

Comhairle Contae Chorcaí Cork County Council

Ms. Mary Turner,
Programme Officer,
Environmental Licensing Programme,
E.P.A. Headquarters,
P.O. Box 3000,
Johnstown Castle Estate,
Co. Wexford.

4th November 2010

Re/ Applications for Waste Water Discharge
Certificates of Authorisation.

Dear Ms. Turner,

I refer to your letter of 12th September 2010 in connection with the above and now
enclose Paying Order No. 656473, in the sum of €84,000 in respect of 28 applications
for the following agglomerations in North Cork, i.e.

- | | |
|-------------------|---------------------|
| 1. Ballindangan ✓ | 15. Kiskeam ✓ |
| 2. Ballydesmond ✓ | 16. Knocknagree ✓ |
| 3. Ballyhea ✓ | 17. Liscarroll ✓ |
| 4. Ballynoe ✓ | 18. Lombardstown ✓ |
| 5. Bartlemy ✓ | 19. Lyre ✓ |
| 6. Bridesbridge ✓ | 20. Meelin ✓ |
| 7. Castlemagner ✓ | 21. Milford ✓ |
| 8. Cecilstown ✓ | 22. Nad ✓ |
| 9. Cullen ✓ | 23. Newtown ✓ |
| 10. Dernagree ✓ | 24. Rathcoole ✓ |
| 11. Dromina ✓ | 25. Rockchapel ✓ |
| 12. Freemount ✓ | 26. Shanballymore ✓ |
| 13. Kilbrin ✓ | 27. Tullylease ✓ |
| 14. Kilcornery ✓ | 28. Glantane ✓ |

Yours faithfully,

June Whyte,
Senior Staff Officer,
WATER SERVICES DEPARTMENT.

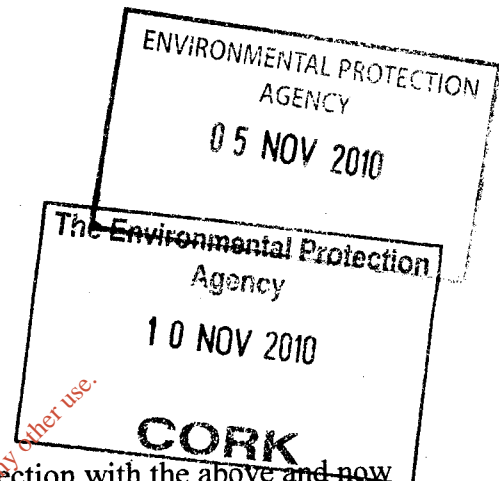
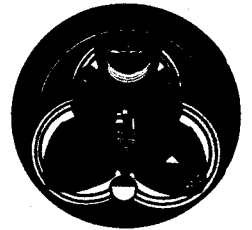
Phone: 022/54806
Email: june.white@corkcoco.ie

Annabella,
Mala,
Co. Chorcaí.

Fón: (022) 21123 • Faics: (022) 21983
R-phost: northcork@corkcoco.ie
Suíomh Gréasáin: www.corkcoco.ie

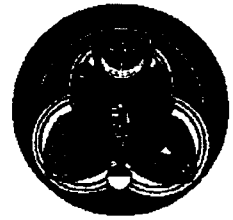
Annabella,
Mallow,
Co. Cork.

Tel: (022) 21123 • Fax: (022)21983
Email: northcork@corkcoco.ie
Web: www.corkcoco.ie



Cómhairle Contae Chorcaí Cork County Council

Environmental Directorate,
Inniscarra, Co. Cork.
Tel. No. (021) 4532700 • Fax No. (021) 4532727
Web: www.corkcoco.ie
An Stiúrthóireacht Comhshaoil,
Inis Cara, Co. Corcaigh.
Fón: (021) 4532700 • Faics: (021) 4532727
Suíomh Gréasáin: www.corkcoco.ie



Mr. Frank Clinton,
Program Manager,
Office of Climate, Licensing & Resource Use,
Environment Protection Agency,
Headquarters,
PO Box 3000,
Johnstown Castle Estate,
County Wexford.

16th December, 2009

Re: Waste Water Discharge (Authorisation) Regulations 2007 – fees payable in respect of applications to be submitted by 22nd December, 2009.

Dear Mr. Clinton,

I refer to the 72 certificate applications and 3 discharge authorisation licence applications which will be submitted by the council under the above regulations before the 22nd December next.

I note that the fees payable in respect of these applications amount to €246,000 and refer you to our letter of 7th November 2008 (sent by Ted O'Leary, Senior Executive Officer) seeking a rebate/reduction, as is provided for under Art 38 (3) of the regulations. I note that since that letter the council has paid a further € 570,000 in applications fees meaning that the total amount paid by the council to date amounts to € 1,245,000.

As you will appreciate, in the current economic climate, the amount payable in respect of this final batch of applications is a significant sum that was not budgeted for in 2009. Moreover we have paid a substantial amount in fees already and have made our case for a reduction/rebate. Accordingly, I must advise that we are not submitting payment in respect of these applications as we anticipate the rebate due to the council exceeds the fees payable.

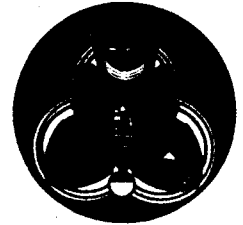
Yours faithfully,

Louis Duffy,
Director of Service,
Environment & Emergency Services Directorate



Comhairle Contae Chorcaí Cork County Council

Annabella,
Mala,
Co. Chorcaí.
Fón: (022) 21123 • Faics: (022) 21983
R-phost: northcork@corkcoco.ie
Suíomh Gréasáin: www.corkcoco.ie
Annabella,
Mallow,
Co. Cork.



Ms. Mary Turner,
Programme Officer,
Office of Climate, Licensing & Resource Use, Web: www.corkcoco.ie
Environmental Protection Agency,
Headquarters,
PO Box 3000,
Johnston Castle Estate,
Co. Wexford.

Tel: (022) 21123 • Fax: (022)21983
Email: northcork@corkcoco.ie

Direct Line : 022 30433
E-Mail : tom.stritch@corkcoco.ie

13th October, 2010

Re : Applications for Certificates of Authorisation in accordance with
Waste Water Discharge (Authorisations) Regulations 2007.

Dear Ms. Turner,

I refer to your letters of 23rd September last addressed to Mr. Frank Cronin in the case of the Northern Division and Ms. Patricia Power in the Southern Division and Mr. Niall O'Mahony in the Western Division pointing out that the Agency has not received the application fees for the Certificate of Authorisation applications submitted by Cork County Council.

I wish to confirm that Cork County Council will submit the prescribed fees forthwith. The fees will be submitted by each of the three Divisions in respect of the applications from the respective Divisions, as soon as the payments are processed.

Please note that Mr. Frank Cronin has retired and that future correspondence in relation to the Northern Division on these applications should be sent to Mr. Paddy O'Friel, S/Senior Engineer.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Tom Stritch'.

Tom Stritch,
S/Divisional Manager.
TS/ML



This is a draft document and is subject to revision.



Waste Water Discharge Certificate of Authorisation Application Form

EPA Ref. N^o:
(Office use only)

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

Tracking Amendments to Draft Application Form

Version No.	Date	Amendment since previous version	Reason
V. 1.	12/06/2009	N/A	
V.2.	17/06/2009	<p>Delete reference to Design Build and Operate</p> <p>Delete the requirement to provide contact information for the associated waste water treatment plant</p> <p>Replace references to the Water Services investment Programme with the Small Schemes Programme</p> <p>Update references to new legislation</p> <p>Inclusion of the requirement to submit information on private WWTPs within the agglomeration.</p>	<p>To accurately reflect the information required for the small schemes programme</p> <p>To accurately reflect the information required and the scale of the waste water works</p> <p>To accurately reflect the information required for the small schemes programme</p> <p>To reflect changes in legislation</p> <p>To obtain an overview of all discharges within the agglomeration.</p>

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Environmental Protection Agency
Application for a Waste Water Discharge Certificate of Authorisation
Waste Water Discharge (Authorisation) Regulations, 2007.

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ABOUT THIS APPLICATION FORM

This form is for the purpose of making an application for a Waste Water Discharge Certificate of Authorisation under the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) or for the review of an existing Waste Water Discharge Certificate of Authorisation.

The Application Form **must** be completed in accordance with the instructions and guidance provided in the *Waste Water Discharge Certificate of Authorisation Application Guidance Note*. The Guidance Note gives an overview of Waste Water Certificates of Authorisation, outlines the certification application process (including the number of copies required) and specifies the information to be submitted as part of the application. The Guidance Note and application form are available to download from the licensing page of the EPA's website at www.epa.ie.

A valid application for a Waste Water Discharge Certificate of Authorisation must contain the information prescribed in the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007). Regulation 24 of the Regulations sets out the statutory requirements for information to accompany a Certificate of Authorisation application. The application form is designed in such a way as to set out these questions in a structured manner and not necessarily in the order presented in the Regulations. In order to ensure a legally valid application with respect to Regulation 24 requirements, please complete the Regulation 24 Checklist provided in the following web based tool:
http://78.137.160.73/epa_wwd_licensing/

This Application Form does not purport to be and should not be considered a legal interpretation of the provisions and requirements of the Waste Water Discharge (Authorisation) Regulations, 2007. **While every effort has been made to ensure the accuracy of the material contained in the Application Form, the EPA assumes no responsibility and gives no guarantee, or warranty concerning the accuracy, completeness or up-to-date nature of the information provided herein and does not accept any liability whatsoever arising from any errors or omissions.**

Should there be any contradiction between the information requirements set out in the Application Form and any clarifying explanation contained in the accompanying Guidance Note, then the requirements in this Application Form shall take precedence.

PROCEDURES

The procedure for making and processing of applications for waste water discharge Certificates of Authorisation, and for the processing of reviews of such Certificates, appears in the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) and is summarised below. The application fees that shall accompany an application are listed in the Third Schedule to the Regulations.

An application for a Certificate of Authorisation must be submitted on the appropriate form (available from the Agency website – <http://www.epa.ie/whatwedo/licensing/wwda/>) with the correct fee, and should contain relevant supporting documentation as attachments. The application should be based on responses to the form and include supporting written text and the appropriate use of tables and drawings. Where point source emissions occur, a system of unique reference numbers should be used to denote each discharge point. These should be simple, logical, and traceable throughout the application.

The application form is divided into a number of sections of related information. The purpose of these divisions is to facilitate both the applicant and the Agency in the provision of the information and its assessment. **Please adhere to the format as set out in the application form and clearly number each section and associated attachment, if applicable, accordingly.** Attachments should be clearly numbered, titled and paginated and must contain the required information as set out in the application form. Additional attachments may be included to supply any further information supporting the application. Any references made should be supported by a bibliography.

All questions should be answered. Where information is requested in the application form, which is not relevant to the particular application, the words "not applicable" should be clearly written on the form. The abbreviation "N/A" should not be used.

Additional information may need to be submitted beyond that which is explicitly requested on this form. Any references made should be supported by a bibliography. The Agency may request further information (under notices provided for in the Regulations) if it considers that its provision is material to the assessment of the application. Advice should be sought from the Agency where there is doubt about the type of information required or the level of detail.

Information supplied in this application, including supporting documentation will be put on public display and be open to inspection by any person.

Applicants should be aware that a contravention of the conditions of a waste water discharge Certificate of Authorisation is an offence under the Waste Water Discharge (Authorisation) Regulations, 2007.

The provision of information in an application for a waste water discharge Certificate of Authorisation which is false or misleading is an offence under Regulation 35 of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007).

Note: Drawings. The following guidelines are included to assist applicants:

- All drawings submitted should be titled and dated.
- All drawings should have a unique reference number and should be signed by a clearly identifiable person.
- All drawings should indicate a scale and the direction of north.
- All drawings should, generally, be to a scale of between 1:20 to 1:500, depending upon the degree of detail needed to be shown and the size of the facility. Drawings delineating the boundary can be to a smaller scale of between 1:1000 to 1:10560, but must clearly and accurately present the required level of detail. Drawings showing the waste water treatment plant location, if such a plant exists, can be to a scale of between 1:50 000 to 1:126 720. All drawings should, however, be A3 or less and of an appropriate scale such that they are clearly legible. Provide legends on all drawings and maps as appropriate.
- In exceptional circumstances, where A3 is considered inadequate, a larger size may be requested by the Agency.

It should be noted that it will not be possible to process or determine the application until the required documents have been provided in sufficient detail and to a satisfactory standard.

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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, where applicable, 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:
Shanballymore Village is located 7.5 Km east of Donneraile village. The waste water from the agglomeration is currently treated by a package treatment plant prior to been discharged.

A description of:

- the waste water works and the activities carried out therein,
Shanballymore wastewater treatment plant (WWTP) was constructed in 2005. The design PE of the plant is 600.

The main elements of the WWTP are;

- 1. Screening***
- 2. Secondary treatment: Activated Sludge (Aeration Tank and Clarifier)***
- 3. Discharge to tributary of the Avonbeg River***

- 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 wastewater treatment plant treats only municipal waste water from Village and it environs via the sewerage collection system.

The final effluent is treated to a 25/35 standard or better prior to been discharged to the River Blackwater.

The discharge from the treatment plant is circa 65-80m³/d.

- the proposed technology and other techniques for preventing or, where this is not possible, reducing emissions from the waste water works,

The treatment works consists of the following elements:

- ***Primary Screening (Automated with manual bypass)***
- ***Aeration Tank .***
- ***Hopper bottom clarifier with sludge return pumps.***
- ***Sludge holding tank***

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

The WWTP is operated by the staff of Cork County Council whose duties also involve the maintenance of a number of other small WWTP's in the area. The caretaker is on duty from 8.00am to 5.30pm Monday – Saturday.

– measures planned to monitor emissions into the environment.

The Cork County Council Environmental Laboratory carries out sampling of the influent and effluent biannually. Sampling, Monitoring and analysis of the wastewater sludge is also undertaken by the Environmental Laboratory.

The Cork County Council Laboratory located in Mallow takes samples from the River Blackwater upstream and downstream of the wastewater treatment plant approximately 2 times per year. Samples of the influent and effluent are also taken at these times.

The EU Water Framework Directive Monitoring Programme is to be fully operational by the year 2012. This monitoring programme was prepared by the EPA to meet the requirements of the EU Water Framework Directive (2000/60/EC) and National Regulations implementing the Water Framework Directive (S.I. No. 722 of 2003) and National Regulations implementing the Nitrates Directive (S.I. No. 788 of 2005).

Supporting information should form **Attachment N^o A.1**

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SECTION B: GENERAL

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

B.1 Agglomeration Details

Name of Agglomeration: <i>Shanballymore & Environs</i>

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 Certificate of Authorisation application relates. It should have the boundary of the agglomeration to which the Certificate of Authorisation application relates clearly marked in red ink.

Name*:	<i>Cork County Council</i>
Address:	<i>Northern Division</i>
	<i>Annabella</i>
	<i>Mallow</i>
	<i>Co. Cork</i>
Tel:	<i>022 21123</i>
Fax:	<i>022 21983</i>
e-mail:	

*This should be the name of the Water Services Authority in whose ownership or control the waste 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*:	<i>Frank Cronin</i>
Address:	<i>Northern Division</i>
	<i>Annabella</i>
	<i>Mallow</i>
	<i>Co. Cork</i>
Tel:	<i>022 21123</i>
Fax:	<i>022 21983</i>
e-mail:	<i>Frank.cronin@corkcoco.ie</i>

*This should be the name of person nominated by the Water Services Authority for the purposes of the application.

Co-Applicant's Details

Name*:	<i>Not applicable</i>
Address:	<i>Not applicable</i>
Tel:	<i>Not applicable</i>
Fax:	<i>Not applicable</i>
e-mail:	<i>Not applicable</i>

*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 Certificate of Authorisation application.

Attachment B.1 should contain appropriately scaled drawings / maps ($\leq A3$) 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	Yes	No
	✓	

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.

Name*:	<i>Pat Walsh</i>
Address:	<i>Shanballymore</i>
	<i>Mallow</i>
	<i>Co. Cork</i>
Grid ref (6E, 6N)	<i>166790E, 107464N</i>
Level of Treatment	<i>Secondary</i>

*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 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.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.

Discharge to	<i>Awbeg River (tributary)</i>
Type of Discharge	<i>Point source</i>
Unique Point Code	<i>SW01-SHAN</i>
Location	<i>Clogher Demesne</i>
Grid ref	<i>166741E, 106840N</i>

(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	Yes	No
	√	

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.

