

Comhairle Contae Chorcaí Cork County Council

Annabella,
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Co. Cork.

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Suíomh Gréasáin: www.corkcoco.ie



Environmental Protection Agency,
Office of Climate change and resource Unit,
Licensing Unit,
P.O. Box 3000,
Johnstown Castle Estate,
Co. Wexford.

22nd December 2009

Re: Waste Water Discharge Certification Application for the Agglomeration of Ballynoe

Dear Sir / Madam,

Please find enclosed Cork County Council's Waste Water Discharge Licence Application for the agglomeration of Ballynoe.

The following documentation is enclosed

- 1 Nr. signed original in hardcopy
- 1 Nr. copy in hardcopy
- 2 Nr. CD-ROM with all documentation in electronic searchable PDF
- 1 Nr. CD-ROM with AutoCAD, Excel Data, Table D.2 and Table E.3

The content of the electronic files is a true copy of the original hardcopy.

Signed:

Paddy O'Friel

S/Senior Engineer – Water Services



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.

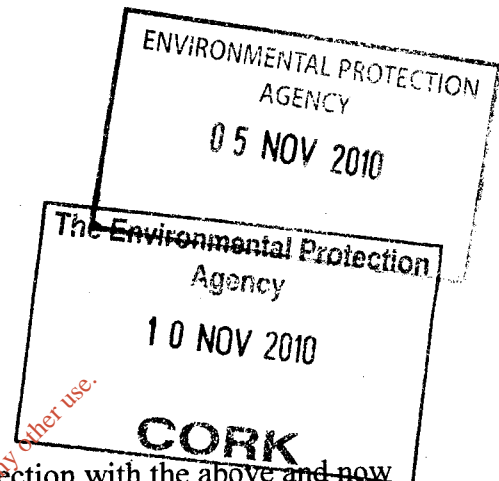
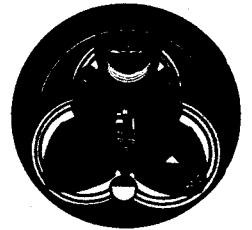
Phone: 022/54806
Email: june.white@corkcoco.ie

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Co. Cork.

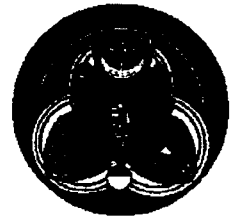
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Recycled

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.
Fóna: (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.

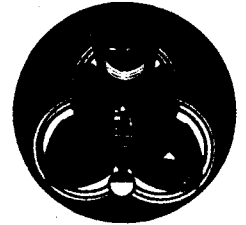
Yours faithfully,

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



Comhairle Contae Chorcaí Cork County Council

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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

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EPA Ref. N°:
(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:

A description of:

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

Supporting information should form **Attachment N° A.1**

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SECTION A: NON-TECHNICAL SUMMARY

Ballynoe village is situated approximately 16km southeast of Fermoy town, close to the Cork-Waterford border.

The Waste Water Works and the Activities Carried Out Therein

The wastewater in Ballynoe is collected in a partially separate foul sewerage drainage network. The wastewater from the village gravitates to the wastewater treatment plant.

Ballynoe WWTP is designed for a Population Equivalent (PE) of 770, which was commissioned in 2009. Activated Sludge is the process employed at the Ballynoe waste water treatment plant. Influent initially gravitates into the inlet works, consisting of an automatic and manual bypass. Following the screening of the raw sewerage, influent enters an inlet sump where influent is pumped to Aeration Tank. Following the aeration process effluent gravitates to the Clarifier Tank where settlement takes place. The solids settle while the supernatant flows out and discharges to the river. Sludge may be returned from the Clarifier Tank to the Aeration Tank and excess sludge is pumped to the Sludge Holding Tank as required and thereafter removed off site for disposal.

In the event of high storm flows effluent can overflow at the inlet sump to the underground concrete storm holding tank. Where the storm water abates influent can return to the inlet sump.

Currently the WWTP is receiving flows ranging from 54m³/d to 130m³/d, with an average DWF of 66m³/d entering the plant. Based average hydraulic load of 220l/d/p, the PE equates to 300.

Ballynoe WWTP is operated by Cork County Council. The plant is operated by a caretaker who duties also involves 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.

The sources of emissions from the waste water works

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

- Domestic population
- Commercial premises
- School & crèches

The sewerage from all commercial premises is collected via the public sewer and treated in conjunction with the domestic waste at the WWTP.

Currently the WWTP is receiving flows ranging from 54m³/d to 130m³/d, with an average DWF of 66m³/d entering the plant.

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

The final effluent is discharged to the Togher River, which is approximately 350m from the wastewater treatment plant site. The maximum flow to the WWTP is in the order of 130m³/d.

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

Technology

The WWTP has a sufficient number of standby pumps, automatic sample facilities, etc is provided to ensure continuation of the wastewater treatment.

The treatment works consists of the following elements:

- Automatic Screen
- Inlet Sump
- Aeration Tank
- Clarifier Tank
- Sludge Holing Tank
- RAS/WAS Pumps
- Ferric Dosing
- Outfall to Togher River

Techniques

The new WWTP shall be operated and managed in accordance with the Performance Management System, developed by the Water Service National Training Group (WSMTG) when required

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

A complete new WWTP was recently commissioned for the village, which replaced an old septic tank at accost of €0.5M

Currently there are no further works listed to be undertaken on Ballynoe WWTP on the Water Service Investment Programme

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 Environmental Department located in Mallow takes samples from the Togher River 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 new wastewater treatment plant is equipped with automatic samplers on the outlet lines.

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).

List of Attachments include the following:

- Location Map Scale 1:50,000
- Site Location Map of WWTP
- Site Layout

Attachment A1 Map 1
Attachment A1 Map 2
Attachment A1 Map 3

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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:	Ballynoe & Environs
-------------------------------	---------------------

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*:	Cork County Council
Address:	Northern Division
	Annabella
	Mallow
	Co. Cork
Tel:	022 21123
Fax:	022 21983
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*:	Paddy O'Friel
Address:	Northern Division
	Annabella
	Mallow
	Co. Cork
Tel:	022 21123
Fax:	022 21983
e-mail:	Paddy.ofriel@corkcoco.ie

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

Co-Applicant's Details

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

*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*:	Flannan Groarke
Address:	Cork County Council
	Ballynoe,
	Fermoy
	Co. Cork
Grid ref (6E, 6N)	193363E 089407N
Level of Treatment	Tertiary

*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	Surface Water
Type of Discharge	225mm pipe to River. Open Pipe
Unique Point Code	SW01- BYN
Location	350m southwest of WWTP
Grid ref (6E, 6N)	193004E 089248N

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	Not Applicable
Type of Discharge	Not Applicable
Unique Point Code	Not Applicable
Location	Not Applicable
Grid ref (6E, 6N)	Not Applicable

*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	Not Applicable
Unique Point Code	Not Applicable
Location	Not Applicable

Grid ref (6E, 6N)	Not Applicable
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Attachment B.5 should contain appropriately scaled drawings / maps ($\leq A3$) of storm water overflow point(s) associated with the waste water works, including labelled monitoring and sampling points associated with the discharge point(s). These drawings / maps should also be provided as geo-referenced digital drawing files (e.g. ESRI Shapefile, MapInfo Tab, AutoCAD or other upon agreement) in Irish National Grid Projection. This data should be provided to the Agency on a separate CD-Rom containing sections B.1, B.2, B.3, B.4, C.1, D.2, E.3 and F.2.

Attachment included	Yes	No
		√

B.6 Planning Authority

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

Name:	Cork County Council
Address:	Planning Department
	County Hall
	Carrigrohane Road
	Cork
Tel:	021 4276891
Fax:	021 48670007
e-mail:	planninginfo@corkcoco.ie

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

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

Local Authority Planning File Reference N^o:	
---	--

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:	Health Service Executive
Address:	North Cork Area Headquarters
	Goudshill
	Mallow, Co. Cork
Tel:	022 30200
Fax:	022 30211
e-mail:	gerry.oconnell@hse.ie

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	490
Data Compiled (Year)	2009
Method	Flow Data

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,
- the percentage of the projected p.e. to be contributed by the non-domestic activities, and
- the ability of the waste water works to accommodate this extra hydraulic and organic loading without posing an environmental risk to the receiving waters.

The current population equivalent being treated at Ballynoe WWTP is 300 based on hydraulic flow assessments.

All developments with granted planning permission and all developments under construction have been included in the agglomeration. The additional p.e due to the

granted planning permissions is estimated to be in the order of 190 p.e. There are no planning permissions in relation to non domestic activities.

With the completion of the recently commissioned 700 p.e WWTP the plant shall be capable of accommodating additional hydraulic and organic loading without posing an environmental risk to the receiving water.

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 €)
<500	€3,000

Appropriate Fee Included	Yes	No
		√ *

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

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.

Recently a new Wastewater Treatment was constructed for the agglomeration of Ballynoe at a cost of €0.5Million.

This project was constructed under the Small Schemes Programme & CLAR Programme. No works are listed to be carried out under the current Water Services Investment Programme 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.

General Description of the Wastewater Treatment Plant

OVERVIEW

The new Ballynoe Wastewater Treatment Plant includes the following elements:

- Inlet Works,
- Secondary Treatment Works,
- Sludge Holding Tanks,
- Outlet Works and Outfall,
- Control/Staff Facilities Building,
- Site Roads and Footpaths,
- Site Fencing,
- Access Road and incoming services,
- Landscaping.

Treatment Plant

The design population for the new wastewater treatment plant is 770 PE. The incoming flow to the treatment plant (max.: 12.76 l/s (6 DWF)) passes through the inlet screen and flows through the inlet flume. Having passed the flume the flow gravitates to the Forward Feed Pump Sump from which it is pumped forward for further biological treatment at a flow rate of 6.36 l/s (3DWF). Excess incoming flows > 3 DWF are diverted to a Storm Detention Tank. The aerated liquid flows into the Secondary Treatment Works. In the final settlement tank the heavy sludge settle to the bottom of the tank. This settled sludge is transferred to the Sludge Holding Tank. The reduction of phosphorus in the wastewater is achieved by means of chemical precipitation using Ferric Sulphate dosing.

The treated effluent through the Outlet Flume is discharged into the Togher river.

GENERAL

The control philosophy describes the general process control of the wastewater treatment plant.

All values of parameters issued by this process control description have to be checked and adjusted during the commissioning phase and approved by the process engineer.

SCOPE OF CONTROL PHILOSOPHY

This document only includes controls related directly to the operation of the treatment plant. Building facilities such as heating, lighting or other general equipment are not part of this description.

PLANT CONTROL & AUTOMATION

- **Basis**

The control and monitoring system for the treatment plant consists of a PLC controller.

The control is executed from the analogue and digital inputs received from the instruments and MCC drives.

• **Communication**

At the treatment plant all digital & analogue signals are wired to (PL-01). All the control panels are located in the control house at the treatment plant. Treatment plant is controlled through a control system.

INLET WORKS

Process Description

The Inlet Works consists of:

- 1 no. Haigh ACE Inlet Screening Unit (01-SC01).

ACE Screener:

The ACE Screener is a fully automated system that normally comprises of the following pieces of equipment. A Brush Screen, an ACE Pump, a Lipactor Station, a Control Panel, an ACE Gritter (if fitted) and the interconnecting pipework and fittings. The purpose of the ACE Screener is to separate the solid phase containing plastics, rags and wood from the organic matter in the flow. The organic matter is then returned to the flow and proceeds to the treatment beds in disintegrated state via a decant pipe, The solid end product is left relatively clean, dry and free of faecal matter and is suitable for disposal either in landfill or by incineration.

The Brush Screen: This comprises of two perforated screen plates (either 6mm or 3mm perforations). When the flow arrives at the screening unit solids larger than the screen perforations are retained on the screen whilst the flow passes through the plate. Solids build up on the screen which causes the level in the channel to rise. At a preset start level the system starts and the screen plates are swept clean by a brush. The brush is driven in a semi-rotary action by a geared drive unit, pushing the screenings into a hopper at the top of the screen plates. As the brush nears the hopper, it picks up a scraper which helps push the screenings into the hopper, as well as clean the brush.

The screen plates have a slot through the middle, which is connected to the hopper. This allows the liquor up-stream of the screen plates to go into the hopper, which gives the screenings a dilution and carriage medium. There is a sensor looking at the gear drive shaft, telling the control panel where the brush is. A flow control blade assembly is fitted to the screen outlet to which can be raised to reduce the differential across the screen.

