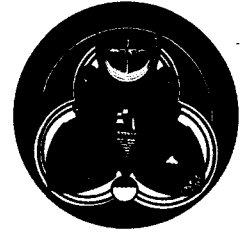


Comhairle Contae Chorcaí Cork County Council

Annabella,
Mallow,
Co. Cork.
Tel: (022) 21123 • Fax: (022)21983
Email: northcork@corkcoco.ie
Web: www.corkcoco.ie
Annabella,
Mala,
Co. Chorcaí.



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

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

22nd December 2009

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

Dear Sir / Madam,

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

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.

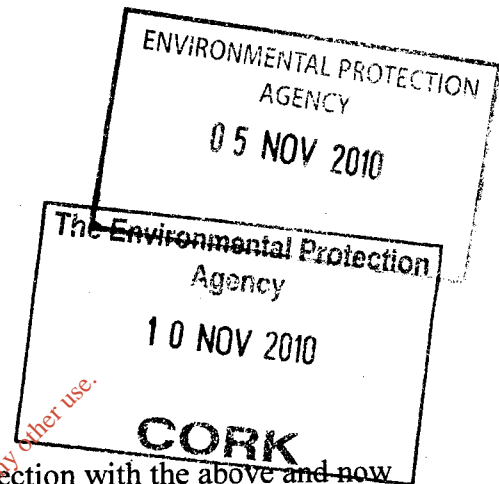
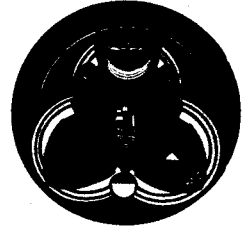
Phone: 022/54806
Email: june.white@corkcoco.ie

Annabella,
Mala,
Co. Chorcaí.

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

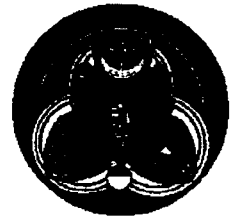
Annabella,
Mallow,
Co. Cork.

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



Cómhairle Contae Chorcaí Cork County Council

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



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

16th December, 2009

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

Dear Mr. Clinton,

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

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

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

Yours faithfully,

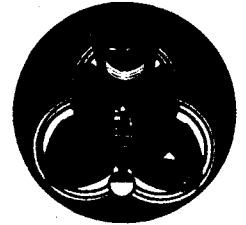
A handwritten signature in black ink, appearing to read 'Louis Duffy'.

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



Comhairle Contae Chorcaí Cork County Council

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



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

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

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

13th October, 2010

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

Dear Ms. Turner,

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

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

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

Yours faithfully,

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

Tom Stritch,
S/Divisional Manager.
TS/ML



This is a draft document and is subject to revision.



Waste Water Discharge Certificate of Authorisation Application Form

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| | |
|--|----------|
| EPA Ref. N^o: <i>(Office use only)</i> | A0339-01 |
|--|----------|

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

Bartlemy village is situated approximately 10km northwest of Newmarket and 18km southwest of Charleville.

The Waste Water Works and the Activities Carried Out Therein

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

Bartlemy WWTP is designed for a Population Equivalent (PE) of 500, which was commissioned in 2007. Activated Sludge is the process employed at the Bartlemy 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 a inlet sump where influent is pumped to primary tank, from where the effluent is pumped to a splitter chamber where the influent splits in to the 2 NR t Aeration Tank. Following the aeration process effluent gravitates to the settlement, the solids settle while the supernatant flows out and discharges to the river. Sludge may be returned from the settling tank to the primary tank and excess sludge is removed from the primary tank to the sludge holding tank as required and thereafter removed off site for disposal.

In the event of high storm flows effluent builds up in the inlet sump, in the event of this being exceeded the influent may overflow to the outlet pipe., however this is unlikely to happen as the sewerage network is separate network.

Currently the WWTP is receiving flows ranging from 27m³/d to 50m³/d, with an average DWF of 26m³/d entering the plant. Based average hydraulic load of 220l/d/p, the PE equates to 120.

Bartlemy 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 Bartlemy 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 27m³/d to 50m³/d, with an average DWF of 26m³/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 Knoppoge River, which is adjacent to the wastewater treatment plant site. The maximum flow to the existing WWTP is in the order of 27m³/d to 50m³/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:

- Inlet Works
- Primary Tank
- Inlet Sump
- Aeration Tank
- Settling Tank
- Sludge Holing Tank
- RAS/WAS Pumps
- Outfall to Allow 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.

Currently there are no further works envisaged to be undertaken on Bartlemy WWTP in the near future.

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 Allow 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 an automatic sampler on the outlet line.

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 | Attachment A1 Map 1 |
| • Site Location Map of WWTP | Attachment A1 Map 2 |
| • Site Layout | 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: | Bartlemy & 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: | |

*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 |
| | Garryantaggart, |
| | Bartlemy, Fermoy |
| | Co. Cork |
| Grid ref (6E, 6N) | 181919E 087883N |
| 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- BY |
| Location | 160m southeast of WWTP |
| Grid ref (6E, 6N) | 182062E 087763N |

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 |
|--------------------------|----------------|

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 | 370 |
| 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 Bartlemy WWTP is 120 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 250 p.e. There are no planning permissions in relation to non domestic activities.