Discharge to	<i>Not applicable</i>
Type of Discharge	<i>Not applicable</i>
Unique Point Code	<i>Not applicable</i>
Location	<i>Not applicable</i>
Grid ref (6E, 6N)	<i>Not applicable</i>

*Where a septic tank is in existence simultaneous to a package plant within an agglomeration, discharges from the septic tank shall be considered as a secondary discharge.

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.

Attachment included	Yes	No
		√

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 Discharge	<i>Point source</i>
Unique	<i>SW01-SHAN</i>

Point Code	
Location	<i>Joins effluent stream Within WWTP Compound.</i>
Grid ref (6E, 6N)	<i>166790E, 107464N</i>

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:	<i>Cork County Council</i>
Address:	<i>Planning Department County Hall Carriagrohane Road Cork</i>
Tel:	<i>021 4276891</i>
Fax:	<i>021 4867007</i>
e-mail:	<i>Planninginfo@corkccp.ie</i>

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

<i>has been obtained</i>	<input type="checkbox"/>	<i>is being processed</i>	<input type="checkbox"/>
<i>is not yet applied for</i>	<input type="checkbox"/>	<i>is not required</i>	<input type="checkbox"/>

Local Authority Planning File Reference N^o:	
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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	Yes	No

B.7 Other Authorities

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

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:	<i>Health Service Executive</i>
Address:	<i>North Cork Area Headquarters</i>
	<i>Gouldhill</i>
	<i>Mallow, Co. Cork</i>
Tel:	<i>022 30200</i>
Fax:	<i>022 30211</i>
e-mail:	<i>Gerry.oconnell@hse.ie</i>

B. 8(i) Population Equivalent of Agglomeration

TABLE B.8.1 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	<i>490</i>
Data Compiled (Year)	<i>2009</i>
Method	<i>House count</i>

B.8 (ii) Pending Development

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

- information on the calculated population equivalent (p.e.) to be contributed to the waste water works as a result of those planning permissions granted, *House count (plus school and shop/pub) 200PE*
Planned Development

<i>Planning Ref</i>	<i>PE</i>	<i>Description</i>
<i>067631</i>	<i>159</i>	<i>53 houses</i>
<i>Various</i>	<i>9</i>	<i>3 one off houses</i>

- the percentage of the projected p.e. to be contributed by the non-domestic activities, and *none*

- the ability of the waste water works to accommodate this extra hydraulic and organic loading without posing an environmental risk to the receiving waters.
The WWTP is operating within its hydraulic and organic loading limitations.

B.8 (iii) FEES

State the relevant Class of waste water discharge as per Regulation 5, 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	Fee (in €)
<i>Discharges from agglomerations with a PE of 500.</i>	<i>€3000</i>

**please see copy of attached letter sent by registered post to Mr F. Clinton ,Programme Manager , Licencing Unit EPA on December 18th 2009*

Appropriate Fee Included	Yes	No
		√

B.9 Capital Investment Programme

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 small schemes programme) 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.

There is no proposed programme of works prioritised for the WWTP or the Network under the WSIP 2007-2009.

Attachment B.9 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.

Attachment included	Yes	No
		√

B.10 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.10 should contain a summary of any relevant correspondence issued in relation to a Section 63 notice.

Attachment included	Yes	No
		√

B.11 Foreshore Act Licences.

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.11 should contain the most recent licence issued under the Foreshore 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
		√

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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.

The combined sewer gravitates to the WWTP compound.

The flow is initially screened by a Khun spiral sieve rake. The Screen has a 5mm diameter holes, throughput of circa 15l/s. The compacted screenings are wasted to a bin for landfill disposal.

Storm water overflow is located in the screening chamber. The overflow is directed to the pre-existing septic tank.

The screen flow collects in a forward feeding pump sump which is fitted with duty/standby pumps. The operation of the pumps is controlled by floating switches.

The aeration tank uses the stahlermatic treatment process. In the tank, the effluent undergoes treatment by a combination of both the activated sludge process and the fixed film process associated with rotating biological contactors. Refer to the Attachment C for more details of the process used.

The rotation of the contactor is controlled by a Dissolved Oxygen monitor via a Variable speed drive.

The effluent from the biotank is settled in a seperate clarifer prior to discharge.

A 8000 Gal sludge holding tank is located adjacent to the clarifer. Waste activated sludge is wasted from the Clarifer to the tank and supernatant decants back into the influent stream.

The sludge holding tank is desludged periodically as required.

Post secondary treatment, the effluent is discharged directly to the stream, a tributary of the Awbeg River.

<i>Operating Volume of Aeration Tank</i>	<i>= unknown</i>
<i>Operating Volume of Clarifer</i>	<i>= unknown</i>
<i>Operation capacity of storm water overflow</i>	<i>=unknown.</i>

C.1.1 Storm Water Overflows

For each storm water overflow within the waste water works the following information shall be submitted:

- An assessment to determine compliance with the criteria for storm water overflows, as set out in the DoEHLG 'Procedures and Criteria in

Relation to Storm Water Overflows', 1995 and any other guidance as may be specified by the Agency, and

- Identify whether any of the storm water overflows are to be decommissioned, and identify a date by which these overflows will cease, if applicable.

Not applicable.

C.1.2 Pumping Stations

For each pump station operating within the waste water works, provide details of the following:

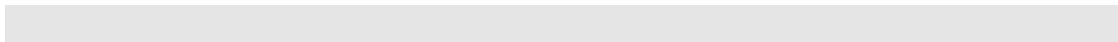
- Number of duty and standby pumps at each pump station;
- The measures taken in the event of power failure;
- Details of storage capacity at each pump station;
- Frequency and duration of activation of emergency overflow to receiving waters. Clarify the location where such discharges enter the receiving waters.

There is one pumping station which is located in the WWTP compound prior to the package plant.

- **There is no emergency overflow from the sump.**
- **1 no duty pump, 1 assist/ standby pump**
- **High level and low level float controls**
- **The sump is circa 2.0m dia*5.0m deep.**

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
	✓	



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 discharges are made or are to be made.

Details of all discharges of waste water from the agglomeration should be submitted via the following web based link: http://78.137.160.73/epa_wwd_licensing/. The applicant should address in particular all discharge points where the substances outlined in Tables 'Emissions to Surface/Groundwaters and 'Dangerous Substances Emissions' 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, e.g., under the Water Framework Directive Programme of Measures) the applicant shall screen the discharge for the relevant substance.

D.1(i) Discharges to Surface Waters

Details of all discharges of waste water from the agglomeration should be supplied via the following web based link: http://78.137.160.73/epa_wwd_licensing/. Tables 'Discharge Point Details', 'Emissions to Surface/Groundwaters and 'Dangerous Substances Emissions', should be completed for the primary discharge point from the agglomeration and for **each** secondary discharge point, where relevant. Table 'Discharge Point Details' should be completed for **each** storm water overflow. Individual Tables must be completed for each discharge point.

Where monitoring information is available for the influent to the waste water treatment plant this data should also be provided in response to Section D.1(i).

Supporting information should form **Attachment D.1(i)**

Attachment included	Yes	No
	✓	

D.1(ii) Discharges to Groundwater

Details of all discharges of waste water from the agglomeration should be supplied via the following web based link: http://78.137.160.73/epa_wwd_licensing/. Tables 'Discharge Point Details', 'Emissions to Surface/Groundwaters and 'Dangerous Substances Emissions', should be completed for the primary discharge point from the agglomeration and for **each** secondary discharge point, where relevant. Table 'Discharge Point Details' should be completed for **each** storm water overflow. Individual Tables must be completed for each discharge point.

Where monitoring information is available for the influent to the waste water treatment plant this data should also be provided in response to Section D.1(ii).

Supporting information should form **Attachment D.1(ii)**

Attachment included	Yes	No
		√

D.1 (iii) Private Waste Water Treatment Plants

Provide information on all independently owned/operated private waste water treatment plants operating within the agglomeration. Submit a copy of the Section 4 discharge licence issued under the Water Pollution Acts 1977 to 1990, as amended for each discharge.

- **Not applicable**

D.2 Tabular Data on Discharge Points

Applicants should submit the following information for each discharge point:

Table D.2:

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING
Point Code Provide label 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
<i>SW01-SHAN</i>	<i>Primary</i>	<i>Cork County Council</i>	<i>River</i>	<i>River Awbeg</i>	<i>NA</i>	<i>166741E</i>	<i>106840N</i>

An individual record (i.e. row) is required for each discharge point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at www.epa.ie. This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, E.3 and F.2.

SECTION E: MONITORING

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

E.1 Waste Water Discharge Frequency and Quantities – Existing & Proposed

Provide an estimation of the quantity of waste water likely to be emitted in relation to all primary and secondary discharge points applied for. This information should be included in Table 'Discharge Point Details' via the following web based link: http://78.137.160.73/epa_wwd_licensing/.

Refer to Weblink submission, attached.

Provide an estimation of the quantity of waste water likely to be emitted in relation to all storm water overflows within the agglomeration applied for. This information should be included in Table 'Discharge Point Details' via the following web based link: http://78.137.160.73/epa_wwd_licensing/.

Not applicable

Indicate if composite sampling or continuous flow monitoring is in place on the primary or any other discharge points. Detail any plans and timescales for the provision of composite sampling and continuous flow monitoring.

An electro magnetic flow meter is located on the inlet to the aeration tank.

A composite sampler is located on the discharge manhole.

E.2. Monitoring and Sampling Points

Programmes for environmental monitoring should be submitted as part of the application. These programmes should be provided as Attachment E.2.

Reference should be made to, provision of sampling points and safe means of access, sampling methods, analytical and quality control procedures, including equipment calibration, equipment maintenance and data recording/reporting procedures to be carried out in order to ensure accurate and reliable monitoring.

In determining the sampling programme to be carried out, the variability of the discharge and its effect on the receiving environment should be considered.

Cork County Council Water Services Laboratories sample and monitor in accordance with 'Sampling Methods for examination of water and wastewater' 18th edition 1992. Sampling is carried out on a Bi-annual basis

Details of any accreditation or certification of analysis should be included.

Attachment E.2 should contain any supporting information.

Attachment included	Yes	No
	✓	

E.3. Tabular data on Monitoring and Sampling Points

Applicants should submit the following information for each monitoring and sampling point:

PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
Point Code Provide label ID's assigned in section E of application	Point Type (e.g., Primary, Secondary, Storm Water Overflow)	Monitoring Type M = Monitoring S = Sampling	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference	Y = GPS used N = GPS not used
<i>SW01-SHAN</i>	Primary	S	166741E	106840N	N
<i>aSW01u</i>	<i>u/s</i>	S	165664E	107564N	N
<i>aSW01d</i>	<i>d/s</i>	S	167826E	105603N	N

An individual record (i.e., row) is required for each monitoring and sampling point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at www.epa.ie. This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, D.2 and F.2.

E.4 Sampling Data

Regulation 24(i) of the Waste Water Discharge (Authorisation) Regulations 2007 requires all applicants in the case of an existing discharge to specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application.

Regulation 24(m) requires applicants to give details of compliance with any applicable monitoring requirements and treatment standards.

Attachment E.4 should contain any supporting information.

Attachment included	Yes	No
	✓	

SECTION F: EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGE(S)

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

Clear and concise information is required to enable the Agency to assess the existing receiving environment. This section requires the provision of information on the ambient environmental conditions within the receiving water(s) upstream and downstream of any discharge(s) and/or the ambient environmental conditions of the groundwater upgradient and downgradient of any discharges.

Where development is proposed to be carried out, being development which is of a class for the time being specified under Article 24 (First Schedule) of the Environmental Impact Assessment Regulations, the information on the state of the existing environment should be addressed in the EIS. **In such cases, it will suffice for the purposes of this section to provide adequate cross-references to the relevant sections in the EIS.**

F.1. Impact on Receiving Surface water or Groundwater

- Details of monitoring of the receiving surface water should be supplied via the following web based link: http://78.137.160.73/epa_wwd_licensing/. Tables 'Monitoring Details', 'Monitoring Test Details', 'Dangerous Substances Monitoring Details' and 'Dangerous Substances Monitoring Test Details' should be completed for the primary discharge point. Surface water monitoring locations upstream and downstream of the discharge point shall be screened for those substances listed in Tables 'Monitoring Details', 'Monitoring Test Details', 'Dangerous Substances Monitoring Details' and 'Dangerous Substances Monitoring Test Details'. Monitoring of surface water shall be carried out at not less than two points, one upstream from the discharge location and one downstream.
Refer to Weblink submission, attached.
- Details of monitoring of the receiving ground water should be supplied via the following web based link: http://78.137.160.73/epa_wwd_licensing/. Tables 'Monitoring Details', 'Monitoring Test Details', 'Dangerous Substances Monitoring Details' and 'Dangerous Substances Monitoring Test Details' should be completed for the primary discharge point. Ground water monitoring locations upgradient and down gradient of the discharge point shall be screened for those substances listed in Tables 'Monitoring Details', 'Monitoring Test Details', 'Dangerous Substances Monitoring Details' and 'Dangerous Substances Monitoring Test Details'. Monitoring of ground water shall be carried out at not less than two points, one upgradient from the discharge location and one downgradient.
Not applicable.
- For discharges from secondary discharge points Tables 'Monitoring Details', 'Monitoring Test Details', 'Dangerous Substances Monitoring Details' and 'Dangerous Substances Monitoring Test Details' should be completed.
Not applicable.

Describe the existing environment in terms of water quality with particular reference to environmental quality standards or other legislative standards. Submit a copy of the most recent water quality management plan or

catchment management plan in place for the receiving water body. Give details of any designation under any Council Directive or Regulations

The water quality in the river is designated as Q4 upstream and Q4-5 downstream of the discharge point.

Station Code	Station Name	EPA Biological Quality Rating (Q values)			
		1995-1997	Target 2007	2001-2003	EPA* (ENVision)
18A051100	Br west of Shanballymore	4	4	4-5	4
18A051200	Br. NW of Ballywater House	4	4-5	4	4-5

Note

Data from Cork County Council Environmental Map viewer.

* Source EPA maps online, 'ENVision', November 2009

Designation of River in relation to

- Shellfish Regulations S.I.200:1994; Not designated.
- Bathing Water Regulations S.I. 178:1998 Not designated
- Salmonid Water Regulations S.I. 293: 1998 Not designated
- Special Area of Conservation (SAC) Designated. SAC 002170, Blackwater
- Special Protection Area (SPA) Not Designated, however the Blackwater estuary is designated.
- Sensitive Area (Urban Waste water Treatment Regulations S.I.254:2001) Not designated

The River Blackwater is included in the draft Management Plan for the South Western River Basin District (Dec 2008). This can be downloaded at the following address;

<http://www.swrbd.ie/downloads/Web/South%20Western%20RBD%20RMBP.pdf>.

- o Provide a statement as to whether or not emissions of main polluting substances (as defined in the *Dangerous Substances Regulations S.I. No. 12 of 2001*) to water are likely to impair the environment.
There is no evidence to suggest that there are sources within the agglomeration or in the discharge itself which would lead to emissions of the main polluting substances (as defined in the dangerous substances Regulations SI 12:2001) at levels which would likely to impair the environment.

- In circumstances where drinking water abstraction points exist downstream/down gradient of any discharge describe measures to be undertaken to ensure that discharges from the waste water works will not have a significant effect on faecal coliform, salmonella and protozoan pathogen numbers, e.g., Cryptosporidium and Giardia, in the receiving water environment.

Not applicable

- Indicate whether or not emissions from the agglomeration or any plant, methods, processes, operating procedures or other factors which affect such emissions are likely to have a significant effect on –
 - (a) a site (until the adoption, in respect of the site, of a decision by the European Commission under Article 21 of Council Directive 92/43/EEC for the purposes of the third paragraph of Article 4(2) of that Directive) —
 - (i) notified for the purposes of Regulation 4 of the Natural Habitats Regulations, subject to any amendments made to it by virtue of Regulation 5 of those Regulations,
 - (ii) details of which have been transmitted to the Commission in accordance with Regulation 5(4) of the Natural Habitats Regulations, or
 - (iii) added by virtue of Regulation 6 of the Natural Habitats Regulations to the list transmitted to the Commission in accordance with Regulation 5(4) of those Regulations,
 - (b) a site adopted by the European Commission as a site of Community importance for the purposes of Article 4(2) of Council Directive 92/43/EEC¹ in accordance with the procedures laid down in Article 21 of that Directive,
 - (c) a special area of conservation within the meaning of the Natural Habitats Regulations, or
 - (d) an area classified pursuant to Article 4(1) or 4(2) of Council Directive 79/409/EEC²;

¹Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ No. L 206, 22.07.1992)

²Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ No. L 103, 25.4.1979)

The development is in the surface water catchment of the River Blackwater, SAC 002170. In accordance with EPA Circular L8/08 Appendix 1, the project must be screened for its impacts. However, due to financial constraints, Cork County Council does not have the resources for the foreseeable future to assess the impacts in accordance with the EPA document, 'Waste Water discharge Licence – Appropriate Assessment'.