The ACE Pump: This unit is mounted on a box at the back of the hopper. The box has a sluice blade with a long handle, to allow stones swept into the hopper to be released down stream. Disintegrating equipment is designed for use where the disintegration of sewage waste within a liquid medium is required to meet the necessary environmental standards. The disintegrators shear the waste into very small particles to comply with these principles. The disintegrator comprises of a cutter head mounted on the rotor shaft which is a spline/hub drive type connection to the motor. The cutterhead mechanism consists of a headstock rotating in contact with, and spring loaded against, a fixed shearplate. The mechanism shears the solids as they flow to the holes in the shearplate.

Liquor flow continues through the pipeline system bearing the reduced particles of effluent. The spring mechanism maintains contact between the headstock and shearplate, keeping the cutting edges sharp while compensating for wear. The shaft

rotates within an oil quench chamber which is protected from the liquid medium by use of a mechanical seal. Oil in the quench chamber keeps the seal faces cool.

The Lipactor Station: The Lipactor Station comprises of a separator mounted on pivots above a dewater chamber with a compactor tube mounted on the side of the stainless steel fabricated frame. This machine is used to separate the liquid and solid mixtures which have been sheared into small particles by the ACE Pump. For the purpose of definition the above is termed the "influent". Disintegrated screenings arrive from the

ACE Pump through the bottom entry into the Separator section. They are drawn up into the screen chamber during rotation by a motor driven rotor, revolving within conical perforated screens. This causes the solids to be pressed against the perforated screens by a centrifugal action. The spirals in the upper screen wind the separated solids up to the ejection flippers and prevent them being expelled too quickly. During separation the liquor will pass through the perforated screens and into the dewater chamber from where it flows into a decant pipe. The solids are ejected through the separator outlet aperture by the flippers to the compactor. The solids are moved up the perforated tube by a rotating auger which squeezes more liquid from them. The solids are then ejected into a Haigh CarriSkip or Wheelie Bin in the form of "cake". Any liquid removed at this stage is collected in a tray at the back of the dewater chamber and returned to the main flow by the decant pipe. Due to its sloping floor the dewater chamber drains automatically when the flow stops. As the screen surfaces and the number of holes in the screens are constant, the quantity of influent which is fed into the machine must be regulated in order to attain an appropriate separation effect.

This detail is of the utmost importance, because cake quality and the separation capacity, can only be influenced by the quantity of influent being delivered.

Cake which is too wet is an indication that either the flow into the separator is too great or that the screen require cleaning. During periods of low temperatures it is important to ensure that the Lipactor Station is operating sufficiently to prevent the influent from freezing. Should the screens blind and separation become ineffective, servicing will be required immediately. The machine will separate whatever quantity of influent is present in the separation cartridge. The higher the flow, the lower the separation effect, resulting in a wetter cake.

Separation is mainly dependent upon: Cleanliness and freedom from blinding of the screens. Wear on the rotor blades and screens.

In operation, when influent is flowing into the liquid separator there will always be a working level present at the separator cartridge. The separator and cover, pivot on mountings above the dewater chamber which is counter balanced for safe movement, with a back latch to secure the separator in service position.

Safety/Warning labels are attached to this machine, all MUST be observed and kept completely legible at all times.

Hand rake Bypass Screen: The ACE Screener is supplied with a static bypass screen to provide limited screening of the flow in the event of either mechanical or power failure.

This screen is a separate screen for channel mounted installations. The screen is supplied with a hand rake to enable the screenings to be manually raked into a collection tray from where they can either be removed or fed back into the main flow for processing when the plant returns to normal operation. The screen should be kept clear from debris and screenings by raking as and when required.

Control Philosophy

The control of the ACE Screener is achieved with the use of a Control Panel and Ultrasonic Level Probe.

Normal Cycle: The screening unit is fitted with an Ultrasonic level sensor upstream of the unit. At a level approximately 200mm above the channel invert the ACE Pump, Liquid Separator & Lipactor will start and run for a set period, which is adjustable, but initially set at 30 seconds. The ACE Pump will then stop and the Liquid Separator & Lipactor run on for 10 seconds before the Liquid Separator stops. The Lipactor, then runs for a further 10 seconds before stopping. The ACE Pump, Liquid Separator & Lipactor will repeat this operation after a delay of 3 minutes, providing the level in the channel has not dropped to the stop level, set at approximately 180mm above the channel invert, but adjustable to suit site conditions. When the ACE Pump, Liquid Separator & Lipactor start, there is a delay, which is adjustable, but initially set at 45 seconds before the Brush Screen starts. The Brush Screen will continue to operate in the forward mode until the level in the channel drops to the stop level. On reaching the stop level the Brush Screen will continue to operate in the forward mode for a 40 second period, then stop and wait for 5 seconds and then start in the reverse mode for 30 seconds. After operating in reverse for 30 seconds, the brush will stop for 5 seconds, then operate in the forward mode again for 30 seconds. The Brush will then park above the flow, which is detected by a proximity switch fitted within the screener unit.

Continuous Run Cycle: If the upstream level remains above the stop level for 10 minutes, the Brush screen stops for 5 seconds, then reverses for 30 seconds and stops.

It then operates in the forward mode until the stop level is reached and the cycle continues as highlighted above.

Storm Cycle: If the upstream level continues to rise to the next setting on the Ultrasonic Level Controller, the ACE Pump, Liquid Separator & Lipactor start and run for 7 minutes.

The ACE Pump will then stop and the Liquid Separator & Lipactor run on for 10 seconds before the Liquid Separator stops. The Lipactor then runs for a further 10 seconds before stopping. During the 7 minute run, if the level falls to below the OFF level on the

Ultrasonic Level Controller, the ACE Pump stops immediately and the Liquid Separator & Lipactor run on for 10 seconds before the Liquid Separator stops. The Lipactor then runs for a further 10 seconds before stopping.

Frost Cycle: The screening unit is fitted with a frost stat, set at -2 degrees C. When the ambient temperature is less than -2 °C, the ACE Pump, Liquid Separator, Lipactor and Brush Screen start and run for 1 minute and stop. This

operation is repeated every 20 minutes providing the temperature is still low. When the temperature rises above -2 degrees C, the ACE Pump, Liquid Separator/Lipactor and Brush Screen stop and revert to normal operation. If during the frost cycle the level in the channel rises to the start level, the system operates as normal.

Interlock System: The Liquid Separator/Lipactor and Brush Screen guards are fitted with guard interlock switches to prevent the units running when either guard is raised for maintenance, the local isolators are off, or the emergency stops are pressed. In any of the above conditions all sections of the ACE Screener will be inhibited from operating.

INLET FLUME

Process Description

The phosphorus removal system consists of:

- 1 no. U/S Level Sensor (02-US01),
- 1 no. Sampler (02-SA01).

Inlet Flume:

Passing the Inlet Works the flow gravitates through the inlet flume prior to enter the

Forward Feed Pumping Station. The flow rate is indicated and recorded by the ultrasonic level sensor (02-US01) installed over the outlet flume. The influent quality is monitored by a Sampler (02-SA01) installed adjacent to the flume. Samples can be taken on either a timed basis or a flow proportional basis to suit site requirements.

The level measuring equipment and quality sampling system work automatically.

FORWARD FEED PUMPING STATION

Process Description

Forward Feed Pumping Station consists of:

- 2 no. Forward Feed Pump (03-P01 & 03-P02),
- 1 no. U/S Level Sensor (03-US01).

Pumping Station:

Passing the Inlet Flume flow enters the Forward Feed Pumping Station. The flow that is collected in the wet well sump is pumped by 2 No. of forward feed pumps (03-P01, 03-P02) forward to the Biological Treatment Unit. Each pump has a capacity of 6.36 l/s (3DWF). The pumps operate on a duty/standby arrangement.

The start/stop of pumps are controlled by the U/S level sensor (03-US01) installed in the sump.

The Forward Feed Pumping Station operates as both a forward feed pumping chamber and detention tank. In the event of an overflow of the wet well the flow enters to the storm holding tank by gravity. The pump sump and the Storm Detention Tank have a combined storm water holding capacity of 54m³ (respectively 18.1 m³+36 m³).

The Forward Feed Pumping Station is capable of total automatic operation by means of a programmable controller.

Automatic Operation

Foul Pumps (03-P01 & 03-P02)

- The duty pump starts when the cut-in level for the duty pump is reached. Level in foul wet well is monitored by a level sensor (03-US01).
- The duty pump stops when the cut-out level for the duty pump is reached.
- If the duty pump fails to start the standby pump becomes the duty pump.
- The duty/ standby arrangement alternates every 8 hours.
- The operator monitors the pumps through the control system

Manual Operation

Foul Pumps (03-P01 & 03-P02)

- The pumps can be controlled by the operator from the local control panel by selecting "Hand" on the selector switch "Hand – Off – Auto" to run the pumps and selecting "Off" to stop the pumps.

Hardwired Interlocks

The pumps can be stopped / disabled by a hardwire signal from:

- Over Current
- Emergency Stop Button
- Any other device specified by the supplier.

STORM DETENTION TANK

Process Description

The Storm Detention Tank consists of:

- 1 no. Venturi Pump (04-P01),
- 1 no. U/S Level Sensor (04-US01).

Storm Detention Tank:

During storm flows to the works, stormwater accumulates in the forward feed pumping sump. In the event of overflow of the forward feed pump sump the flow gravitates to the Storm Detention Tank which has a capacity of 36m³. Complete with the forward feed pumping chamber the total combined storm water holding capacity is 54m³. When the storm conditions subside the content of the storm holding tank gravitates back to the forward feed pumping station through a flap valve installed in the pump sump. In the event of an overflow of the Storm Detention Tank the excess flow leaves the tank through the emergency overflow.

When the liquid level monitored by a U/S Level Sensor (04-US01) in the Storm Storage Tank reaches the pre-set level an automatic tank cleaning cycle is initiated. This system consists of 1 no. Venturi Pump (04-P01). The cleaning system operates only during the draining process of the tank. In operation the complete system ejects a water-air mixture at high velocity parallel to the tank floor effecting sufficient turbulence within the whole tank to maintain sludge particles in suspension during the draining process thereby providing a brush clean finish to the walls and floor of the tank. When the liquid level in the tank reaches a pre-set level the cleaning system turns off. Dry venturi pump running is prevented by the U/S Level Sensor.

The Storm Tank is capable of total automatic operation by means of a programmable

controller.

Automatic Operation

Venturi pump:

- When the storm condition subsides, as detected by a falling level in the tank, and the water level in the tank is above the minimum level measured by the U/S level sensor (04-US01) the venturi pump starts and runs until the liquid level reaches a preset low level.

Manual – Auto Operation

Venturi pump:

- The operator starts the cleaning cycle through control system.

Manual Operation

Venturi pump:

- The operator selects “manual mode” on the selector switch and starts/stops the pump manually.

Hardwired Interlocks

Venturi pump:

The pump can be stopped / disabled upon a hardwire signal from:

- Over current.
- Low water level.
- Earth fault.

AERATION TANK

Process Description

The Aeration Tank consists of:

- 2 no. Air Blowers (05-AB01 & 05-AB02),
- 1 no. Dissolved Oxygen Probe (05-DO01).

Aeration Tank:

The waste water is pumped from the Forward Feed Pumping Station to the Aeration

Tank which purpose is to allow the activated sludge break down the effluent, assisted by the presence of oxygen induced by the duty air blower. 2 no. blowers (05-AB01 & 05- AB02) are installed adjacent to the Aeration Tank and deliver air through fine bubble air diffusers installed on the base of the aeration tank. These air blowers work on a duty/ standby bases. The quantity of air being delivered to the basin can be controlled by the adjustment of the performance of the duty air blower proportional to the dissolved oxygen concentration of the liquid measured by 1 no. dissolved oxygen probe (05-DO01) installed in the tank. The blowers work on a VSD. The fine bubble diffused aeration system maintains the DO level in the aeration tank at a set point (To be set during commissioning). The aerated Mixed Liquor overflows a bell mouth in the aeration tank and flows by gravity to the in the Final Settlement Tank.

The Aeration Tank is capable of total automatic operation by means of a programmable controller.

Automatic Operation

Blowers (05-AB01 & 05-AB02):

- In the event of a low dissolved oxygen level in the Aeration Tank as monitored by (05-DO01) the duty blower ramps up.

- In the event of a high dissolved oxygen level in the Aeration Tank as monitored by (05-DO01) the duty blower ramps down.

Manual – Auto Operation

Blowers (05-AB01 & 05-AB02):

- Operator starts blowers based on observed conditions.

Manual Operation

Blowers (05-AB01 & 05-AB02):

- Operator controls the blowers by manually selecting Hand mode on selector switch

“Hand – Off – Auto”.

Note: This mode is not recommended and plant should not be left unattended while in hand mode

Hardwired Interlocks

Air Blowers (05-AB01 & 05-AB02):

The blowers can be stopped / disabled by a hardwire signal from:

- Over Current
- Emergency Stop Button

CLARIFIER, RAS/WAS PUMPING STATION

Process Description

The Clarifier and the RAS/WAS Pumping Station consist of:

- 1 no. Clarifier Tank,
- 1 no. Drive Motor (06-M01),
- 1 no. Scum Pump (06-P01),
- 2 no. RAS/WAS Pumps (06-P02 & 06-P03).

