	10	0	0
Inlet, C.C.W.W.	19/05/2003	10	0	0
Inlet, C.C.W.W.	01/07/2003	10	0	0
Inlet, C.C.W.W.	22/09/2003	10	0	0

Inlet, C.C.W.W.	04/11/2003	10	0	0
Inlet, C.C.W.W.	06/02/2004	10	0	0
Inlet, C.C.W.W.	26/03/2004	10	0	0
Inlet, C.C.W.W.	22/04/2004	10	0	0
Inlet, C.C.W.W.	27/07/2004	10	0	0
Inlet, C.C.W.W.	28/10/2004	10	0	0
Inlet, C.C.W.W.	03/03/2005	10	0	0
Inlet, C.C.W.W.	07/04/2005	10	0	0
Inlet, C.C.W.W.	01/06/2005	10	0	0
Inlet, C.C.W.W.	11/08/2005	10	0	0
Inlet, C.C.W.W.	20/10/2005	10	0	0
Inlet, C.C.W.W.	10/11/2005	10	0	0
In 0000 dia south		مراميت ماميتهم مامير	and the Main	

In 2006 we discontinued taking a 10 litre grab sample and now use a Filta-Max.

### Section E4 Cork City Council Monitoring Data at water works Intake

Sampling Point	Date Sample Taken	Vol Filtered >	of Cryptosporidial Ooc	<u>ys No of Giardial Cysts/I</u>
		<u>(in Litres )</u>	detected/l	
Inlet, C.C.W.W.	09/02/2006		0.03/L	0/L
Inlet, C.C.W.W.	27/07/2006	80	0.000/L	0.000/L
Inlet, C.C.W.W.	01/09/2006	199	<0.01/10L	<0.01/10L
Inlet, C.C.W.W.	05/10/2006	83	0.24/10L	0.48/10L
Inlet, C.C.W.W.	16/11/2006		only are 0.01/10L	<0.01/10L
		~0°	S. C. C.	
Inlet, C.C.W.W.	11/01/2007	38 0112	1.05/10L	<0.01/10L
Inlet, C.C.W.W.	08/02/2007	67 ton et re	<0.01/10L	0.29/10L
Inlet, C.C.W.W.	09/02/2007	24 Own	6.67/10L	<0.01/10L
		orinight		
		topy		
		x of U		
	n ^{se}	St.		
	Cor	83 38 67, ton purport 67, ton purport 67, ton purport 83		

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Parameter						1012001	7000000	06/09/2007	21/08/2007	24/07/2007	18/0/12001	20002000	17/07/2007	04/07/2007	20/06/2007	2410012001	24/05/2007	26/04/2007	12/04/2007	24/01/2007	Sample Date				
	Method			Kg/Day	Average		Effluent	Effluent	Effluent			Effluent	Effluent	Effluent		Effluent	Effluent	Effluent	Effluent	Ettiluent		Sample			
	Results		•		1.01	7 27	7.2	7.2	1.0	4 .	74	7.7	7	1.4		7.2	7.8	7.4	1.4		7 4	PH			
	Units			17.51035	0.000000	8 5583333	4.8	~		3 1	4.1	12	23	+	-	3.8	7.4	σσ	4.0		86	BOD mg/L			
				91.6608	Т	44.8	<21	2	ž į	23	22	63	011	140	20	24	50	US S	30	77	53	BOD mg/L COD mg/L			
	So			21.021	77 274	13.5	-	4 4	ω	5	თ	23	20	3	4	16	1.	5	3	15	31	SS mg/L IP mg/L			
	Source			0.04120	A 01178	2.95273		4 74	2 22	2.2	3.63		0.00	5 85	1.83	3.68	2.20	3 3	4 78	1.85	2.45			RI A	
				10.1	43 111266	21.071		Рл	10.9	6.5	21			16		4.00	100	20.25	13.3	11.9	32	IN IIIg/L		RNEY	
0 010076	Nyivay	Kalnav		Г	0.7161	0.00	0.35	< <u>0.1</u>	0.2	.1	<u. 1<="" td=""><td></td><td></td><td>0.4</td><td>0.6</td><td></td><td></td><td></td><td>0.2</td><td></td><td></td><td>1413</td><td>NH mail</td><td>RI ARNEY SEWAGE TREATMENT PLANT</td><td></td></u.>			0.4	0.6				0.2			1413	NH mail	RI ARNEY SEWAGE TREATMENT PLANT	
37			I	ł	86.75	72.4	V CV	\$ 0	46.7	44.4	40.1	10.1	ŵ	41.5	40.1			_	35.6				S04	AGE	
-	1		k		3.60096		1 76	1.04	2.19	2.05												~[!	0-P04-P	TREA	
							2046	1855	1706	1014	4044	1477	3217	1840	1233	1000	5779	1028	1366	1773		1398	Flow	INE	
		Contraction of the second second	ANAL 1 AV NUMBER 1				332	332	a na ann ann an an an		-15	1.04		··· , #2	-				_				ond 20c		1
			1. I I I I I I I I I I I I I I I I I I I		<0.0409z		<0.02	<0.02	11 I.A	C CT	<0.0>	NAME OF A DESCRIPTION OF		A CONTRACTOR OF A CONTRACTOR O		<0.02	<0.02						Cond 20c Cadmium		N NIT
					NU.UTUOL	20170 01	<0.02	<0.02	1	and the second se	<0.02					<0.02	<0.02		1	20.05			Chromium		
					10.0	<0 04093	- <0.02	н. -1	8 01				an areas of			<0.02	<0.02				-<0.02		n Copper		
						<0.04092 <0.04091 <	<0.02	╉		!	<0.02					<0.02	<0.02			-	<0.02		Lead N		

Parameter         Method         Results         Units         Source           Arsenic (OES)         ICP-OES         6         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Atrazine         Colorimetry         <5         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Cyanide         Colorimetry         <5         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Dichloromethane         GC-MS 1         <1         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           EPH         GC-FID         <1         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Mercury (OES)         ICP-OES         0.6         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Polyaromatic Hydrocarbons         ICP-OES         0.6         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Selenium (OES)         ICP-OES         <0.74         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Simazine         ICP-OES         <0.74         ug/L         GR1052 Blarney WWTP Effluent 24/10/07           Total Organic Carbon         TOC analyser (NPOC)         5.89         mg/L         GR1052 Blarney WWTP Effluent 24/10/07           TPH C10-C36         GC-MS 1         <0.01         ug/L         GR1052 Blarney WWTP Effluent 24/10/07<	ſ				Т	Т			ŀ	٦Ū		Γ			T								
Results         Units           6         ug/L         0           <0.01		Xylene	TPH C10-C36	Total Organic Carbon		Toluenė	Simazine	Selenium (OES)		olvaromatic Hydrocarbons	Phenols (Total)		Mercury (OES)			Dichloromethane	Cyaniue	Cincido	Atrazine	Arsenic (UES)	010	Parameter	
Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		GC-MS 1	GC-FID		TOC analyser (NPOC)	GC-MS 1	HPLC		ICP-OES	HPLC		CC-MS 2			GC-FID								
		<0.01	2	ì	5.89	<0.01	0.0		<0.74	<0.01		<0.10	0.0	2	<u>^</u>	1-	Ì	ζ,	10.01		o		1
Source GR1052 Blarney WWTP Effluent 24/10/07 GR1052 Blarney WWTP Effluent 24/10/07		1/60	uy, c	10/1	mg/L	ug/L		110/1	ug/L	ug/r		lug/L	ug/r		lug/L	uy, c	1/0/1	lug/L	n ĥn	10/1	ug/L		Inite
Kg/Day           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000           0.000			CB1052 Blarney WWTP Effluent 24/10/07	GR1052 Blarney WWTP Effluent 24/10/07	GR1052 Blarney WW1P Effluent 24/ 10/07		CB1052 Blamey WWTP Effluent 24/10/07	GR1052 Blarney WWTP Effluent 24/10/07	GR1052 Blarney WWIP CITUETI 24 10/01		GR1052 Blarney WWTP Effluent 24/10/07	GR1052 Blarney WW IP Enluent 24/ 10/07		GR1052 Blarnev WWTP Effluent 24/10/07	GRIUDZ DIAITIEY WWWIT LINGSIN	OD4052 Blossow WWWTD Effluent 24/10/07	GR1052 Blarney WWTP Effluent 24/10/07	GR1052 Blamey WWW IF Linden: 271 1010	ADJACO Diamoni MAN/TD Efficient 24/10/07	GR1052 Blarney WWTP Effluent 24/10/07	GR1052 Blarney www.in clilueiii 2m ioioi		
(9/Day 0.012276 0.00002046 0.002046 0.002046 0.0012276 0.0012276 0.0012276 0.0012276 0.0012276 0.0012276 0.0002046 0.00121404 0.01205094 0.01205094 0.01205094 0.01205094			5	0	ئال	-				<0 00151404	چې مې	3 0	10										

	<0.00002046	R1052 Blarney WWTP Effluent 24/10/07
	<0.002046	R1052 Blarney WWTP Effluent 24/10/07
. in	0.01205094	R1052 Blarney WWTP Effluent 24/10/07
is per	<0.00002046	R1052 Blarney WWTP Effluent 24/10/07
ton	<0.00002046	R1052 Blarney WWTP Effluent 24/10/07
put f	<0.00151404	R1052 Blarney WWTP Effluent 24/10/07
osec	<0.00002046	R1052 Blarney WWTP Effluent 24/10/07
ott	<0.0002046	
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	0.0624	0.0305-	<0.02		<0.02				0.026	0.035			<0.02	Zinc		
	0409 0.0624 <0.04092	<0.02	<0.02		<0.02				<0.02	<0.02			<0.02	Barium		
Annual and an annual and an annual and an annual an	2 < 0.04092	<0.02	1.1				in a					-	ð.	Boron		and the second se
	0.47058	1	0.23		Ī									Fluoride		
	0.87978	t	0.43	2						and the second				Nitrate as N		
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				I Giah	Samle Method Grah	Contraction of the second seco	- c	Femplate Salmonoid	nle Temnlate	Sam					182	25.0	1 79	1.86	12-Feh-03
				. 75300	Eucaliui PEasili g - 19900-		7 E	r luject situutiagit					1.2	-	0.000	2.07	0.02	0.007	15- Jap-03
			,	Location Reference 19S010280	on Reference	Locatio	<b>5</b> 	Rivers	Category Rivers				11.8	7 /.5	0.034	25.3	0.03	0.035	12-Dec-02
	1					)etails	Sampling Details			Γ			11.2	8.4	0.013	18	0.03	0.047	16-Oct-02
		-									,		12.2	12	0.013	18.9	0.03	0.057	19-Sep-02
						per	Diss Cu=Dissolved Copper	s Cu=Dis	Dis				10.5	12	0.043	21.8	0.03	0.038	19-Jun-02
		Alk=Alkalinity	Alk=A			ylids	S.Solids=Suspended Solids	olids=Su:	S.S				10.9	11.4	0.043	a an	0.02	0.027	16-May-02
<b>I</b>		Hard=Hardness	Hard=			gen	Diss O2=Dissolved Oxygen	s O2=Dis	Dis	•					0.024	23.66	0.11	0.028	20-Mar-02
	grees C	Cond=Conductivity at 20 Degrees C	Conductiv	Cond=			NO2=Nitrite	NO2							0.033	29.4	0.05	0.03	13-Feb-02
ŤĮĮI		Cl=Chloride				COR	NO3=Nitrate	ND4=/							0.023	25.88	0.05	0.026	09-Jan-02
		Temp=Temperature	Temp=Te	-		MRP(P)=Molybdate Reactive Phosphorus	Reactive P	lolybdate	MRP(P)=N			% O2	mg/l	Degrees C	mg/l	mg/l	mg/l	mg/l	
					Legend	Le Le	and it					Diss O2 %	Diss O2	Temp	NO2	NO3	NH4		Sample Date
<b>j</b> ( :	1						ASPe Tig												
<u> </u>  :							g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24(16)07	am River Sh	TP Upstream	Barney WW	GR1054 E	ug/L	<0.01	AS 1	GC-MS 1	Xylene	×
ht.							24/10/07	illsons Ra	GR1054 Blamey WWTP Upstream River Shoumanh @Willsons Bor 2410/07	am River Sh	TP linstre	Slarnev WW	GR1054 F	ing/L	5 A D	GC-EID		TPH C10-C36	TPH (
							g 24/10/07	fillsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @WillSon's Bdg 24/10/07	am River Sh	TP Upstre	Blarney WW	GR1054 1	ug/L	<0.01	AS 1	GC-MS 1	Toluene	T-tri O-
	h					-I	g 24/10/07	Illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstre	3larney WW	GR1054 [	ug/L	<0.01	ဂ် 	HPLC	Simazine	Sim
	1 4						g 24/10/07	Bisons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Wiljsons Bdg 24/10/07	am River Sh	TP Upstre	Blarney WW	GR1054 E	ug/L	<0.74	DES	ICP-OES	Selenium (OES)	Seleniu
	iai 11					<u> </u>	g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstrea	3larney WW	GR1054 E	ug/L	<0.01	LC .	- HPLC	Polyaromatic Hydrocarbons	Polyaromatic
Í,	i.h.						g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstrea	3larney WW	GR1054 E	ug/L	<0.10	AS 2	GC-MS 2	Phenols (Total)	Pheno
	é.					4	g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstrea	3larney WW	GR1054 E	ug/L	0.8	OES	ICP-OES	Mercury (OES)	Mercu
							g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstrea	3larney WW	GR1054 E	mg/L	5.6	FID	GC-FID	EPH	
1							g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstrea	3larney WW	GR1054 E	ug/L	۰ ۵	AS 1	GC-MS 1	Dichloromethane	Dichlor
1							g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Sh	TP Upstrea	Barney WW	GR1054 E	ug/L	\$	metry	Colorimetry	Cyanide	Су
i, i							g 24/10/07	illsons Bd	GR1054 Blarney WWTP Upstream River Shournagh @Willsons Bdg 24/10/07	am River Shu	TP Upstrea	3larney WW	GR1054 E	ug/L ·	<0.01	6	HPLC	Atrazine	Atr
ł							g 24/10/07	illsons Bd	ournagh @W	am River Shu	TP Upstrea	3larney WW	GR1054 E	ug/L	4	DES	ICP-OES	Arsenic (OES)	Arsen
1 1	•					<b>.</b>	манадан ( с.н. 1 1 1			Source				Units	Results	bor	Method	Parameter	Para
- [	- H	- F							-										
1 11 11	<0.02 <0.02	<0.02	<0.02	<0.02	<0.02	197	<0.05	ŝ	0.1	6.508889	<0.2	13.285714	<u>\$</u>	1.9285714	7.766667	age	Average		
		-	<n n=""></n>	<n 03<="" th=""><th><n n=""></n></th><th>197</th><th><n 05<="" th=""><th>3</th><th><n 1<="" th=""><th>4 2</th><th>\$</th><th>. م</th><th>2</th><th>, ,</th><th>78</th><th>0</th><th>S/U</th><th>24/10/2007</th><th>24/1</th></n></th></n></th></n>	<n n=""></n>	197	<n 05<="" th=""><th>3</th><th><n 1<="" th=""><th>4 2</th><th>\$</th><th>. م</th><th>2</th><th>, ,</th><th>78</th><th>0</th><th>S/U</th><th>24/10/2007</th><th>24/1</th></n></th></n>	3	<n 1<="" th=""><th>4 2</th><th>\$</th><th>. م</th><th>2</th><th>, ,</th><th>78</th><th>0</th><th>S/U</th><th>24/10/2007</th><th>24/1</th></n>	4 2	\$	. م	2	, ,	78	0	S/U	24/10/2007	24/1
t. 10					A MARKED AND A MARKED AND A			ŝ	6 I	7	<0.20	4	!	<b>_</b>	7.9	S	S/N	06/09/2007	06/0
	-<0.02-	50°U>	- c0:02	c0.0>				ŝ	6 g	A (	<n></n>	<u>م</u>	\$	<u>^ !</u>	77		5/U	21/08/2007	21/0
		20:02	20.02	20.02	1000	1. 11	-115		Â.é	» <u>′</u>	~n .>	R \2.0		3/	78			17/07/2007	17/0
		<0.02	<0.02	<0.02			-		0.1	4.56	<0.2	41		5			U/S	20/06/2007	20/0
	i terre	1							<0.1	6.61	<0.2	<2.5		1.1	7.8	0	U/S	24/05/2007	24/0
1					The second s				<0.1	6.41	<0.2	<2.5				S	S/N	26/04/2007	26/0
	<0.02 <0.02	<0.02 <0	<0.02	<0.02			antarită.		<0.1	9.2	<0.2	8		1.3		S	S/N	12/04/2007	12/0
180,901		1.1					e come da		<0.1	10.5	<0.2	22			7.6	5	S/N	24/01/2007	24/0
Bariu	Nickel Zinc	Lead	Copper	Chromium	Cond 20c Cadmium	Cond 20c	0-P04-P	S04	NH ₃ mg/L	TN mg/L	TP mg/L	SS mg/L	COD mg/L	BOD mg/L	pН	ple	Sample	Sample Date	Samp
				ANT	ק	TREATMENT		SEWAGE		ARNEY	BL								
		A second s					1421-1212-14-14-14-14-14-14-14-14-14-14-14-14-14-									6			
				7748 -	1		******												•
					and a second		<del>م</del> حقومت									,			
		And and a constraint of the second se	1				***E.;												