- This section should also contain details of any modelling of discharges from the agglomeration. Any other relevant information on the receiving environment should be submitted as **Attachment F.1**.
There is no modelling of the sewer network to date.

Attachment included	Yes	No
		√

F.2 Tabular Data on Drinking Water Abstraction Point(s)

Applicants should submit the following information for each downstream or downgradient drinking water abstraction point. The zone of contribution for the abstraction point should be delineated and any potential risks from the waste water discharge to the water quality at that abstraction point identified.

ABS_CD	AGG_SERVED	ABS_VOLUME	PT_CD	DIS_DS	EASTING	NORTHING	VERIFIED
Abstraction Code	Agglomeration served	Abstraction Volume in m ³ /day	Point Code Provide label ID's	Distance Downstream in meters from Emission Point to Abstraction Point	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference	Y = GPS used N = GPS not used

Note: Attach any risk assessment that may have been carried out in relation to the abstraction point(s) listed.

An individual record (i.e. row) is required for each abstraction point. Acceptable file formats include Excel, Access or other upon agreement with the Agency. A standard Excel template can be downloaded from the EPA website at www.epa.ie. This data should be submitted to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, B.5, C.1, D.2 and E.3.

Attachment F.2 should contain any supporting information.

Not applicable

SECTION G: PROGRAMMES OF IMPROVEMENTS

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

G.1 Compliance with Council Directives

Provide details on a programme of improvements to ensure that emissions from the agglomeration or any premises, plant, methods, processes, operating procedures or other factors which affect such emissions will comply with, or will not result in the contravention of the;

- Dangerous Substances Directive 2006/11/EC,
- Water Framework Directive 2000/60/EC,
- Birds Directive 79/409/EEC,
- Groundwater Directives 80/68/EEC & 2006/118/EC,
- Drinking Water Directives 80/778/EEC,
- Urban Waste Water Treatment Directive 91/271/EEC,
- Habitats Directive 92/43/EEC,
- Environmental Liabilities Directive 2004/35/EC,
- Bathing Water Directive 76/160/EEC, and
- Shellfish Waters Directive (2006/113/EC).

Not applicable, currently there is no programme of improvements to the waste water treatment works.

Attachment G.1 should contain the most recent programme of improvements, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

Attachment included	Yes	No
		✓

G.2 Compliance with the European Communities Environmental Objectives (Surface Waters) Regulations 2009

Provide details on a programme of improvements, including any water quality management plans or catchment management plans in place, to ensure that improvements of water quality required under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 are being achieved. Provide details of any specific measures adopted for waste water works specified in Phosphorus Measures Implementation reports and the progress to date of those measures. Provide details highlighting any waste water works that have been previously identified as the principal sources of pollution under the Phosphorous Regulations (S.I. No. 258 of 1998).

Not applicable, currently there is no programme of improvements to the waste water treatment works.

Attachment G.2 should contain the most recent programme of improvements and any associated documentation requested under Section G.3 of the application.

Attachment included	Yes	No

		√
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G.3 Impact Mitigation

Provide details on a programme of improvements to ensure that discharges from the agglomeration will not result in significant environmental pollution.

Not applicable, currently there is no programme of improvements to the waste water treatment works.

Attachment G.3 should contain the most recent programme of improvements, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

Attachment included	Yes	No
		√

G.4 Storm Water Overflows

Provide details on a programme of improvements to ensure that discharges other than the primary and secondary discharges comply with the definition of 'storm water overflow' as per Regulation 3 of the Waste Water Discharge (Authorisation) Regulations, 2007.

Not applicable, currently there is no programme of improvements to the waste water treatment works.

Attachment G.4 should contain the most recent programme of improvements, including a copy of any approved funding for the project and a timeframe for the completion of the necessary works to take place.

Attachment included	Yes	No
		√

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SECTION H: DECLARATION

Declaration

I hereby make application for a waste water discharge Certificate of Authorisation/revised Certificate of Authorisation, 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.

Signed by 
(on behalf of the organisation)

Date : 18th Dec 2009

Print signature name: Tom STRITCH

Position in organisation: DIRECTOR OF SERVICES

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Agglomeration details

Leading Local Authority	Cork County Council
Co-Applicants	
Agglomeration	Shanballymore (North)
Population Equivalent	490
Level of Treatment	secondary
Treatment plant address	shanballymore Mallow Co. Cork
Grid Ref (12 digits, 6E, 6N)	166790 / 107464
EPA Reference No:	

Contact details

Contact Name:	Frank Cronin
Contact Address:	Water Services Section Cork County Council North Division Annabella Mallow Co. Cork
Contact Number:	022-21123
Contact Fax:	022-21983
Contact Email:	frank.cronin@corkcoco.ie

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

Discharge Point Code: SW-1

Local Authority Ref No:	SW01 SHAN	
Source of Emission:	SHANBALLYMORE WWTP	
Location:	SHANBALLYMORE	
Grid Ref (12 digits, 6E, 6N)	166741 / 106840	
Name of Receiving waters:	River Awbeg	
Water Body:	Ground Water Body	
River Basin District	South Western RBD	
Designation of Receiving Waters:	SAC 002170	
Flow Rate in Receiving Waters:	4.43	m ³ .sec ⁻¹ Dry Weather Flow
	1.2	m ³ .sec ⁻¹ 95% Weather Flow
Additional Comments (e.g. commentary on zero flow or other information deemed of value)		

Emission Details:

(i) Volume emitted			
Normal/day	80 m ³	Maximum/day	365 m ³
Maximum rate/hour	15.2 m ³	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.000925 m ³ /sec		

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Table D.1(i)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of The Emission (Primary Discharge Point)

Discharge Point Code: SW-1

Substance	As discharged			
	Unit of Measurement	Sampling Method	Max Daily Avg.	kg/day
pH	pH	Grab	= 9	
Temperature	°C	Grab	= 30	
Electrical Conductivity (@ 25°C)	µS/cm	Grab	= 1000	
Suspended Solids	mg/l	Grab	= 35	2.8
Ammonia (as N)	mg/l	Grab	= 0	0
Biochemical Oxygen Demand	mg/l	Grab	= 25	2
Chemical Oxygen Demand	mg/l	Grab	= 125	10
Total Nitrogen (as N)	mg/l	Grab	= 35	2.8
Nitrite (as N)	mg/l	Grab	= 0	0
Nitrate (as N)	mg/l	Grab	= 0	0
Total Phosphorous (as P)	mg/l	Grab	= 8	0.64
OrthoPhosphate (as P)	mg/l	Grab	= 6	0.48
Sulphate (SO ₄)	mg/l	Grab	= 0	0
Phenols (Sum)	µg/l	Grab	= 0	0

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper

For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

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Table D.1(i)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of The Emission (Primary Discharge Point)

Discharge Point Code: SW-1

Substance	As discharged			
	Unit of Measurement	Sampling Method	Max Daily Avg.	kg/day
Atrazine	µg/l	Grab	= 0	0
Dichloromethane	µg/l	Grab	= 0	0
Simazine	µg/l	Grab	= 0	0
Toluene	µg/l	Grab	= 0	0
Tributyltin	µg/l	Grab	= 0	0
Xylenes	µg/l	Grab	= 0	0
Arsenic	µg/l	Grab	= 0	0
Chromium	µg/l	Grab	= 0	0
Copper	µg/l	Grab	= 0	0
Cyanide	µg/l	Grab	= 0	0
Flouride	µg/l	Grab	= 0	0
Lead	µg/l	Grab	= 0	0
Nickel	µg/l	Grab	= 0	0
Zinc	µg/l	Grab	= 0	0
Boron	µg/l	Grab	= 0	0
Cadmium	µg/l	Grab	= 0	0
Mercury	µg/l	Grab	= 0	0
Selenium	µg/l	Grab	= 0	0
Barium	µg/l	Grab	= 0	0

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper

For Phenols: USEPA Method 604, AWWA Standard Method 6246, or equivalent.

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TABLE E.1(i): WASTE WATER FREQUENCY 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)
SW-1	365	29200

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TABLE E.1(ii): WASTE WATER FREQUENCY 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
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TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1d
Grid Ref (12 digits, 6E, 6N)	167826 / 105603

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	26/08/09					
pH		= 8			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 356			Grab	0.5	Electrochemical
Suspended Solids		= 12			Grab	0.5	Gravimetric
Ammonia (as N)		< 0.1			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 1.2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		< 21			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	ISE
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)	= 0				Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.1	Colorimetric
Nitrate (as N)		= 1.73			Grab	0.5	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO ₄)		< 30			Grab	30	Turbidimetric
Phenols (Sum)		< 0.1			Grab	0.1	GC-MS2

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For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper

For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	Default 01/01/09 and 0 where results are not available.
----------------------	---

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

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1d
Grid Ref (12 digits, 6E, 6N)	167826 / 105603

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	26/08/09				
Atrazine		< 0.01		Grab	0.96	HPLC
Dichloromethane		< 1		Grab	1	GC-MS1
Simazine		< 0.01		Grab	0.01	HPLC
Toluene		< 0.28		Grab	0.02	GC-MS1
Tributyltin	= 0			Grab	0.02	GC-MS1
Xylenes		< 1		Grab	1	GC-MS1
Arsenic		< 0.96		Grab	0.96	ICP-MS
Chromium		< 20		Grab	20	ICP-OES
Copper		< 20		Grab	20	ICP-OES
Cyanide		< 5		Grab	5	Colorimetric
Flouride	= 0			Grab	100	ISE
Lead		< 20		Grab	20	ICP-OES
Nickel		< 20		Grab	20	ICP-OES
Zinc		< 20		Grab	20	ICP-OES
Boron		< 20		Grab	20	ICP-OES
Cadmium		< 20		Grab	20	ICP-OES
Mercury		< 0.2		Grab	0.2	ICP-MS
Selenium		< 0.74		Grab	0.74	ICP-MS
Barium		= 26.8		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn Default of 01/01/09 and 0 where results are not available.
----------------------	---

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

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	165664 / 107654

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	26/08/09					
pH		= 7.9			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 316			Grab	0.5	Electrochemical
Suspended Solids		= 9			Grab	0.5	Gravimetric
Ammonia (as N)		< 0.1			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		< 1			Grab	0.06	Electrochemical
Chemical Oxygen Demand		= 31			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	ISE
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 2.3			Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.1	Colorimetric
Nitrate (as N)		= 1.45			Grab	0.5	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO ₄)		< 30			Grab	30	Turbidimetric
Phenols (Sum)	= 0				Grab	0.1	GC-MS2

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For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper

For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	Default of 01/01/09 and 0 where results are not available.
----------------------	--

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

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	165664 / 107654

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	26/08/09				
Atrazine	= 0			Grab	0.96	HPLC
Dichloromethane	= 0			Grab	1	GC-MS1
Simazine	= 0			Grab	0.01	HPLC
Toluene	= 0			Grab	0.02	GC-MS1
Tributyltin	= 0			Grab	0.02	GC-MS1
Xylenes	= 0			Grab	1	GC-MS1
Arsenic	= 0			Grab	0.96	ICP-MS
Chromium		< 20		Grab	20	ICP-OES
Copper		< 20		Grab	20	ICP-OES
Cyanide	= 0			Grab	5	Colorimetric
Flouride		< 0.1		Grab	100	ISE
Lead		< 20		Grab	20	ICP-OES
Nickel		< 20		Grab	20	ICP-OES
Zinc		< 20		Grab	20	ICP-OES
Boron		< 20		Grab	20	ICP-OES
Cadmium		< 20		Grab	20	ICP-OES
Mercury	= 0			Grab	0.2	ICP-MS
Selenium	= 0			Grab	0.74	ICP-MS
Barium		< 20		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn Default of 01/01/09 and 0 where results are not available.
----------------------	---

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.

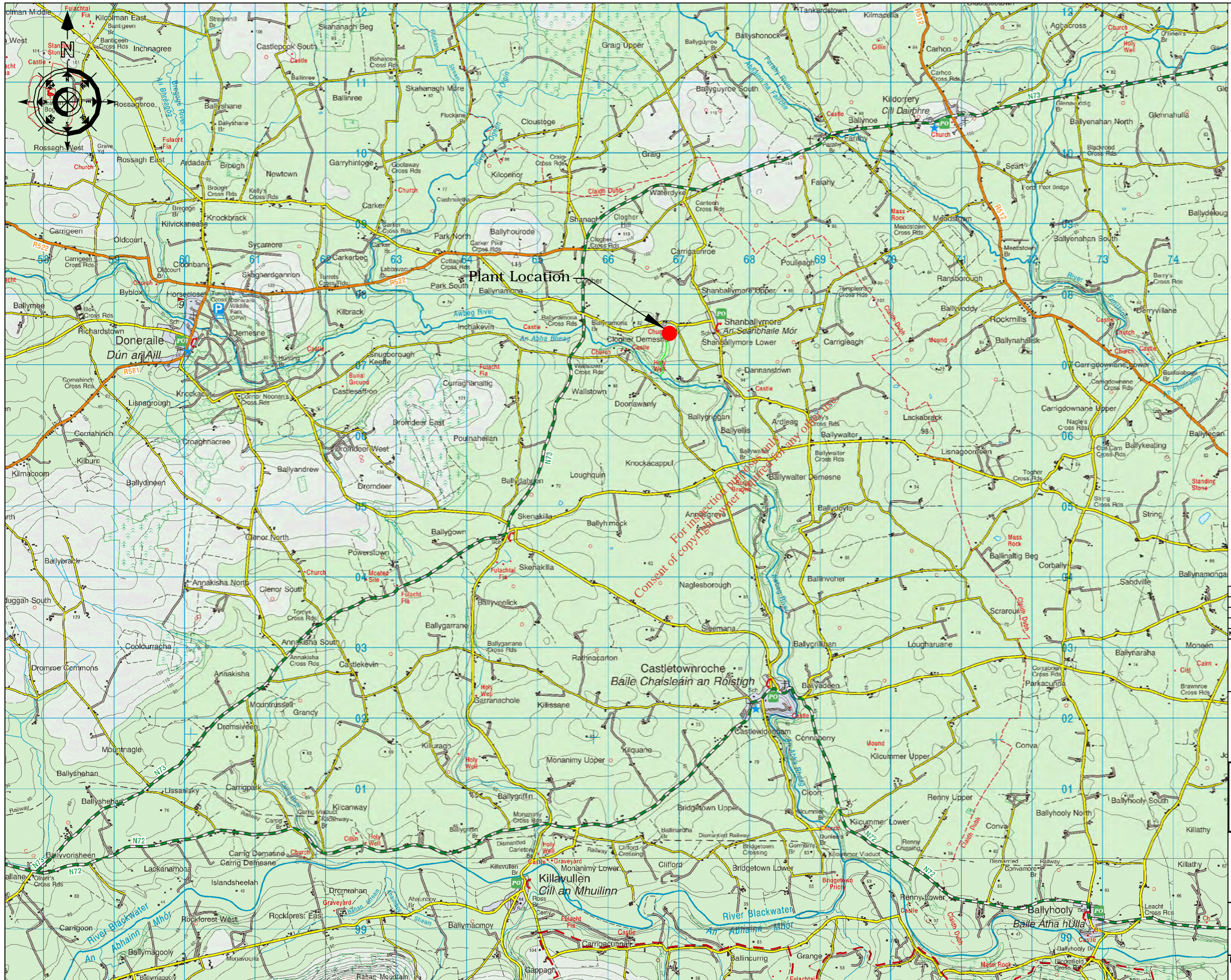
In each case, refer to the attachment number(s), of your application which contains(s) the information requested in the appropriate sub-article.