Final Settlement Tank, RAS/WAS Pumping Station:

The Flow enters from the aeration tank to the Final Settlement Tank. The heavy sludge in the waste water falls to the bottom of the tanks. The tank is fitted with a scraper mechanism attached to a rotating half bridge that directs settled sludge on the floor of the tanks to the sludge hoper. The travelling bridge on the tank is operated by a drive motor (06-M01). From the sludge hoper the sludge is pumped forward by pumps (06-P02 & 06-P03) to the Aeration Tank or periodically to the Sludge Holding Tank for further treatment. These pumps operate on a duty/standby basis. The pumps are controlled by a VSD located in the panel. The operator will determine the sludge return rate. Scum on the surface of the liquor is directed to a scum collection box by a scraper on the top of the half bridge. From the collection box it is pumped by 1 no. pump (06-P01) to the Sludge Holding Tank.

Control Philosophy

The Final Settlement Tank, RAS/WAS Pumping Station are capable of total automatic operation by means of a programmable controller.

Automatic Operation

Drive Motor:

- The drive motor operates continuously.

RAS/WAS Pumps:

- Automatic pump control is obtained by PLC.

Manual – Auto Operation

Drive Motor:

- The operator controls the motor through control system.

RAS/WAS Pumps:

- The operator controls the pumps through control system.

Manual Operation

Drive Motor:

- The operator selects "manual mode" on the selector switch and starts/stops the motor manually.

RAS/WAS Pumps:

- The operator selects "manual mode" on the selector switch and starts/stops the pumps manually.

Hardwired Interlocks

Drive Motors, RAS/WAS pumps:

The above units can be stopped / disabled upon a hardwire signal from:

- Over current.
- Earth fault.
- Any other protection device as specified by supplier.

SLUDGE HOLDING TANK

Process Description

The Sludge Holding Tank consists of:

- 1 no. Odour Control Unit (07-OCU01)

Sludge Holding Tank:

Flow enters the sludge holding tank from the RAS/WAS pumps and the scum pump in the clarifier. The contents of the tank are allowed to thicken through the separation of the clear liquid and sludge by gravity.

Clear liquid at the top of the tank overflows through a high level decant pipe or is manually decanted at a lower level. This liquor is then returned to the Forward Feed Pumping Station.

A passive odour control unit (07-OCU01) is operated by natural air displacement through the unit.

The Bauer coupling at the base of the tank allows for decant using a mobile tanker.

OUTLET FLUME

Process Description

The Outlet Flume consists of:

- 1 no. U/S Level Sensor (08-US01),
- 1 no. Sampler (08-SA01).

Outlet Flume:

Clarified effluent flows from the clarifier through the outlet flume prior to discharge to the Toghher River. The flow rate to discharge is indicated and recorded by the ultrasonic level sensor (08-US01) installed over the outlet flume. Final effluent quality is monitored by a Sampler (08-SA01) installed adjacent to

the flume. Samples can be taken on either a timed basis or a flow proportional basis to suit site requirements.

FERRIC DOSING SYSTEM

Process Description

The phosphorus removal system consists of:

- 1 no. Bunded Chemical Storage Tank,
- 2 no. Chemical Dosing Pumps (09-P01 & 09-P02).

Dosing System:

The installed system is used for the precipitation of phosphorus with the addition of chemicals. The coagulants stored in the bunded storage tank are pumped to the dosing location by 2 no. dosing pumps (09-P01 & 09-P02). These pumps work on a duty/standby bases. The dosing location can be found at the Aeration Tank. The ferric dosing system is located in the dosing room in the Control Building.

Automatic Operation

- The dosing plant is designed to be fully automatic. The dosing pumps run when the forward feed pumps run. The dose rate is set by the operator.

Manual – Auto Operation

- None.

Manual Operation

- None.

Hardwired Interlocks

The pumps can be stopped / disabled by a hardwire signal from:

- Over Current
- Any other device specified by the supplier.

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.

There are no storm overflows located within the agglomeration.

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.

Pumping Stations:

The Forward Feed Works:

- Number of duty and standby pumps: 2 Nr Pumps duty/standby
- The measures taken in the event of power failure: Overflow to the adjacent storm tank
- Details of storage capacity at each pump station; The pump sump and the Storm Detention Tank have a combined storm water holding capacity of 54m³ (respectively 18.1 m³+36 m³).
- Frequency and duration of activation of emergency overflow to receiving waters. Clarify the location where such discharges enter the receiving waters: There are no emergency overflows.

Church View Estate Pumping Station:

- Number of duty and standby pumps: 2 Nr pumps duty/standby
- The measures taken in the event of power failure: Influent from the 8 houses which discharge to the sump, fill the sump & back up the sewer line.
- 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 are no emergency overflows.

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.

There are no independently owned/operated private waste water treatment plants operating within the agglomeration.

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
SW-01 - BYN	Primary	Cork County Council	River	Togher	U/S of Salmonid River	193004	089248

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/.

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/.

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.

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.

Lab Sampling and testing is done in accordance with 'Sampling Methods for examination of water and wastewater' 18th edition 1992.

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
SW01	Primary	SAMPLING	193363	089407	N
aSW01u	u/s	Sampling	193125	089004	N
aSW01d	d/s	Sampling	192759	089571	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.
- 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.
- 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.
- 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 that apply in relation to the receiving surface or groundwater.

- 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.
 - 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.
 - 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)
- 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.**

The plant is performing satisfactorily at present and operating within the requirements of the following legislation. As the plant and the pumping station has been recently upgraded there are no improvements planned at present for the Ballynoe Wastewater Treatment Plant.

Water Quality Standards

The Water Framework Directive (WFD) aims to establish an integrated approach to water protection, improvement and sustainable use. In order to achieve the requirements of the WFD, Ireland has been divided into a number of River Basin Districts or management units. The South Western River Basin District (SWRBD) comprises substantially the counties of Cork and Kerry, all of Cork City, and also parts of counties Limerick, South Tipperary and Waterford.

The Toghher River is included in the SWRBD. The overall objectives of the SWRBD project include the following:

- Strengthen compliance with EU Directives and national legislation
- Collect and analyse information to determine water quality and identify possible threats to water status
- Prevent further deterioration and protect/enhance water quality
- Develop a programme of measures to address all significant pressures and sources of impact on aquatic ecosystems and groundwater
- Encourage and facilitate public participation including the maintenance of a project website
- Promote sustainable water use

In order to achieve these objectives the following project tasks have been identified:

- Identify pressures on water bodies and assess risk of not achieving compliance with the Water Framework Directive
- Prepare a Characterisation Report
- Identify Heavily Modified (HMWB) and Artificial Water Bodies (AWB)
- Establish risk to waters from Hazardous Substances
- Establish data management system and GIS
- Prepare programme of measures
- Review of monitoring needs
- Design monitoring programme
- Prepare River Basin Management Strategy
- Assist public participation in the project
- Prepare printed reports
- Assist capacity building

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

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

The SWRBD has proposed water quality standards for the Toghher River under a water quality / catchments management plan. This water body has been given Moderate status. As there is no chemical or biological monitoring data available for this river the status has been extrapolated from nearby waterbodies with similar attributes.

The River Basin Management System currently being developed will include a programme of measures and a River Basin Management Strategy, designed to achieve at least good status for all waters by 2015, and to maintain high status where it exists. Therefore discharges from Ballynoe Wastewater Treatment Plant

cannot cause deterioration in good water quality under the Water Framework Directive at present.

The Togher River is not a designated Shellfish area under the Shellfish Waters Regulations, S.I.200 of 1994. The River Blackwater, into which the River Bride flows, is also not designated under these regulations. The Togher River is a tributary of the River Douglas which in turn is a tributary of the River Bride.

The Togher River is not designated a Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988, however the River Bride and River Blackwater which the Togher River joins, is designated Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988.

The Togher River is not designated a Bathing Water under the Bathing Water Regulations, S.I. 178 of 1998 as amended.

The Togher River is not a designated Sensitive Area under the Urban Wastewater Treatment Regulations 2001 (S.I. 254 of 2001). The River Blackwater downstream of Mallow Railway to Ballyduff Bridge is a designated Sensitive Area. This is not within 2km of any discharge point from Ballynoe Wastewater Treatment wastewater works.

Water is not abstracted from the Togher River.

Areas of Conservation

The Department of the Environment, Heritage and Local Government is responsible for the designation of conservation sites in Ireland. It is required under European law and national laws to conserve habitats and species, through designation of conservation areas under Special Areas of Conservation, Natural Heritage Areas and Special Protected Areas.

Special Areas of Conservation

Candidate Special Areas of Conservation (cSACs) are protected under the European Union (EU) Habitats Directive (92/43/EEC), as implemented in Ireland by the European Communities (Natural Habitats) Regulations, 1997.

The Blackwater River cSAC (Site Code: 002170) is very large, extending from the tidal estuary of the river at Youghal Co. Cork to the upper tributaries and their flood plains, in Cos. Cork Kerry, Limerick, Tipperary and Waterford.

The cSAC is designated on the basis of the presence of a large number of EU Habitats Directive Annex 1 habitats and Annex 2 species. Many of these are estuarine habitats and species found only in the lower reaches of the River Blackwater, however a number may be present in the Togher River section of the cSAC including, for example the Annex 1 habitats, 'alluvial wet woodlands', 'floating river vegetation', and 'old oak woodlands'; and the Annex 2 species sea lamprey, river lamprey, brook lamprey, Atlantic salmon, freshwater pearl-mussel and otter.

The Blackwater River Site Synopsis is included in this attachment.

Natural Heritage Areas

The Togher River does not flow through a Proposed Natural Heritage Areas (NHA). Natural Heritage Areas are the basic designation for wildlife. An NHA is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection.

Under the Wildlife Amendment Act 2000, NHAs are legally protected from damage from the date they are formally proposed for designation.

Special Protected Areas

Special Protection Areas (SPAs) are designated in order to safeguard certain habitats pursuant to EU Directive requirements. The EU Birds Directive (79/409/EEC) requires designation of SPAs for listed rare and vulnerable species, migratory species and wetlands.

No designated special protected areas are located along the Togher River. There are areas of the River Blackwater that are designated SPAs, however these are located downstream of Fermoy and therefore greater than 2km from all discharge points.

Receiving Water Quality Requirement

Water Quality analysis data for the Togher River was obtained from Cork County Council. There are no EPA stations upstream of the discharge point along the Togher River, however the EPA takes 1 samples along the river Togher and 1 Nr sample along the Douglas River, downstream of the discharge point. These stations are the flowing:

- Br West of Ballynoe (Togher Bridge) – 350m downstream of discharge
- Br South West of Killavarilly (Athnafofa Bridge) – 4.0km downstream of discharge – Douglas River

Table F1-1: Biological Quality Rating for River Togher –Downstream of Discharge

Sampling Location	EPA Biological Quality Rating (Q values)		
	1995 -1997	2001 – 2003	2006
Br West of Ballynoe	3-4	3	3-4
Br South West of Killavarilly	4	4	ND

The Royal Commission in its report on Water Quality Guidelines recommends that "in all circumstances effluent discharges which are calculated to raise the BOD of the receiving water, outside the mixing zone, by more than 1 mg/l should be discouraged". The average existing background level for BOD is estimated at 1mg/l. Therefore the receiving water limiting value for BOD for this river is 2mg/l.

The standard water quality requirements for dangerous substances are based on the Water Quality (Dangerous Substances) Regulations 2001.

Hence, the principal receiving water quality requirements are given in Table 3 below: -

Table F1-2: Receiving Water Quality Limiting Values

Parameter	Water Quality Standard (mg/l)
Chromium	30
Copper	30
Lead	10
Nickel	50
Zinc	100

Based on Hardness of receiving waters >100mg/l CaCO3

Effluent Standards

The treated effluent quality requirements shown in the table below are determined with respect to the EC Urban Wastewater Directive, given effect in Irish Law by S.I.254 of 2001.

Table F1-3: Minimum Effluent Standards based on S.I.254 of 2001 and Recorded Effluent Concentrations

Parameter	Effluent Standards (mg/l)	Actual Concentrations* (mg/l)
Biological Oxygen Demand (BOD)	25	16.5
Suspended Solids (SS)	35	12

*Actual Concentration is the average effluent concentrations recorded at the outlet of the WWTP by Cork County Council Wastewater Laboratory during the period Aug '08 to Nov '09. The August results are from the old septic tank treatment unit, which has since been replaced by the new WWTP.

From Table 3 above, it is evident that treated effluent from the Ballynoe wastewater treatment plant is compliant with the quality of effluent standards set out in the above legislation.