22-Oct-03	14-Aug-03	12-Jun-03	12-Mar-03	12-Feb-03	15-Jan-03	12-Dec-02	14-Nov-02	16-Oct-02	19-Sep-02	19-Jun-02	16-May-02	20-Mar-02	13-Feb-02	09-Jan-02		Sample Date
0.016	0.047	0.039	0.032	1.86	0.058	0.034	0.035	0.047	0.057	0.038	0.027	0.028	0.03	0.026	mg/l	MRP
0.03	< 0.026	0.035	0.02	1.79	0.18	0.02	0.03	0.03	0.03	0.03	0.02	0.11	0.05	0.05	. mg/l	NH4
18.84	20.6	20.17	24.4	25.9	24	28.2	25.3	18	18.9	21.8	and the second second	23.66	29.4	25.88	mg/l	NO3
< 0.013	< 0.013	0.035	0.024	1.82	0.089	0.033	0.034	0.013	0.013	0.043	0.043	0.024	0.033	0.023	mg/l	NO2
		13.9				7	7.5	8.4	12	12	11.4				Degrees C	Temp
		10.1				12.4	11.8	11.2	12.2	10.5	10.9				mg/l	Diss O2
		97													% O2	Diss O2 %

	Sample Template Salmonoid Sample Method Grab	Location Willisons b Location Northing 75300	Project Shournagh Location Easting #59300=	Category Rivers Location Reference 19S010280	Sampling Details	Diss Cu=Dissolved Copper	S.Solids=Suspended Solids	Diss 02=Dissolved 0xygen	NO2=Nitrite Cond
AND ALL AND AL				0			Alk=Alkalinity	Hard=Hardness	Cond=Conductivity at 20 Degree:

nine strategyman	ble Template Salmonoid	Location Willisons b	Project Shournagh	Category Rivers	Sampling Details	
	Sample Method	Location Northing 75300	-Location Easting	Location Reference 19S010280	tails	
	Grab	75300	g 159300	19S010280		

Page 2

					1.1	<0.02-			<0.02		arium		
<0.02	<0.02										Boron		
4.66	4.66							·			INO3		
<b>6</b> .1	<0.1										Fluoride	-	
0.0067	0.0067		-								- NO2-		
50	50										-Alk-		
0.045	0.045										-		
	4.66 <0.1 0.0067 50 0.045	4.66         <0.1         0.0067         50         0.045           4.66         <0.1	4.66         <0.1         0.0067         50         0.045           4.66         <0.1	4.66         <0.1	4.66         <0.1	4.66         <0.1	4.66         <0.1	4	4.66         <0.1	4.66         <0.1	4.66         <0.1         0.0067         50         0.045           4.66         <0.1	-NO3:         -Fluoride         NO2:         -Aik-         MRP	INO3       Eluoride       NO2       Aik       MRP         Image: State Stat

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Index         Sample         pH         Bob mgL         Com mgL         Sample         pH         Bob mgL         Com mgL         Sample         reg         Com mgL         Sample         reg<		100 Alk 64 56 60	10.3 Hard mg/l 103 5 100 97 99	14.3 Cond μS/cm 227 221 221 222		<b>27.2</b> 22.5 22.6 Colour (H4 Hazen r Hazen r 23 35 23 61 67	< 0.026 < 0.026 BOD (O2) mg/l 0.4 2.7 0.3	0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.142 0.142 0.142 0.142 0.142 0.142 0.142 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 0.101 7.6 7.6 7.6 7.6 7.6 7.7 7.6 7.7 7.6 7.7 7.7		7 105 5 109 9 99 9 89 89 89	11.	10.4 13.2 15 14.9 14.2	0.03 0.111 0.111 0.065 0.053 0.053 0.029	21.05 23.63 26.39 22.52 28.52 22.48 17.68 23.99	0.069         0.042           0.034         0.034           0.0114         0.034           0.026         0.026           0.034         0.035           0.034         0.035           0.034         0.034	0.107 0.148 0.034 0.075 0.049 0.147 0.234 0.106 0.066	14-Aug-03 22-Oct-03 10-Mar-04 15-Apr-04 20-May-04 29-Jun-04 29-Jun-04 30-Jul-04 25-Aug-04 22-Sep-04
Image:         Sample         pH         BOD mgL         SST mgL         Tr mgL         Th mgL         NumgL         Sot         OpC - Color				40 1 13.3 17.5 17.5 12.3	0.068 0.061 0.162 0.162 0.136 0.034 0.034 0.058 0.058 0.058 0.057 0.042	35.1 24.43 28.88 28.88 25.15 22.15 22.79 31.05 36.87 36.87 22.44						11.6 12.2 8.7 7.4 6	0.115 0.088 0.056 0.072 0.072 0.021 0.021 0.021 0.021 0.021 0.021	28.4 6.33 22.83 19.7 20.4 26.7 26.7 26.7 26.7 20.48			13-Feb-02 20-Mar-02 16-May-02 19-Jun-02 19-Sep-02 16-Oct-02 12-Dec-02 12-Jan-03 12-Feb-03 12-Mar-03 12-Jun-03
BLARNEY SEWAGE TREATMENT PLANT         Sample       pH       BOD mg/L       COD mg/L       SS mg/L       TP mg/L       Th mg/L       Th mg/L       Th mg/L       Nummer State         DIS       7.6       5.3       1.6       -0.2       6.3       -0.1       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02       -0.02 <td< td=""><td></td><td>02%</td><td>Diss O2 mg/l</td><td>10.9</td><td>5</td><td>2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 3 Towe</td><td>Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @ NH3 mg/l 0.037</td><td>tream River t tream River t</td><td>VTP Downs VTP Downs VTP Downs VTP Downs VTP Downs VTP Downs 02-Nov-04</td><td>Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV O2</td><td>GR1055 GR1055 GR1055 GR1055 GR1055 GR1055 GR1055 Mg/l</td><td>ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L</td><td>0.04</td><td>2-OES PLC PLC PSer (NPOC) 2-FID C-FID NO3 NO3 NO3 26.98</td><td><mark>╞╾┊┥╌╞╍┙┫</mark>╴┝╍╍┥╴┼┈╤┿╼┥┥╸┽╴┼</td><td>B B B B B B B B B B B B B B B B B B B</td><td>Seleniu Sim Total Orga TPH C Xy Sample Date 09-Jan-02</td></td<>		02%	Diss O2 mg/l	10.9	5	2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 2 Tower Bdg 3 Towe	Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @ NH3 mg/l 0.037	tream River t tream River t	VTP Downs VTP Downs VTP Downs VTP Downs VTP Downs VTP Downs 02-Nov-04	Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV O2	GR1055 GR1055 GR1055 GR1055 GR1055 GR1055 GR1055 Mg/l	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.04	2-OES PLC PLC PSer (NPOC) 2-FID C-FID NO3 NO3 NO3 26.98	<mark>╞╾┊┥╌╞╍┙┫</mark> ╴┝╍╍┥╴┼┈╤┿╼┥┥╸┽╴┼	B B B B B B B B B B B B B B B B B B B	Seleniu Sim Total Orga TPH C Xy Sample Date 09-Jan-02
Sample         pH         BOD mg/L         SS mg/L         TP mg/L         TI mg/L         NU Mg/L         Cold 200 C         Cadmium         Chooper         Lead         Nickel           D/S         7.6         c.1         o         c.0.2         f.9.4         c.0.1         o         p.0.4         Cooper         Lead         Nickel           D/S         7.6         c.1         o         c.0.2         f.9.4         c.0.1         o         p.0.4         c.0.02	1			•	24/10/07 24/10/07 24/10/07 24/10/07 24/10/07 24/10/07 24/10/07 24/10/07 24/10/07	) Tower Bdg ) Tower Bdg	Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @ Shournagh @	Source Iream River 5 Iream River 9 Iream River 9 Iream River 9 Iream River 9 Iream River 9	VTP Downs VTP Downs VTP Downs VTP Downs VTP Downs VTP Downs	Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV Blarney WV	GR1055 GR1055 GR1055 GR1055 GR1055 GR1055	Units ug/L ug/L ug/L ug/L ug/L ug/L	Results           7           <0.01	PLC PLC PLC PLC PLC PLC PLC		c (OES) izine inide methane PH PH s (Total) Hvdrocarbons	Para Arseni Atra Cya Dichlorr Dichlorr E Dichlorr E Dichlorr Phenol
Sample         pH         BOD mg/L         COD mg/L         SS mg/L         TP mg/L         TN mg/L         NH, mg/L         Source         Codmium         Copper         Lead         Nicket           D/S         7.6         <1	2 <0.02 2 <0.02		<0.02	232	0.08	^30 ^30	<0.1 <0.1 0.4		0.29 <0.02 <0.2 0.29	<2.5		3.6 3.9 1.4 3.15	7.6 7.8 7.7 7.6666667		Average	5/2007 5/2007 5/2007	21/08 06/09 24/10
Sample pH BOD mg/L COD mg/L COD mg/L SS mg/L TP mg/L TN mg/L NH3 mg/L SO4 10-PO4-P Cond 20C Cadmium Chromium Copper Lead Nickel         D/S       7.6       <1       <0.2       19.4       <0.1       <0.1       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02       <0.02	<0:02 ≤0:02	<0 [.] 02					<0.1 0.6 0.4 <0.1	6.8 7.52 5.9 <1 8	<0.2 <0.2 <0.2 <0.2 0.29	30	45	2.1 2 5.3 5.3	7.7			1/2007 1/2007 1/2007 1/2007	26/04 24/05 20/06 04/07
	Nickel	Chromium <0:02		Cond 20C	0-PO4-P			ARNEY 19.4 6.2		SS mg/L	COD mg/L	80D mg/L <1 1.6		mple D/S	Sa	le Date /2007	Samp 24/01

Page 3

			Sampling Details	mpling	Sa		
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	0.011	56	<0.1	5.07	<0.02	<0.02	.02
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'	Nitrite	=Aik=	Barium: =Boron= =NO3 ==Eluoride = =Alk=	=NO3-	=Boron=	Barium	linc

 Sample Method Grab	Sample Template Salmonoid-	Location Northing 74551	Location Easting 158620	Location Reference 19S010300	Location	Project	Category Rivers	Sar	
Grab	Salmonoid	74551	158620	19S010300	Location Tower Br.	Project Shournagh	Rivers	Sampling Details	

CI=Chloride Cond=Conductivity at 20 Degrees C Hard=Hardness Alk=Alkalinity	Diss C4-Dissolved Oxygen S.Solids=Suspended Solids Diss Cu=Dissolved Copper Temp=Temperature	Legend MRP(P)=Molybdate Reactive Phosphorus NH4=Ammonia NO3=Nitrate NO2=Nitrite
-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------

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	F .	n.m.4		10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/10/07	1051 Blarne	GR	ug/L	<0.01	HPLC	Polvaromatic Hydrocarbons
<ul> <li>A set of the set of</li></ul>	ン門	~~~		10/07	nfluent 24	GR1051 Blarney WWTP Influent 24/10/07	1051 Blarne	GR	ug/L	<0.10	GC-MS 2	Phenols (Total)
	r r f		J	10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/10/07	1051 Blarne	GR	ug/Ľ	0.5	ICP-OES	Mercury (OES)
			L	10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/10/07	1051 Blarne	GR	ug/L	4	GC-FID	EPH
Barriero esta esta esta esta esta esta esta esta	1	رىشىم، - قى	<b>.</b>	10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/10/07	1051 Blarne	GR	ug/L	<u>^</u>	GC-MS 1	Dichloromethane
	1	53 .	<u> </u>	10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/10/07	1051 Blarne	GR1	ug/L	ŝ	Colorimetry	Cyanide
		'	J	10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/1	1051 Blarne	GR1	ug/L	<0.01	HPLC	Atrazine
		"do" -		10/07	nfluent 24/	GR1051 Blarney WWTP Influent 24/1	051 Blarne	GR	ug/L	4	ICP-OES	Arsenic (OES)
		a ' m.	<b>L</b>			Source			Units	Results	Method	Parameter
			ŗ									
<0.02 0.033 0.11267 <0.02 0.031	549	5.66	40.475	27.7	36	11.1275	362.5	1596.3333	412	7.2	Average	
010201020102600020002	549	5.66	42	21.9	36	8.23	138	634	292	7.2	influent	24/10/2007
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المنافع المنافع المنافع المنافع المنافع المنافع المنافع		i	34.6			7.15					Inlet	01/08/2007
		jeng dana						1425			Inlet	24/07/2007
			42.5	22.9		20.35	587	2730	532	7.2	Inlet	18/07/2007
		)wa								-	Inlet	17/07/2007
<0.02 0.08 <0.02 <0.02										-	Inlet	04/07/2007
	الحريدة مقدر	y									Inlet	20/06/2007
0C Cadmium Chromium Copper Lead Nicke	I-P Cond 20C	0-P04-P	S04	. NH ₃ mg/L	TN mg/L	TP mg/L	SS mg/L	BOD mg/L COD mg/L	BOD mg/L	рH	Sample	Sample Date
BLARNEY SEWAGE TREATMENT PLANT	TMENT	REA	GE T	SEWA	NEY	BLAR						
		ŀ										

Parameter	Method	Results	Units	Source
Arsenic (OES)	ICP-OES	4	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Atrazine	HPLC	<0.01	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Cyanide	Colorimetry	~5	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Dichloromethane	GC-MS 1	<u>1</u>	ug/L	GR1051 Blarney WWTP Influent 24/10/07
EPH	GC-FID	<1	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Mercury (OES)	ICP-OES	0.5	ug/Ľ	GR1051 Blarney WWTP Influent 24/10/07
Phenols (Total)	GC-MS 2	<0.10	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Polyaromatic Hydrocarbons	HPLC	<0.01	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Selenium (OES)	ICP-OES	7	ug/L	GR1051 Blarney WWTP Influent 24/10/0703
Simazine	HPLC	<0.01	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Toluene	GC-MS 1	<0.01	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Total Organic Carbon	TOC analyser (NPOC)	75.50	mg/L	GR1051 Blarney WWTP Influent 24/10/07
TPH C10-C36	GC-FID	<1	ug/L	GR1051 Blarney WWTP Influent 24/10/07
Xylene	GC-MS 1	<0.01	ug/L	GR1051 Blarney WWTP Influent 24/10/07

a a su a su anna ann an ann an ann ann ann ann ann	0132433	<u>≡</u> 0.11		≣0.657 _	1) <b>  </b>	1081	0.206	ETH III	Zinc -	 , ITA KANGANANANA	11
	0.12933333	0.043		0.267			0.078		Barium		
	<0.02	<0.02							Boron		
	0.43	0.43							Nitrate as N-		
			1		1			1		1	

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ABS_CD	AGG_SERVED	ABS_VOL	PT CD	DIS_DS	EASTING	NORTHING	VERIFIED
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WWD Application Form V2/07

# TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING

(Primary Discharge Point – one table per upstream and downstream location)

# Discharge Point Code: SW01Blarney

# MONITORING POINT CODE: SW01Blarney

Parameter		Re: (mg/	Results (mg/l ^{Note 1} )		Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
2007	July17	Aug 21	Sept 06	Oct 24			
Hq	7.0	7.3	7.2	7.2	Composite	2	Electrochemical
Temperature	NA	NA	NA	NA	Composite	NA	NA
Electrical Conductivity	NA	NA	NA	332	Composite	0.5 µmhos/cm	Electrochemical
(@20°C)			C				
Suspended Solids	20	5	M	2ª	Composite	0.5 mg/L	Gravimetric
Ammonia (as N)	0.4	<0.1	0.2	<b>30.1</b>	Composite	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	23	2.1	2	4.8 0 0	Composite	0.06 mg/L	Electrochemical
	118	23	<21	<21 24.11	Composite	8 mg/L	Digestion +
Chemical Oxygen Demand				Shi	ecti	-	Colorimetric
Dissolved Oxygen	NA	NA	٨A	AN	Composite	NA	NA
Hardness (as CaCo ₃ )	NA	NA	NA	NA	Cômposite	N/A	NA
	16	· 6.5	10.9	65	Composite	0.5 mg/L	Digestion +
Total Nitrogen (as N)				ì	on		Colorimetric
Nitrite (as N)	NA	NA	NA	NA	Composite	NA	N/A
Nitrate (as N)	NA	NA	NA	0.43	Composite M	0.5 mg/L	Colorimetric
	5.85	2.20	2.22	1.7	Composite	0.2 mg/L	Digestion +
Total Phosphorus (as P)					L DE		Colorimetric
Orthophosphate (as P) -	NA	2.1	2.19	1.04	Composite	0.02 mg/L	Colorimetric
unfiltered	-	l r	- - - - - -	-			
Sulphate (SO4)	42	44	47	<30	Composite	30 mg/L	Turbidimetric
Phenols (sum) Note 2 (ug/l)	NA	NA	NA	<0.1	Composite	0.1 µg/L	GC-MS 2
Note 1: Or other unit as appropriate - please specify	- please specif	۷.					