Regulation 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,	B .1	Yes
(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,	not applicable	Yes
(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,	B	Yes
(d)	state the population equivalent of the agglomeration to which the application relates,	B.8 (i)	Yes
(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	Yes
(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.	F.1	Yes
(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,	E.2, E.3	Yes
(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,	E.4	Yes
(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,	C	Yes
(j)	give particulars of the nearest downstream drinking water abstraction point or points to the discharge point or points,	not applicable	Yes
(k)	give details, and an assessment of the effects, of any existing or 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,	F.1	Yes
(l)	give detail of compliance with relevant monitoring requirements and treatment standards contained in any applicable Council Directives of Regulations,	E.1, E.4	Yes
(m)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work.	G	Yes
(n)	Any other information as may be stipulated by the Agency.		Yes
Regulation 16(3) Without prejudice to Regulation 16 (1) and (2), an application for a licence shall be accompanied by -		Attachment Number	Checked by Applicant
(a)	a copy of the notice of intention to make an application given pursuant to Regulation 9,	not applicable	Yes
(b)	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,	not applicable	Yes
(c)	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -	B	Yes
(c) (i)	the point or points, including storm water overflows, from which a discharge or discharges take place or are to take place, and	B	Yes
(c) (ii)	the point or points at which monitoring and sampling are undertaken or are to be undertaken,	B	Yes
(d)	such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		Yes

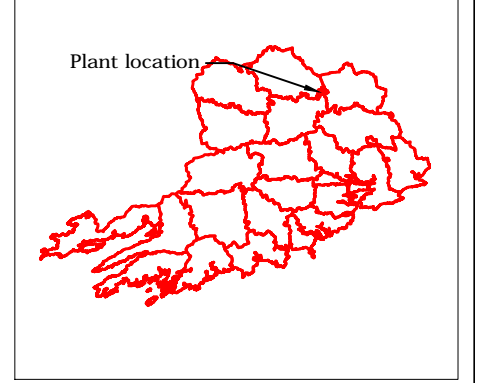
Regulation 16(4) An original application shall be accompanied by 2 copies of it and of all accompanying documents and particulars as required under Regulation 16(3) in hardcopy or in an electronic or other format as specified by the Agency.		Attachment Number	Checked by Applicant
1	An Original Application shall be accompanied by 2 copies of it and of all accompanying documents and particulars as required under regulation 16(3) in hardcopy or in electronic or other format as specified by the agency.		Yes
Regulation 16(5) For the purpose of paragraph (4), all or part of the 2 copies of the said application and associated documents and particulars may, with the agreement of the Agency, be submitted in an electronic or other format specified by the Agency.		Attachment Number	Checked by Applicant
1	Signed original.		Yes
2	2 hardcopies of application provided or 2 CD versions of application (PDF files) provided.		Yes
3	1 CD of geo-referenced digital files provided.		Yes
Regulation 17 Where a treatment plant associated with the relevant waste water works is or has been subject to the European Communities (Environmental Impact Assessment) Regulations 1989 to 2001, in addition to compliance with the requirements of Regulation 16, an application in respect of the relevant discharge shall be accompanied by a copy of an environmental impact statement and approval in accordance with the Act of 2000 in respect of the said development and may be submitted in an electronic or other format specified by the Agency		Attachment Number	Checked by Applicant
3	2 CD versions of EIS, as PDF files, provided.	not applicable	Yes
1	EIA provided if applicable	not applicable	Yes
2	2 hardcopies of EIS provided if applicable.	not applicable	Yes
Regulation 24 In the case of an application for a waste water discharge certificate of authorisation, the application shall –		Attachment Number	Checked by Applicant
(a)	give the name, address, telefax number (if any) and telephone number of the applicant and the address to which correspondence relating to the application should be sent and, if the operator of the waste water works is a body corporate, the address of its registered office or principal office	B	Yes
(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,	not applicable	Yes
(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 discharge point or points to which the application relates,	B	Yes
(d)	state the population equivalent of the agglomeration to which the application relates,	B	Yes
(e)	in the case of an application for the review of a certificate, specify the reference number given to the relevant certificate in the register,		Yes
(f)	specify the content and extent of the waste water discharge, the level of treatment provided and the flow and type of discharge,	A	Yes
(g)	give details of the receiving water body, 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 or likely to be affected by the discharge concerned,	F	Yes
(h)	identify monitoring and sampling points and indicate proposed arrangements for the monitoring of discharges and of the likely environmental consequences of any such discharges,	F	Yes
(i)	in the case of an existing discharge, specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application,	E	Yes
(j)	describe the existing or proposed measures, including emergency procedures, to prevent unauthorised or unexpected waste water discharges and to minimise the impact on the environment of any such discharges,	C	Yes
(k)	give particulars of the location of the nearest downstream drinking water abstraction point or points to the discharge point or points associated with the waste water works,		Yes
(l)	give details of any designation under any Council Directive or Regulations that apply in relation to the receiving waters,	F	Yes
(m)	give details of compliance with any applicable monitoring requirements and treatment standards,	E	Yes
(n)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work,	G	Yes
(o)	give any other information as may be stipulated by the Agency, and		Yes
(p)	be accompanied by such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		Yes

ANNEX 1: TABLES / ATTACHMENT

Section		Ref	Description
A1	Non Technical Summary	Map 1 Map 2 Map 3	1:50,000 Location Map Site Location of WWTP Wastewater Treatment Plant – Site Layout
B1	Agglomeration Details	Map 4	Agglomeration Map
B2	Location of WWTP	Map 5	Layout of Waste Water Treatment Plant
B3	Location of Primary Discharge Point	Map 6 Map 7	Location of primary discharge point Location of Sampling Points
B4	Location of secondary Discharge Point		-
B5	Location of SWO		-
B6	Planning Authority		-
B7	Other Authorities		-
B8	PE of Agglomeration		-
B9	Capital Investment Programme		-
B10	Significant Correspondence		-
B 11	Foreshore Act Licences		-
C1	Infrastructure and operation.	Map 8 Drg 1	Layout WWTP Schematic of Wastewater Treatment Plant
D1	Discharges to Surface Waters		Sampling Results
	Discharges to Ground waters		-
	Private WWTP		-
D2	Discharge Points		Excel sheet of discharge point data
E2	Monitoring & Sampling Points		-
E3	Tabular data on Monitoring and Sampling Points		Excel sheet of sampling point data
E4	Sampling Data		Sampling Results
F1	Impact on Receiving Surface water or Groundwater		Blackwater SAC
F2	Tabular Data on Drinking Water Abstraction Point(s)		-
G1	Compliance with Council Directives		-
G2	Compliance with the European Communities Environmental Objectives (Surface Waters) Regulations 2009		-
G3	Impact Mitigation		-
G4	Storm Water Overflows		-




- NOTES**
1. Dimensions are not to be scaled from drawing. For any discrepancies found consult with the design office.
 2. This drawing is to be read in conjunction with the Specification.
 3. This drawing is to be read in conjunction with all other contract drawings.



Key Map

No.	Date	Drawn	Survey	Checked	Revision	Description

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Northern Division.

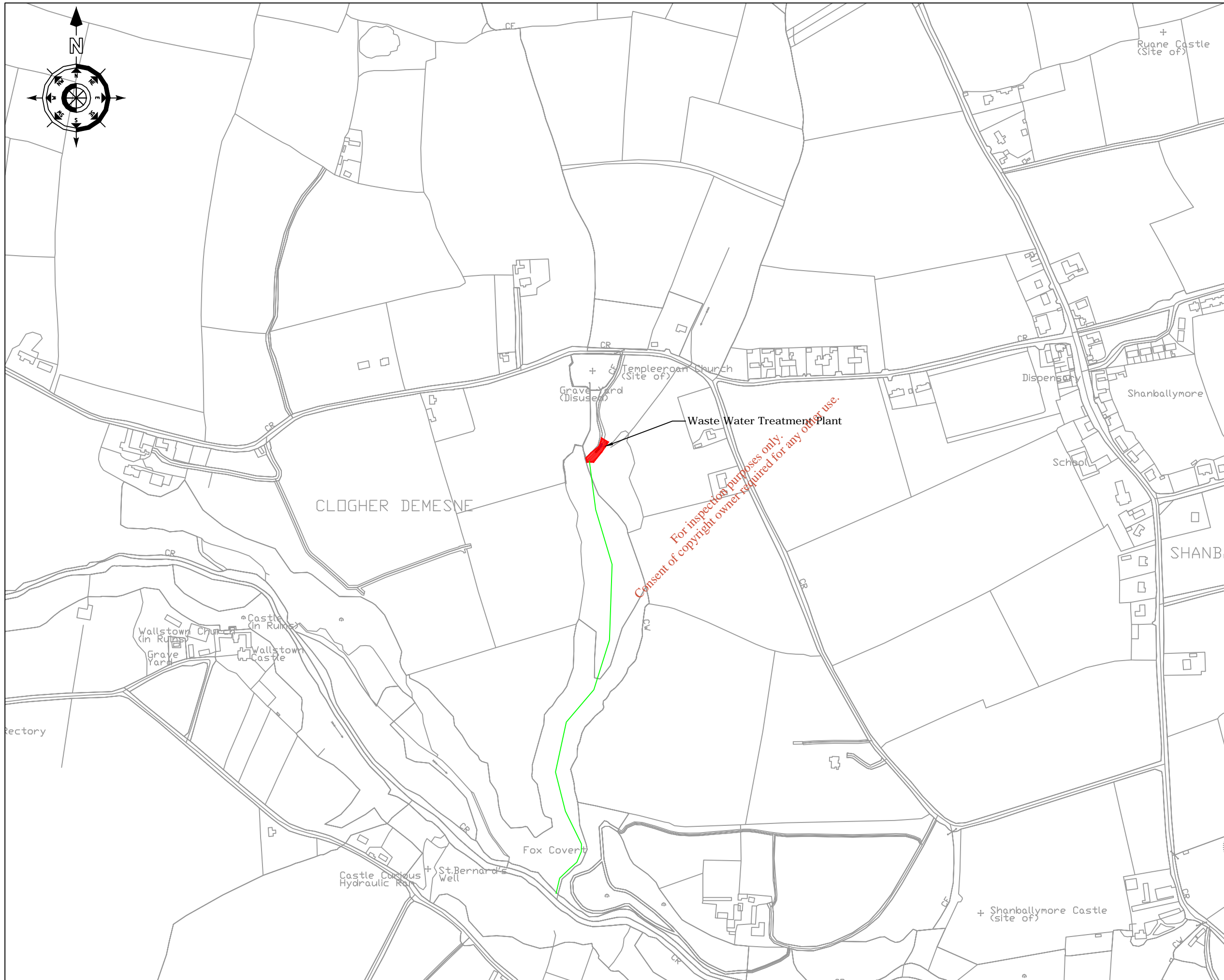


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title: Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Location Map
Scale - 1:50,000
Attachment A1 - Map 1

Scales: 1:50,000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F.	Date: December 2009
Drawing number: A1 - Map 1	Rev: -	



NOTES

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Cork County Council,
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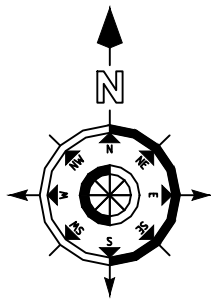


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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Site Locations of W.W.T.P.
Attachment A1 - Map 2

Scales: 1:5000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F	Date: December 2009
Drawing number: A1-Map2	Rev: -	



Aeration Tank

Control kiosk

Sludge Holding Tank

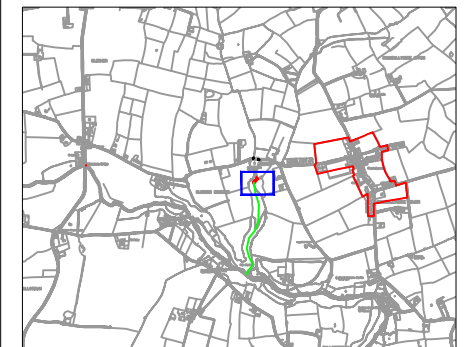
Waste Water Treatment plant
(166799E, 107464N)

Primary Discharge
SW-01 SHAN
(166741E, 106840N)

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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

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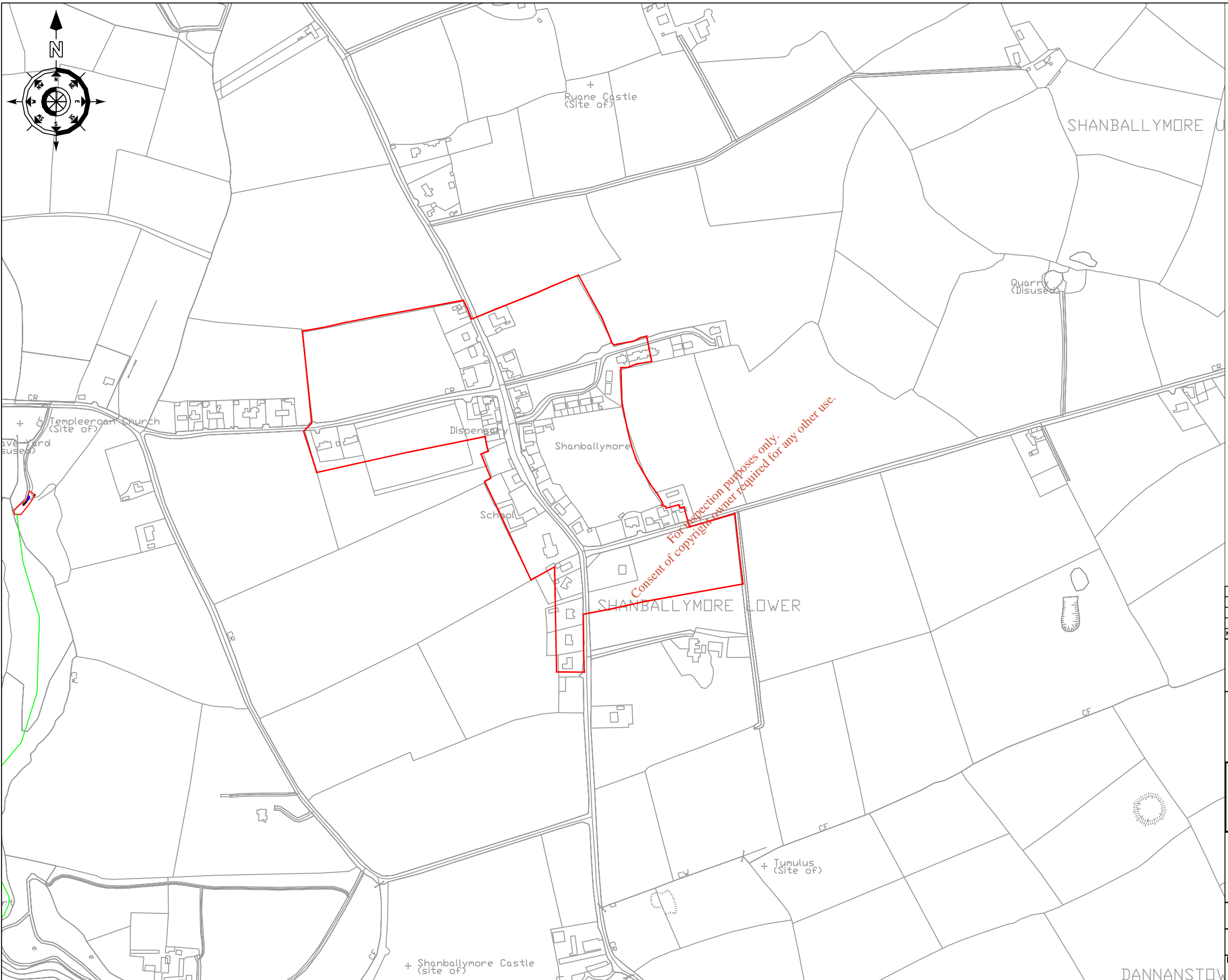


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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Waste Water Treatment Plant
Site Layout
Attachment A1 - Map 3

Scales: 1:500 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F	Date: December 2009
Drawing number: A1 - Map 3	Rev:	-




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No.	Date	Drawn	Survey	Checked	Revision	Description

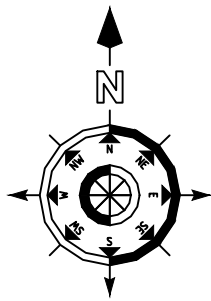
Cork County Council,
Northern Division.