Please Note That Ballynoe WWTP was commissioned in end of October 2009. Results below are based on the effluent arising from the new WWTP.

a) **Mass Balance Equation for Orthophosphate:**

Median flow of River = 0.355 sec
 Median oPO₄-P in River (upstream) = 0.09mg/L

Average volume of discharge = 0.002 m³/sec
 Median value for oPO₄-P in discharge = 0.4mg/l

$$C_{\text{final}} = \frac{(.355 \times .09) + (0.002 \times 0.4)}{0.355 + 0.002}$$

$$C_{\text{final}} = 0.092 \text{ mg/L oPO}_4\text{-P}$$

The increase in Orthophosphate due to the discharge is 0.02 mg/L

b) **Mass Balance Equation for BOD:**

Flow of River (95%) = 0.06 m³/sec

Average BOD in River (upstream) = 2 mg/L

Average volume of discharge = 0.002 m³/sec

Average BOD in discharge = 2 mg/L

$$C_{\text{final}} = \frac{(0.06 \times 2) + (0.002 \times 2)}{0.06 + 0.002}$$

$C_{\text{final}} = 2.00$ mg/L BOD

The increase in BOD due to the discharge is 0 mg/L.

c) **Mass Balance Equation for Suspended Solids:**

Flow of River (95%) = 0.06 m³/sec

Average Suspended Solids in River (upstream) = 10mg/L

Average volume of discharge = 0.002 m³/sec

Average Suspended Solids in discharge = 2 mg/L

$$C_{\text{final}} = \frac{(0.06 \times 10) + (0.002 \times 2)}{0.06 + 0.002}$$

$C_{\text{final}} = 9.74$ mg/L Suspended Solids

The increase in Suspended Solids due to the discharge is 0mg/L.

d) **Mass Balance Equation for Total Phosphate:**

50% Median flow of River = 0.355 m³/sec

Median TPO₄-P in River (upstream) = 0.115 mg/L

Average volume of discharge = 0.002 m³/sec

Median TPO₄-P in discharge = 0.5 mg/L

$$C_{\text{final}} = \frac{(0.355 \times 0.115) + (0.002 \times 0.5)}{0.355 + 0.002}$$

$C_{\text{final}} = 0.118$ mg/L TPO₄-P

The increase in Total Phosphate due to the discharge is 0.003mg/L

e) **Mass Balance Equation for Total Nitrogen:**

Flow of River (95%) = 0.06 m³/sec

Average Total Nitrogen in River (upstream) = 5.55mg/L

Average volume of discharge = 0.002 m³/sec

Average Total Nitrogen in discharge = 7.22 mg/L

$$C_{\text{final}} = \frac{(0.06 \times 5.55) + (0.002 \times 7.22)}{0.06 + 0.002}$$

C_{final} = 5.60 mg/L Total Nitrogen

The increase in Total Nitrogen due to the discharge is 0.05 mg/L.

f) **Mass Balance Equation for Sulphate:**

Flow of River (95%) = 0.06 m³/sec

Average Sulphate in River (upstream) = 30 mg/L

Average volume of discharge = 0.002 m³/sec

Average Sulphate of discharge = 30 mg/L

Average Sulphate in River (downstream) = 30 mg/L

C_{final} = 30mg/L Sulphate

The increase in Sulphate due to the discharge is 0mg/L.

g) **Mass Balance Equation for Ammonia-N:**

Flow of River (95%) = 0.06m³/sec

Average Ammonia-N in River (upstream) = 0.05 mg/L

Average volume of discharge = 0.002 m³/sec

Average Ammonia-N in discharge = 0.1 mg/L

Average Ammonia-N in River (downstream) = 0.05mg/L

$$C_{\text{final}} = \frac{(0.06 \times 0.05) + (0.002 \times 0.1)}{0.06 + 0.002}$$

C_{final} = 0.081 mg/L Ammonia

The increase in Ammonia due to the discharge is 0.031mg/L.

Assimilative Capacity Calculations were not performed for the following parameters, as the substances were below the limit of detection in the upstream samples, in the discharge samples and in the downstream samples:

- (a) Chromium
- (b) Copper
- (c) Lead
- (d) Nickel
- (e) Cadmium
- (f) Barium
- (g) Boron
- (h) Zinc
- (i) Fluoride

Discharges in proximity of Wastewater Works

Water quality analysis data presented in Tables 4 & 5 below was recorded by Cork County Council wastewater laboratory and covers a sampling period from Dec 2008 to Jan 2009.

Table F1-4: Upstream Water Quality

Parameter	Upstream Monitoring Station	
	26/08/09	18/11/09
Ph	7.3	7.3
BOD	2.1	2
SS	15	5
Ammonia	0.1	0.05
Ortho-Phosphate	0.11	0.07

Table F1-5: Downstream Water Quality

Parameter	Upstream Monitoring Station	
	26/08/09	18/11/09
Ph	7.2	7.3
BOD	5.5	2
SS	12	6
Ammonia	1.2	0.05
Ortho-Phosphate	0.3	0.05

The data in the above tables confirms the wastewater discharge has little effect on the overall river quality and since the upgrade of the WWTP, results have improved the downstream water quality.

Appropriate Assessments

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'.

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_VOL	PT_CD	DIS_DS	EASTING	NORTHING	VERIFIED
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

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.

There are no drinking water abstraction points downstream or downgradient of the discharge point.

Attachment F.2 should contain any supporting information.

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).

The plant is operating satisfactory at present and is operating within the requirements of the relevant legislation, outlined above. Recent improvements include the construction and commissioning of the new 700PE WWTP.

Water Framework Directive 2000/60/EC

The Water Framework Directive (WFD) aims to establish an integrated approach to water protection, improvement and sustainable use. In order to achieve the requirements of the WFD, Ireland has been divided into a number of River Basin Districts or management units. The South Western River Basin District (SWRBD) comprises substantially the counties of Cork and Kerry, all of Cork City, and also parts of counties Limerick, South Tipperary and Waterford.

The overall objectives of the South Western River Basin District project include the following:

- *Strengthen compliance with EU Directives and national legislation*
- *Collect and analyse information to determine water quality and identify possible threats to water status*
- *Prevent further deterioration and protect/enhance water quality*
- *Develop a programme of measures to address all significant pressures and sources of impact on aquatic ecosystems and groundwater*
- *Encourage and facilitate public participation including the maintenance of a project website*
- *Promote sustainable water use*

In order to achieve these objectives the following project tasks have been identified:

- *Identify pressures on water bodies and assess risk of not achieving compliance with the Water Framework Directive*
- *Prepare a Characterisation Report*

- Identify Heavily Modified (HMWB) and Artificial Water Bodies (AWB)
- Establish risk to waters from Hazardous Substances
- Establish data management system and GIS
- Prepare programme of measures
- Review of monitoring needs
- Design monitoring programme
- Prepare River Basin Management Strategy
- Assist public participation in the project
- Prepare printed reports
- Assist capacity building

There are no EPA stations upstream of the discharge point along the Togher River, however the EPA takes 1 samples along the river Togher and 1 Nr sample along the Douglas River, downstream of the discharge point. These stations are the flowing:

- Br West of Ballynoe (Togher Bridge) – 350m downstream of discharge
- Br South West of Killavarilly (Athnafola Bridge) – 4.0km downstream of discharge – Douglas River

Table G1-1: Upstream Water Quality

Parameter	Upstream Monitoring Station	
	26/08/09	18/11/09
Ph	7.3	7.3
BOD	2.1	2
SS	15	5
Ammonia	0.1	0.05
Ortho-Phosphate	0.11	0.07

Table G1-2: Downstream Water Quality

Parameter	Upstream Monitoring Station	
	26/08/09	18/11/09
Ph	7.2	7.3
BOD	5.5	2
SS	12	6
Ammonia	1.2	0.05
Ortho-Phosphate	0.3	0.05

The data in the above tables confirms the wastewater discharge has little effect on the overall river quality.

Birds Directive 79/409/EEC

Special Protection Areas (SPAs) are designated in order to safeguard certain habitats pursuant to EU Directive requirements. The EU Birds Directive (79/409/EEC) requires designation of SPAs for listed rare and vulnerable species, migratory species and wetlands.

No designated special protected areas are located along the Togher River. There are areas of the River Blackwater which are designated SPAs however these are located downstream of Fermoy and therefore, greater than 2km from all discharge points.

Groundwater Directives 2006/118/EC

The Groundwater Directive 2006/118/EC has been developed in response to the requirements of Article 17 of the Water Framework Directive: Strategies to prevent and control pollution to groundwater. Groundwater Quality standards are to be established by the end of 2008.

Ballynoe (Well) is the closest PWS that utilise ground water for medium sized water supplies. This located approximately 2.2km from the discharge point.

With the proper mitigation measures in place the operation of the wastewater treatment plant does not have any significant negative impacts on the existing groundwater.

Drinking Water Directives 80/778/EEC

There are no areas along the Togher River or River Blackwater downstream of Ballynoe WWTP designated for the abstraction of water intended for human consumption.

Urban Waste Water Treatment Directive 91/271/EEC

The Urban Wastewater Treatment Regulations (S.I. 254 of 2001) gives effect to provisions of the Urban Wastewater Treatment Directive (91/271/EEC). The 2001 Irish Regulations cover the various requirements in relation to the collection and treatment of urban wastewater.

Article 4(1)(c) states that "In the case of urban wastewater entering collecting systems, a sanitary authority shall provide treatment plants, which provide for secondary treatment or an equivalent treatment by 31 December 2005 in respect of all discharges to freshwaters and estuaries from agglomerations with a population equivalent of between 2,000 and 10,000."

The Ballynoe Wastewater Treatment Plant was commissioned in 2009 and was designed to treat effluent to a 25/35ppm standard.

The Second Schedule (Part 1) of the 2001 Regulations states that effluent should be treated to the following standards.

Table G1-3: Minimum Effluent Standards based on SI 254 of 2001

Parameter	Conc. (mg/l)	Minimum Percentage of Reduction
Biochemical Oxygen Demand (BOD)	25	70 - 90
Chemical Oxygen Demand (COD)	125	75
Suspended Solids	35	90

The aeration and clarifying plant at the new Ballynoe wastewater treatment plant is treating effluent to a high standard. Efficiencies of BOD, COD and SS removal for the plant is typically in excess of 85%. The effect of the discharges on the quality of the receiving waters is assessed in Attachment F1.

The Third Schedule of the 2001 Regulations gives a list of Sensitive areas.

Article 4(2)(a) states that all discharges into Sensitive Areas require more stringent treatment than secondary treatment. The Togher River is not a designated Sensitive Area. The River Blackwater downstream of Mallow Railway Bridge to Ballyduff Bridge is designated a Sensitive Area. This is not within 2km of any discharge point from the Ballynoe wastewater treatment works.

The Fifth Schedule of the 2001 Regulations gives a methodology for monitoring the final effluent from the wastewater treatment plant. Item 3 states "The minimum annual number of samples shall be determined according to the size of the treatment plant and be collected at regular intervals during the year." For a PE of between 2000-9999 4 samples should be taken each year. Cork County Council wastewater laboratory carries out regular testing at the outlet of the treatment plant.

Shellfish Directive 79/923/EEC

The Togher River is not a designated Shellfish Area under the Shellfish Waters Regulations, S.I. 200 of 1994. The River Blackwater, into which the River Bride flows (after joining the Douglas & Togher River), is also not designated under these regulations.

Habitats Directive 92/43/EEC

Candidate Special Areas of Conservation (cSACs) are protected under the European Union (EU) Habitats Directive (92/43/EEC), as implemented in Ireland by the European Communities (Natural Habitats) Regulations, 1997.

The Blackwater River cSAC (Site Code: 002170) is very large, extending from the tidal estuary of the river at Youghal Co. Cork to the upper tributaries and their flood plains, in Cos. Cork Kerry, Limerick, Tipperary and Waterford.

The cSAC is designated on the basis of the presence of a large number of EU Habitats Directive Annex 1 habitats and Annex 2 species.

The Blackwater River Site Synopsis is included in this attachment.

Environmental Liabilities Directive 2004/35/EC

The Environmental Liability Directive is about preventing and remedying environmental damage. It aims to hold operators whose activities have caused environmental damage financially liable for remedying this damage, and it aims to hold those whose activities have caused an imminent threat of environmental damage liable for taking preventive actions.

Cork County Council Wastewater Laboratory carries out monitoring of the effluent from the wastewater treatment plant on a regular basis.

Failure to meet the specified treated effluent standards may result in final penalties to Cork County Council. As a result, the risk of environmental pollution from the treatment plant may be reduced.

Bathing Water Directive 76/160/EEC

The Togher River is not designated a Bathing Water under the Bathing Water Regulations, S.I. 178 of 1998 as amended.