Note 1: Or other unit as appropriate – please specify. Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

# NA=not available

Blarney Application dec

ANNEX – Standard Forms

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Discharge Point Code: SW01Blarney

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# MONITORING POINT CODE: SW01Blarney

Parameter		Re (µ	Results (µg/l)		Sampling method (arah drift etc.)	Limit of Quantitation	Analysis method / technique
	July17	Aug 21	Sept 06	Oct 24		-	
Atrazine	NA	AN	NA	<0.01	Composite	0.96 µg/L	HPLC
Dichloromethane	NA	NA	NA	<u>~1</u>	Composite	1 µg/L	GC-MS 1
Simazine	NA	NA	NA	<0.01	Composite	0.01 µg/L	HPLC
Toluene	NA	NA	NA	<0.01	Composite	0.02 µg/L	GC-MS 1
Tributyltin	NA	NA	NA	NA	Composite	0.02 µg/L as Sn	GC-MS 1
Xylenes	NA	NA	NA	<b>∜</b> ≰0.01	Composite	1 µg/L	GC-MS 1
Arsenic	NA	NA	NA	6%	Composite	0.96 µg/L	ICP-OES
Chromium	NA	<20	NA	<200,00	Composite	20 µg/L	ICP-OES
Copper	NA	<20	NA	<20 24 4	Composite	20 µg/L	ICP-OES
Cyanide	NA	NA	NA	< 2	Composite	5 µg/L	Colorimetric
Fluoride	NA	NA	NA	230	Composite	100 µg/L	ISE
Lead	NA	<20	NA	<20	Composite	20 µg/L	ICP-OES
Nickel	NA	<20	NA	<20	Composite	20 µg/L	ICP-OES
Zinc	NA	<20	. VN	<20	Composites	20 µg/L	ICP-OES
Boron	NA	NA	NA	<20	Composite	20 µg/L	ICP-OES
Cadmium	NA	<20	NA	· <20	Composite M	20 µg/L	ICP-OES
Mercury	NA	NA	NA	0.6	Composite	0.2 µg/L	ICP-OES
Selenium	NA	NA	NA	<0.74	Composite	0.74 µg/L	ICP-OES
Barium	NA	<20	NA	<20	Composite	20 µg/L	ICP-OES

NA=not available

ANNEX – Standard Forms

Blarney Application dec

WWD Application Form V2/07

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 TABLE F.1(i)(a):
 SURFACE/GROUND WATER MONITORING

 (Primary Discharge Point - one table per upstream and downstream location)

SW01Blarney Discharge Point Code:___

# aSW01u(1) Blarney Bawnafinny MONITORING POINT CODE:

2007     July17     Aug 21     Sept 06     Oct 24       NA     NA     NA     NA     NA     NA       NA     NA     NA     NA     NA     Grab       NA     NA     NA     NA     Grab     Grab       NA     NA     NA     NA     NA     Grab       NA     NA     NA     NA     NA     Grab       NA     NA     NA     NA     Grab     Grab       NA     NA     NA     Grab     Grab     Ma       NA     NA     NA     Grab     Grab     Ma       NA     NA     NA     Grab     Ma	Parameter		Re: (mg/	Results (mg/l ^{Note 1} )		Sampling method	Limit of Quantitation	Analysis method / technique
mperature mperatureNANANA7.7Grab Cab20°C) 20°C)NANANA67ab20°C)Spended SolidsNANA67ab20°C)Spended SolidsNANA67ab20°C)Spended SolidsNANA67ab7.7GrabGrabGrab7.9Spended SolidsNANA7.9NANANA7.9NANA67ab7.9NANA2.87.9NANA2.87.9NANA2.88NANA2.88NANANA8NANAA8NANANA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA8NANAA9NANAA9NANAA9NANAA9NANA		July17	Aug 21	Sept 06	Oct 24			
NANANAGrabNityNANANAGrabNANANANAGrabNANANANAGrabNANANANAGrabNANANANAGrabNANANANACabNANANANACabNANANANACabNANANANACabNNANANACabNNANANACabNNANANACabNNANANACabNNANANACabNNANANANNANANANNANANANNANAS.11GabNANANANANANANANANANANANANANAS.11Sa P)-NANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANANA	pH	NA	NA	NA	7.7	Grab	2	Electrochemical
ivity NA NA NA NA A 251 Grab NA NA NA NA Grab En Demand NA NA 0.039.04 Grab Demand NA NA 2.8 4.4.6.7ab NA NA NA 2.1 4.6.7ab NA NA NA NA C21 4.6.7ab NA NA NA NA C21 4.6.7ab NA NA NA NA C21 4.6.7ab NA NA NA NA S.3 Grab manage NA NA NA S.3 Grab manage MA S.3 Grab manage MA NA S.3 Grab manage MA NA S.3 Grab manage MA NA S.3 Grab manage MA S.3 Grab manage MA NA S.3 Grab manage MA S.3 Gr	Temperature	NA	NA	NA	NA	Grab	NA	NA
en Demand NA NA NA NA <u>667</u> Grab NA NA NA NA <u>0.039 4 Grab</u> Demand <u>NA NA 28 w 676 a</u> Grab NA NA <u>2.8 w 664</u> Grab NA NA <u>2.8 w 664</u> Grab NA NA <u>2.8 w 664</u> Grab NA NA NA <u>2.8 w 664</u> Grab NA NA NA <u>2.1 m 664</u> Ma Grab m 674 NA NA NA NA <u>5.3 Grab m 664</u> NA NA NA <u>5.3 Grab m 664</u> NA NA NA <u>5.11 Grab m 664</u> NA NA NA <u>5.11 Grab m 664</u> NA NA NA <u>0.015 Grab m 664</u> MA NA NA <u>0.015 Grab m 664</u> MA NA NA <u>5.11 Grab m 664</u> MA NA NA NA NA <u>5.11 Grab m 664</u> MA NA	Electrical Conductivity (@20°C)	NA	NA	NA	251	Grab	0.5 µmhos/cm	Electrochemical
NANANANA0.039GrabNANANANA2.80.0390.0NANANANA2.80.0390.0NANANANANACrab0.000NANANANANACrab0.000NANANANANACrab0.000NANANANANACrab0.000NANANANANACrab0.000NANANANACrab0.000NANANANA0.015Crab0.000NANANANA0.015Crab0.000NANANANA0.074Crab0.000NANANANA0.074Crab0.000NANANANA0.074Crab0.000	Suspended Solids	NA	٩N	AN	0 0 0	Grab	0.5 mg/L	Gravimetric
IndNANANA2.83.44.54.5NANANANANA<2.1	Ammonia (as N)	NA	٩N	NA	0.0390.0	Grab	0.02 mg/L	Colorimetric
NA NA NA A <21 40 0 8 2 1 1 0 0 8 2 1 1 0 0 8 2 1 1 0 0 8 2 1 1 0 0 0 8 2 1 1 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Biochemical Oxygen Demand	NA	٩N	NA	2.8	Grab	0.06 mg/L	Electrochemical
NA NA NA NA NA Grab na sa Grab na sa Grab na sa NA NA Grab na NA Grab na sa NA Grab na sa sa na sa sa na sa		NA	AN	NA	<21	Grab	8 mg/L	Digestion +
P) - NA NA NA NA Grab And	Chemical Oxygen Demand					SAU		Colorimetric
P) - NA NA NA Grab Grab Antipolo (P) NA NA NA 5.3 Grab Antipolo (P) NA NA NA 0.015 Grab Nation (P) (P) NA NA NA 0.015 Grab Nation (P) (P) NA NA NA 0.074 Grab Nation (P) (P) NA NA NA 0.074 Grab (P)	Dissolved Oxygen	NA	AN	٨A	NA	Grab	NA	NA
P) NA NA NA 5.3 Grab Partura NA NA NA 0.015 Grab Na 100 NA NA 0,2 Grab Na 100 NA 100 NA NA 0,2 Grab Na 100 NA NA 0,2 Grab Na 100 NA NA NA 0.074 Grab 100 NA NA NA 230 Grab	Hardness (as CaCo ₃ )	NA	NA	NA	NA	Grab R. C.	N/A	NA
P) NA NA NA 0.015 Grab 1.00 NA NA NA 5.11 Grab 1.00 NA NA NA 0,2 Grab 1.00 NA NA NA 0.74 Grab 1.00 NA NA NA 200 Grab		NA	NA	NA	5.3	×	0.5 mg/L	Digestion +
NA         NA         NA         0.015         Grab         Ma           NA         NA         NA         NA         5.11         Grab         Ma           NA         NA         NA         NA         NA         5.11         Grab         Ma           Drus (as P)         NA         NA         NA         NA         0,2         Grab         Ma           ate (as P) -         NA         NA         NA         0.074         Grab         Ma           4)         NA         NA         NA         6.0074         Grab         Ma	Total Nitrogen (as N)							Colorimetric
NA NA NA 5.11 Grab NA NA NA 0,2 Grab NA NA NA 0.074 Grab NA NA NA <30 Grab	Nitrite (as N)	NA	ΔN	NA	0.015		NA	N/A
NA NA NA 0,2 Grab NA NA NA 0.074 Grab NA NA A30 Grab	Nitrate (as N)	NA	NA	NA	5.11	Grab	0.5 mg/L	Colorimetric
NA NA NA 0.074 Grab NA NA <30 Grab		NA	AN	AN	0,2	Grab	0.2 mg/L	Digestion +
NA NA NA 0.074 Grab NA NA NA <30 Grab	Total Phosphorus (as P)					5.		Colorimetric
NA NA <30 Grab	Orthophosphate (as P) - unfiltered	NA	NA	NA	0.074	Grab .	0.02 mg/L	Colorimetric
	Sulphate (SO ₄ )	NA	NA	NA	< 30	Grab	30 mg/L	Turbidimetric
NA <0.1 Grab		NA	NA	AA	<0.1	Grab	0.1 µg/L	GC-MS 2

NA=not available

Blarney Application dec

ANNEX – Standard Forms



# TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances) (Primary Discharge Point - one table per upstream and downstream location)

Discharge Point Code: SW01Blarney

# MONITORING POINT CODE: aSW01u(1) Blarney Bawnafinny

Parameter		С. Кё	Results (µg/l)		Sampling method	Limit of Quantitation	Analysis method / technique
	1.1/17	Aug 21	Sant 06	0ct 24	(grab, drift etc.)		
Atrovino					den C	1/ 20. 0	
Audzille	M	NA	AN	10.02	Grau	0.90 µg/L	
Dichloromethane	NA	NA	NA	<1	Grab	1 µg/L	GC-MS 1
Simazine	NA	NA	NA	<0.01	Grab	0.01 µg/L	HPLC
Toluene	NA	NA	NA	<0.01	Grab	0.02 µg/L	GC-MS 1
Tributyltin	NA	NA	NA	NA	Grab	0.02 µg/L as Sn	GC-MS 1
Xylenes	NA	NA	NA	N<1	Grab	1 µg/L	GC-MS 1
Arsenic	NA	NA	NA	200	Grab	0.96 µg/L	ICP-OES
Chromium	AA	AN	NA	<2000 40	Grab	20 µg/L	ICP-OES
Copper	NA	NA	NA	<20 24 th	Grab	20 µg/L	ICP-OES
Cyanide	NA	NA	NA	<5 ⁶⁹	Grab	5 µg/L	Colorimetric
Fluoride	NA	NA	NA	<100	<b>Grab</b>	100 µg/L	ISE
Lead	NA	NA	NA	<20	Grabin	20 µg/L	ICP-OES
Nickel	NA	NA	NA	<20	Grab& %	20 µg/L	ICP-OES
Zinc	NA	NA	NA	<20	Grab Po 0	20 µg/L	ICP-OES
Boron	NA	NA	NA	<20	Grab 6.2	20 µg/L	ICP-OES
Cadmium	NA	NA	NA	<20	Grab R	20 µg/L	ICP-OES
Mercury	NA	NA	AN	1.0	Grab Grad	0.2 µg/L	ICP-OES
Selenium	NA	NA	NA	5	Grab Grab	0.74 µg/L '	ICP-OES
Barium	NA	NA	NA	24	Grab	20 µg/L	ICP-0ES

NA=not available

ANNEX – Standard Forms

 TABLE F.1(i)(a):
 SURFACE/GROUND WATER MONITORING

 (Primary Discharge Point – one table per upstream and downstream location)

SW01Blarney Discharge Point Code:___

## aSW01uBlarney Willsons Bdg MONITORING POINT CODE: ____

Parameter		Re	Results		Sampling	Limit of	Analysis method
•		(mg/	(mg/l ^{Note 1} )		method (qrab, drift etc.)	Quantitation	/ technique
2007	July17	Aug 21	Sept 06	Oct 24			
Hd	7.8	7.7	7.9	7.8	Grab	2	Electrochemical
Temperature	AN	NA	NA	NA	Grab	NA	NA
Electrical Conductivity (@20°C)	NA	NA	NA	197	Grab	0.5 µmhos/cm	Electrochemical
Suspended Solids	9	٣	4	ner	Grab	0.5 mg/L	Gravimetric
Ammonia (as N)	<0.1	<0.1	<0.1	0.038 🔊	Grab	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	2.1	<1.0	1	2 0.0	Grab	0.06 mg/L	Electrochemical
	NA	na	<21	<21 41	. Kgrab	8 mg/L	Digestion +
Chemical Oxygen Demand					otif		Colorimetric
Dissolved Oxygen	NA	NA	NA	NA	Grab	NA	NA č
Hardness (as CaCo ₃ )	NA	NA	NA	NA	Grab 11	N/A	NA
	6	4.1	7	4.2	Grab Hi W	0.5 mg/L	Digestion +
Total Nitrogen (as N)					ont		Colorimetric
Nitrite (as N)	NA	NA	NA	0.007	Grab 9	NA	N/A
Nitrate (as N)	NA	NA	NA	4.66	Grab 220	0.5 mg/L	Colorimetric
	<0.2	<0.2	<0.2	<0.2	Grab Grad	0.2 mg/L	Digestion +
Total Phosphorus (as.P)					15S		Colorimetric
Orthophosphate (as P) - unfiltered	AN	AN	AN	0.045	Grab	0.02 mg/L	Colorimetric
Sulphate (SO ₄ )	NA	<30	<30	<30	Grab	30 mg/L	Turbidimetric
Phenols (sum) ^{Note 2} (ug/l)	NA	NA	NA	<0.1	Grab	0.1 µg/L	GC-MS 2
Note 1: Or other unit as appropriate - please specify	- please specif	Ý.					