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---	--

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Agglomeration Boundary
Attachment B1 - Map 4

Scales: 1:5,000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F.	Date: December 2009
Drawing number: B1 - Map 4		Rev: -



Aeration Tank

Control kiosk

Sludge Holding Tank

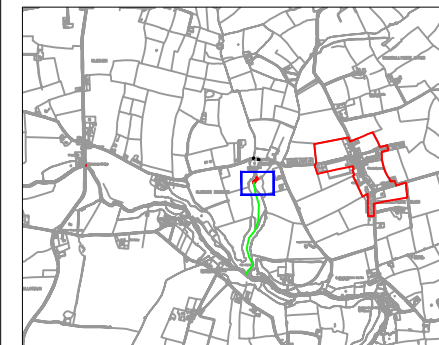
Waste Water Treatment plant
(166799E, 107464N)

Primary Discharge
SW-01 SHAN
(166741E, 106840N)

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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
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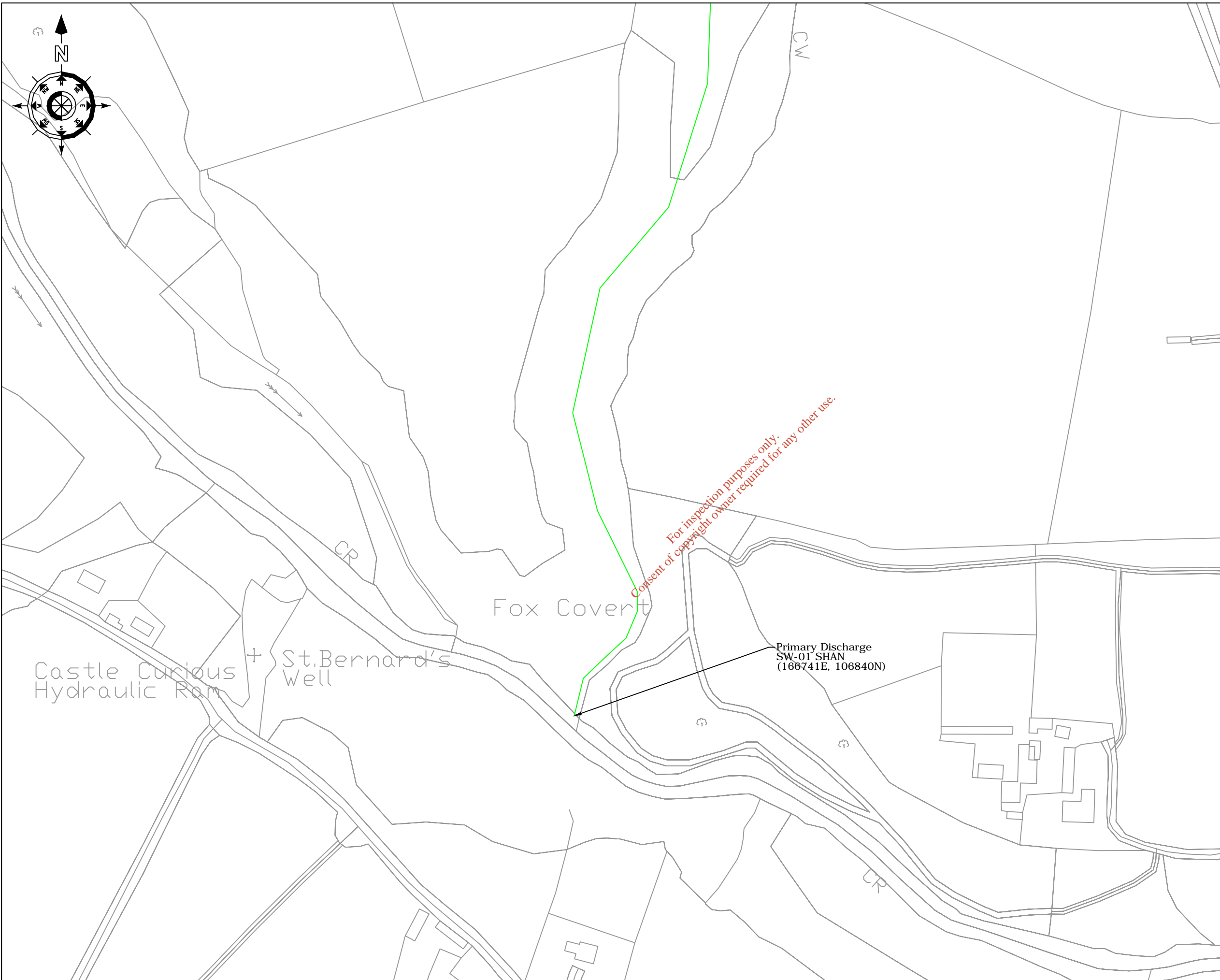


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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Waste Water Treatment Plant
Site Layout
Attachment B2 - Map 5

Scales: 1:500 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F	Date: December 2009
Drawing number: B2 - Map 5	Rev:	-



NOTES

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Northern Division.

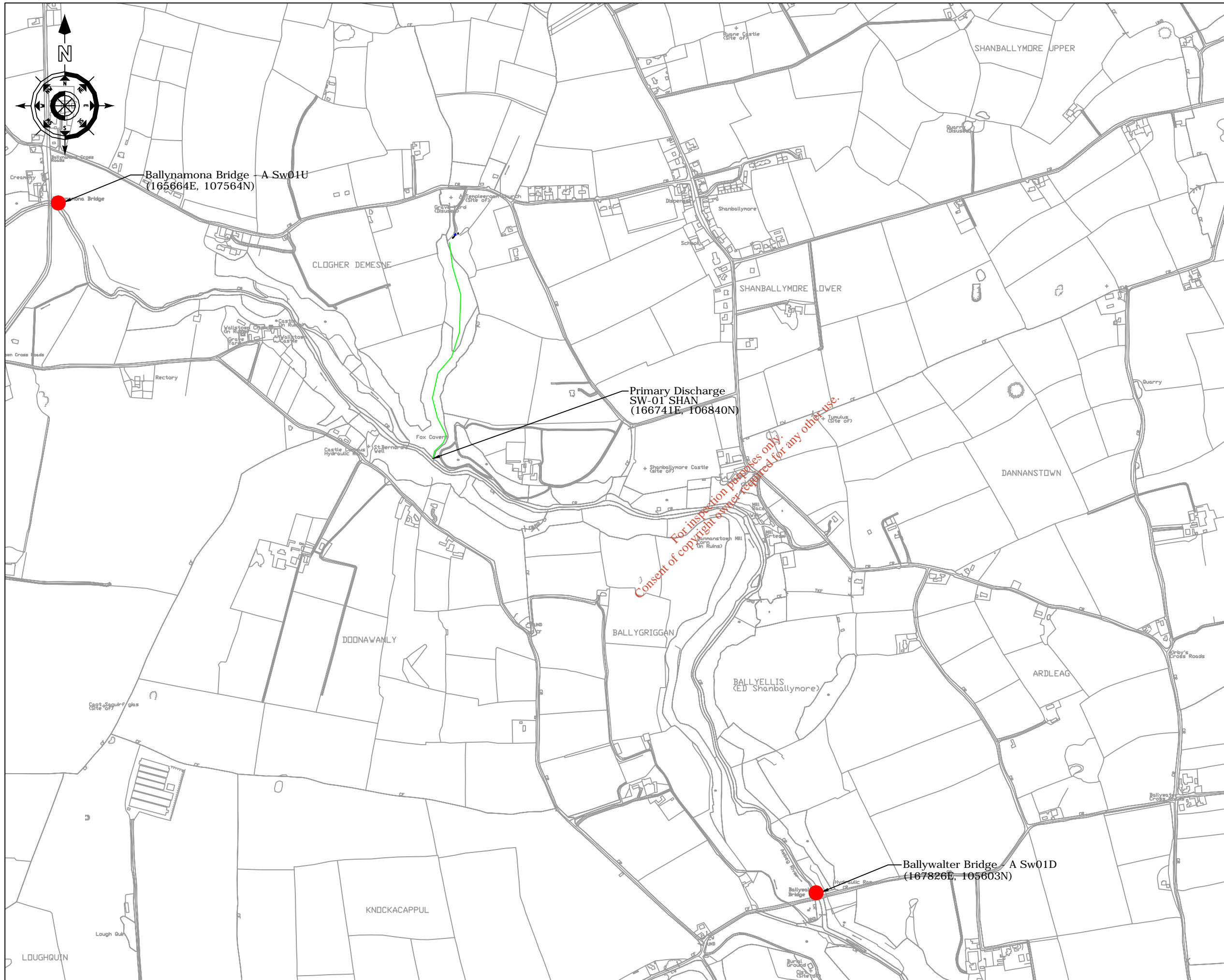


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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Location of Primary Discharge
Point SW01 - SHAN
Attachment B3 - Map 6

Scales: 1:500 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F	Date: December 2009
Drawing number: B3 - Map 6	Rev: -	



NOTES

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No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

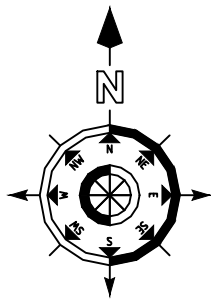


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Locations of sampling points
Attachment B3 - Map 7

Scale: 1:10,000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F.	Date: December 2009
Drawing number: B3 - Map 7	Rev: -	



Aeration Tank

Control kiosk

Sludge Holding Tank

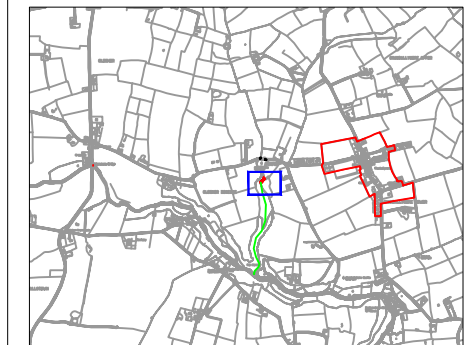
Waste Water Treatment plant
(166799E, 107464N)

Primary Discharge
SW-01 SHAN
(166741E, 106840N)

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NOTES

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For any discrepancies found consult with the design office.
2. This drawing is to be read in conjunction with the Specification.
3. This drawing is to be read in conjunction with all other contract drawings.



KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

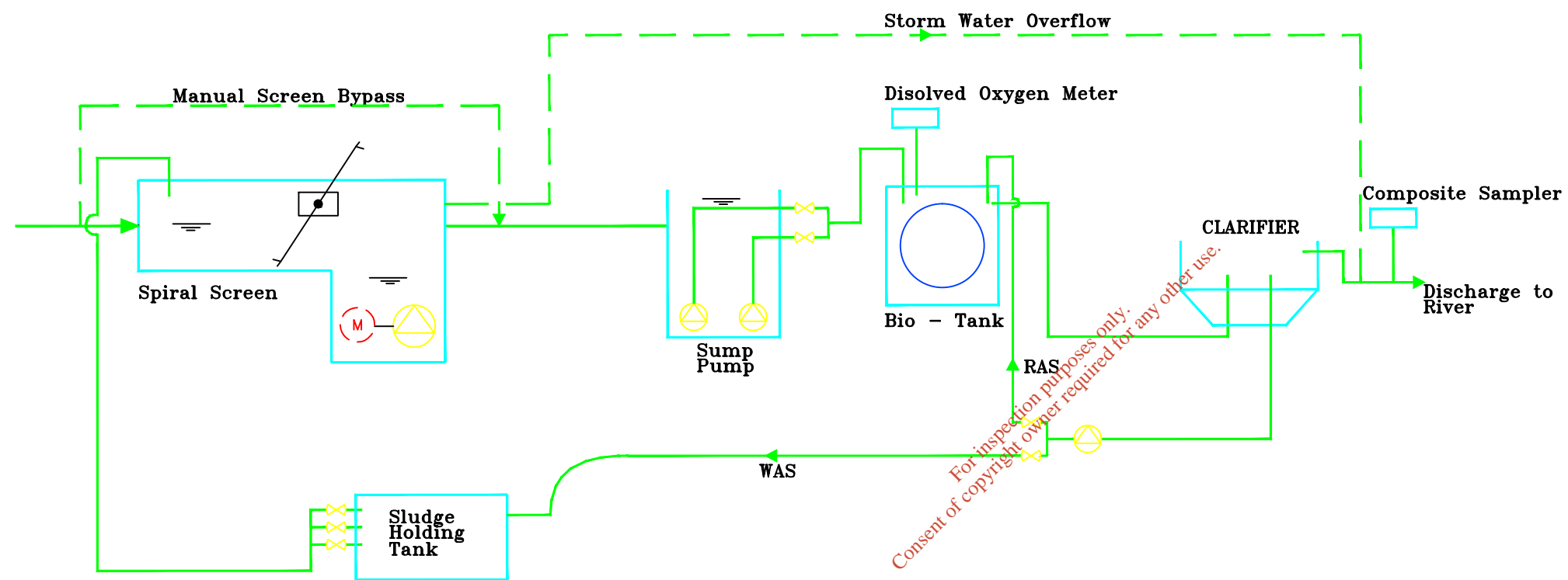


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Waste Water Treatment Plant
Site Layout
Attachment C1 - Map 8

Scales: 1:500 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F	Date: December 2009
Drawing number: C1 - Map 8	Rev:	-



NOTES

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2. This drawing is to be read in conjunction with the Specification.
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No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

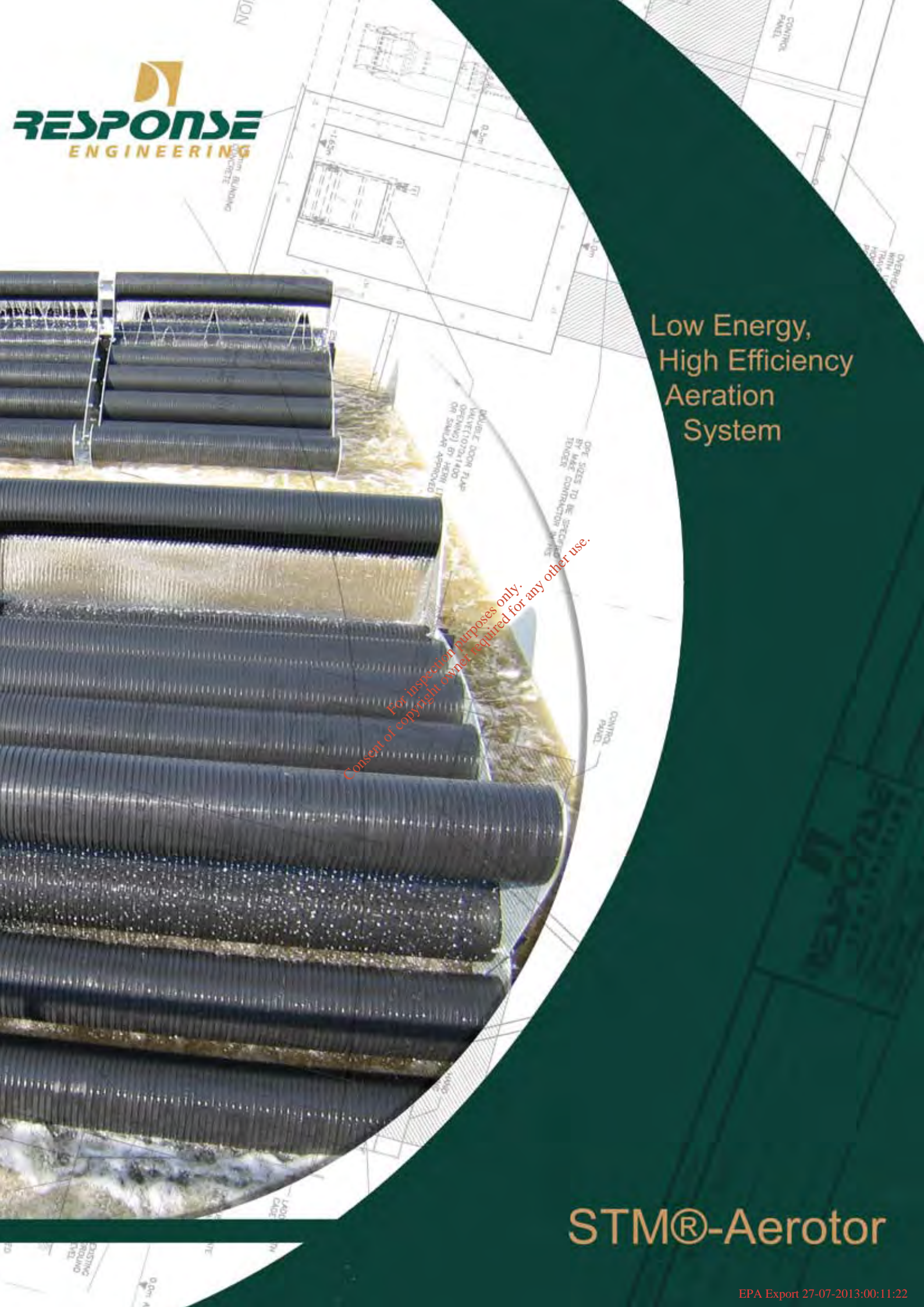


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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Shanballymore & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Schematic showing Existing
Treatment Plant Process
Attachment C1 - Drawing 1

Scales: 1:5000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: E.M.	Checked by: P.O.F	Date: December 2009
Drawing number: C1 - Drawing 1	Rev: -	



Low Energy, High Efficiency Aeration System

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STM®-Aerotor

STAHERMATIC®

The combine wastewater treatment process

The “combined process” method for the biological treatment of wastewater is a combination of the submerged fixed film process and the activated sludge system.