Dangerous Substances Directive 2006/11/EC

The level of dangerous substances in both the effluent discharged from Ballynoe wastewater treatment plant and the river itself is significantly lower than the concentration limits set in the directive.

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).

Receiving Water Quality Requirement based on Phosphorus Regulations 2008

The effluent arising from the WWTP is discharge to the Yogher River, which flows adjacent to the WWTP site boundary. The Togher River is a tributary of the River Douglas, which in turn is a tributary of the River Bride which is a tributary of the Blackwater River (Munster).

The EPA have a number of stations downstream of the discharge point.

Effluent Standards

The treated effluent quality requirements are determined with respect to the EC Urban Wastewater Directive, given effect in Irish Law by S.I.254 of 2001. The wastewater treatment processes should reduce nutrients in the final effluent. The minimum effluent standard based on S.I.254 of 2001 for Phosphorus in wastewater effluent is 2mg/l.

As a natural consequence of secondary treatment, there will be an uptake of phosphorous for biomass synthesis at the wastewater treatment plant in Ballynoe. This is evident from Tables 3 & 4 below showing the uptake of phosphorus through the wastewater treatment plant.

Table G2-3: Phosphorus Levels in Influent to WWTP

Parameter	Inlet Monitoring Station	
	26/08/09	18/11/09
Ortho-Phosphate	1.02	1.9

Table G2-4: Phosphorus Levels in Effluent from WWTP

Parameter	Outlet Monitoring Station	
	26/08/09	18/11/09
Ortho-Phosphate	1.03	0.4

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

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.

Recently the WWTP was upgraded at a cost of €0.5 M. These projects were upgraded under the Small Schemes Programme/CLAR Programme. No further works are listed to be carried out under the current Water Services Investment Programme 2007 -2009

With these recent improvements to the WWTP, it will ensure that discharges from the agglomeration will not result in significant environmental pollution.

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.

There are no Storm Overflows within the Agglomeration.

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 : _____

Print signature name: _____

Position in organisation: _____

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SECTION H: DECLARATION

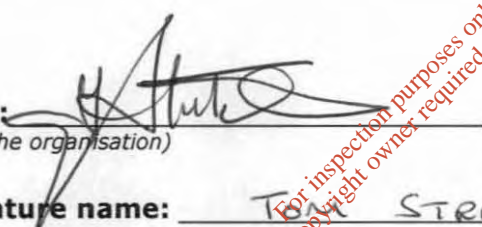
Declaration

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 SERVICE

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SECTION I: JOINT DECLARATION

Joint Declaration ^{Note1}

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.

Lead Authority

Signed by : _____ **Date :** _____
(on behalf of the organisation)

Print signature name: _____

Position in organisation: _____

Co-Applicants

Signed by : _____ **Date :** _____
(on behalf of the organisation)

Print signature name: _____

Position in organisation: _____

Signed by : _____ **Date :** _____
(on behalf of the organisation)

Print signature name: _____

Position in organisation: _____

Note 1: In the case of an application being lodged on behalf of more than a single Water Services Authority the following declaration must be signed by all applicants.

Agglomeration details

Leading Local Authority	Cork County Council
Co-Applicants	
Agglomeration	Ballynoe
Population Equivalent	490
Level of Treatment	Tertiary
Treatment plant address	Ballynoe, Fermoy, Co. Cork
Grid Ref (12 digits, 6E, 6N)	193363 / 089248
EPA Reference No:	

Contact details

Contact Name:	Paddy O'Friel
Contact Address:	Water Services Section Cork County Council North Division Annabella Mallow Co. Cork
Contact Number:	022-21123
Contact Fax:	022-21983
Contact Email:	Paddy.ofriel@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:	SW-01-BYN	
Source of Emission:	Ballynoe WWTP	
Location:	Ballynoe, Fermoy	
Grid Ref (12 digits, 6E, 6N)	193004 / 089248	
Name of Receiving waters:	Togher River	
Water Body:	River Water Body	
River Basin District	South Western RBD	
Designation of Receiving Waters:	u/s of Salmonid River	
Flow Rate in Receiving Waters:	0.03	m ³ .sec ⁻¹ Dry Weather Flow
	0.06	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	66 m ³	Maximum/day	200 m ³
Maximum rate/hour	8.33 m ³	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	7.6 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	24 hr composite	= 9	
Temperature	°C	24 hr composite	= 30	
Electrical Conductivity (@ 25°C)	µS/cm	24 hr composite	= 1000	
Suspended Solids	mg/l	24 hr composite	= 35	7
Ammonia (as N)	mg/l	24 hr composite	= 0	0
Biochemical Oxygen Demand	mg/l	24 hr composite	= 25	5
Chemical Oxygen Demand	mg/l	24 hr composite	= 125	25
Total Nitrogen (as N)	mg/l	24 hr composite	= 15	3
Nitrite (as N)	mg/l	24 hr composite	= 0	0
Nitrate (as N)	mg/l	24 hr composite	= 0	0
Total Phosphorous (as P)	mg/l	24 hr composite	= 2	0.4
OrthoPhosphate (as P)	mg/l	24 hr composite	= 1.7	0.34
Sulphate (SO ₄)	mg/l	24 hr composite	= 0	0
Phenols (Sum)	µg/l	24 hr composite	= 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	24 hr composite	= 0	0
Dichloromethane	µg/l	24 hr composite	= 0	0
Simazine	µg/l	24 hr composite	= 0	0
Toluene	µg/l	24 hr composite	= 0	0
Tributyltin	µg/l	24 hr composite	= 0	0
Xylenes	µg/l	24 hr composite	= 0	0
Arsenic	µg/l	24 hr composite	= 0	0
Chromium	µg/l	24 hr composite	= 0	0
Copper	µg/l	24 hr composite	= 0	0
Cyanide	µg/l	24 hr composite	= 0	0
Flouride	µg/l	24 hr composite	= 0	0
Lead	µg/l	24 hr composite	= 0	0
Nickel	µg/l	24 hr composite	= 0	0
Zinc	µg/l	24 hr composite	= 0	0
Boron	µg/l	24 hr composite	= 0	0
Cadmium	µg/l	24 hr composite	= 0	0
Mercury	µg/l	24 hr composite	= 0	0
Selenium	µg/l	24 hr composite	= 0	0
Barium	µg/l	24 hr composite	= 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	24090

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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)	192759 / 089571

Parameter	Results (mg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	26/08/09	18/11/09			
pH		= 7.2	= 7.3	Grab	2	Electrochemical
Temperature	= 0			Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 148	= 231	Grab	0.5	Electrochemical
Suspended Solids		= 12	= 6	Grab	0.5	Gravimetric
Ammonia (as N)		= 1.2	= 0.05	Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 5.5	< 2	Grab	0.06	Electrochemical
Chemical Oxygen Demand		= 46	= 12	Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0			Grab	0.2	ISE
Hardness (as CaCO ₃)	= 0			Grab	1	Titrimetric
Total Nitrogen (as N)		= 4.4	= 6.12	Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		= 0.826		Grab	0.1	Colorimetric
Nitrate (as N)		< 0.5		Grab	0.5	Colorimetric
Total Phosphorous (as P)		= 0.209	= 0.1	Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		= 0.3	= 0.05	Grab	0.02	Colorimetric
Sulphate (SO ₄)		< 30		Grab	30	Turbidimetric
Phenols (Sum)		< 0.1		Grab	0.1	GC-MS2

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 no results are available
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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)	192759 / 089571

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		= 9		Grab	5	Colorimetric
Flouride		< 100		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		= 23.5		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn TBT testing not required
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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-1u
Grid Ref (12 digits, 6E, 6N)	193125 / 089004

Parameter	Results (mg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	26/08/09	18/11/09			
pH		= 7.3	= 7.3	Grab	2	Electrochemical
Temperature	= 0			Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 1079	= 264	Grab	0.5	Electrochemical
Suspended Solids		= 15	= 5	Grab	0.5	Gravimetric
Ammonia (as N)		= 0.1	< 0.05	Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 2.1	< 2	Grab	0.06	Electrochemical
Chemical Oxygen Demand		= 26	= 13	Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0			Grab	0.2	ISE
Hardness (as CaCO ₃)	= 0			Grab	0.1	Titrimetric
Total Nitrogen (as N)		= 4.9	= 6.2	Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		= 0.407		Grab	0.1	Colorimetric
Nitrate (as N)		= 3.183		Grab	0.5	Colorimetric
Total Phosphorous (as P)		= 0.121	= 0.1	Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		= 0.11	= 0.07	Grab	0.02	Colorimetric
Sulphate (SO ₄)		< 30		Grab	30	Turbidimetric
Phenols (Sum)	= 0			Grab	0.1	GC-MS2

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 no results are 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)	193125 / 089004

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		< 100		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 no reults are available, TBT testing not required
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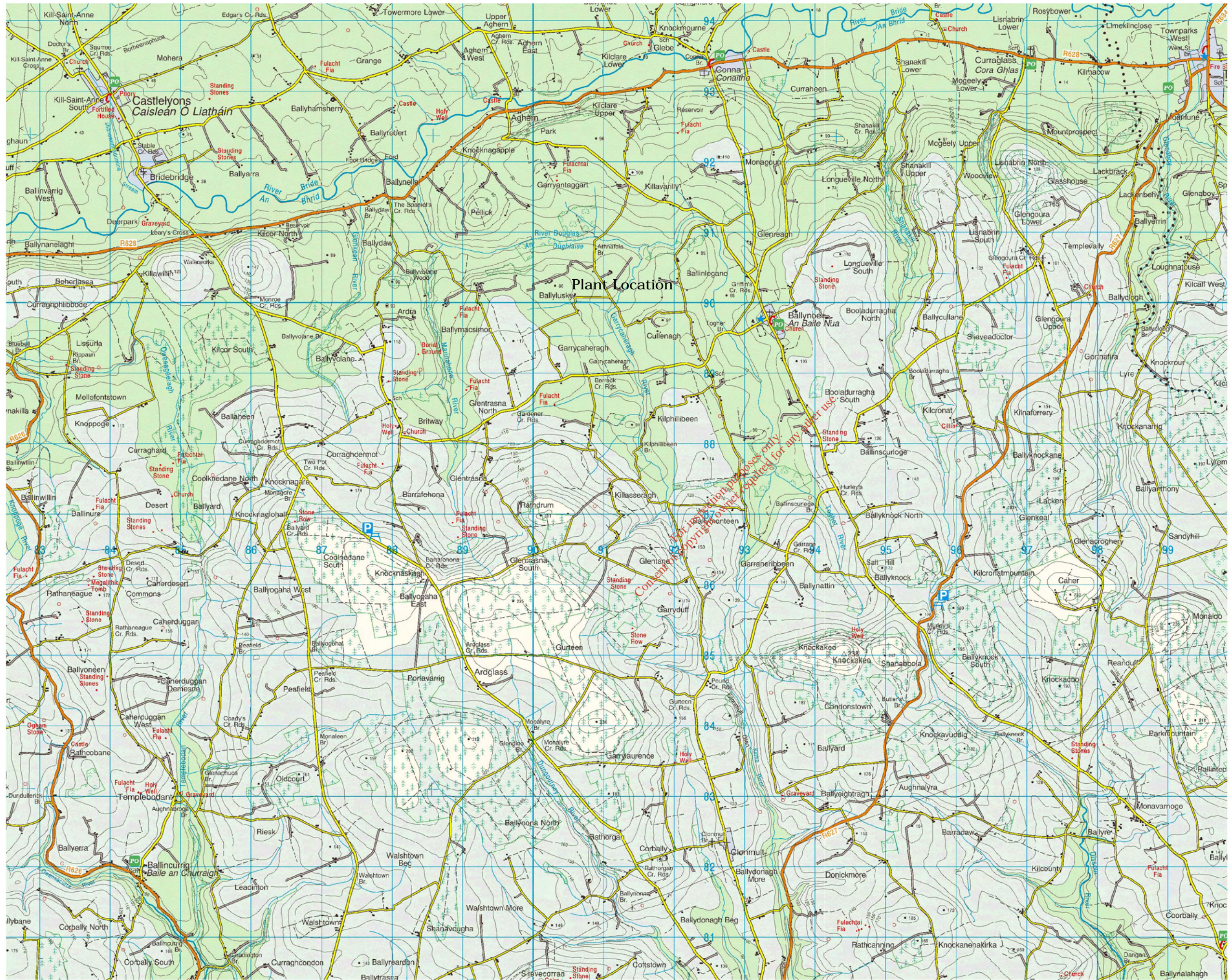
Annex 2: Check List For Regulation 16 Compliance

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)	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,		
(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,		
(d)	state the population equivalent of the agglomeration to which the application relates,		
(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,		
(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.		
(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,		
(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,		
(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,		
(j)	give particulars of the nearest downstream drinking water abstraction point or points to the discharge point or points,		
(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,		
(l)	give detail of compliance with relevant monitoring requirements and treatment standards contained in any applicable Council Directives of Regulations,		
(m)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work.		
(n)	Any other information as may be stipulated by the Agency.		
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,		No
(b)	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,		No
(c)	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -		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		Yes
(c) (ii)	the point or points at which monitoring and sampling are undertaken or are to be undertaken,		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.		Yes
1	EIA provided if applicable		Yes
2	2 hardcopies of EIS provided if 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,	B	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,	E	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,	G	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



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.