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

NA=not available

ANNEX -- Standard Forms

TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances) (Primary Discharge Point - one table per upstream and downstream location)

Discharge Point Code: SW01Blarney

# MONITORING POINT CODE: <u>aSW01uBlarneyWillsons</u>

Parameter		Re (µ	Results (µg/l)		Sampling method	Limit of Quantitation	Analysis method / technique
	July17	Aug 21	Sept 06	Oct 24			
Atrazine	AN	NA	NA	<0.01	Grab	0.96 µg/L	HPLC
Dichloromethane	NA	NA	NA	<u>~</u>	Grab	1 µg/L	GC-MS 1
Simazine	AN	NA	NA	<0.01	Grab	0.01 µg/L	HPLC
Toluene	٨A	NA	NA	<0.01	Grab	0.02 µg/L	GC-MS 1
Tributyltin	NA	NA	AN	NA	Grab	0.02 µg/L as Sn	GC-MS 1
Xylenes	NA	NA	NA	<mark>کچ</mark> 0.01	Grab	1 µg/L	GC-MS 1
Arsenic	NA	NA	NA	400	Grab	0.96 µg/L	ICP-OES
Chromium	ΝA	<20	NA	<200,00	Grab	20 µg/L	ICP-OES
Copper	٩N	<20	NA		Grab	20 µg/L	ICP-OES
Cyanide	NA	NA	NA	<5 (1)	Grab	5 µg/L	Colorimetric
Fluoride	NA	NA	NA	<100	ଜିମ୍ପେର	100 µg/L	ISE
Lead	NA	<20	NA	<20	Gradin	20 µg/L	ICP-OES
Nickel	٩N	<20	NA	<20	Graby %	20 µg/L	ICP-OES
Zinc	٩N	<20	NA	<20	Grab Prov	20 µg/L	ICP-OES
Boron	٩N	NA	NA	<20	Grab Q.C.	20 µg/L	ICP-OES
Cadmium	ΝA	<20	NA	<20	Grab M	20 µg/L	ICP-OES
Mercury	۸A	NA	٨A	0.8	Grab	0.2 µg/L	ICP-OES
Selenium	٨A	NA	NA	<0.74	Grab	0.74 µg/L	ICP-OES
Barium	NA	<20	NA	<20	Grab	20 µg/L	ICP-OES

NA=not available

ANNEX – Standard Forms

 TABLE F.1(i)(a):
 SURFACE/GROUND WATER MONITORING

 (Primary Discharge Point – one table per upstream and downstream location)

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SW01Blarney Discharge Point Code:____

### aSW01d Blarney MONITORING POINT CODE: _

		mg (mg	(mg/l ^{Note 1} )		aampung method (grab, drift etc.)	Limit or Quantitation	Analysis method / technique
2007	July17	Aug 21	Sept 06	Oct 24			
Hd	7.6	7.6	7.8	7.7	Grab	2	Electrochemical
Temperature	NA	NA	NA	NA	Grab	NA	NA
Electrical Conductivity (@20°C)	AN	NA	NA	232	Grab	0.5 µmhos/cm	Electrochemical
Suspended Solids	30	NA	NA	<2°5 2°5	Grab	0.5 mg/L	Gravimetric
Ammonia (as N)	0.2	<0.1	<0.1	<0.02 0	Grab	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	5.3	3.6	3.9	1.4	Scrab	0.06 mg/L	Electrochemical
	45	<21	NA	<21	Grab	8 mg/L	Digestion +
Chemical Oxygen Demand					and a start		Colorimetric
Dissolved Oxygen	NA	NA	NA	NA	Grap 1	NA	NA
Hardness (as CaCo ₃ )	NA	NA	NA	NA	Grabhy 6	N/A	NA
	8.0	3.9	8.3	9.4	Grab Polo	0.5 mg/L	Digestion +
Total Nitrogen (as N)					or Y.		Colorimetric
Nitrite (as N)	NA	NA	AN	0.011	Grab ·	NA	N/A
Nitrate (as N)	NA	NA	NA	5.1	Grab	0.5 mg/L	Colorimetric
	0.29	0.29	<0.2	<0.2	Grab	0.2 mg/L	Digestion +
Total Phosphorus (as P)							Colorimetric
Orthophosphate (as P) - unfiltered	NĂ	NA	Ň	0.10	Grab	0.02 mg/L	Colorimetric
Sulphate (SO ₄ )	NA	<30	<30	< 30	Grab	30 mg/L	Turbidimetric
Phenols (sum) Note 2 (ug/I)	NA	AN	NA	<0.1	Grab	0.1 µg/L	GC-MS 2

Blarney Application dec

NA=not available

ANNEX – Standard Forms

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# TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances) (Primary Discharge Point - one table per upstream and downstream location)

Discharge Point Code: SW01Blarney

## MONITORING POINT CODE: aSW01dBlarney

July24Aug 21Sept 06Oct 24July24methaneNANANASept 06Oct 24methaneNANANASci.01GrabneNANANASci.01GrabneNANANASci.01GrabneNANANASci.01GrabneNANANASci.01GrabneNANANASci.01GrabnmNANANANASci.01GrabnmNANANANASci.01GrabnmNANANANASci.01GrabnmNANANASci.01GrabnmNASci.01NASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNASci.01NASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANANASci.01GrabnmNANA <th>Parameter</th> <th>•</th> <th>Re: (L</th> <th>Results (µg/l)</th> <th></th> <th>Sampling method</th> <th>Limit of Quantitation</th> <th>Analysis method / technique</th>	Parameter	•	Re: (L	Results (µg/l)		Sampling method	Limit of Quantitation	Analysis method / technique
IneNANANA $< 0.01$ GraboromethaneNANANA $< (101)$ GrabzineNANANA $< (101)$ GrabzineNANANA $< (0.01)$ GrabzineNANANA $< (0.01)$ GrabreNANANA $< (0.01)$ GrabtylinNANANA $< (0.01)$ GrabtylinNANANA $< (0.01)$ GrabtylinNANA $< (0.01)$ GrabnumNA $< (0.01)$ $< (0.01)$ $< (0.01)$ deNA $< (0.01)$ $< (0.01)$ $< (0.01)$ de $< (0.01)$ $< (0.01)$ $< (0.01)$ de<		July24	Aug 21	Sept 06	Oct 24	(Jian, unit etc.)		
oromethaneNANANA $<1$ GrabzineNANANANA $<0.01$ GrabzineNANANANA $<0.01$ GrabtyltinNANANANAColo1GrabtyltinNANANANAGrabtyltinNANANANAGrabtyltinNANANANAGrabtyltinNANANASolutinGrabticNANANASolutinGrabninmNASolutinSolutinGrabdeNANANASolutindideNANASolutinGrabninmNASolutinSolutindideNANASolutindideNASolutinGrabninmNASolutinGrabninmNASolutinGrabninmNASolutinGrabninmNASolutinGrabninmNASolutinGrabninmNASolutinGrabninmNANASolutinninmNASolutinGrabdideNASolutinSolutinninmNASolutinSolutinninmNASolutinSolutinninmNASolutinSolutinninmNANASolutinninmNA	Atrazine	NA	NA	NA	<0.01	Grab	0.96 µg/L	HPLC
zineNANANANA $<0.01$ GrabneNANANANA $<0.01$ GrabtytinNANANANA $<0.01$ GrabtytinNANANANA $<0.01$ GrabneNANANANA $<0.01$ GrabneNANANA $<0.01$ GrabneNANANA $<0.01$ GrabnimNA $<20$ NA $<20$ GrabnimNA $<20$ NA $<20$ GrabnimNA $<20$ NA $<20$ GrabnimNANANA $<20$ GrabnimNANA $<20$ NA $<20$ nimNA $<20$ NA $<20$ GrabnimNA $<20$ NA $<20$ GrabnimNANANA $<20$ GrabnimNANANA $<20$ GrabnimNANANA $<20$	Dichloromethane	NA	NA	NA	<1	Grab	1 µg/L	GC-MS 1
IneNANANACO.01GrabtyltinNANANACO.01GrabtssNANANACabCabtssNANANACabCabnicNANANACabCabnicNAS20NACabnicNAS20CabCabniumNAS20NACabniumNAS20NACabdeNANANACabNANANAS20CabniumNANAS20CabniumNAS20NAS20niumNAS20NAS20niumNAS20CabniumNAS20CabniumNAS20CabniumNAS20CabniumNAS20CabniumNANAS20NAS20CabCabNAS20NAS20NAS20CabNANAS20NAS20CabNANAS20NAS20CabNANAS20NAS20CabNANAS20NANAS20NANAS20NAS20CabNANAS20NANANANA </td <td>Simazine</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>&lt;0.01</td> <td>Grab</td> <td>0.01 µg/L</td> <td>HPLC</td>	Simazine	NA	NA	NA	<0.01	Grab	0.01 µg/L	HPLC
tyltinNANANANAGrabresNANANANAGrabresNANANAS20000GrabnicNA<20	Toluene	NA	NA	NA	<0.01	Grab	0.02 µg/L	GC-MS 1
IndextNANANANANAIndextIndextNaNANANANANAIndextIndextIndextIndextMiumNA<20	Tributyltin	NA	NA	AN	NA	Grab	0.02 µg/L as Sn	GC-MS 1
IcNANANANAZOCrabmiumNA<20	Xylenes	A	NA	NA	\s 1	Grab	1 µg/L	GC-MS 1
miumNA<20NA<20CodeGraberNA<20	Arsenic	NA	NA	NA	AN A	Grab	0.96 µg/L	ICP-OES
er         NA         <20         NA         <20         MA         Grab           Ide         NA         NA         NA         NA         S         MA         Grab           Ide         NA         NA         NA         NA         S         S         MA         S           Ide         NA         NA         NA         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S	Chromium	NA	<20	NA	<200.00	Grab	20 µg/L	ICP-OES
ide         NA         NA         NA         S         S         Grab           ide         NA         NA         NA         NA         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S	Copper	NA	<20	AN	<20 22.4	Grab	20 µg/L	ICP-OES
Ide         NA         NA         NA         NA         <100         ©130           I         NA         <20	Cyanide	NA	NA	NA	<5 <	Grab	5 µg/L	Colorimetric
Induction         NA         <20         NA         <20         Grad Manage           Induction         NA         <20	Fluoride	AA	NA	NA	<100	ି ଜୁମ୍ଚିଥି	100 µg/L	ISE
Image: Name of the state of the st	Lead	AN	<20	NA		Grab Hi		ICP-OES
n n num num num num num num num	Nickel	NA	<20	NA		Grabal Second		ICP-OES
Im         NA         NA         NA         Comparison         Comparison<	Zinc	ΔA	<20	NA		Grab Prov		ICP-OES
Im         NA         <20         NA         <20         Grab         MA           /         NA         NA         NA         0.9         Grab         MA           m         NA         NA         NA         1.0         Grab         MA	Boron	NA	NA	NA		Grab 0.4		ICP-OES
m NA NA NA 0.9 Grab 7.0 M M NA 1.0 Grab 7.0 M M M M M M M M M M M M M M M M M M M	Cadmium	NA	<20	NA		Grab		ICP-OES
m NA NA 1.0 Grab	Mercury	NA	NA	NA		Grab Grab		ICP-OES
	Selenium	NA	NA	NA	1.0	Grab Grab	0.74 µg/L	ICP-OES
NA   <20 NA   <20 Grab	Barium	NA	<20	NA	<20	Grab	20 µg/L	ICP-OES

NA=not available

ANNEX - Standard Forms

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 TABLE F.1(ii)(a):
 SURFACE/GROUND WATER MONITORING
 (1 table per discharge point upstream and downstream locations)

 (Secondary Discharge Point)
 (Secondary Discharge Point)

Discharge Point Code: SW02Blarney

## MONITORING POINT CODE: SW02Blarney

Parameter		Re (mg,	Results (mg/l ^{Note 1} )		Sampling method	Limit of Quantitation	Analysis method / technique
2007	July24	Aug 21	Sept 06	Oct 24			
PH	NA	NA	NA	NA	NA	2	Electrochemical
Temperature	NA	NA	NA	NA	NA	N/A	N/A
Electrical Conductivity (@25°C)	NA	NA	NA	NA	NA	0.5 µmhos/cm	Electrochemical
Suspended Solids	NA	NA	NA	<b>A</b>	NA	0.5 mg/L	Gravimetric
Ammonia (as N)	NA	NA	NA	NA COL	NA	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	NA	NA	NA	NA BLAN	NA	0.06 mg/L	Electrochemical
	٨A	NA	NA	NA	(NA)	8 mg/L	Digestion +
Chemical Oxygen Demand			,		10n	5	Colorimetric
Dissolved Oxygen	NA	NA	NA	NA	PUT N	N/A	N/A
Hardness (as CaCo ₃ ).	٨A	NA	NA	NA	NA BLOG	N/A	N/A
	NA NA	NA	NA	NA	NA Nev O	0.5 mg/L	Digestion +
Total Nitrogen (as N)	-				in. for	5	Colorimetric
Nitrite (as N)	NA	NA	NA	AN	NA	N/A	N/A
Nitrate (as N)	٩N	AN	NA	NA	<b>NA</b>	0.5 mg/L	Colorimetric
•	NA	NA	NA	NA	NA K DE	0.2 mg/L	Digestion +
Total Phosphorus (as P)					¢.		Colorimetric
Orthophosphate (as P) - unfiltered	AN	NA	NA	NA	NA	0.02 mg/L	Colorimetric
Sulphate (SO4)	NA	NA	NA	NA	NA	30 mg/L	Turbidimetric
Phenols (sum) Note 2 (ug/l)	NA	NA	NA	NA	NA	0.1 µg/L	GC-MS 2

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

ANNEX – Standard Forms

 TABLE F.1(ii)(b):
 SURFACE/GROUND WATER MONITORING (Dangerous Substances)

 (Secondary Discharge Point - one table per upstream and downstream location)

SW02Blarney Discharge Point Code:___

SW02Blarney MONITORING POINT CODE: ____

Parameter		Re (µ	Results (µg/l)		Sampling method (arab. drift etc.)	Limit of Quantitation	Analysis method / technique
•	July24	Aug 21	Sept 06	Oct 24			
Atrazine	NA	NA	NA	NA	NA	0.96 µg/L	HPLC
Dichloromethane	NA	NA	NA	NA	NA	1 µg/L	GC-MS 1
Simazine	NA	NA	O AN	NA	NA	0.01 µg/L	HPLC
Toluene	NA	NA	NA 9	ANA	NA	0.02 µg/L	GC-MS 1
Tributyltin	NA	NA	NA	NA AN	NA	0.02 µg/L as Sn	GC-MS 1
Xylenes	NA	NÀ	NA	NACON	NA	1 µg/L	GC-MS 1
Arsenic	NA	NA	NA	NA POLITICAN	NA	0.96 µg/L	ICP-OES
Chromium	NA	NA	NA	NA NA	ANA ANA	20 µg/L	ICP-OES
Copper	NA	NA	NA	NA	MR.	20 µg/L	ICP-OES
Cyanide	NA	NA	NA	NA	PILL N	5 µg/L	Colorimetric
Fluoride	NA	NA	NA	NA	NA Call of the	100 µg/L	ISE
Lead	NA	NA	NA	NA	NA MOLOGIA	20 µg/L	ICP-OES
Nickel	NA	NA	NA	NA	The particular the particular the particular the particular term of term	20 µg/L	ICP-OES
Zinc	NA	NA	NA	NA	NA MA	20 µg/L	ICP-OES
Boron	NA	NA	AN	NA	othe AN	20-µg/L	ICP-OES
Cadmium	NA	NA	NA	NA	NA NA	20 µg/L	ICP-OES
Mercury	NA	NA	NA	NA	NA	0.2 µg/L	ICP-OES
Selenium	NA	NA	NA	NA	NA	0.74 µg/L	ICP-OES
Barium	NA	NA	NA	NA	NA	20 µg/L	ICP-OES

NA=not available

ANNEX-- Standard Forms

 TABLE F.1(ii)(a):
 SURFACE/GROUND WATER MONITORING
 (1 table per discharge point upstream and downstream locations)

 (Secondary Discharge Point)
 (Secondary Discharge Point)

Discharge Point Code: SW03Blarney

## MONITORING POINT CODE: SW03Blarney

Parameter		Re (mg	Results (mg/l ^{Note 1} )	· · ·	Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
2007	July24	Aug 21	Sept 06	Oct 24			-
Hd	NA	NA	NA	NA	NA	2	Electrochemical
Temperature	NA	NA	NA	NA	NA	N/A	N/A
Electrical Conductivity (@25°C)	NA	NA	NA	NA	NA	0.5 µmhos/cm	Electrochemical
Suspended Solids	NA	NA	NA VA	NA	NA	0.5 ma/l	Gravimetric
Ammonia (as N)	NA	NA	NA	\$NA	NA	0.02 ma/L	Colorimetric
Biochemical Oxygen Demand	NA	NA	NA	AN AN	NA	0.06 ma/L	Flectrochemical
	NA	NA	NA	NA ⁸	NA	8 mg/L	Digestion +
Chemical Oxygen Demand			_	in Pr		b 	l Colorimetric
Dissolved Oxygen	NA	NA	NA	NA (6)	<b>AND</b>	N/A	N/A
Hardness (as CaCo ₃ )	AA	NA	NA	NA	NP)	N/A	N/A
-	AN.	NA	) • •	NA	OUT	0.5 mg/L	Digestion +
Total Nitrogen (as N)					105°	5	Colorimetric
Nitrite (as N)	AA	NA	NA		NA Neg	N/A	N/A
Nitrate (as N)	NA	NA	NA	NA	NA NA NA	0.5 mg/L	Colorimetric
	٨A	NA	NA	NA	AN	0.2 mg/L	Digestion +
Total Phosphorus (as P)					oth		Colorimetric
Orthophosphate (as P) - unfiltered	NA NA	NA	NA	NA	AN PL INC	0.02 mg/L	Colorimetric
Sulphate (SO ₄ )	NA	NA	NA	NA	NA	30 ma/L	Turbidimetric
Phenols (sum) ^{Note 2} (ug/l) NA I	NA	NA	NA	NA	NA	0.1 ua/L	GC-MS 2