The STAHLERMATIC® process of wastewater treatment is effected on the one side by suspended activated sludge in the mixed liquor, and on the other hand by fixed micro-organisms in the biofilm on the surface of the contactors. This combines the advantages of both the activated sludge and the fixed film processes in a single stage. The system works like a conventional activated sludge system with activated biological in the mixed liquor with sludge return. The efficiency of the typical activated sludge system is enhanced by working with higher concentrations in the suspended sludge than normal, and by the additional effect on the biofilm.

The STM® system can be used in the same process combinations as conventional activated sludge systems, but with higher efficiency. Advanced nitrification and de-nitrification as well as effective biological P-elimination are carried out simultaneously and safely in a single vessel.

The immersed STM® – Aerator is a wheel of cage design mounted on a central shaft. The plates and discs in the contact aerators are formed with a special surface profile in order to assure maximum oxygen transfer. With only one mechanical drive a geared motor mounted above the liquid level rotates the contact aerator. This dissolves atmospheric air into the mixed liquor to supply the activated sludge with sufficient quantities of oxygen. The biofilm on the contact aerators is oxygenated when the contactors emerge above water level. During the downward travel the air is trapped in the chambers by the plates and discs of the contactors and forced into mixed liquor. As the contactor moves downwards towards the bottom of the biotank the air is compressed more and more. The biofilm is supplied with oxygen during the rotation of the wheel, when exposed to the atmosphere and in the mixed liquor, the trapped air also helps to reduce power requirements by virtue of increased buoyancy, which helps ensure exceptional consumption of the system.

The STM® – Aerator gives the benefits of an efficient aeration system with lowest possible consumption.

Mode of Operation

In principal the method of operation is identical for both kinds of contact aerators: the cell-segment type and the pipe-type.

The oxygen supply for the micro-organism is achieved by rotating the STM® – Aerators slowly by an inverter controlled geared motor mounted above liquid level. As soon as a segment emerges above water level during rotation, the mixed liquor inside the chambers flows out. The segment will then be filled with atmospheric air. The necessary oxygen for the biofilm dissolves onto the wet surfaces of the fixed bed biofilm. Because this very large surface area is contacted directly by the partial pressure of the air, an immediate saturation of the oxygen concentration results.

When the segments are submerged again **the air cannot escape and is trapped** inside the segments. In the course of the rotation, the **trapped air is forced to the bottom** of the biotank and compressed to a higher level. During the downward travel quantities of air can escape. **The bubbles travelling with the rotation of the wheel result in a homogeneous mixing** of biotank. In addition, the activated sludge in the mixed liquor is **always effectively supplied with oxygen**.

During upwards travel of the contact aerator the partially **air-filled segments** provide buoyancy and significantly reduce the power requirement of the unit. The fixed film on the surface areas within the segments are also **supplied with oxygen up to saturation point when emerging into the atmosphere**. The forced air contacts all inner surface areas of the plate or discs in the segments during rotation. By this means also all the **micro-organisms in the fixed film are fully supplied with oxygen** during rotation in the mixed liquor.

The forced air contacts the specially profiled surfaces of the plates and discs. The unique design of these profiles results in the continuous formation of countless new transition zones for the transfer of oxygen. **This result in the achievement of the recommended oxygen supply for both parts of the process, the fixed biofilm and the suspended activated sludge.**

Waste water Treatment Plant “Nieder-/Oberzeuzheim”



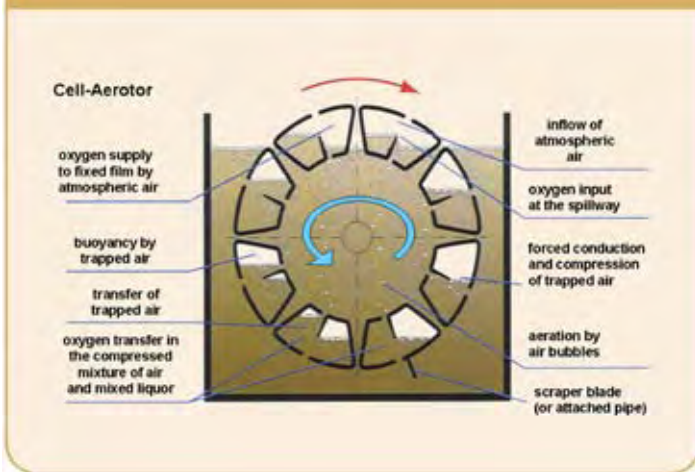
Constructed	1989
Degree of Purification	Advanced nitrification (control value <10mg N H4-N/1, Temperature > 12c < 0.7kg BOD5 / (M3 X D)
Volume load	<3 mg BOD5/1
Effluent Quality	<33mg COD/1 <4mg NH4 – N/1 <4mg NO3- N/1
No Chemical Treatment	<1 mg P / 1

Waste water Treatment Plant Shannon Airport

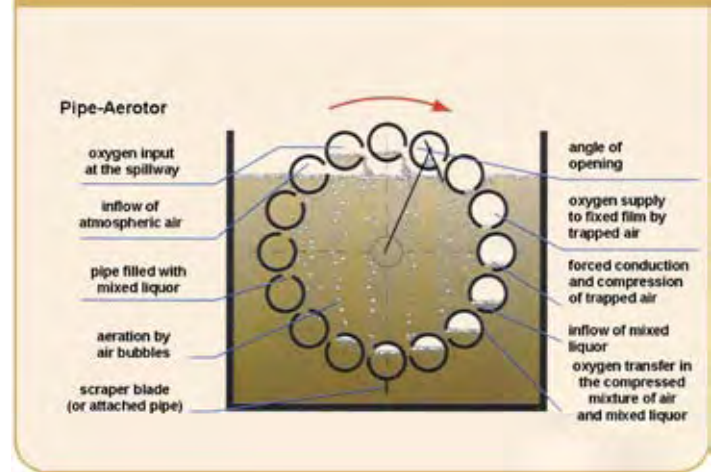


Kind of Wastewater	Municipal Wastewater
Population equivalent	7,500
Started	2006
Effluent Quality	<25mg/l BOD <35mg/l SS <2mg/l P <5mg/l NH4

Cell-Segments Contact Aerator (ZR) Direction of rotation



Cell-Segments Contact Aerator (ZR) Direction of rotation



Design Features

The characteristic properties of the STM® – system are the high degradation efficiency, high quality effluent standards and a high flexibility caused by the combination of the advantages of the biological processes in a true hybrid system. These advantages are added to by lower than normal running costs, smaller plant footprints and low noise levels. The plants are suitable for permanent installation in any size. Temporary plants can be container mounted or modular constructed units. Specific sizes and design features are dictated by the requirements of the application.

The materials used are chosen specifically to guarantee a long service life. The simple and solid construction results in a long service life, low maintenance costs, and exceptionally lower power consumption while still meeting all international Health & Safety standards. The STAHLERMATIC® contact aerators can be supplied in the cell-segment style, according to requirements.

All STM® – contact aerator construction complies with DIN 19569 – 3 -1995 – 01 (equipment for waste water facilities) standards and come with CE marking.

The cell-segment contact aerator (ZR) consists of several segments, each with two air pockets. The segments are constructed as a series of Polypropylene plates, to provide large growth areas for the fixed film biomass, and to create air pockets for oxygen supply. Sufficient oxygen transfer is guaranteed for any pollution load. In principle, the pipe-segment contact aerator is identical in function and operation to the cell-segment contact aerator although the growth surfaces for the fixed film and the volume of the air pockets are smaller. This system is used for special requirements or to meet specific application needs. Parallel to the shaft several cylindrical hollow sections in the form of pipes are radially arranged as the contact aerators. The pipes are constructed in turn from a series of Polypropylene discs. Both kinds of contact aerators can be equipped with a scraper. If required the contact aerators can be equipped with a nine attached pipes. They increase both the active surface area and the oxygen input.

Waste water Treatment Plant Ballysadare



Kind of Wastewater	Municipal Wastewater
Population equivalent	2,500
Started	2007
Effluent Quality	<25mg/l BOD <35mg/lSS <3mg/l P

Paper Mill "Kohler – Oberkirch"



Waste Source	Manufacturing waste waters from a paper mill
Population equivalents	12.000
Construction	1984
Volume Load	0,5-0,7kg BOD5/(M3-D)
Effluent quality	<5 mg BOD5/1 <70 mg COD/1

Application fields

The STM® process is suitable for

- New Wastewater treatment facilities
- Plant upgrades - treatments standards
- Plant upgrades - population increases

The contact aerator can be installed in a biotank built of concrete or steel in permanent installations. For temporary installations the STM® system can be built in a variety of completely equipped steel –constructed versions: container-units, packaged units, modular constructed units etc.

Applications Fields

- Treatment of domestic wastewater in all sizes of facility – single step or multi step wastewater treatment plants
- Treatment of domestic wastewater with industrial waste streams
- Treatment of organically loaded wastewater direct from industry, manufacturing, trade etc.
- * STM® biological treatment facilities coupled with
 - Conventional activated sludge systems
 - Denitrification facilities
 - N-elimination facilities
 - P-elimination facilities
 - Sewage lagoons or polishing ponds
 - Treatment facilities for fecal sludge
- Aerobic sludge stabilisation
 - Primary sludge
 - Excess sludge
 - Fecal sludge
- Biological treatment of leachate from sanitary landfill
- Treatment of liquid manure partial, basic treatment
- Aquaculture systems: intensive fish farming in closed warm-water circuits

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Waste Water Treatment Plant with separate aerobic sludge stabilisation “Palmas Del Mar, Puerto Rico”



Operating since	1987
Waste source	Holiday resort
Population Equivalents	26.000
Degree of treatments	Biological degradation with separate aerobic sludge stabilisation
Effluent Quality	<5mg BOD 5/1 <10 mg/1 Filterable solids

WASTE WATER TREATMENT PLANT “SIRIRAJ HOSPITAL MAHIDOL UNIVERSITY” BANGKOK, THAILAND

Wastewater is controlled from the hospital and all university buildings in the Shirraj campus and flow to the wastewater treatment plant. The solids are separated before treatment in a subsequently process. The wastewater is treated biologically with the STAHLERMATIC® – system.

The STAHLERMATIC® – system is equipped with 12 pipe-segments-contact-aerator RR 4, 3 x 2, 5

The excess sludge is stabilised simultaneously. The sludge is biologically and sanitarly clean and is pressed, dried, packed into bags and used as fertiliser.

The table shows figures for the efficiency of the plant. Sanitary investigations of germs in the effluent water, in the sludge and in the air near the biological stage that hygienically the plant works with no problem as far as hygiene is concerned.

Influent flow (m3/d)	BOD5 (mg/l)		Suspended solids (mg/l)	
	Effluent	Standards	Effluent	Standards
4.000-5.000	5-8	20	10-15	30



Recommended sizing data

The ATZ-guidelines are basic for all dimensionings, document in the papers A 122, A 126, A 131, A 135, A 257 and H 254. Other information is given in the report of the ATV-workshop 2.6.4 "Combined waste water treatment techniques". The following recommended data is based on practical experience by operating more than 500 well established SPAHLERMATIC® facilities worldwide. This recommended data has to be used in the dimensioning instructions in accordance with the Guidelines mentioned above.

Combined Waste water Treatment Techniques

The data specified in the guidelines mentioned above can be used in principle for the dimensioning of Stahlermatic wastewater treatment facilities.

An indication of the method used for the dimensioning of STAHLERMATIC®-systems can be found in these guidelines: The influent load is divided into different proportions for the suspended activated sludge and for the fixed film. For both components the degradation efficiency has to be proofed separately in accordance with the guidelines. As a rule this method is used for a wastewater treatment plants with a design capacity of not more than 10,000 population equivalent. Other information is given in the ATV-Guidelines A131 and H 254.

THE EFFLUENT STANDARDS ARE GUARANTEED
INDEPENDENT OF TEMPERATURE (Summer / Winter)

Concentration of the Mixed Liquor Suspended Solids (MLSS) in kg/m ³	With Preliminary Setting	Without Preliminary Setting
Standard degradation	4,0 - 6,0	4,5 - 7,0
Degradation with nitrification and with denitrification	4,0 - 7,0	5,0 - 8,0
Simultaneous aerobic stabilisation of sludge with advanced nitrification / denitrification and with advanced biological P-uptake	-----	5,0 - 9,0
Sludge Volume Index (ml/g) sludge loading ration (SLR)	SLR > 0,05	SLR < 0,05
Wastewater with lower concentrations of organic industrial components	40 - 100	40 - 80
Wastewater with higher concentrations of organic industrial components	50 - 120	50 - 100
Fixed Biofilm		
Effective dry solids concentration of the fixed biofilm	20 - 25	g DS/m ²
BOD-degradation of the fixed biofilm		
- biological standard degradation	10 - 16	g BOD/(m ² .d)
- biological degradation with nitrification	8 - 12	g BOD/(m ² .d)
- biological degradation with nitrification & with simultaneous aerobic sludge stabilisation	4 - 8	g BOD/(m ² .d)
Rate of nitrification of the fixed film	4 - 8	g N/(m ² .d)

Biological Leachate Treatment Plant The Sanitary Landfill "Hengelo, Netherlands"



The aim of this facility is the advanced degradation of nitrogen through simultaneous nitrification, denitrification and P-elimination in a single treatment process. This was accomplished in 1995 in one year pilot project. The Hengelo facility into full scale production in early 1997

Elimination Rate				
COD	BOD ₅	NH ₄ -N	N-kj	P Total
>60%	>95%	>96%	>90%	>85%

Flexibility of volume adaption and the dimensioning of the oxygen supply

The STM® system offers various possibilities in the design:
Variation of the oxygen supply by

- **Changing the number of revolutions of the contact aerators (for adapting to changing operation conditions) by using an infinitely variable geared motor or a frequently regulated motor**
- **Assembling additional pipes: Increasing the total oxygen transfer and the degradation efficiency**
- **Adaption of the volume of the biotank**

Volume of the biotank

If the tank has to be completely aerobic, e.g. for advanced nitrification, smaller sizes of biotank are recommended. The biotank volume is then always sufficiently supplied with oxygen. A high nitrification efficiency is always guaranteed.