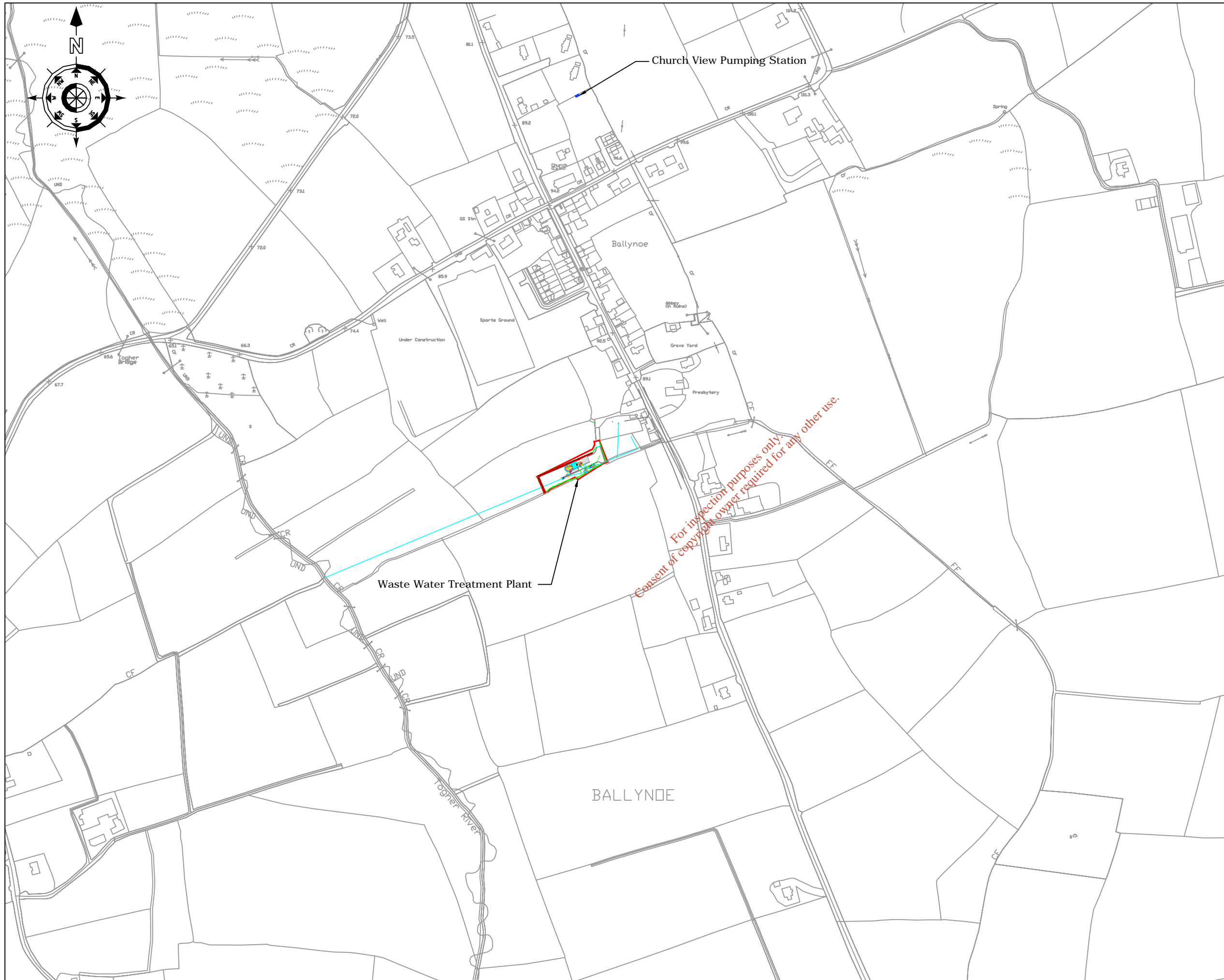
Plant location

Key Map

Ballynoe & Environs
Waste Water Discharge
Licence Application

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

1:50,000 @ A3	D.L.	D.L.
F.J.	P.O.F	December 2009
A1 - Map 1	-	-



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- 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.

No.	Date	Drawn	Survey	Checked	Revision	Description

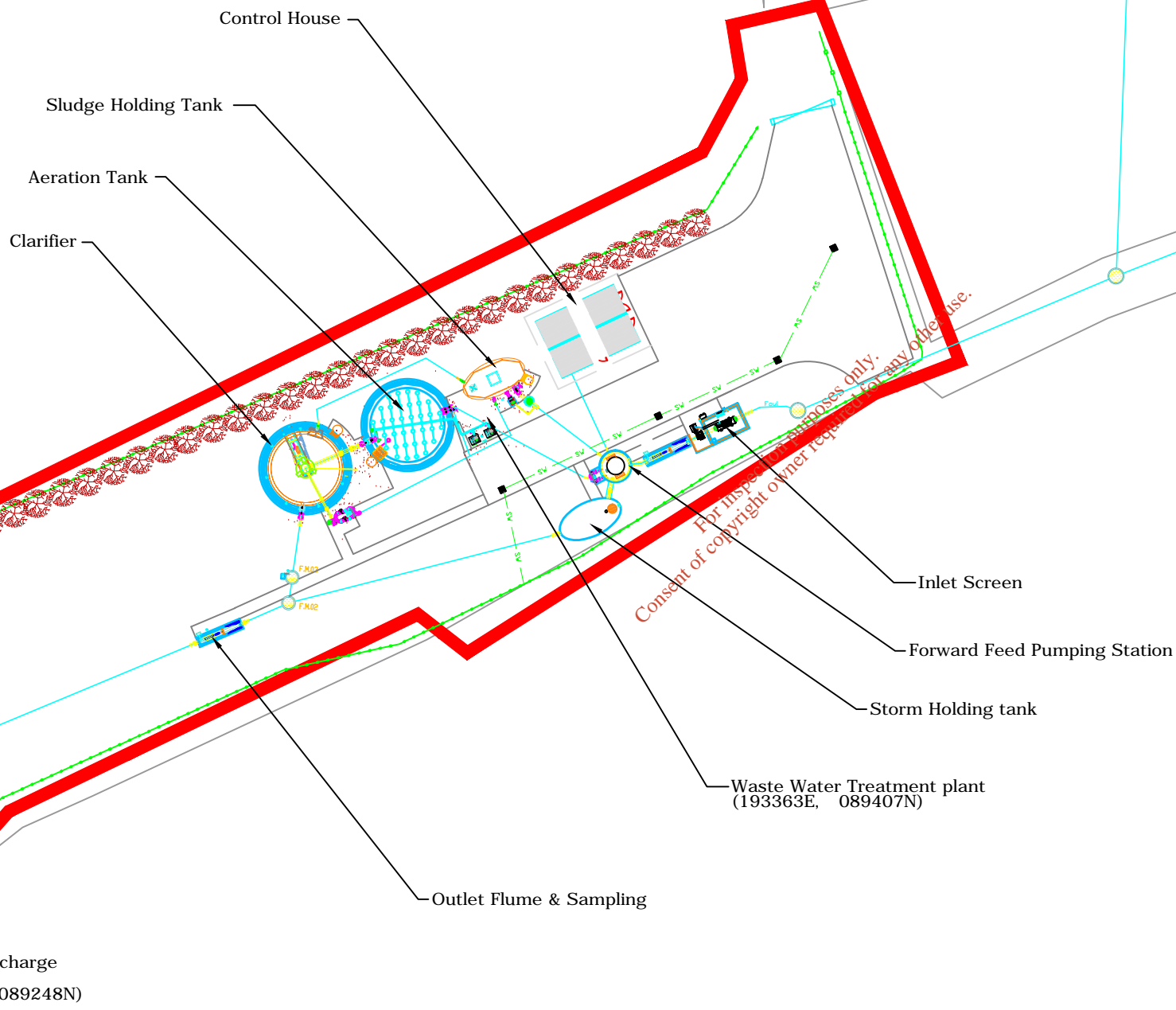
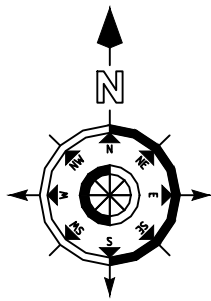
Cork County Council,
Northern Division.

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

Job Title:
Ballynoe & Environs
Waste Water Discharge
Licence Application

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

Scales: 1:5000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: F.J.	Checked by: P.O.F	Date: December 2009
Drawing number: A1-Map 2	Rev: -	



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.
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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

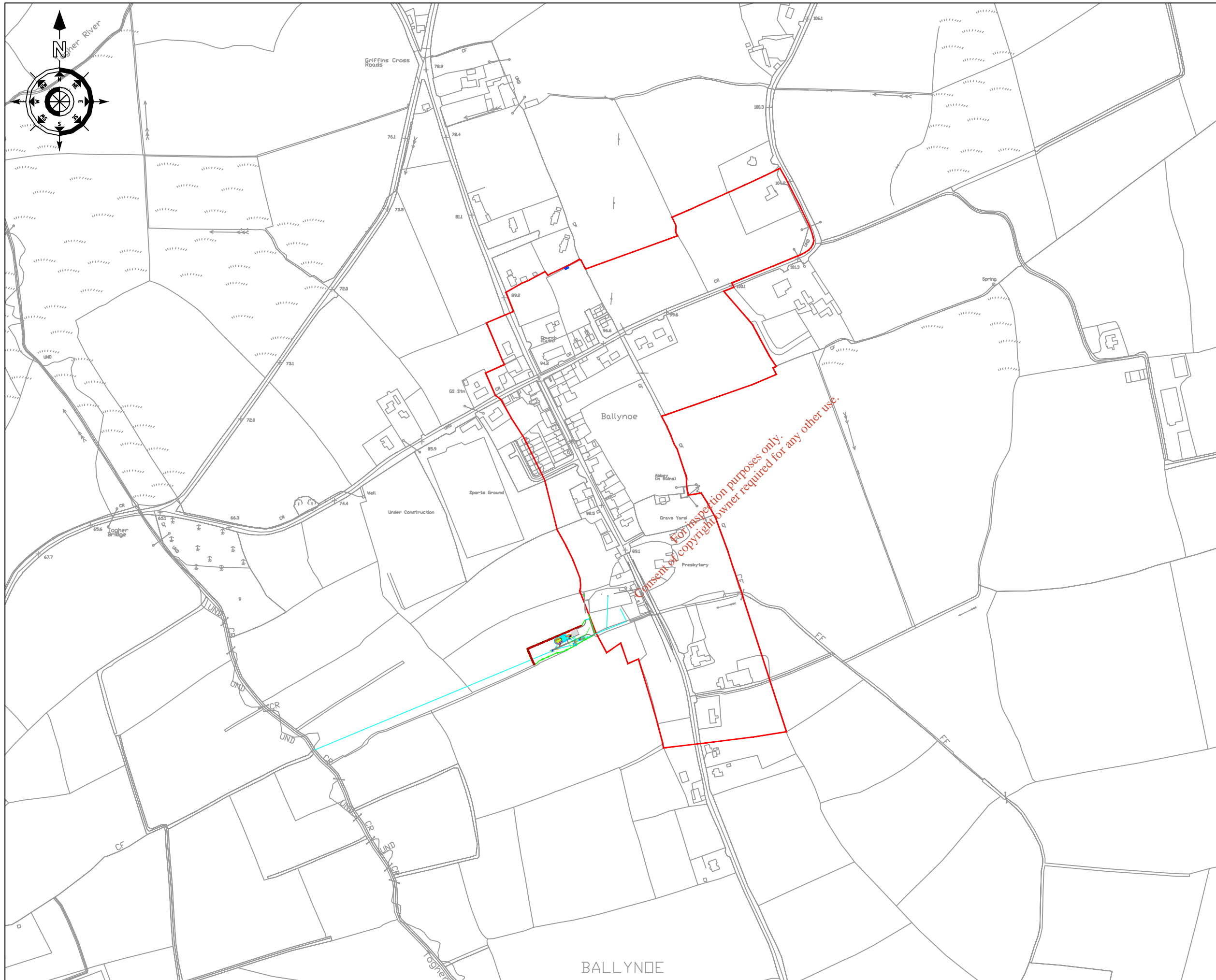


N. O'KEEFFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Ballynoe & 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: F.J.	Checked by: P.O.F	Date: December 2009
Drawing number: A1 - Map 3	Rev: -	



- 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.