ANNEX-Standard Forms

 TABLE F.1(ii)(b):
 SURFACE/GROUND WATER MONITORING
 (1 table per discharge point upstream and downstream locations)

 (Secondary Discharge Point)
 (Secondary Discharge Point)

Discharge Point Code: SW03Blarney

## MONITORING POINT CODE: SW03Blarney

Parameter	-	С Г	Results (µg/l)		Sampling method (arab. drift etc.)	Limit of Quantitation	Analysis method / technique
2007	July24	Aug 21	Sept 06	Oct 24			
Atrazine	NA	AN	NA	NA	NA	0.96 µg/L	HPLC
Dichloromethane	NA	NA	NA	NA	NA	1 µg/L	GC-MS 1
Simazine	NA	AN	NA	NA	NA	0.01 µg/L	HPLC
Toluene	NA	NA	NA	NA	NA	0.02 µg/L	GC-MS 1
Tributyltin	NA	NA	NA	NA	NA ·	0.02 µg/L as Sn	GC-MS 1
Xylenes	NA	NA	NA	ANA	NA	1 µg/L	GC-MS 1
Arsenic	NA	NA	NA	N.	NA	0.96 µg/L	ICP-MS
Chromium	NA	AN	NA	AN Stor	NA	20 µg/L	ICP-OES
Copper	NA	NA	NA	NA 20. 1	NA	20 µg/L	ICP-OES
Cyanide	NA	NA	NA	AN BU	NA NA	5 µg/L	Colorimetric
Fluoride	NA	NA	NA	NA	ON AS	100 µg/L	ISE
Lead	NA	NA	NA	NA	NA AN	20 µg/L	ICP-OES
Nickel	NA	NA	NA	NA	$\infty$	20 µg/L	ICP-OES
Zinc	NA	NA	NA	NA	NA Rev 0	20 µg/L	ICP-OES
Boron	NA	NA	NA	NA	NA DO X	20 µg/L	ICP-OES
Cadmium	NA	NA	NA	, NA	NA	20 µg/L	ICP-OES
Mercury	AN	NA	NA	NA	NA	0.2 µg/L	ICP-MS
Selenium	AN	NA	NA	NA	<b>NA</b>	0.74 µg/L	ICP-MS
Barium	NA	NA	NA	NA	NA	20 µg/L	ICP-OES

ANNEX – Standard Forms

 TABLE F.1(ii)(a):
 SURFACE/GROUND WATER MONITORING
 (1 table per discharge point upstream and downstream locations)

 (Secondary Discharge Point)
 (2 table per discharge point)

SW04Blarney Discharge Point Code:__

### SW04Blarney MONITORING POINT CODE:

Parameter		Re (mg,	Results (mg/l ^{Note 1} )		Sampling method (grab. drift etc.)	Limit of Quantitation	Analysis method / technique
2007	July24	Aug 21	Sept 06	Oct 24		,	
pH	NA	NA	NA	NA	NA	2	Electrochemical
Temperature	AN	NA	NA	NA	NA	N/A	N/A
Electrical Conductivity (@25°C)	NA	NA	NA	NA	NA	0.5 µmhos/cm	Electrochemical
Suspended Solids	NA	NA	AN	NA	NA N	0.5 mg/L	Gravimetric
Ammonia (as N)	NA S	NA	NA	ANA	NA	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	NA	NA	NA	NA.	NA	0.06 mg/L	Electrochemical
	٨A	NA	NA	NA ^{CO} TO	NA	8 mg/L	Digestion +
Chemical Oxygen Demand				103 103		i	Colorimetric
Dissolved Oxygen	NA	NA	NA	NA	<b>NA</b>	N/A	N/A
Hardness (as CaCo ₃ )	NA	NA	NA	AN	M.R.	N/A	N/A
	٩N	NA	NA	NA	PULL A	0.5 mg/L	Digestion +
Total Nitrogen (as N)					ose edi	à	Colorimetric
Nitrite (as N)	٨A	NA	NA	NA	NA	N/A	N/A
Nitrate (as N)	NA AN	NA	NA	NA	NA Da	0.5 mg/L	Colorimetric
	AN	NA	NA	NA	AN	0.2 mg/L	Digestion +
Total Phosphorus (as P)					othe	5	Colorimetric
Orthophosphate (as P) - unfiltered	NA	NA	NA	AN	AN Theo.	0.02 mg/L	Colorimetric
Sulphate (SO ₄ )	NA	NA	NA	NA	NA	30 mg/L	Turbidimetric
Phenols (sum) Note 2 (ug/l)	NA	NA	NA	NA	NA	0.1 ua/L	GC-MS 2

ANNEX – Standard Forms

 TABLE F.1(ii)(b):
 SURFACE/GROUND WATER MONITORING
 (1 table per discharge point upstream and downstream locations)

 (Secondary Discharge Point)
 (Secondary Discharge Point)

SW04Blarney Discharge Point Code:_

### SW04Blarney MONITORING POINT CODE: _

Parameter		ц. Ке	Results (µg/l)	· · ·	Sampling method	Limit of Quantitation	Analysis method / technique
					(grab, drift etc.)	Ι.	
2007	July24	Aug 21	Sept 06	Oct 24			
Atrazine	NA	NA	NA	. VN	NA	0.96 µg/L	HPLC
Dichloromethane	NA	NA	NA	NA	NA	1 µg/L	GC-MS 1
Simazine	NA	NA	NA	NA	NA	0.01 µg/L	HPLC
Toluene	NA	NA	NA	NA	NA	0.02 µg/L	GC-MS 1
Tributyltin	NA	NA	NA	NA	NA	0.02 µg/L as Sn	GC-MS 1
Xylenes	NA	NA	NA	ANA	NA	1 µg/L	GC-MS 1
Arsenic	NA	NA	NA	NA	NA	0.96 µg/L	ICP-MS
Chromium	NA	NA	NA	NA Road	NA	20 µg/L	ICP-OES
Copper	NA	NA	NA	NA BU	NA	20 µg/L	ICP-OES
Cyanide	NA	NA	NA	NA (19	NA.	5 µg/L	Colorimetric
Fluoride	NĂ	NA	NA	NA	MAD.	100 µg/L	ISE
Lead	AN	NA	NA	NA	NAME	20 µg/L	ICP-OES
Nickel	AN	NA	NA	NA	NA BUS	20 µg/L	ICP-OES
Zinc	NA	NA	NA	NA	NA Mercelo	20 µg/L	ICP-OES
Boron	NA	NA	NA	NA	NA N. Ot	20 µg/L	ICP-OES
Cadmium	AN	NA	NA	NA	NA	20 µg/L	ICP-OES
Mercury	NA	NA	NA	NA	NA	0.2 µg/L	ICP-MS
Selenium	AN	NA	NA	NA	NA	0.74 µg/L	ICP-MS
Barium	NA	NA	NA	NA	NA	20 µg/L	ICP-OES

ANNEX - Standard Forms

### Cryptosporidium Risk Assessment

At

### Lee Road Waterworks



<b>Revision Control Table</b>	Revision	Control	Table
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Revision	Description of changes	Prepared by	Date
No.			
4	Revised score to source	BG	31/3/2006
	type – 8 instead of 4		
3	Scottish model 2003	BG	11/10/2005
	Directions. Entire		
	document reviewed.		
2	Once monthly continuous	BG	19/08/2005
	monitoring introduced		
1	Blarney sewage treatment	BG	24/02/2004
	plant included in		
	assessment risk.		
0	Final draft $-1^{st}$ issue	BG/KOD	14/11/2002

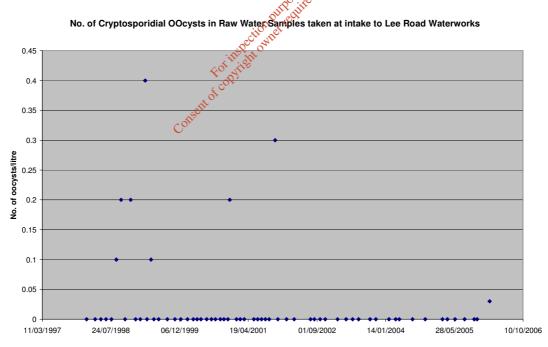
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### Background

This document is based on the Scottish Model – *The Cryptosporidium (Scottish Water) Directions 2003* as recommended by the EPA. This methodology with some modifications to the text is outlined in Appendix 6 of the document *European Communities (Drinking Water) Regulations, 2000 (S.I. 439 of 2000) A Handbook on Implementation for Sanitary Authorities* published by the EPA. The text of this document is reproduced in Appendix 1 of this document. Use has also been made of a template spreadsheet for risk assessment developed by Michael Lavelle of Cork County Council.

### **Cryptosporidium Monitoring at the Lee Road Waterworks**

Sampling of both the raw water and treated water at the Lee Road has been ongoing since 1998. One grab sample is taken each month from the intake and treated water leaving the plant and sent to Dublin for analysis. Since March 2005 a Filta Max filter system has been in place for monitoring the final water outflow of the plant and a similar system has now been setup for the Raw Water since February 2006. Todate, no cryptosporidum has been detected in the treated water. However, it has been found in the raw water as follows:



As can be seen, there are some shows though most results show zero concentrations. It should be noted that most of these individual samples represent a snapshot in time and place and are unrepresentative. Nothing had been found for a number of years since 31/10/2001 but the first run of the Filta Max in February 2006 found 3 oocysts in 100 litres.

Supply	Risk	Action to be taken by water authorities on
Classification	Assessment	completion of a risk assessment
	Score	
Very High	>100	Improve treatment process to reduce the risk to lower
Risk		risk category. Implement continuous monitoring of
		treated water for Cryptosporidium.
High Risk	76-100	Improve treatment process to reduce the risk to lower
		risk category. Implement continuous monitoring of
		treated water for Cryptosporidium.
Moderate Risk	50-75	Improve treatment process to reduce the risk to lower
		risk category. Implement continuous monitoring of
		treated water for Cryptosporidium.
Low Risk	<50	No need to monitor supplies unless there is an
		outbreak of cryptosporidiosis occurs within the
		supply area.

### **Risk Assessment Scoring:**

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### Assessment

Scheme	Lee Road Waterworks	
	Enter the Scheme name in the box above and on the Tab and enter the	name
	of the source in the box below.	
Source	River Lee	
	Enter the assessed score in the shaded boxes on the right of the table. excel sheet will do all of the calculations.	The
	SURFACE WATER RISK ASSESSMENT	
	(CATCHMENT RISK SCORE)	
	Animals within the Catchment	
Item	Risk Factor	Item
NL.		0

Item	Risk Factor	Item	Score
No.		Scores	
1.1	Cattle/calves at less than or equal to one animal per hectare of forage area. If density not known assume more than one animal per hectare of forage area.	6	12
1.2	Cattle/calves at more than one animal per hectare of forage area. If density not known assume more than one animal per hectare of forage area.	12	
1.3	Sheep/lambs at less than or equal to one animal per hectare of forage area. If density not known assume more than one animal per hectare of forage area.	6	6
1.4	Sheep/lambs at more than one animal per hectare of forage area. If density not known assume more than one animal per hectare of forage area.	12	
1.5	Wild or farmed deer	2	0
1.6	Pig farms	2	2
1.7	Animals have direct access towater sources including feeder streams	4	4
1.8	Fencing prevents access to water sources including feeder streams	-1	
1.9	Kot site High numbers of birds	2	0
1,10	Any other farmed animal or bird	1	0
	SCORE FOR SECTION 1;		24

### Agricultural Practices within the Catchment

2.1	Slurry spraying	6	6
2.2	Dung spreading	3	3
2.3	Slurry or dung stores	3	3
2.4	Sheep pens or cattle byres	6	6
2.5	Lambing or calving on the catchment	8	8
	SCORE FOR SECTION 2;		26

### Discharges to the Catchment / Water Source

	Districting of the full of the order of the order of		
3.1	Population served by all septic tanks = 100	4	6
3.2	Population served by all septic tanks > 100	6	
3.3	Population equivalent served by all sewage works <100	4	7
3.4	Population equivalent served by all sewage works 500 to 5,000	5	
3.5	Population equivalent served by all sewage works 5,001 to 20,000	6	
3.6	Population equivalent served by all sewage works 20,001 to 50,000	7	
3.7	Population equivalent served by all sewage works > 50,000	8	
3.8	Storm sewage overflows (Regardless of number)	2	2
3.9	Abattoirs/livestock markets (Regardless of number)	2	2
	SCORE FOR SECTION 3;		17
Water Source Type			
4.1	Secure natural springs – vulnerable soil/hydrogeology	4	8

4.3       Other shallow underground sources - vulnerable soil/hydrogeology       4         4.4       Other shallow underground sources - non-vulnerable soil/hydrogeology       2         4.5       Upland reservoir       2         4.6       Lowland long term storage reservoir       4         4.7       Upland river or stream - direct abstraction       6         4.8       Lowland river or stream - direct abstraction or bankside storage       8		1	Secure natural springs – non-vulnerable soil/hydrogeology	4.2
4.5       Upland reservoir       2         4.6       Lowland long term storage reservoir       4         4.7       Upland river or stream – direct abstraction       6         4.8       Lowland river or stream – direct abstraction or bankside storage       8		4	Other shallow underground sources - vulnerable soil/hydrogeology	4.3
4.6Lowland long term storage reservoir44.7Upland river or stream – direct abstraction64.8Lowland river or stream – direct abstraction or bankside storage8		2	Other shallow underground sources – non-vulnerable soil/hydrogeology	4.4
4.7Upland river or stream – direct abstraction64.8Lowland river or stream – direct abstraction or bankside storage8		2	Upland reservoir	4.5
4.8 Lowland river or stream – direct abstraction or bankside storage 8		4	Lowland long term storage reservoir	4.6
		6	Upland river or stream – direct abstraction	4.7
SCOBE FOR SECTION 4: 8		8		4.8
	8		SCORE FOR SECTION 4;	

### **Raw Water Aquaducts**

5.1	Raw water aqueduct known or suspected to be vulnerable to contamination from farmland	8	0
5.2	Raw water aqueduct proven to be secure contamination from farmland within past five years	0	
5.3	No Aquaduct bringing water from source to treatment plant	0	
	SCORE FOR SECTION 5;		0

### Catchment Inspections

6.1	Catchment inspections carried out at least monthly	-3	-3
6.2	Catchment inspections carried out less frequently	6	
6.3	Procedures in place to deal with irregularities on the catchment	-3	-3
6.4	No procedures in place to deal with irregularities on the catchment	0	
	SCORE FOR SECTION 6;		-6

### Raw Water Intake Management for Direct Abstraction

7.1	్ల్లిస్ No turbidity monitor on intake	3	-2
7.2	Turbidity monitor on intake that is alarmed and connected to telemetry	-2	
7.3	Automatic; intake shut down when poor water quality	-4	-1
7.4	Manual intake shut down when poor water quality	-1	
7.5	wintake shut down when poor water quality	3	
	SCORE FOR SECTION 7;		-3
	<u> </u>		

### Surface Water Catchment Risk Score (Sections 1 to 7) 66

### WATER TREATMENT PROCESSES

8.1	Disinfection only	10	-10
8.2	Microstraining	10	
8.3	Simple sand filtration (not slow sand filtration)	8	
8.4	Coagulation followed by DAF/sedimentation and filtration	-10	
8.5	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation)	-7	
8.6	Slow sand filtration	-9	
8.7	Membrane filtration (on Scottish Executive or DWI list)	-16	
8.8	Membrane filtration (not on Scottish Executive or DWI list	-2	
8.9	Cartridge/Kalsep filtration	-2	
8,10	Filtamat or similar filtration system	-2	
	SCORE FOR SECTION 8;		-10