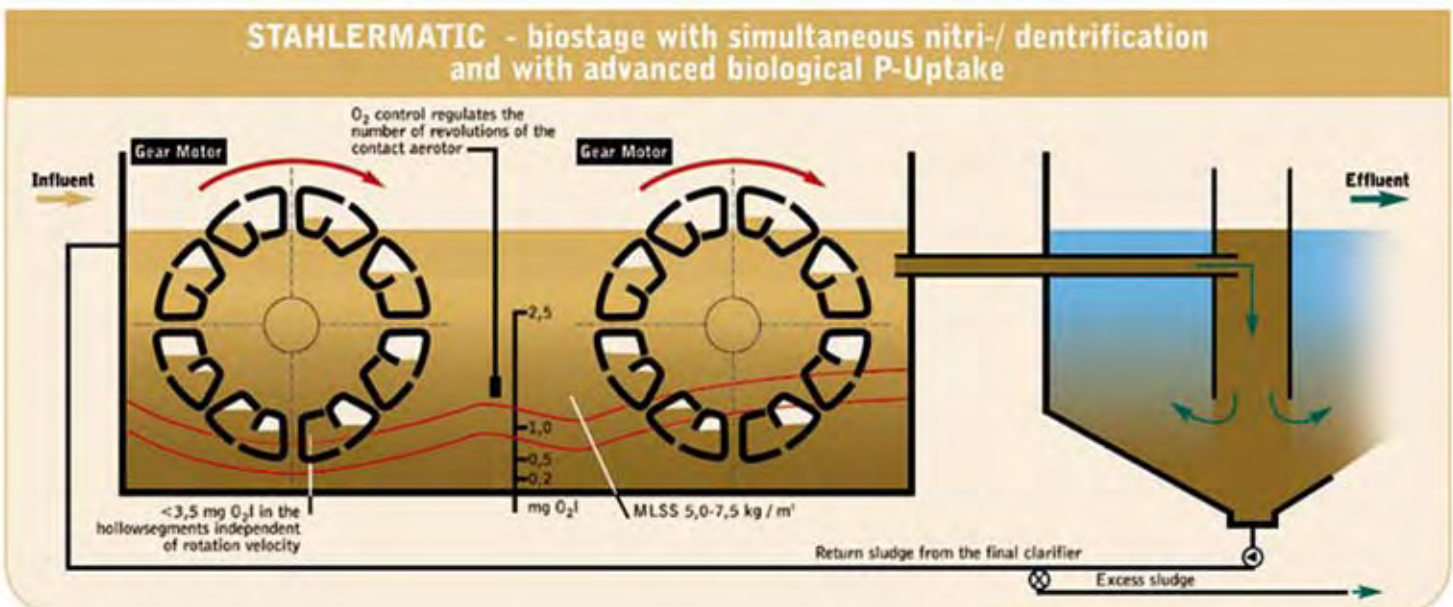
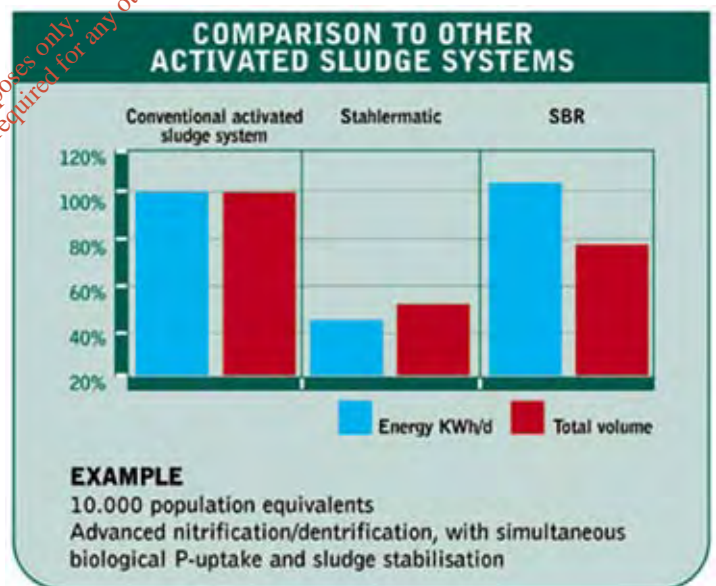
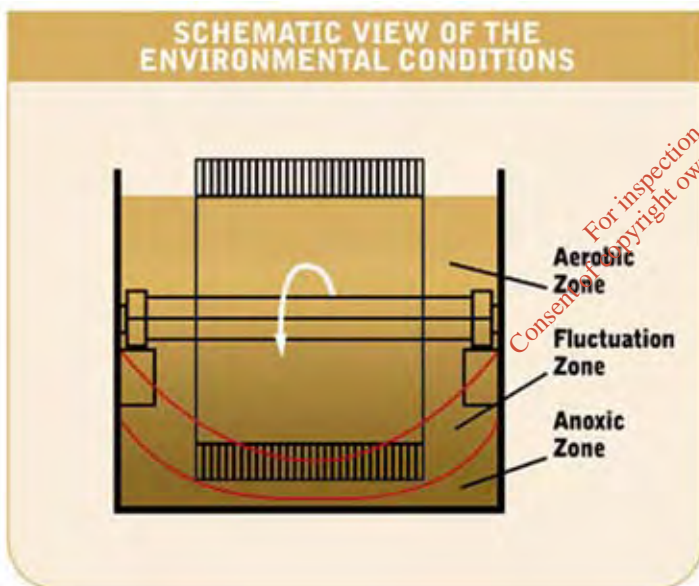
Choosing a larger size of the biotank equipped with the same contact aerator (expanding the biotank volume) results in a larger treatment volume. Consequently the anoxic environmental zones are increased, so that simultaneous de-nitrification takes place. The anoxic zones are mainly beneath the contact aerators. By expanding the biotank volume a continuously aerobic environment in the centre and right next to the contact aerator is guaranteed.

High nitrification efficiency is achieved independent of the number or revolutions of the contact aerator. The sizes of the zones with different oxygen environments are not fixed. The extension of the zones will change depending upon the number of revolutions, the oxygen demand and depending upon the required degradation and the hydraulic loading rate of the tank.

The conditions for high nitrification efficiency are always maintained. Oxygen control in combination with operation control will keep nearly-constant oxygen conditions in the different environmental zones. Advanced nitrification and simultaneous de-nitrification will always work with a high efficiency.

With the option to equip the contact aerators with additional pipes or to choose different sizes of biotank, the STM can comply with all requirements of degradation: advanced biodegradation of the organic carbon components, advanced nitrification and simultaneous de-nitrification.

Phosphate is extensively eliminated by biological uptake as the STM –system will work with higher concentrations of the biomass compared to more conventional systems. In an expanded biotank the suspended activated sludge changes continuously from one oxygen environment into another (aerobic –anoxic). By this the P-uptake will be enhanced. Nevertheless the efficiency of the other degradation processes remains unchanged





WWTW Carney, Ireland for 2500 P.E.



Brewery Puerto Rico, India for 20,000 P.E



WWTW Doonbeg, Ireland for 1500 P.E.



WWTW Coolaney, Ireland for 2500 P.E.



WWTW Shanagary, Ireland for 600 P.E

ADVANTAGES

STABLE PROCESS PERFORMANCE

High process stability and flexibility even under high loadings, by combining the activated sludge and fixed film processes. Even the strictest effluent standards can be met consistently.

SOLID AND SIMPLE CONSTRUCTION

Quality System assured construction, including long-life polypropylene media, simple low-maintenance drive train, and nylon-lined support bearings for extended life.

LOWEST CAPITAL COST

Tank volume is reduced by 40% over conventional aeration by the STM-Aerator's process efficiency.

LOWEST ENERGY USAGE

The STM-Aerator, which is 75% submerged, operates at slow speeds driven by a low-powered motor. This provides great savings in energy. Only 45% of the necessary energy compared with Fine Bubble Aeration is used.

ADVANCED BIOLOGICAL NUTRIENT REMOVAL

The STM-Aerator can provide consistent simultaneous nitrification / de-nitrification, as well as biological phosphorous removal, in a single basin.

NO NOISE OR ODOUR PROBLEMS

Simple slow-speed operation reduces operating noise. The STM-Aerator process operates with virtually zero problem-causing odours.

IMPROVED SLUDGE QUALITY

Better setting characteristics (lowers sludge volume index) better dewaterability, and smaller volumes of waste sludge

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- Response Group is 100% Irish owned.
- 120 no. fulltime employees.
- Located in Charleville, Cork, Dublin, Donegal & Carlow.
- €30M Group turnover

Head Office
Railway Road
Charleville,
Co. Cork
T: 00353 (0)63 33400
F: 00353 (0)63 33401
W: www.response-eng.com
E: info@response-eng.com

Unit 3, Ballymount
Business Park
Ballymount Cross
Dublin 24
T: 01 4568050
F: 01 456 8033

Response CSL
Deerpark Business
Complex,
Dublin Road,
Carlow,
T: 059 9143464
F: 059 9143469

Response Civil LTD
Mullans
Donegal Town
Co. Donegal
T: 074 9725187
F: 074 9725077



Attachment E4 Shanballymore analytical data for certification application

Sample Date	17/02/2009	19/05/2009	26/08/2009		19/05/2009	26/08/2009		26/08/2009		*
Sample	Influent	Influent	Influent		Effluent	Effluent		River Upstream		River Downstream
Sample Code	GT280	GT781	GT1056		GT782	GT1055		GT1057		No result
Flow M ³ /Day	No result	No result	No result		No result	No result		No result		No result
pH	No result	No result	7.8		No result	7.9		7.9		No result
Temperature °C	No result	No result	No result		No result	No result		No result		No result
Cond 20 °C	No result	No result	857		No result	912		316		No result
SS mg/L	No result	No result	20		No result	83		9		No result
NH ₃ mg/L	No result	No result	15.1		No result	19.9		<0.1		No result
BOD mg/L	No result	No result	63		No result	100		<1		No result
COD mg/L	No result	No result	250		No result	270		31		No result
TN mg/L	No result	43.8	23		28.4	27.6		2.3		No result
Nitrite mg/L	No result	No result	<0.1		No result	<0.1		<0.1		No result
Nitrate mg/L	No result	No result	<0.5		No result	<0.5		1.45		No result
TP mg/L	No result	No result	1.78		No result	2		<0.05		No result
O-PO4-P mg/L	No result	No result	1.73		No result	1.8		<0.05		No result
SO4 mg/L	No result	No result	44.5		No result	56.6		<30		No result
Phenols µg/L	No result	No result	No result		No result	20.10		No result		No result
Atrazine µg/L	No result	No result	No result		No result	<0.01		No result		No result
Dichloromethane	No result	No result	No result		No result	<1		No result		No result
Simazine µg/L	No result	No result	No result		No result	<0.01		No result		No result
Toluene µg/L	No result	No result	No result		No result	<0.28		No result		No result
Tributyltin µg/L	No required	No required	No required		No required	No required		No required		No required
Xylenes µg/L	No result	No result	No result		No result	<0.73		No result		No result
Arsenic µg/L	No result	No result	No result		No result	<0.96		No result		No result
Chromium ug/L	<20	<20	<20		<20	<20		<20		No result
Copper ug/L	23.2	22.1	<20		<20	<20		<20		No result
Cyanide µg/L	No result	No result	No result		No result	<5		No result		No result
Fluoride µg/L	No result	No result	0.87		No result	0.86		<0.1		No result
Lead ug/L	<20	<20	<20		<20	<20		<20		No result
Nickel ug/L	<20	<20	<20		<20	<20		<20		No result
Zinc ug/L	96.2	34.9	95.7		<20	23.7		<20		No result
Boron ug/L	100.7	225.6	24.7		27.3	37.7		<20		No result
Cadmium ug/L	<20	<20	<20		<20	<20		<20		No result
Mercury µg/L	No result	No result	No result		No result	<0.2		No result		No result
Selenium µg/L	No result	No result	No result		No result	<0.74		No result		No result
Barium ug/L	30.4	<20	20.4		<20	<20		<20		No result

Note samples analysed for Dangerous substances in discharge and downstream of discharge

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING	VERIFIED
SW01 SHAN	Primary	cork county council	river	AWBEG	none	166741E	106840N	N

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PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
SWO1	Primary	Sampling	145327E	112543N	N
aSW01u	u/s	Sampling	165664E	107654N	N
aSW01d	d/s	Sampling	167826E	105603N	N

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Attachment E4 Shanballymore analytical data for certification application

Sample Date	17/02/2009	19/05/2009	26/08/2009		19/05/2009	26/08/2009		26/08/2009		*
Sample	Influent	Influent	Influent		Effluent	Effluent		River Upstream		River Downstream
Sample Code	GT280	GT781	GT1056		GT782	GT1055		GT1057		No result
Flow M ³ /Day	No result	No result	No result		No result	No result		No result		No result
pH	No result	No result	7.8		No result	7.9		7.9		No result
Temperature °C	No result	No result	No result		No result	No result		No result		No result
Cond 20 °C	No result	No result	857		No result	912		316		No result
SS mg/L	No result	No result	20		No result	83		9		No result
NH ₃ mg/L	No result	No result	15.1		No result	19.9		<0.1		No result
BOD mg/L	No result	No result	63		No result	100		<1		No result
COD mg/L	No result	No result	250		No result	270		31		No result
TN mg/L	No result	43.8	23		28.4	27.6		2.3		No result
Nitrite mg/L	No result	No result	<0.1		No result	<0.1		<0.1		No result
Nitrate mg/L	No result	No result	<0.5		No result	<0.5		1.45		No result
TP mg/L	No result	No result	1.78		No result	2		<0.05		No result
O-PO4-P mg/L	No result	No result	1.73		No result	1.8		<0.05		No result
SO4 mg/L	No result	No result	44.5		No result	56.6		<30		No result
Phenols µg/L	No result	No result	No result		No result	20.10		No result		No result
Atrazine µg/L	No result	No result	No result		No result	<0.01		No result		No result
Dichloromethane	No result	No result	No result		No result	<1		No result		No result
Simazine µg/L	No result	No result	No result		No result	<0.01		No result		No result
Toluene µg/L	No result	No result	No result		No result	<0.28		No result		No result
Tributyltin µg/L	No required	No required	No required		No required	No required		No required		No required
Xylenes µg/L	No result	No result	No result		No result	<0.73		No result		No result
Arsenic µg/L	No result	No result	No result		No result	<0.96		No result		No result
Chromium ug/L	<20	<20	<20		<20	<20		<20		No result
Copper ug/L	23.2	22.1	<20		<20	<20		<20		No result
Cyanide µg/L	No result	No result	No result		No result	<5		No result		No result
Fluoride µg/L	No result	No result	0.87		No result	0.86		<0.1		No result
Lead ug/L	<20	<20	<20		<20	<20		<20		No result
Nickel ug/L	<20	<20	<20		<20	<20		<20		No result
Zinc ug/L	96.2	34.9	95.7		<20	23.7		<20		No result
Boron ug/L	100.7	225.6	24.7		27.3	37.7		<20		No result
Cadmium ug/L	<20	<20	<20		<20	<20		<20		No result
Mercury µg/L	No result	No result	No result		No result	<0.2		No result		No result
Selenium µg/L	No result	No result	No result		No result	<0.74		No result		No result
Barium ug/L	30.4	<20	20.4		<20	<20		<20		No result

Note samples analysed for Dangerous substances in discharge and downstream of discharge

SITE SYNOPSIS

SITE NAME: BLACKWATER RIVER (CORK/WATERFORD)

SITE CODE: 002170

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. In times of heavy rainfall the levels can fluctuate widely by more than 12 feet on the gauge at Careysville. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which includes the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The extent of the Blackwater and its tributaries in this site, flows through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Towns along, but not in the site, include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The Blackwater rises in boggy land of east Kerry, where Namurian grits and shales build the low heather-covered plateaux. Near Kanturk the plateaux enclose a basin of productive Coal Measures. On leaving the Namurian rocks the Blackwater turns eastwards along the northern slopes of the Boggeraghs before entering the narrow limestone strike vale at Mallow. The valley deepens as first the Nagles Mountains and then the Knockmealdowns impinge upon it. Interesting geological features along this stretch of the Blackwater Valley include limestone cliffs and caves near the villages and small towns of Killavullen and Ballyhooly; the Killavullen caves contain fossil material from the end of the glacial period. The associated basic soils in this area support the growth of plant communities which are rare in Cork because in general the county's rocks are acidic. At Cappoquin the river suddenly turns south and cuts through high ridges of Old Red Sandstone. The Araglin valley is predominantly underlain by sandstone, with limestone occurring in the lower reaches near Fermoy.

The site is a candidate SAC selected for alluvial wet woodlands and Yew wood, both priority habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats, *Salicornia* mudflats, Atlantic salt meadows, Mediterranean salt meadows, perennial vegetation of stony banks and old Oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon, Otter and the plant, Killarney Fern.

Wet woodlands are found where river embankments, particularly on the River Bride, have broken down and where the channel edges in the steep-sided valley between Cappoquin and Youghal are subject to daily inundation. The river side of the embankments was often used for willow growing in the past (most recently at Cappoquin) so that the channel is lined by narrow woods of White and Almond-leaved Willow (*Salix alba* and *S. triandra*) with isolated Crack Willow (*S. fragilis*) and Osier (*S. viminalis*). Grey Willow (*S. cinerea*) spreads naturally into the sites and occasionally, as at Villierstown on the Blackwater and Sapperton on the Bride, forms woods with a distinctive mix of woodland and marsh plants, including Gypsywort (*Lycopus europaeus*), Guelder Rose (*Viburnum opulus*), Bittersweet (*Solanum dulcamara*) and various mosses and algae. These wet woodlands form one of the most extensive tracts of the wet woodland habitat in the country.

A small stand of Yew (*Taxus baccata*) woodland, a rare habitat in Ireland and the EU, occurs within the site. This is on a limestone ridge at Dromana, near Villierstown. While there are some patches of the wood with a canopy of Yew and some very old trees, the quality is generally poor due to the dominance of non-native and invasive species such as Sycamore, Beech and Douglas Fir (*Pseudotsuga menziesii*). However, the future prospect for this Yew wood is good as the site is proposed for restoration under a Coillte EU Life Programme. Owing to its rarity, Yew woodland is listed with priority status on Annex I of the EU Habitats Directive.