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

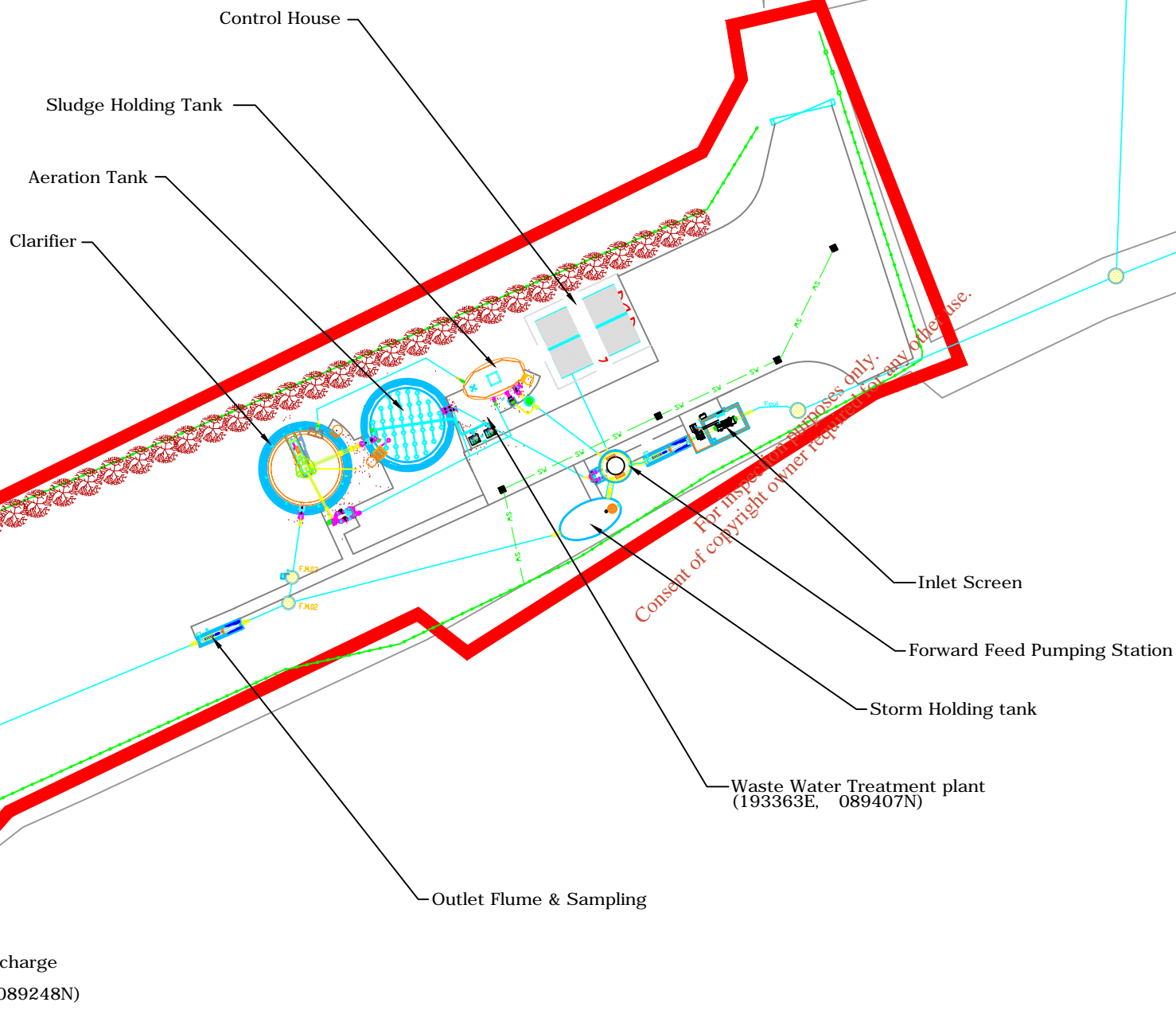
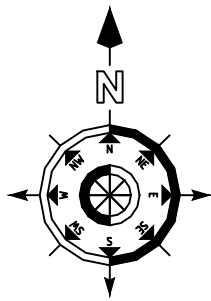


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Ballynoe & 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: F.J.	Checked by: P.O.F	Date: December 2009
Drawing number: B1 - Map 4	Rev: -	



NOTES

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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

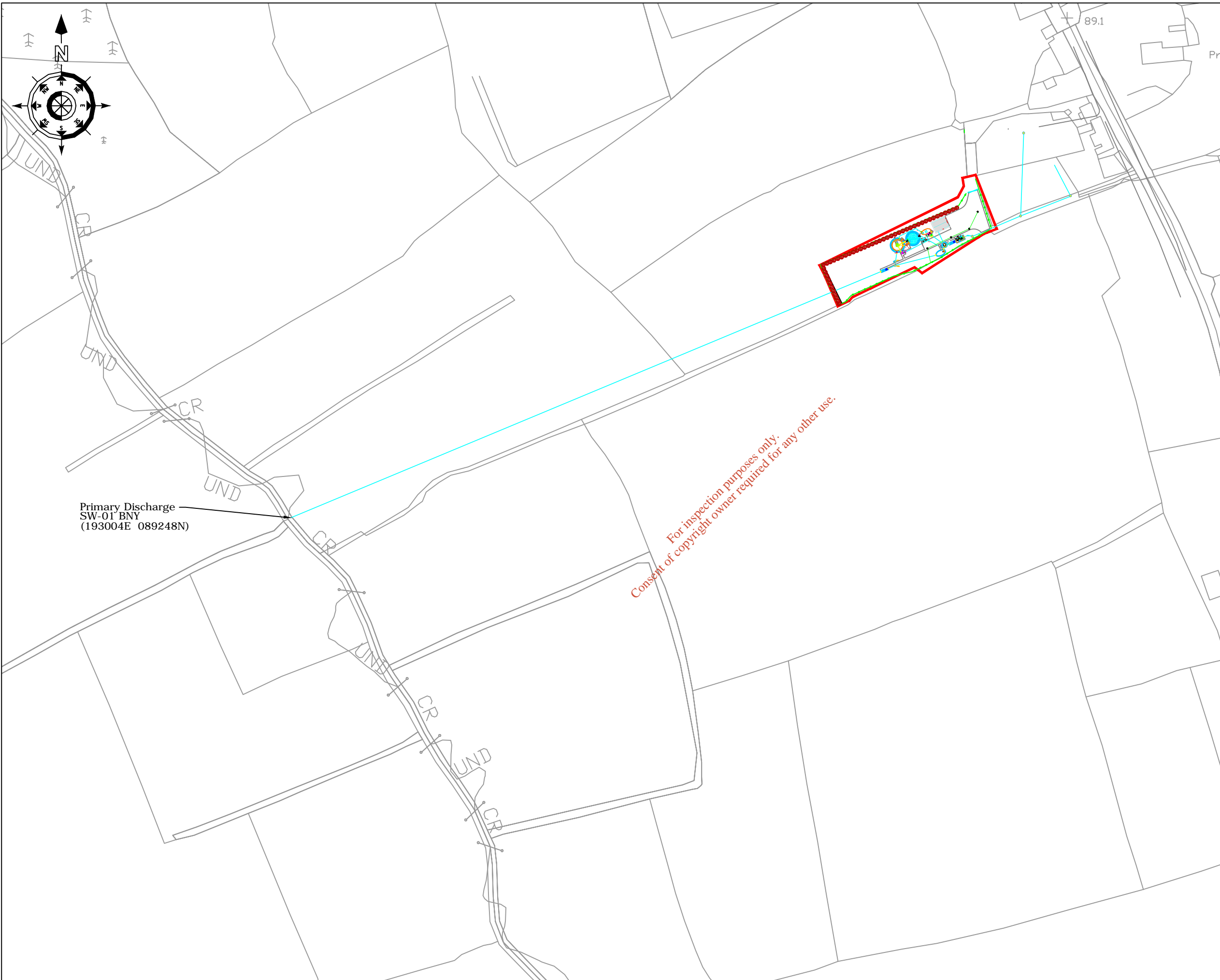


N. O'KEEFFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Ballynoe & 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: F.J.	Checked by: P.O.F	Date: December 2009
Drawing number: B2 - Map 5	Rev: -	



NOTES

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3. This drawing is to be read in conjunction with all other contract drawings.

Primary Discharge
SW-01 BNY
(193004E 089248N)

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No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
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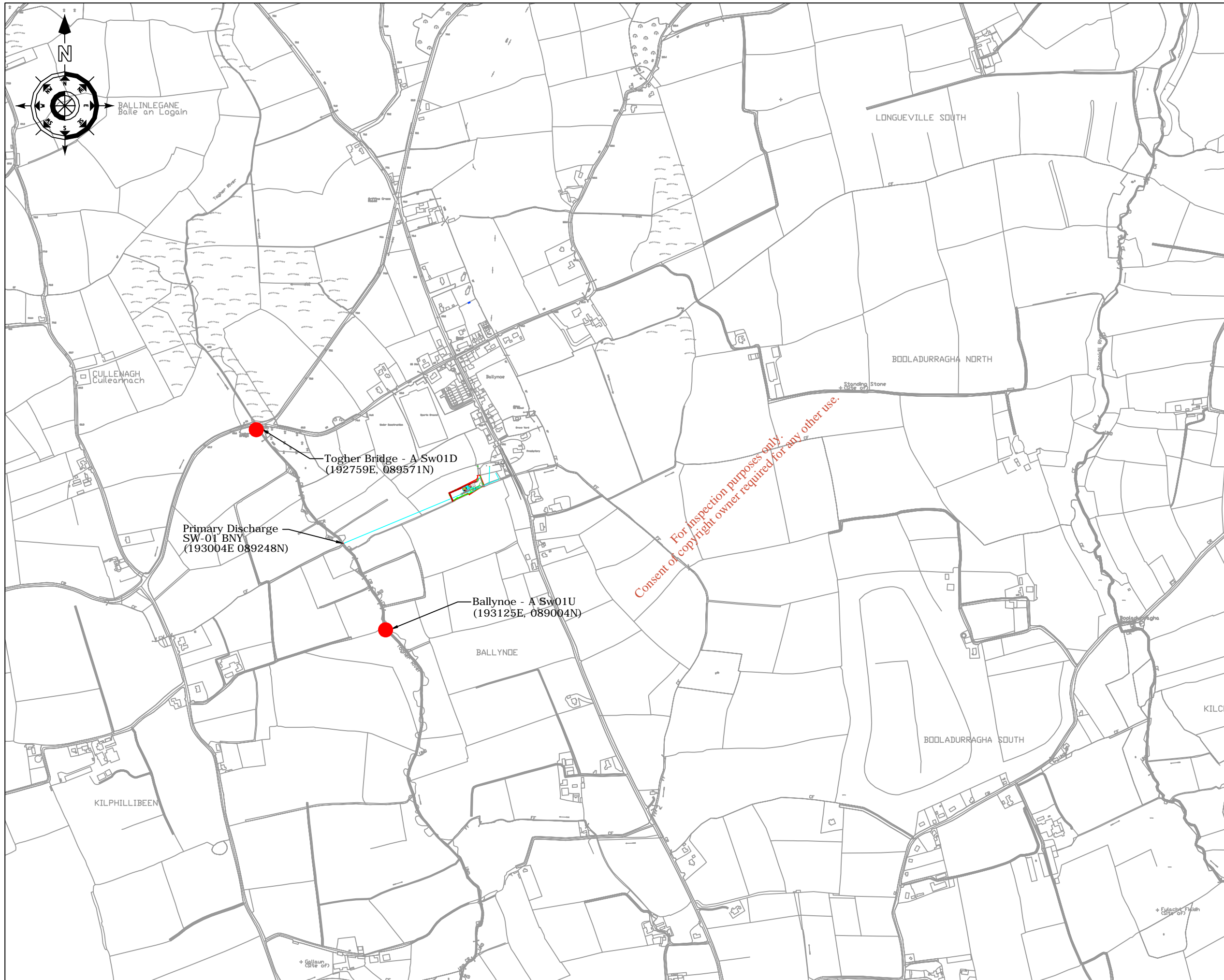


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Ballynoe & Environs
Waste Water Discharge
Licence Application

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

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



NOTES

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No.	Date	Drawn	Surv	Chkd	Revision	Description

Cork County Council,
Northern Division.



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

Job Title:
Ballynoe & Environs
Waste Water Discharge
Licence Application

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

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

Comhairle Contae Chorcaí
Cork County Council

County Hall,
Cork, Ireland.
Tel: (021) 4276891 • Fax: (021) 4276321
Web: www.corkcoco.ie
Halla an Chontae,
Corcaigh, Éire.
Fón: (021) 4276891 • Faics: (021) 4276321
Suíomh Gréasáin: www.corkcoco.ie



Ms. Bernie O'Leary,
Cork County Council,
Annabella,
Mallow,
Co. Cork.