For section 9 below complete only the relevant section. Ignore the other 2. Treatment Works Monitoring of Coagulation and Filtration Rapid gravity and pressure filters

9.1	Turbidity meter on each filter with alarm on telemetry	-5	2
9.2	Turbidity meter on each filter but no alarm on telemetry	0	
9.3	One turbidity meter shared by more than one filter with alarm on telemetry	-2	

	2	One turbidity meter shared by more than one filter but no alarm on telemetry	9.4
	10	No turbidity meters monitoring filter performance	9.5
2	-2	Final water turbidity meter with alarm on telemetry	9.6
	2	Final water turbidity meter but no alarm on telemetry	9.7
	5	No final water turbidity meter	9.8
0	-5	Particle counter used continuously to monitor filter performance	9.9
5	-5	Continuous residual coagulant monitor on combined filtrate or works outlet with alarm	9,10
	-1	11 Continuous residual coagulant monitor on combined filtrate or works outlet -1 but no alarm	
	5	2 No continuous residual coagulant monitor on combined filtrate or works 5 outlet	
-2	-2	Routine discrete monitoring of treated water for turbidity/residual coagulant	9.13
	2	No routine discrete monitoring of treated water for turbidity/residual coagulant	9.14
0	-2	Turbidity of backwash supernatant monitored when recycled	9.15
	2	Turbidity of backwash supernatant not monitored when recycled	9.16
7		9.1 to 9.16	

### Slow sand filters

0	-5	Turbidity meter on each filter with alarm on telemetry	9.17
	0	Turbidity meter on each filter but no alarm on telemetry	9.18
	-2	One turbidity meter shared by more than one with alarm on telemetry	9.19
	2	One turbidity meter shared by more than one filter but no alarm on surgeit	9,20
	10	No turbidity meters monitoring filter performance	9.21
0	-2	Final water turbidity meter with alarm on telemetry	9.22
	2	Final water turbidity meter but no alarm on telemetry	
		No final water turbidity meter	
0	-5	Particle counter used continuously to monitor filter performance	
0	-4	Filters matured and filtrate analysed for turbidity, coliforms and	9.26
	Cryptosporidium during maturation		
	Filters matured but no analysis carried out on filtrate 5		9.27
	Filters not matured 15		9.28
0		9.17 to 9.28	

### **Membrane filters**

0	-3	Plant monitored and alarmed for integrity	9.29
	0	Plant monitored for integrity but not alarmed	9,30
]	10	Plant not monitored for integrity	9.31
0	-5	Particle counter used continuously to monitor filter performance	9.32
0	9.29 to 9.32		
7	SCORE FOR SECTION 9 [9.1 to 9.16] or [9.17 to 9.28] or [9.29 to 9.32];		

10.1	Final water turbidity increases by more than 50%, excluding normal	4	0
	backwash period		
10.2	Treated water turbidity increases by less than 50%, excluding normal backwash period	0	
10.3	Media loss from any filter has brought media depth below design level	6	0

### **Rapid Gravity and Pressure Filter Works Performance**

10.4	Media depth above minimum design level with audit trail maintained -2		
10.5	Signs of media cracking on any filter	4	4
10.6	All filters have been drained, inspected and any necessary remedial action -2 taken within last year		0
10.7	Air scour and backwash maintained and operating efficiently as per -2 maintenance manual		-2
	SCORE FOR SECTION 10;		2

### **Treatment works Operation**

-1	Process control manuals specific to works available	11.1
1	Process control manuals specific to works not available	11.2
-1	Auditable action plans available for dealing with deviations in quality	11.3
1	Auditable action plans not available for dealing with deviations in quality	11.4
-4	Slow start facility on filters operational	11.5
4	No slow start facility on filters, or slow start facility not operational	11.6
-6	Filters run to waste for appropriate period after backwash	11.7
-4	Filters run to head of works for a period following backwash	11.8
4	Filters not run to waste or head of works for a period following backwash	11.9
2	Backwash water and/or sludge supernatant has to be recycled	11,10
-2	Other disposal route available for backwash water and sludge supernatant	
-2	Water flow through works when operating has not varied by >10% in <30	11.12
	<u> </u>	
2		11.13
4	Flow through works above design flow for \$10% of time in last 12 months	11.14
0	Flow through works above design flow for =10% of time in last 12 months	11.15
	SCORE FOR SECTION 11;	
	$ \begin{array}{c} 1 \\ -1 \\ 1 \\ -4 \\ 4 \\ -6 \\ -4 \\ 4 \\ 2 \\ -2 \\ -2 \\ -2 \\ 2 \\ 4 \\ \end{array} $	Process control manuals specific to works not available1Auditable action plans available for dealing with deviations in quality-1Auditable action plans not available for dealing with deviations in quality1Auditable action plans not available for dealing with deviations in quality1Auditable action plans not available for dealing with deviations in quality1Auditable action plans not available for dealing with deviations in quality1Auditable action plans not available for dealing with deviations in quality1Slow start facility on filters, or slow start facility on filters operational-4No slow start facility on filters, or slow start facility not operational4Filters run to waste for appropriate period after backwash-6Filters not run to waste or head of works for a period following backwash-4Backwash water and/or sludge supernatant has to be recycled2Other disposal route available for backwash water and sludge supernatant-2Water flow through works when operating has not varied by >10% in <30-2Water flow through works when operating has varied by >10% in <302Flow through works above design flow for \$10% of time in last 12 months4Flow through works above design flow for \$10% of time in last 12 months4

Surface Water Treatment and Supply Risk Score (Sections 8, 9, 10 and 11)

e or

3

69

### Final Weighted Surface Water Risk Assessment Score (Sections 1 to 11)

### **Population Criterion**

The population weighting factor is $0.4 \times \log 10$ (population served by the supply). The final weighted surface water risk assessment score is the final surface water risk assessment score x the population weighting factor.	
Insert the population at risk in the shaded box on the next line	
Population Served	90,000
Log to the base 10 of the population served	4.95
0.4 (Log to the base 10 of pop served)	1.98
Cryptosporidium	137
Risk Score	

Comments / notes concerning peculiarities of this scheme or this evaluation

Insert Name of Assessor and Date of the Assessment (Date Month and Year e.g.13/04/2005)) in the blue boxes below

Assessment undertaken by Brendan Goggin, Cork City Council Date 31/03/2006

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Improvements in the existing	plant to reduce the risk.
------------------------------	---------------------------

Items 1 – 5	Reduce Score by:
It is not possible to change the first 4 categories – thus the score for these will remain the same. (These are the Animals on the Catchment, Agricultural Practices on the Catchment, Discharges into the Catchment/ Water Source, Water Source Type and Raw Water Aqueducts.	0
Item 6: Catchment Inspections	
Already have the maximum score possible here.	0
Item 7: Raw Water Intake Management for Direct Abstractions	
Automatic shutdown would be expensive and may not even be desirable. No change.	0
Item 8: Water Treatment Processes	0
Already have maximum score here.	
12. 21	
Item 9: Treatment Works Monitoring of Coagulation and Filtration.	
Putting a turbidity meter on each filter, at a cost of $\in 36,000$ , would reduce the score by 3. Alarm on final water turbidity would reduce score by 4. This is almost complete $\approx$ aready is on telemetry. This should be in place by next year. Reasonable expectation – reduce score by 4.	4
- BROOM	
Item 10: Rapid Gravity and Pressure Filter Works Performance	
There is severe cracking on all filters. Probably all require a filter media replacement at this stage. This would be very costly and in view of the proposed upgrade probably wasteful. The filters are also overloaded.	0
Itom 11. Treatment montre on anotion	
Item 11: Treatment works operation Filters could be left run to waste for a while after backwash. This is not easily done at this stage as the wash sequence was programmed into a PLC over 20 years ago and the entire system is delicate to say the least. This system may have to be looked at if the improvement project does not go ahead in the short term. This could reduce the score by 10. If the winter peak was eliminated, the variation in flow through the plant could be kept within 10%. This would reduce the score by 4. This not desirable Reasonable expectation (optimistic) – reduce score by 10	10
Total:	14

### **Conclusions and Recommendations**

Based on the recommended risk assessment procedure, i.e. The Scottish Model, the waterworks plant at Lee Road is at *Very High Risk* of allowing Cryptosporidium into the water distribution network. Even if moderate improvements were made to the existing plant, the Plant would remain in the *Very High Risk Category (137-14=123)*. The recommended procedure is to either put in place measures which will bring the risk down to the *Low Risk* category and in the meantime to put in place continuous monitoring. In view of the imminent plant upgrade, it would not be economically viable to put these measures in place and thus the latter solution of implementing continuous monitoring has been partly put in place.



### **Appendix 1**

### **EPA Guidance Document to Drinking Water Regulations RISK ASSESSMENT FOR CRYPTOSPORIDIUM**

### **INTRODUCTION**

A specific risk assessment methodology for *Cryptosporidium* is given below as an example of the application of the above general principles set out in Section 9.

One of the most significant drinking water and public health issues in recent years in the United Kingdom and elsewhere has been outbreaks of cryptosporidiosis related to drinking water supplies. A UK Group of Experts on *Cryptosporidium* in water supplies has published three reports giving comprehensive advice to water suppliers and other organisations. One of the recommendations of the Group of Experts is that water suppliers should carry out risk assessments for each of their water supplies, although the methodology to be used is not specified in any detail.

The Drinking Water Inspectorate has published a methodology for water suppliers in England and Wales to use to meet the requirement in Regulations to carry out risk assessments for *Cryptosporidium*. This methodology sets out the factors that water suppliers are required to take into account. Where the water supplier has found a significant risk the Regulations require it to install treatment to meet the treatment standard of an average of less than one oog steper 10 litres and to monitor the treated water continuously to establish whether the treatment standard is met. The water supplier uses the professional judgement of its scientists to decide when there is a significant risk. The methodology does not include any quantification of the risks such as a scoring system.

The Scottish Executive has published a similar methodology for Scottish Water to use to meet the requirement in the Directions to carry out risk assessments for Cryptosporidium. The original Directions were made in 2000. The Scottish Executive has reviewed these Directions in the light of experience of their use and has proposed new Directions. The new Directions are "The Cryptosporidium (Scottish Water) Directions 2003". This methodology, in addition to setting out the factors that Scottish Water is required to take into account, sets out a quantitative scoring system for each factor to enable Scottish Water to determine whether each supply is high, medium or low risk. The new 2003 Directions specify the frequency of sampling of both raw water and treated water at each treatment works. The frequency for raw water depends on the catchment risk score and the maximum design flow of the works and ranges between no samples per year for small works and low risk catchments to 52 samples per year for large works and high risk catchments. The frequency for treated waters depends on the catchment plus treatment risk score and the maximum design flow of the works and ranges from 12 samples per year for small, low risk works to 365samples per year for large, high risk works. Each sample must be taken continuously and for frequencies of less than 365 samples per year the period over which each sample is taken must be a minimum of 24 hours and a maximum of 36 hours. The National Disease Surveillance Centre in its draft report on a waterborne outbreak of cryptosporidiosis

prepared by a sub-committee of its Scientific Advisory Committee has included the *Cryptosporidium* risk assessment methodology published by the Scottish Executive in the original 2000 Directions.

An assessment has been made of these two risk assessment methodologies to decide which one would be most appropriate for sanitary authorities and private water suppliers in Ireland. It is considered that a methodology relying on a quantitative scoring system rather than professional judgement is more appropriate for the sanitary authorities and private water suppliers. Therefore it is recommended that sanitary authorities and private water suppliers use the Scottish methodology in the new 2003 Directions involving a relatively simple quantitative scoring system that assesses the risk by identifying the factors for the potential for *Cryptosporidium* being present in water supplies. The higher the score, the greater the potential risk. The methodology involves assessing surface water supplies separately from groundwater supplies. For both types of supply a catchment risk score and a treatment/supply risk score is calculated separately and then the two scores for each type are added and population weighted to give a final risk score. This methodology, with some modifications to the text, is given in the paragraphs below.

### SURFACE WATER RISK ASSESSMENT (CATCHMENT RISK SCORE)

Surface water is defined as water that is open to the atmosphere and subject to surface run off. It includes rivers, streams, takes, loughs, reservoirs (impounding and pumped long term and bankside storage), springs and shallow underground sources (such as river gravels). Where there is more than one source supplying a treatment works, each source should be assessed individually and the highest score used to calculate the combined catchment and treatment and supply score, and the final, population weighted score.

### Animals within the Catchment

Sheep and cattle, particularly when lambing or calving, are significant sources of *Cryptosporidium*. The higher the density of animals in the forage area the higher the potential risk. Forage areas are defined as grass, open woodland, rape for stock feed, rough grazing, turnips/swedes for stock feed and other crops for stock feed. Deer (also when high numbers in the wild) and pigs, particularly if farmed close to water sources, can also be a source of *Cryptosporidium*. The risk is higher when animals have direct access to water. High numbers of birds, particularly when roosting on or near water sources, can also be a source of *Cryptosporidium*. The total score for item 1 is the sum of the scores from items 1.1 or 1.2, 1.3 or 1.4, 1.5, 1.6, 1.7 or 1.8, 1.9 and 1.10.

Item	Risk Factor	Score
No.		
1.1	Cattle/calves at less than or equal to one animal per hectare of	6
	forage area. If density not known assume more than one animal	
	per hectare of forage area.	
1.2	Cattle/calves at more than one animal per hectare of forage area.	12
	If density not known assume more than one animal per hectare of	
	forage area.	

1.3	Sheep/lambs at less than or equal to one animal per hectare of forage area. If density not known assume more than one animal	6
	per hectare of forage area.	
1.4	Sheep/lambs at more than one animal per hectare of forage area. If density not known assume more than one animal per hectare of forage area.	
1.5	Wild or farmed deer	2
1.6	Pig farms	2
1.7	Animals have direct access to water sources including feeder streams	4
1.8	Fencing prevents access to water sources including feeder streams	-1
1.9	High numbers of birds	2
1,10	Any other farmed animal or bird	1

### **Agricultural Practices within the Catchment**

Slurry spraying and dung spreading, particularly the former, pose a high risk of *Cryptosporidium* contamination of water sources. Although well kept and managed slurry stores can kill oocysts, there is no way of knowing how effectively they are being operated and therefore a risk should be assumed. Sheep pens and cattle byres and lambing or calving on the catchment present a potential risk. The total score for Item 2 is the sum of the scores for each of the risk factors in the table below that is taking place on the catchment.

Item No.	Risk Factor	Score
2.1	Slurry spraying for stright	6
2.2	Dung spreading &	3
2.3	Slurry or dung stores	3
2.4	Sheep pens or cattle byres	6
2.5	Lambing or calving on the catchment	8

### **Discharges to the Catchment / Water Source**

Sewage works and septic tanks may not remove oocysts if there is cryptosporidiosis in the community, so there could be oocysts in the sewage works or septic tank effluent and that effluent could enter a raw water source. The impact of septic tanks and sewage works is scored separately on the basis of the total population served by **all** tanks or works in the catchment. Storm sewage overflows (outlets) and abattoirs/livestock markets are also a potential source of *Cryptosporidium* and each should be scored only once even when there is more than one of each discharging into the catchment. The total score for item 3 is the sum of the scores from items 3.1 **or** 3.2, 3.3 **or** 3.4 **or** 3.5 **or** 3.6 **or** 3.7, 3.8 and 3.9.

Item	Risk Factor	Score
No.		
3.1	Population served by all septic tanks $\leq 100$	4
3.2	Population served by all septic tanks > 100	6
3.3	Population equivalent served by all sewage works <100	4

3.4	Population equivalent served by all sewage works 500 to 5,000	5
3.5	Population equivalent served by all sewage works 5,001 to 20,000	6
3.6	Population equivalent served by all sewage works 20,001 to 50,000	7
3.7	Population equivalent served by all sewage works > 50,000	8
3.8	Storm sewage overflows (Regardless of number)	2
3.9	Abattoirs/livestock markets (Regardless of number)	2

### Water Source Type

Surface water sources present the highest risk from *Cryptosporidium*, particularly when there is direct abstraction from a river or stream. Lowland rivers present a greater risk than upland reservoirs. The risk from springs and shallow underground sources depends on hydrogeological factors, particularly their vulnerability to contamination from activities on the surface. The total score for item 4 consists of one score from the list of sources in the table below (no adding of scores).