Marshes and reedbeds cover most of the flat areas beside the rivers and often occur in mosaic with the wet woodland. Common Reed (*Phragmites australis*) is ubiquitous and is harvested for thatching. There is also much Marsh Marigold (*Caltha palustris*) and, at the edges of the reeds, the Greater and Lesser Pond-sedge (*Carex riparia* and *C. acutiformis*). Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Reed Canary-grass (*Phalaris arundinacea*), Meadowsweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*), Purple Loosestrife (*Lythrum salicaria*), Marsh Valerian (*Valeriana officinalis*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*).

At Banteer there are a number of hollows in the sediments of the floodplain where subsidence and subterranean drainage have created isolated wetlands, sunk below the level of the surrounding fields. The water rises and falls in these holes depending on the watertable and several different communities have developed on the acidic or neutral sediments. Many of the ponds are ringed about with Grey Willows, rooted in the mineral soils but sometimes collapsed into the water. Beneath the densest stands are woodland herbs like Yellow Pimpernel (*Lysimachia nemorum*) with locally abundant Starwort (*Callitriche stagnalis*) and Marsh Ragwort (*Senecio palustris*). One of the depressions has Silver Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Crab Apple (*Malus sylvestris*) and a little Oak (*Quercus robur*) in addition to the willows.

Floating river vegetation is found along much of the freshwater stretches within the site. The species list is quite extensive and includes Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*), Pondweed (*Potamogeton* spp.), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus*

lacustris), Water-starwort (*Callitriche* spp.), Lesser Water-parsnip (*Berula erecta*) particularly on the Awbeg, Water-cress (*Nasturtium officinale*), Hemlock Water-dropwort, Fine-leaved Water-dropwort (*O. aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*.

The grassland adjacent to the rivers of the site is generally heavily improved, although liable to flooding in many places. However, fields of more species-rich wet grassland with species such as Yellow-flag (*Iris pseudacorus*), Meadow-sweet, Meadow Buttercup (*Ranunculus acris*) and rushes (*Juncus* spp.) occur occasionally. Extensive fields of wet grassland also occur at Annagh Bog on the Awbeg. These fields are dominated by Tufted Hair-grass (*Deschampsia cespitosa*) and rushes.

The Blackwater Valley has a number of dry woodlands; these have mostly been managed by the estates in which they occur, frequently with the introduction of Beech (*Fagus sylvatica*) and a few conifers, and sometimes of Rhododendron (*Rhododendron ponticum*) and Laurel. Oak woodland is well developed on sandstone about Ballinatrav, with the acid Oak woodland community of Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Greater Woodrush (*Luzula sylvatica*) and Buckler Ferns (*Dryopteris affinis*, *D. aemula*) occurring in one place. Irish Spurge (*Euphorbia hyberna*) continues eastwards on acid rocks from its headquarters to the west but there are many plants of richer soils, for example Wood Violet (*Viola reichenbachiana*), Goldilocks (*Ranunculus auricomus*), Broad-leaved Helleborine (*Epipactis helleborine*) and Red Campion (*Silene dioica*). Oak woodland is also found in Rincrew, Carrigane, Glendine, Newport and Dromana. The spread of Rhododendron is locally a problem, as is over-grazing. A few limestone rocks stand over the river in places showing traces of a less acidic woodland type with Ash, False Brome (*Brachypodium sylvaticum*) and Early-purple Orchid (*Orchis mascula*).

In the vicinity of Lismore, two deep valleys cut in Old Red Sandstone join to form the Owenashad River before flowing into the Blackwater at Lismore. These valleys retain something close to their original cover of Oak with Downy Birch (*Betula pubescens*), Holly and Hazel (*Corylus avellana*) also occurring. There has been much planting of Beech (as well as some of coniferous species) among the Oak on the shallower slopes and here both Rhododendron and Cherry Laurel (*Prunus laurocerasus*) have invaded the woodland.

The Oak wood community in the Lismore and Glenmore valleys is of the classical upland type, in which some Rowan (*Sorbus aucuparia*) and Downy Birch occur. Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*) cover many of the trees while Greater Woodrush, Bluebell (*Hyacinthoides non-scripta*), Wood Sorrel (*Oxalis acetosella*) and, locally, Bilberry dominate the ground flora. Ferns present on the site include Hard Fern (*Blechnum spicant*), Male Fern (*Dryopteris filix-mas*), Buckler Ferns (*D. dilatata*, *D. aemula*) and Lady Fern (*Athyrium filix-femina*). There are many mosses present and large species such as *Rhytidiadelphus* spp., *Polytrichum formosum*, *Mnium hornum* and *Dicranum* spp. are noticeable. The lichen flora is important and includes 'old forest' species which imply a continuity of woodland here since ancient times. Tree Lungwort (*Lobaria* spp.) is the most conspicuous and is widespread.

The Araglin valley consists predominantly of broadleaved woodland. Oak and Beech are joined by Hazel, Wild Cherry (*Prunus avium*) and Goat Willow (*Salix caprea*). The ground flora is relatively rich with Pignut (*Conopodium majus*), Wild Garlic (*Allium ursinum*), Garlic Mustard (*Alliaria petiolata*) and Wild Strawberry (*Fragaria vesca*). The presence of Ivy Broomrape (*Orobanche hederæ*), a local species within Ireland, suggests that the woodland, along with its attendant Ivy is long established.

Along the lower reaches of the Awbeg River, the valley sides are generally cloaked with mixed deciduous woodland of estate origin. The dominant species is Beech, although a range of other species are also present, e.g. Sycamore (*Acer pseudoplatanus*), Ash and Horse-chestnut (*Aesculus hippocastanum*). In places the alien invasive species, Cherry Laurel, dominates the understorey. Parts of the woodlands are more semi-natural in composition, being dominated by Ash with Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europæa*) also present. However, the most natural areas of woodland appear to be the wet areas dominated by Alder and willows (*Salix* spp.). The ground flora of the dry woodland areas features species such as Pignut, Wood Avens (*Geum urbanum*), Ivy and Soft Shield-fern (*Polystichum setiferum*), while the ground flora of the wet woodland areas contains characteristic species such as Remote Sedge (*Carex remota*) and Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*).

In places along the upper Bride, scrubby, semi-natural deciduous woodland of Willow, Oak and Rowan occurs with abundant Great Woodrush in the ground flora.

The Bunaglanna River passes down a very steep valley, flowing in a north-south direction to meet the Bride River. It flows through blanket bog to heath and then scattered woodland. The higher levels of moisture here enable a vigorous moss and fern community to flourish, along with a well-developed epiphyte community on the tree trunks and branches.

At Banteer a type of wetland occurs near the railway line which offers a complete contrast to the others. Old turf banks are colonised by Royal Fern (*Osmunda regalis*) and Eared Willow (*Salix aurita*) and between them there is a sheet of Bottle Sedge (*Carex rostrata*), Marsh Cinquefoil (*Potentilla palustris*), Bogbean (*Menyanthes trifoliata*), Marsh St. John's-wort (*Hypericum elodes*) and the mosses *Sphagnum auriculatum* and *Aulacomnium palustre*. The cover is a scraw with characteristic species like Marsh Willowherb (*Epilobium palustre*) and Marsh Orchid (*Dactylorhiza incarnata*).

The soil high up the Lismore valleys and in rocky places is poor in nutrients but it becomes richer where streams enter and also along the valley bottoms. In such sites Wood Speedwell (*Veronica montana*), Wood Anemone (*Anemone nemorosa*), Enchanter's Nightshade (*Circaea lutetiana*), Barren Strawberry (*Potentilla sterilis*) and Shield Fern occur. There is some Wild Garlic, Three-nerved Sandwort (*Moehringia trinervia*) and Early-purple Orchid (*Orchis mascula*) locally, with Opposite-leaved Golden-saxifrage, Meadowsweet and Bugle in wet places. A Hazel stand at the base of the Glenakeeffe valley shows this community well.

The area has been subject to much tree felling in the recent past and re-sprouting stumps have given rise to areas of bushy Hazel, Holly, Rusty Willow (*Salix cinerea* subsp. *oleifolia*) and Downy Birch. The ground in the clearings is heathy with Heather (*Calluna vulgaris*), Slender St John's-wort (*Hypericum pulchrum*) and the occasional Broom (*Cytisus scoparius*) occurring.

The estuary and the other Habitats Directive Annex I habitats within it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The main expanses occur at the southern end of the site with the best examples at Kinsalebeg in Co. Waterford and between Youghal and the main bridge north of it across the river in Co. Cork. Other areas occur along the tributaries of the Licky in east Co. Waterford and Glendine, Newport, Bride and Killahaly Rivers in Waterford west of the Blackwater and large tracts along the Tourig River in Co. Cork. There are narrow bands of intertidal flats along the main river as far north as Camphire Island. Patches of green algae (filamentous, *Ulva* species and *Enteromorpha* sp.) occur in places, while fucoid algae are common on the more stony flats even as high upstream as Glenassy or Coneen.

The area of saltmarsh within the site is small. The best examples occur at the mouths of the tributaries and in the townlands of Foxhole and Blackbog. Those found are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists of Common Saltmarsh-grass (*Puccinellia maritima*), small amounts of Greater Sea-spurrey (*Spergularia media*), Glasswort (*Salicornia* sp.), Sea Arrowgrass (*Triglochin maritima*), Annual Sea-blite (*Suaeda maritima*) and Sea Purslane (*Halimione portulacoides*) - the latter a very recent coloniser - at the edges. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couch-grass (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include Lavender (*Limonium* spp.), Sea Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvy-grass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges.

The shingle spit at Ferrypoint supports a good example of perennial vegetation of stony banks. The spit is composed of small stones and cobbles and has a well developed and diverse flora. At the lowest part, Sea Beet (*Beta vulgaris*), Curled Dock (*Rumex crispus*) and Yellow-horned Poppy (*Glaucium flavum*) occur with at a slightly higher level Sea Mayweed (*Tripleurospermum maritimum*), Cleavers (*Galium aparine*), Rock Samphire (*Crithmum maritimum*), Sandwort (*Honkenya peploides*), Spear-leaved Orache (*Atriplex prostrata*) and Babington's Orache (*A. glabriuscula*). Other species present include Sea Rocket (*Cakile maritima*), Herb Robert (*Geranium robertianum*), Red Fescue (*Festuca rubra*) and Kidney Vetch (*Anthyllis vulneraria*). The top of the spit is more vegetated and includes lichens and bryophytes (including *Tortula ruraliformis* and *Rhytidiadelphus squarrosus*).

The site supports several Red Data Book plant species, i.e. Starved Wood Sedge (*Carex depauperata*), Killarney Fern (*Trichomanes speciosum*), Pennyroyal (*Mentha pulegium*), Bird's-nest Orchid (*Neottia nidus-avis*), Golden Dock (*Rumex maritimus*) and Bird Cherry (*Prunus padus*). The first three of these are also protected under the

Flora (Protection) Order 1999. The following plants, relatively rare nationally, are also found within the site: Toothwort (*Lathraea squamaria*) associated with woodlands on the Awbeg and Blackwater; Summer Snowflake (*Leucojum aestivum*) and Flowering Rush (*Butomus umbellatus*) on the Blackwater; Common Calamint (*Calamintha ascendens*), Red Campion (*Silene dioica*), Sand Leek (*Allium scorodoprasum*) and Wood Club-rush (*Scirpus sylvaticus*) on the Awbeg.

The site is also important for the presence of several Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl-mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers.

The Blackwater is noted for its enormous run of salmon over the years. The river is characterised by mighty pools, lovely streams, glides and generally, a good push of water coming through except in very low water. Spring salmon fishing can be carried out as far upstream as Fermoy and is very highly regarded especially at Careysville. The Bride, main Blackwater upstream of Fermoy and some of the tributaries are more associated with grilse fishing.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. The bat species Natterer's Bat, Daubenton's Bat, Whiskered Bat, Brown Long-eared Bat and Pipistrelle, are to be seen feeding along the river, roosting under the old bridges and in old buildings.

Common Frog, a Red Data Book species that is also legally protected (Wildlife Act, 1976), occurs throughout the site. The rare bush cricket, *Metrioptera roselii* (Orthoptera: Tettigoniidae), has been recorded in the reed/willow vegetation of the river embankment on the Lower Blackwater River. The Swan Mussel (*Anodonta cygnea*), a scarce species nationally, occurs at a few sites along the freshwater stretches of the Blackwater.

Several bird species listed on Annex I of the E.U. Birds Directive are found on the site. Some use it as a staging area, others are vagrants, while others use it more regularly. Internationally important numbers of Whooper Swan (average peak 174, 1994/95-95/96) and nationally important numbers Bewick's Swan (average peak 35, 1994/95-95/96) use the Blackwater Callows. Golden Plover occur in regionally important numbers on the Blackwater Estuary (average peak 885, 1984/85-86/87) and on the River Bride (absolute max. 2141, 1994/95). Staging Terns visit the site annually (Sandwich Tern (>300) and Arctic/Common Tern (>200), average peak 1974-1994). The site also supports populations of the following: Red Throated Diver, Great Northern Diver, Barnacle Goose, Ruff, Wood Sandpiper and Greenland White-fronted Goose. Three breeding territories for Peregrine Falcon are known along the Blackwater Valley. This, the Awbeg and the Bride River are also thought to support at

least 30 pairs of Kingfisher. Little Egret now breed at the site (12 pairs in 1997, 19 pairs in 1998) and this represents about 90% of the breeding population in Ireland.

The site holds important numbers of wintering waterfowl. Both the Blackwater Callows and the Blackwater Estuary Special Protection Areas (SPAs) hold internationally important numbers of Black-tailed Godwit (average peak 847, 1994/95-95/96 on the callows, average peak 845, 1974/75-93/94 in the estuary). The Blackwater Callows also hold Wigeon (average peak 2752), Teal (average peak 1316), Mallard (average peak 427), Shoveler (average peak 28), Lapwing (average peak 880), Curlew (average peak 416) and Black-headed Gull (average peak 396) (counts from 1994/95-95/96). Numbers of birds using the Blackwater Estuary, given as the mean of the highest monthly maxima over 20 years (1974-94), are Shelduck (137 +10 breeding pairs), Wigeon (780), Teal (280), Mallard (320 + 10 breeding pairs), Goldeneye (11-97), Oystercatcher (340), Ringed Plover (50 + 4 breeding pairs), Grey Plover (36), Lapwing (1680), Knot (150), Dunlin (2293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Black-headed Gull (4000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary are located in the Kinsalebeg area on the east of the estuary in Co. Waterford. The remainder are concentrated along the Tourig Estuary on the Co. Cork side.

The river and river margins also support many Heron, non-breeding Cormorant and Mute Swan (average peak 53, 1994/95-95/96 in the Blackwater Callows). Heron occurs all along the Bride and Blackwater Rivers - 2 or 3 pairs at Dromana Rock; c. 25 pairs in the woodland opposite; 8 pairs at Ardsallagh Wood and c. 20 pairs at Rincrew Wood have been recorded. Some of these are quite large and significant heronries. Significant numbers of Cormorant are found north of the bridge at Youghal and there are some important roosts present at Ardsallagh Wood, downstream of Strancally Castle and at the mouth of the Newport River. Of note are the high numbers of wintering Pochard (e.g. 275 individuals in 1997) found at Ballyhay quarry on the Awbeg, the best site for Pochard in County Cork.

Other important species found within the site include Long-eared Owl, which occurs all along the Blackwater River, and Barn Owl, a Red Data Book species, which is found in some old buildings and in Castlehyde west of Fermoy. Reed Warbler, a scarce breeding species in Ireland, was found for the first time in the site in 1998 at two locations. It is not known whether or not this species breeds on the site, although it is known to nearby to the south of Youghal. Dipper occurs on the rivers.

Landuse at the site is mainly centred on agricultural activities. The banks of much of the site and the callows, which extend almost from Fermoy to Cappoquin, are dominated by improved grasslands which are drained and heavily fertilised. These areas are grazed and used for silage production. Slurry is spread over much of this area. Arable crops are grown. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Habitats Directive Annex II animal species within it. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the Blackwater and its tributaries and there are a number of Angler Associations, some with a number of

beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. Other recreational activities such as boating, golfing and walking are also popular. Water skiing is carried out at Villierstown. Parts of Doneraile Park and Anne's Grove are included in the site: both areas are primarily managed for amenity purposes. There is some hunting of game birds and Mink within the site. Ballyhay quarry is still actively quarried for sand and gravel. Several industrial developments, which discharge into the river, border the site.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, overgrazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel.

Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively; furthermore it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.

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