Direct Dial: 021-4285457
Email: helen.bowman@corkcoco.ie

24th July, 2007.

**Re: Report under Article 179(3)(b) of the Planning & Development Act, 2000
Report under Article 81 of the Planning & Development Regulations 2001**

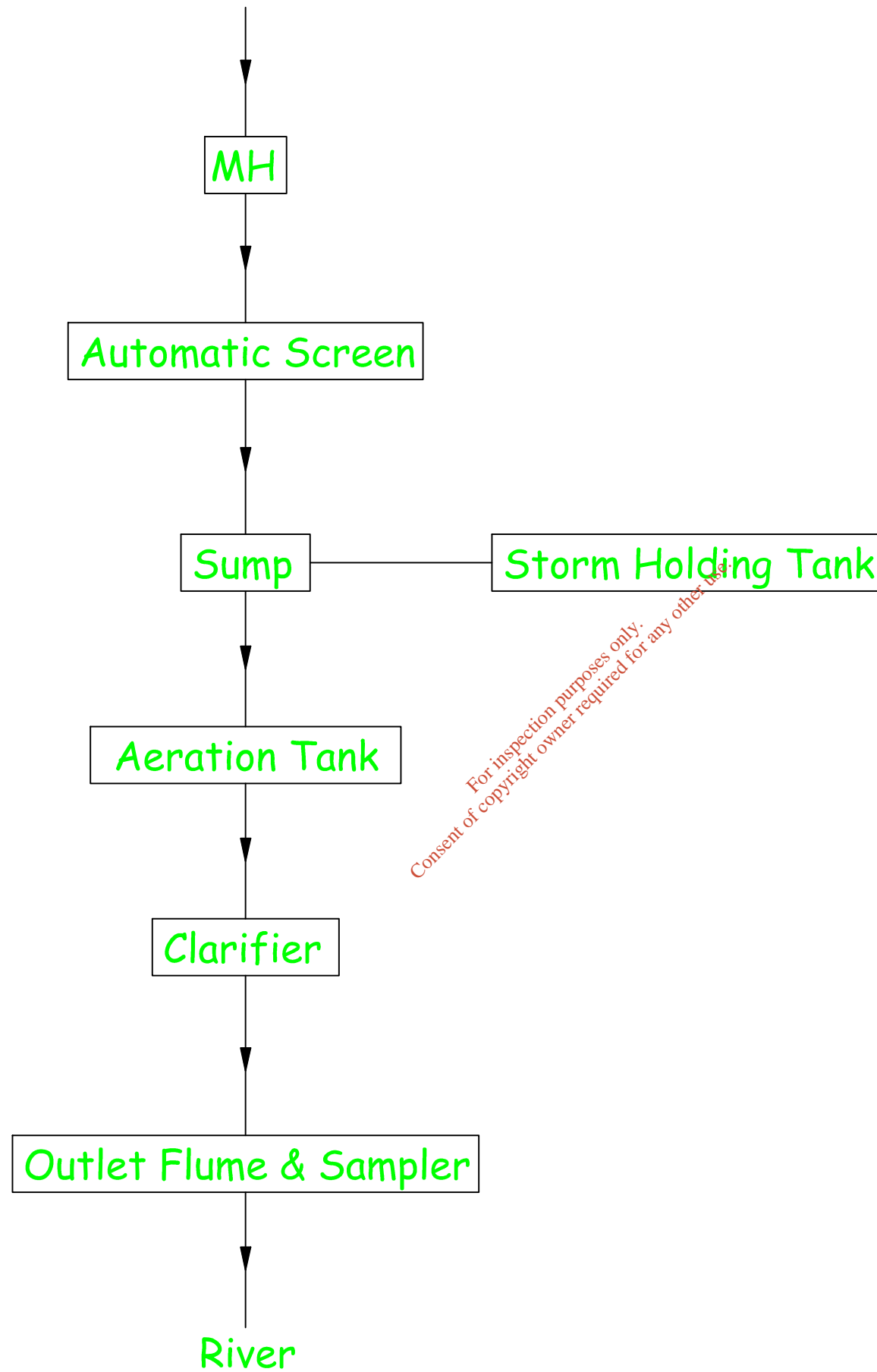
- (a). Construction of new Wastewater Treatment Plant at Ballynoe, Fermoy.
- (b). New cemetery at Lismire, Newmarket.
- (c). Construction of new 1000 cubic m reservoir at Gortnagraige, Mallow
- (d). Provision of new 50,000 gallon reservoir at Lyraneag, Rockchapel
- (e). Mallow/Ballyvinter RWSS - Box Cross - Phase 1 - new pumping station and new production borehole stations.
- (f). Construction of Wastewater Treatment Plant at Knockanohill, Kilworth.

I refer to your email dated 16th July, 2007, in connection with the above.

At the meeting of Cork County Council held on 23rd July, 2007 the recommendations of the Northern Committee were approved.


MAURICE MANNING,
SENIOR EXECUTIVE OFFICER.





NOTES

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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.

No.	Date	Drawn	Surv	Chkd	Revision	Description

Cork County Council,
Northern Division.

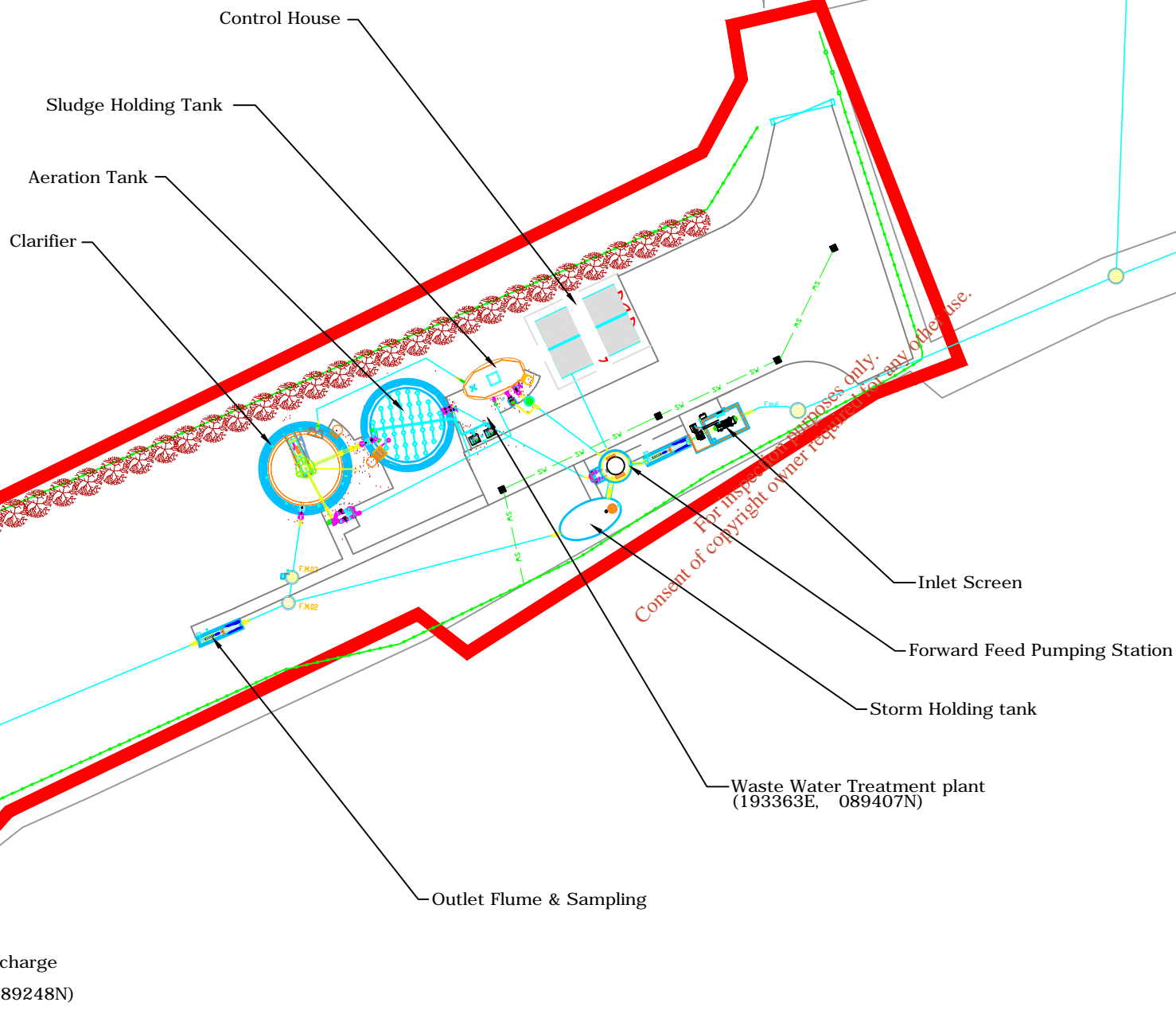
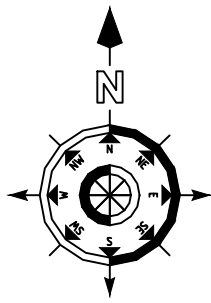


N. O'KEEFFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title: Ballynoe & 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: F.J.	Checked by: P.O.F	Date: December 2009
Drawing number: C1 - Drawing 1	Rev: -	



NOTES

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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'KEEFFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Ballynoe & 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: F.J.	Checked by: P.O.F	Date: December 2009
Drawing number: C1 - Map 8	Rev: -	

Attachment E4 Ballynoe analytical data for certification application

Sample Date	26/08/2009	18/11/2009		26/08/2009	18/11/2009		26/08/2009	18/11/2009		26/08/2009	18/11/2009
Sample	Influent	Influent		Effluent	Effluent		River Upstream	River Upstream		River Downstream	River Downstream
Sample Code	GT1050	GT1409		GT1049	GT1410		GT1051	GT1411		GT1048	GT1412
Flow M ³ /Day	*	*		*	*		*	*		*	*
pH	6.9	6.8		6.9	7.4		7.3	7.3		7.2	7.3
Temperature °C	*	*		*	*		*	*		*	*
Conductivity uS/cm 20°C	324	407		334	324		1079	264		148	231
Suspended Solids mg/L	36	8		22	2		15	5		12	6
Ammonia-N mg/L	14.5	2.8		10.1	0.1		0.1	<0.05		1.2	0.05
BOD mg/L	162	29		31	<2		2.1	<2		5.5	<2
COD mg/L	196	57		68	<5		26	13		46	12
TN-N mg/L	28.3	21.32		15.5	7.22		4.9	6.2		4.4	6.12
Nitrite-N mg/L	<0.1	*		No result	<0.1		0.407	*		0.826	*
Nitrate-N mg/L	<0.5	*		1.84	6.32		3.183	*		<0.5	*
TP-P mg/L	1.67	1.9		1.09	0.5		0.121	0.11		0.209	0.1
O-PO4-P mg/L	1.02	1.9		1.03	0.4		0.11	0.07		0.3	<0.05
SO4 mg/L	<30	*		<30	<30		<30	*		<30	*
Phenols µg/L	*	*		<0.10	<0.10		*	*		<0.10	*
Atrazine µg/L	*	*		<0.01	<0.01		*	*		<0.01	*
Dichloromethane µg/L	*	*		<1	<1		*	*		<1	*
Simazine µg/L	*	*		<0.1	<0.01		*	*		<0.01	*
Toluene µg/L	*	*		<0.28	<0.28		*	*		<0.28	*
Tributyltin µg/L	Not required	Not required		Not required	Not required		Not required	Not required		Not required	Not required
Xylenes µg/L	*	*		<0.73	<0.73		*	*		<1	*
Arsenic µg/L	*	*		<0.96	0.3		*	*		<0.96	*
Chromium ug/L	<20	*		<20	<20		<20	*		<20	*
Copper ug/L	<20	*		<20	<20		<20	*		<20	*
Cyanide µg/L	*	*		<5	<5		*	*		9	*
Fluoride µg/L	<0.1	*		<100	45		<0.1	*		<0.1	*
Lead ug/L	<20	*		<20	<20		<20	*		<20	*
Nickel ug/L	<20	*		<20	<20		<20	*		<20	*
Zinc ug/L	<20	*		<20	<20		<20	*		<20	*
Boron ug/L	<20	*		<20	<20		<20	*		<20	*
Cadmium ug/L	<20	*		<20	<20		<20	*		<20	*
Mercury µg/L	*	*		<0.2	<0.03		*	*		<0.2	*
Selenium µg/L	*	*		<0.74	<2.12		*	*		<0.74	*
Barium ug/L	<20	*		<20	<20		<20	*		23.5	*

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.

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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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13.09.2006

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.

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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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