Item	Risk Factor	Score
No.		
4.1	Secure natural springs – vulnerable soil/hydrogeology	4
4.2	Secure natural springs – non-vulnerable soil/hydrogeology	1
4.3	Other shallow underground sources - vulnerable soil/hydrogeology	4
4.4	Other shallow underground sources a non-vulnerable soil/hydrogeology	2
4.5	Upland reservoir	2
4.6	Lowland long term storage reservoir	4
4.7	Upland river or streams direct abstraction	6
4.8	Lowland river or stream – direct abstraction or bankside storage	8
D III	Consent o	·

### **Raw Water Aquaducts**

If the raw water is transferred to the treatment works in an aqueduct, this item should be scored. The total score for item 5 is the score from items 5.1 or 5.2.

Item	Risk Factor	Score
No.		
5.1	Raw water aqueduct known or suspected to be vulnerable to contamination from farmland	8
5.2	Raw water aqueduct proven to be secure contamination from farmland within past five years	0

### **Catchment Inspections**

Regular catchment inspections and procedures to deal with any identified irregularities reduce the risk from *Cryptosporidium*. The total score for item 6 is the sum of the scores

Item	Risk Factor	Score
No.		

6.1	Catchment inspections carried out at least monthly	-3
6.2	Catchment inspections carried out less frequently	6
6.3	Procedures in place to deal with irregularities on the catchment	3

### **Raw Water Intake Management for Direct Abstraction**

This item should only be scored if the raw water is abstracted directly from a river or stream and for lowland rivers with direct abstraction into a short-term bankside storage reservoir. Risk is reduced when turbidity monitors are installed at the intake and further reduced when the monitors are alarmed and the intake shut when poor water quality conditions are detected. The total score for item 7 is the sum of the scores from items 7.1 or 7.2 and 7.3 or 7.4 or 7.5.

Item	Risk Factor	Score
No.		
7.1	No turbidity monitor on intake	3
7.2	Turbidity monitor on intake that is alarmed and connected to	-2
	telemetry	
7.3	Automatic intake shut down when poor water quality	-4
7.4	Manual intake shut down when poor water quality	-1
7.5	No intake shut down when poor water quality	3
Surface	Water Catchment Risk Score	•. 1

### Surface Water Catchment Risk Score

Calculate the surface water catchment risk seere by adding the scores from items 1, 2, 3, 4, 5, 6 (if applicable) and 7 (if applicable).

### Surface Water Risk Assessment (Freatment and Supply Risk Score)

If there is more than one treatment process stream at the water treatment works, each treatment process stream should be scored separately and the highest scoring treatment process stream should be used to calculate the treatment and supply risk score and the combined catchment and treatment and supply risk score and the final population weighted score.

### Water Treatment Processes

It is well established that some treatment processes are much more effective in removing *Cryptosporidium*, and therefore reducing the risk, than others. The most effective processes are those that use membrane filtration or coagulation followed by sedimentation or dissolved air flotation and filtration. Membrane filtration is particularly effective when the membrane is capable of removing or retaining particles greater that one micron diameter – the Scottish Executive and the Drinking Water Inspectorate publish lists of membrane products that achieve this performance. Simple disinfection and microstraining do not reduce the risk from Cryptosporidium. The total score for item 8 is one of the scores from the risk factors in the table below based on the principal treatment at the works.

Item No.	Risk Factor	Score
8.1	Disinfection only	10

8.2	Microstraining	10
8.3	Simple sand filtration (not slow sand filtration)	8
8.4	Coagulation followed by DAF/sedimentation and filtration	-10
8.5	Coagulation followed by rapid gravity or pressure filtration (no	-7
	flotation or sedimentation)	
8.6	Slow sand filtration	-9
8.7	Membrane filtration (on Scottish Executive or DWI list)	-16
8.8	Membrane filtration (not on Scottish Executive or DWI list	-2
8.9	Cartridge/Kalsep filtration	-2
8,10	Filtamat or similar filtration system	-2

### **Treatment Works Monitoring of Coagulation and Filtration**

This section only applies when coagulation and filtration or filtration only is part of the water treatment process. Turbidity meters provide a good indication of filtration efficiency. Where turbidity meters are fitted and are alarmed so action can be taken, the risk from *Cryptosporidium* is reduced. Similarly a residual coagulant monitor on the outlet of the works, particularly when alarmed, provides an indication of the efficiency of the coagulation and filtration process. When membrane filters have an alarm to monitor the integrity of the membrane or have particle counters to monitor performance, the risk from *Cryptosporidium* is reduced. Routine discrete monitoring of treated water quality is also important. For **rapid gravity or pressure filters** the total score for item 9 is the sum of the scores for items 9.1 or 9.2 or 9.3 or 9.4 or 9.5, 9.6 or 9.7 or 9.8, 9.9, 9.10 or 9.11 or 9.42, 9.13 or 9.14, and 9.15 or 9.16. For **slow sand filters** the total score for item 9 is the sum of the scores for items 9.17 or 9.18 or 9.19 or 9.20 or 9.21, 9.22 or 9.23 or 9.24, 9.25, and 9.26 or 9.27 or 9.28. For **membrane filters** the total score tor item 9 is the sum of the scores for items 9.10 or 9.20 or 9.21, 9.22 or 9.23 or 9.24, 9.25, and 9.26 or 9.27 or 9.28.

Item	Risk Factor O st	Score
No.		
9.1	Turbidity meter on each filter with alarm on telemetry	-5
9.2	Turbidity meter on each filter but no alarm on telemetry	0
9.3	One turbidity meter shared by more than one filter with alarm on telemetry	-2
9.4	One turbidity meter shared by more than one filter but no alarm on telemetry	2
9.5	No turbidity meters monitoring filter performance	10
9.6	Final water turbidity meter with alarm on telemetry	-2
9.7	Final water turbidity meter but no alarm on telemetry	2
9.8	No final water turbidity meter	5
9.9	Particle counter used continuously to monitor filter performance	-5
9,10	Continuous residual coagulant monitor on combined filtrate or works outlet with alarm	-5
9.11	Continuous residual coagulant monitor on combined filtrate or works outlet but no alarm	-1
9.12	No continuous residual coagulant monitor on combined filtrate or works outlet	5

### Rapid gravity and pressure filters

9.13	Routine discrete monitoring of treated water for turbidity/residual coagulant	-2
9.14	No routine discrete monitoring of treated water for	2
	turbidity/residual coagulant	
9.15	Turbidity of backwash supernatant monitored when	-2
9.16	Turbidity of backwash supernatant not monitored when recycled	2

### **Slow sand filters**

	Slow sund meers	
9.17	Turbidity meter on each filter with alarm on telemetry	-5
9.18	Turbidity meter on each filter but no alarm on telemetry	0
9.19	One turbidity meter shared by more than one filter with alarm on	-2
	telemetry	
9,20	One turbidity meter shared by more than one filter but no alarm on	2
	telemetry	
9.21	No turbidity meters monitoring filter performance	10
9.22	Final water turbidity meter with alarm on telemetry	-2
9.23	Final water turbidity meter but no alarm on telemetry	2
9.24	No final water turbidity meter	5
9.25	Particle counter used continuously to monitor filter performance	-5
9.26	Filters matured and filtrate analysed for turbidity, coliforms and	-4
	Cryptosporidium during maturation	
9.27	Filters matured but no analysis carried out on filtrate	5
9.28	Filters not matured	15

### Membrane filters

9.29	Plant monitored and alarmed for integrity	-3
9,30	Plant monitored for integrity but not alarmed	0
9.31	Plant not monitored for integrity	10
9.32	Particle counter used continuously to monitor filter performance	-5
	Couser	

### **Rapid Gravity and Pressure Filter Works Performance**

This item only applies to treatment works with rapid gravity or pressure filters. Final water turbidity is a good indicator of filter performance. Filter condition, particularly loss of filter media and cracking of filter bed, the effect of filter backwashing on final water turbidity, and filter maintenance are also relevant. The total score for item 10 is the sum of the scores for items 10.1 **or** 10.2, 10.3 **or** 10.4, 10.5, 10.6 and 10.7.

Item No.	Risk Factor	Score
10.1	Final water turbidity increases by more than 50%, excluding normal backwash period	4
10.2	Treated water turbidity increases by less than 50%, excluding normal backwash period	0
10.3	Media loss from any filter has brought media depth below design level	6
10.4	Media depth above minimum design level with audit trail maintained	-2
10.5	Signs of media cracking on any filter	4

10.6	All filters have been drained, inspected and any necessary	-2
	remedial action taken within last year	
10.7	Air scour and backwash maintained and operating efficiently as	-2
	per maintenance manual	

### **Treatment Works Operation**

When a treatment works is operated in accordance with good practice with quality assured procedures, the risk from *Cryptosporidium* is reduced, particularly when there are auditable action plans to deal with any deviations from expected quality. The methods of returning filters to service following backwashing (following skimming and cleaning in the case of slow sand filters) and dealing with filter backwash water have an effect on the risk. Other relevant factors are significant short-term variations in flow through the works and whether the works has operated above its design flow. The total score for item 11 is the sum of the scores from items 11.1 or 11.2, 11.3 or 11.4, 11.5 or 11.6 (if relevant), 11.7 or 11.8 or 11.9 (if relevant), 11.10 or 11.11 (if relevant), 11.12 or 11.13 and 11.14 or 11.15.

	1	
11.1	Process control manuals specific to works available	-1
11.2	Process control manuals specific to works not available	1
11.3	Auditable action plans available for dealing with deviations in	-1
	quality	
11.4	Auditable action plans not available for dealing with deviations in	1
	quality	
11.5	Slow start facility on filters operational	-4
11.6	No slow start facility on filters, or slow start facility not	4
	operational w ^{eg} tico ^t	
11.7	Filters run to waste for appropriate period after backwash	-6
11.8	Filters run to head of works for a period following backwash	-4
11.9	Filters not run to waste or head of works for a period following	4
	backwash Cont	
11,10	Backwash water and/or sludge supernatant has to be recycled	2
11.11	Other disposal route available for backwash water and sludge	-2
	supernatant	
11.12	Water flow through works when operating has not varied by	-2
	>10% in <30 minutes in last 12 months	
11.13	Water flow through works when operating has varied by >10% in	2
	<30 minutes in last 12 months	
11.14	Flow through works above design flow for >10% of time in last	4
	12 months	
11.15	Flow through works above design flow for $\leq 10\%$ of time in last	0
	12 months	

### Surface Water Treatment and Supply Risk Score

The surface water treatment and supply risk score is the sum of the scores for items 8, 9 (if relevant and for the relevant treatment process), 10 (if relevant) and 11.

### Final Weighted Surface Water Risk Assessment Score

The final surface water risk assessment score is the sum of the surface water

catchment risk score and the surface water treatment and supply risk score. This score is then weighted according to the population served by the supply. The population weighting factor is  $0.4 \times 10010$  (population served by the supply). The final weighted surface water risk assessment score is the final surface water risk assessment score x the population weighting factor.

### WATER SUPPLY RISK CLASSIFICATION

The classification depends on the final risk assessment score. It should be noted that the high risk assessment classification used by the Scottish Executive has been renamed very high risk and the moderate risk classification split into two classifications – high risk and moderate risk.

Water Supply Risk Classification	Final Risk Assessment Score
Very high risk	>100
High risk	76-100
Moderate risk	50-75
Low risk	<50



### Table G

2/ V		Investment programme	Yes Yes			
	chment include		Yes	No		
5	Carrigtwohill	First phase proposal is to increase capacity to 45,000 p.e. secondary treatment. EIS and PR will address these issues	EIS and PR as the currently designate	is being proposed in the discharge area is ed a sensitive area.	No interim proposals	EIS to ABP March '08
	Ringaskiddy	. As for Crosshaven	As for Crosshave		As for Crosshaven	As for Crossshaven
4 5	Carrigaline	As for Crosshaven	As for Crossshave		As for Crossshaven	As for Crossshaven
3	Cobh	As for Crossshaven	115 101 010333110		As for Crosssilaven	As for Crossshaven
2	Crosshaven	Forms an element of the proposed Lower Harbour SS. Will be served by the Lower Harbour Wastewater Treatment Plant the EIS for which will be lodged with An Bord Pleanála at end 2007. The Preliminary Report is also at an advanced stage and will be lodged with DEHLG in February 2008. The reports will address all relevant environmental and drainage issues.	Nutrient removal discharge is not to	is not envisaged as sensitive waters	. No interim mitigation measures are proposed	Will be addressed in the Preliminary Report
	Blarney	No information to hand on this.	been upgraded to treatment and inc	tional upgrading is	No further works identified as necessary at this time.	No programme of improvements at this time
	AGGLOMERATION	G1- COMPLIANCE WITH COUNCIL DIRECTIVES		PHOSPHOROUS I No. 258 of 1998)	G3-IMPACT MITIGATION	G4- STORM OVERFLOWS.

### SECTION G: G.1 Compliance with Directives

### G.1(a) 2006

Based on monitoring data by both Cork City Council and Cork County Council Water Laboratory there were no breaches of the Abstraction Directive in 2006.

### G.1(b) 2007

The data supplied relates to monitoring in 2007 by Cork County Council as part of the Salmonid Directive at Cork City Council intake location.

The analytical results were also assessed against the Abstraction Directive for those parameters that are regulated under the Abstraction Regulations. There was one non-compliant date, i.e. February 8th 2007 where the directive was breached for BOD and colour. The A2 category permitted values are 5 mg/L for BOD and 100 Hazen units for colour.

This exceedance was due to heavy rain and flooding in the adjacent locality as the level of Suspended Solids was also elevated on that date.

### Monitoring by Cork City Council under the Abstraction Directive at the intake to Lee Road waterworks SURFACE WATER 2006 mg/l

(For Surface Water Directive)

			•	by Cork City	•						
DATE	Jan	Feb	Apr	May	Jun	July	Aug	Oct	Nov	(For Surface	Water Dir)
pН	7.11	6.85	6.8	7.11	7.15	7.35	7.46	7.22	7.35		g List
Ċol	20H.U	20HU	30H.U	17H.U	15H.U	15H.U	18H.U	17H.U	20H.U	OCTOBER s	-
SS	17mgl	14mg/l	15mg/l	17mg/l	18mg/l	12mg/l	9mg/l	3	11mg/l		
TEMP	9.5.C	10.1.C	10.5.C	16.5.C	18.1.C	21.Č	22.C	15.6.C	13.C	Parameter	Result
COND.	187us	200us	138us	150us	220us	178us	168us	147us/cm	170us	Cyanide	<0.1
ODOUR	None	None	None	None	None	None	None	None	None	Phenol.	<0.005
Nitrate	22.3	20.4	25.2	26.1	27.2	17	12.3	11.4	13.5	COD.	22
Fluoride	0.009	0.11	0.15	0.008	0.12	0.05	other 12.3	0.03	0.04	<b>D.O</b> .	97%
Dis. Iron	0.007	0.01	0.05	0.01	0.02	0.015	0.025	0.03	0.02	BOD.	2.1
Mn	0.01	0.006	0.022	0.009	0.008	0.01701 0.003 0.004 0.001 2.5 16.2 0.002	0.03	0.013	0.02	K.Nitrogen.	0.3
Cu	0.007	0.004	0.007	0.006	0.005	0.003	0.001	0.015	0.001	Ammonia.	0.07
Zn	0.007	0.004	0.005	0.003	0.009	S (0.004	0.001	0.002	0.002	Tot. Coli	2,000/100ml
Lead	0.001	0.001	<0.001	<.001	0.001	0.001 No.	0.001	,0.001	0.001	F.Coli.	200/100ml
Sulphate	2.7	1.5	2.1	2.6	2000	2.5	2	2	2.4	Boron.	<0.3
Chloride	21.7	24.1	15.7	16.1	~ 15 0°	16.2	17	18.4	16.5	Arsenic.	<0.001
Surf.	0.001	0.001	0.002	0.001	0.001	0.002	0.003	<0.005	0.003	Selenium.	0.003
Tot.P	0.75	0.81	0.9	1 <0.005 12 Cons	x ⁰ 1.1	1	1.1	0.06	1.3	Mercury.	<0.1
Phenol	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	Barium.	0.011
COD	9	7	15		9	9	10		12	PAH.	<0.01ug/l
DO	98%	97%	96%	96%	165%	125%	104%		90%	Tot.Pest.	<0.05ug/l
BOD	1.5	1	2	2.1	2.1	2	2.2		2.4	F.Strep.	47/100mls
K.Nitrogen	0.09	0.07	0.1	0.2	0.15	0.19	0.2		0.21	Salmonella.	ABSENT
Ammonia	0.01	0.03	0.15	0.08	0.11	0.15	0.12		0.17		
TOT COLI	2000/100ml	1750/100ml	1150/100ml	2000/100ml	2000/100ml	2748/100ml	2354/100ml		1500/100m		
F. COLI	500/100ml	440/100ml	370/100ml	200/100ml	220/100ml	170/100ml	180/100ml		120/100ml		

### **Re: Licensing of Discharges**

Ballincollig- Donald Cronin is preparing a response in respect of Ballincollig

**Blarney-** The Council has recently completed an upgrade of the wastewater treatment plant at Blarney to 13,000 p.e. and has no immediate proposals to increase that capacity. The plant at Blarney has two independent secondary treatment processes with the wastewater load being split approximately evenly between them. One stream has biological nutrient removal and the other has chemical nutrient removal. There is concern in relation to the nutrient levels in the river catchments north of Cork City and the Council has obtained approval to carry out a drainage study , the City Environs (CASP) Drainage Study which is being funded under the Water Services Investment Programme 2007-2009. This study will consider the drainage options available for the catchment concerned having regard to existing and planned developments in the area . The Council is currently preparing a brief for the appointment of a consultant and expects to advertise the appointment in early January 2008 and to have the study completed in approx six months thereafter.

**Crosshaven-** wastewater from Crosshaven is collected and discharged to the Carrigaline network and ultimately discharges to Cork Harbour via the 'IDA' sewer at the Dognose Bank. The discharge is currently untreated but will ultimately be served by the Lower Harbour SS, the treatment plant for which will be located at Carrigaline East and the effluent from this plant will discharge through the 'IDA' outfall to the barbour. The EIS for the wastewater treatment plant is being prepared and the Council bepes to lodge it with ABP by end of 2007. Nutrient removal is not being proposed as the receiving waters are not designated sensitive. The PR for the Scheme will be lodged with the DEHLG shortly after the EIS is sent to ABP but approval to the PR will not issue until after the EIS is approved , say mid 2008. The Lower Harbour SS is being funded under the Water Services Investment Programme 2007-2009 and the scheme is expected to be faily operational before the end of 2012.

**Cobh** – this also forms part of the proposed Lower Harbour SS and a significant upgrading of the Cobh sewer network is envisaged with the wastewater being pumped across the harbour to the proposed WWTP at Carriganne East. The current estimated design capacity required is 80,000 p.e.

**Carrigaline-** this wastewater is discharged (see Crosshaven) via the 'IDA' sewer and will ultimately form part of the Lower Harbour SS

**Ringaskiddy** – as for Carrigaline

**Carrigtwohill** –EIS under preparation and expected to be submitted to ABP March '08. The anticipated first phase will be to increase treatment capacity to 45000 p.e. from the current 8500 p.e. . The works are to be funded under the Serviced land Initiative . Nutrient removal will be included in the EIS and the PR as the Lee Estuary/Lough Mahon Area is currently designated a sensitive water.

The above information should be read in conjunction with earlier correspondence on the same matter and in particular you should cross-reference with response received from Duane O'Brien in relation to Carrigtwohill.

Regards,

R O'Farrell, Senior Engineer, WSIP Projects Office 4th December 2007

### Section G 2

Blarney Compliance with the phosphorus regulations

The discharge to the river Shournagh from Blarney wastewater treatment plant is 1.0 km upstream of site No 19S01 0300 at Tower bridge, Tower ,Co. Cork .

The baseline Q value was set at Q4 in 1997 The Q value for 2000 was Q3 -Q4 at this location The Q value for 2000 was Q3 -Q4 at this location The Q value for 2005 was Q3 -Q4 at this location.

On the basis of the above this site is posted of any other use. regulations. The treatment plant of the Blarney has been upgraded and nutrient removal included as parts of the upgrade . Details are included in section B10 and the listings of schemes in section G outline the details of the upgrade .

On this basis it is expected that there will be an improvement in the Q rating due to this measure and other measures that were undertaken as part of a programme of measures and that the site will be in compliance with the Phosphate regulations at this location within the next two to three years.

### **Cork County**

### Water Services Investment Programme 2007 - 2009

Schemes at Construction	W/S	Est. Cost		W/S	Est. Cost
Cork North					
Mitchelstown Sewerage Scheme			Cork South	_	
(Nutrient Removal)	S	221,000	Ballincollig Sewerage Scheme (Upgrade) (G)	S	22,248,000
()	-	,	Cork Lower Harbour Sewerage Scheme (excl. Crosshaven	SS)S	73,542,000
Cork South			Shannagarry/ Garryvoe/ Ballycotton Sewerage Scheme	S	3,780,000
Ballyvourney/ Ballymakeery Sewerage Scheme	S	3,049,000	Youghal Sewerage Scheme	S	14,420,000
Cobh/ Midleton/ Carrigtwohill Water Supply Scheme	W	10,135,000			
Cork Lower Harbour Sewerage Scheme			Cork West		
(Crosshaven SS) (G)	S	4,850,000	Ballydehob Sewerage Scheme	S	683,000
Cork Water Strategy Study (G)	W	941,000	Bantry Water Supply Scheme	W	14,935,000
Kinsale Sewerage Scheme	S	20,000,000 2,078,000	Clonakilty Sewerage Scheme (Plant Capacity Increase)	S	3,677,000
Midleton Sewerage Scheme (Infiltration Reduction) (G	) 3	<b>41,274,000</b>	Courtmacsherry/ Timoleague Sewerage Scheme	S	2,472,000
Schemes to start 2007		41,274,000	Dunmanway Regional Water Supply Scheme Stage 1	W	12,669,000
					164,629,000
Cork North			Serviced Land Initiative		
North Cork Grouped DBO Wastewater Treatment					
Plant (Buttevant, Doneraile & Kilbrin)	S	5,150,000	Cork North		
			Ballyclough Water Supply Scheme	W	139,000
Cork West			Ballyhooley Improvement Scheme	W/S	139,000
Skibbereen Sewerage Scheme	S	20,000,000	Broghill-Rathgoggin Sewerage Scheme	S	406,000
Cohemaa ta atart 0000		25,150,000	Bweeng Water Supply Scheme	W	115,000
Schemes to start 2008		Ś	Churchtown Sewerage Scheme (incl. Water)	W/S	543,000
Cork North		8,652,000 F. 4,498,000	Clondulane Sewage Treatment Plant	S	417,000
Mallow/ Ballyviniter Regional Water Supply Scheme (H	H) W	8.658.000	Freemount Sewerage Scheme	S	150,000
	· ·	\$,408,000	Pike Road Sewerage Scheme (incl. Water)	W/S	2,080,000
<b>o</b> ( )		tropy	Rathcormac Sewerage Scheme (incl. Water)	W/S	2,080,000
Cork South		948,000 1,296,000			
Ballincollig Sewerage Scheme (Nutrient Removal) (G)	S	948,000	Spa Glen Sewerage Scheme	S	736,000
Ballingeary Sewerage Scheme	Cor	1,296,000	Uplands Fermoy Sewerage Scheme (incl. Water)	W/S	1,174,000
Danuon Seweraye Scheme Stage 2	3	14,729,000	Watergrasshill Water Supply Scheme (incl. Sewerage) (G)	W/S	4,151,000
City Environs (CASP) Strategic Study (G)	S	153,000			
Cloghroe Sewerage Scheme (Upgrade)	S	683,000	Cork South		
Coachford Water Supply Scheme Garrettstown Sewerage Scheme	W S	1,318,000	Ballincollig Sewerage Scheme (Barry's Rd Foul and		
Inniscarra Water Treatment Plant Extension Phase 1	W	2,153,000 2,678,000	Storm Drainage) (G)	S	1,164,000
Little Island Sewerage Scheme (G)	S	2,200,000	Belgooley, Water Supply Scheme (incl. Sewerage)	W/S	2,913,000
	Ŭ	_,,	Blarney Water Supply Scheme (Ext. to Station Rd) (G)	W	416,000
			Carrigtwohill Sewerage Scheme (Treatment and		
Cork West			Storm Drain) (G)	S	7,632,000
Bantry Sewerage Scheme	S	7,148,000	Castlematyr Wastewater Treatment Plant Extension	S	1,200,000
Dunmanway Sewerage Scheme	S	2,153,000	Crookstown Sewerage Scheme (incl. Water)	W/S	1,200,000
Leap/ Baltimore Water Supply Scheme	W	6,365,000	Dripsey Water Supply Scheme (incl. Sewerage)	W/S	1,112,000
Schull Water Supply Scheme	W	5,253,000	Glounthane Sewerage Scheme (G)	S	1,576,000
Cohemen to start 0000		61,137,000	Innishannon Sewerage Scheme	S	277,000
Schemes to start 2009			Innishannon Wastewater Treatment Plant	S	694,000
Cork North			Kerrypike Sewerage Scheme	S	832,000
Banteer/Dromahane Regional Water Supply Scheme	W	1,576,000	Kerrypike Water Supply Scheme	W	416,000
Conna Regional Water Supply Scheme Extension	w	2,627,000	Killeagh Wastewater Treatment Plant Extension	S	1,200,000
Cork NE Water Supply Scheme	W	4,326,000	Killeagh Water Supply Scheme (includes Sewerage)	W/S	485,000
Cork NW Regional Water Supply Scheme	W	6,046,000	Killeens Sewerage Scheme	S	420,000
Millstreet Wastewater Treatment Plant (Upgrade)	S	1,628,000	Kilnagleary Sewerage Scheme	S	694,000
			Midleton Wastewater Treatment Plant Extension	S	4,050,000
				3	4,030,000

### Cork County contd.

### Water Services Investment Programme 2007 - 2009

	W/S	Est. Cost		W/S	Est. Cost
Mogeely, Castlemartyr & Ladysbridge Water Supply Scheme	e W	2,566,000	Cork South		
North Cobh Sewerage Scheme (G)	S	3,193,000	Carrigtwohill Sewerage Scheme (G)	S	20,000,000
Riverstick Water Supply Scheme (incl. Sewerage)	W/S	525,000	Cork Sludge Management (G)	S	14,420,000
Rochestown Water Supply Scheme	W	2,700,000	Cork Water Supply Scheme (Storage - Mount Emla,		
Saleen Sewerage Scheme	S	1,051,000	Ballincollig & Chetwind) (G)	W	8,500,000
Youghal Water Supply Scheme	W	2,300,000	Inniscarra Water Treatment Plant (Sludge Treatment)(	G)W	5,356,000
			Macroom Sewerage Scheme	S	5,150,000
Cork West			Minane Bridge Water Supply Scheme	W	1,421,000
Castletownshend Sewerage Scheme	S	1,576,000			
		50,797,000	Cork West		
Rural Towns & Villages Initiative			Bantry Regional Water Supply Scheme (Distribution)	W	9,455,000
			Cape Clear Water Supply Scheme	W	1,679,000
Cork North			Castletownbere Regional Water Supply Scheme	W	8,405,000
Buttevant Sewerage Scheme (Collection System)	S	2,446,000	Glengarriff Sewerage Scheme	S	2,500,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000	Roscarberry/Owenahincha Sewerage Scheme	S	1,576,000
			Skibbereen Regional Water Supply Scheme Stage 4	W	7,880,000
Cork South			ther		95,646,000
Innishannon (Ballinadee/ Ballinspittle/ Garrettstown)			23.00		
Water Supply Scheme	W	6,726,000	Water Conservation Allocation Water Conservation Allocation Masset Management Study South Western River Basin District (WFD) Project ¹		12,206,000
			100° ifed		
Cork West		and and	Asset Management Study		300,000
Ballylicky Sewerage Scheme	S	2,153,000	\$ ³		
Baltimore Sewerage Scheme	S		South Western River Basin District (WFD) Project		9,400,000
Castletownbere Sewerage Scheme	S	\$ 5,202,000			
Schull Sewerage Scheme	S	3,523,000			
	Ś	<b>24,950,000</b>	Programme Total	48	5,489,000
Schemes to Advance through Planning	Collec	5,202,000 (3,523,000) 24,950,000			
Cork North	14/	0.450.000			
Mitchelstown North Galtees Water Supply Scheme	W	3,152,000			
Mitchelstown Sewerage Scheme	S	3,000,000			

¹ This project is being led by Cork County Council on behalf of other authorities in the River Basin District

S

3,152,000

(H) Refers to a Hub as designated in the National Spatial Strategy

Newmarket Sewerage Scheme

(G) Refers to a Gateway as designated in the National Spatial Strategy

### SECTION H: DECLARATION

19 SC 61

### Declaration

I hereby make application for a waste water discharge licence/revised licence, pursuant to the provisions of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007).

I certify that the information given in this application is truthful, accurate and complete.

I give consent to the EPA to copy this application for its own use and to make it available for inspection and copying by the public, both in the form of paper files available for inspection at EPA and local authority offices, and via the EPA's website.

This consent relates to this application itself and to any further information or submission, whether provided by me as Applicant, any person acting on the Applicant's behalf, or any other person.

Nec 07 Date <u>***</u>/// Signed by (on behalf of the organisation) CIA Print signature name: Position in organisation:

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### Blarney : ANNEX 2: Check List For Regulation 16 Compliance

Regulation 16 of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) sets out the information which must, in all cases, accompany a discharge licence application. In order to ensure that the application fully complies with the legal requirements of Regulation 16 of the 2007 Regulations, all applicants should complete the following.

In each case, refer to the attachment number(s) of your application which contain(s) the information requested in the appropriate subarticle.

Regu	llation 16(1) In the case of an application for a waste water discharge licence, the application shall -	Attachment Number	Checked by Applicant ✓
(a)	give the name, address, telefax number (if any) and telephone number of the applicant (and, if different, of the operator of any treatment plant concerned) and the address to which correspondence relating to the application should be sent and, if the operator is a body corporate, the address of its registered office or principal office,	B1	
(b)	give the name of the water services authority in whose functional area the relevant waste water discharge takes place or is to take place, if different from that of the applicant,	B7	$\checkmark$
(c)	give the location or postal address (including where appropriate, the name of the townland or townlands) and the National Grid reference of the location of the waste water treatment plant and/or the waste water discharge point or points to which the application relates,	B2	$\checkmark$
(d)	state the population equivalent of the agglomeration to which the application relates,	B9	$\checkmark$
(e)	specify the content and extent of the waste water discharge, the level of treatment provided, if any, and the flow and type of discharge,	C,D	$\checkmark$
(f)	give details of the receiving water body, including its protected area status, if any, and details of any sensitive areas or protected areas or both in the vicinity of the discharge point or points likely to be affected by the discharge concerned, and for discharges to ground provide details of groundwater protection schemes in place for the receiving water body and all associated hydrogeological and geological assessments related to the receiving water environment in the vicinity of the discharge.	D2	

Regu	Ilation 16(1) continued/	Attachment Number	Checked by Applicant ✓
(g)	identify monitoring and sampling points and indicate proposed arrangements for the monitoring of discharges and, if Regulation 17 does not apply, provide details of the likely environmental consequences of any such discharges,	E3	$\checkmark$
(h)	in the case of an existing waste water treatment plant, specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application,	E4	$\checkmark$
(i)	describe the existing or proposed measures, including emergency procedures, to prevent unintended waste water discharges and to minimise the impact on the environment of any such discharges,	G	$\checkmark$
(j)	give particulars of the nearest downstream drinking water abstraction points or points to the discharge point or points,	F2	$\checkmark$
(k)	give details, and an assessment of the effects, of any existing of proposed emissions on the environment, including any environmental medium other than those into which the emissions are, or are to be made, and of proposed measures to prevent or eliminate or, where that is not practicable, to limit any pollution caused in such discharges.	F1	
(I)	give detail of compliance with relevant monitoring, requirements and treatment standards contained in any applicable Council Directives of Regulations,	G	$\checkmark$
(m)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work.	G3	~
(n)	Any other information as may be stipulated by the Agency.	x	x

	<b>Ilation 16(3)</b> Without prejudice to Regulation 16 (1) and (2), an application for a licence shall be accompanied by -	Attachment Number	Checked by the applicant ✓
(a)	a copy of the notice of intention to make an application given pursuant to Regulation 9,	B8	$\checkmark$
(b)	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,	Not applicable	$\checkmark$
(c)	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -		
	(i) the point or points, including storm water overflows, from which a discharge or discharges take place or are to take place, and	B5	$\checkmark$
	(ii) the point or points at which monitoring and sampling are undertaken or are to be undertaken,	E3	$\checkmark$
(d)	such fee as is appropriate having regard to the provisions of Regulations 38 and 39.	B9(ii)	
	ulation 16(4)		
parti speci	riginal application shall be accompanied by 2 copies of it and of all accompanying documents and culars as required under Regulation 16(3) in hardcopy or in an electronic or other format as fied by the Agency.		
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