With the completion of the recently commissioned 500 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 Bartlemy at a cost of €0.3Million.

This project was constructed under the Small Schemes 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

PROCESS OUTLINE

The Waste Water Treatment plant will receive the domestic sewage at its primary stage. The wastewater will flow to the main inlet works designed to accommodate up to 10L/s, which shall incorporate a 6mm mechanical screen with manual by-pass arrangement and grit removal facilities to prevent forward transfer of gross solids from passing forward onto the aeration phase.

Following the mechanical screen, the effluent flows into a Pump chamber where it is pumped periodically by duty/standby primary feed pumps to a 36m³ primary settlement tank. Primary and returned Secondary sludge are periodically pumped from the primary settlement stage to the sludge holding tank.

The second chamber of the primary settlement tank is fitted with duty/standby forward feed pumps to pump the effluent to the aeration phase.

The flow from the primary tank is then split into two equal flow streams. Each flow stream will be designed to cater for the wastewater generated by 250 PE, therefore the total capacity of the plant is 500 PE. The pumping rate shall be selected to provide sufficient hydraulic retention in order to achieve the required level of treatment.

The aeration phase shall consist of a moving bed biological reactor as biological treatment. The MBBR process uses extended aeration technology with a floating media to provide high quality final effluent with a small overall plant foot print. Each reactor vessel will consist of two zones and have a total tank volume of 36m³ containing sufficient media to treat the daily organic load, and shall be designed to have the required hydraulic retention at the pump forward feed rate.

Following the aeration stage, the effluent shall then flow to the secondary settlement stage of the process. The secondary stage is required to achieve a standard of 20:30 mg/l on BOD₅:SS at the design flow. Each secondary settlement tank will have a total volume of 36m³ with a benched floor designed to provide the required upward flow rate at the pump forward feed rate. The sludge collected in this section will be wasted periodically to a sludge storage tank.

Phosphate removal is also provided by ferric dosing with the addition of Ferric sulphate. This phosphate removal system is designed to achieve an annual average final effluent quality of 2mg/l P.

At the outlet, an open channel flow flume with a ultrasonic device to measure liquid volume discharged from the wastewater treatment plant and an automatic composite sampler are provided.

PROCESS DESIGN CRITERIA

Table 1: *Design Loads and Flows*

| | | |
|----------------------------------|-----|---------------------|
| Design Population Equivalent | 500 | PE |
| Dry Weather Flow (DWF) | 119 | m ³ /day |
| BOD ₅ Load to Plant | 90 | kg/day |
| Final Effluent Standard Required | | |
| BOD ₅ | 20 | mg/l |
| COD | 125 | mg/l |
| SS | 30 | mg/l |
| Ammonia | | mg/l |
| Total Phosphorous | 2 | mg/l |
| Nitrates | | mg/l |
| Sludge Storage | 23 | m ³ |

TECHNICAL INFORMATION

Inlet Works

The inlet works consists of an automatic Haige mechanical screen designed to accommodate flows up to 10L/s. The supplied equipment consists of the following; Haigh Ace Inlet screen, 6mm rotary brush screener (290) with 304 SS inlet box complete with bypass channel, overflow weir, handraked bar screen @10mm with Lipactor –liquid separating station with integral compactor for dewatering.

Pump Chamber

Following the mechanical screen, the effluent flows into a precast concrete Pump chamber where it is pumped periodically by duty/standby Ebarra Best 2 primary feed pumps to a 36m³ primary settlement tank.

Primary Settlement

Primary settlement consists of a 36m³ precast concrete tank with a benched floor with a forward feed pump chamber section. Duty/standby Ebarra Best 4 Forward feed pumps periodically pump the effluent forward to Aeration phase of the treatment plant.

Flows greater than 3 Dry Weather will flow to the plant overflow following screening.

Primary and returned Secondary sludge are periodically pumped from the primary settlement stage to the sludge holding tank by an ABS sludge pump.

The total flow shall be split into two equal flow streams, each with a capacity of 250PE.

- Number of duty and standby pumps at sump: 2Nr Duty / Standby
- The measures taken in the event of power failure: The Sump Fills & back up the line
- Details of storage capacity at each sump:
- Frequency and duration of activation of emergency overflow to receiving waters. Clarify the location where such discharges enter the receiving waters. – No Emergency Overflow

Biological treatment

The Moving Bed Biological Reactor (MBBR) system uses extended aeration and consists of two zone precast concrete 36m³ bioreactors which shall contain sufficient floating media to treat the daily load to the plant.

The aeration phase consists of a network of floor mounted diffusers which actively release fine bubbles of air upwards through the wastewater. Rietschle SAP300 Double-flow side channel vacuum pump Air blowers provide process air on a duty/standby system. The inert media rings used provide a large surface area to which biodegradative microorganisms attach. As these microbes receive oxygen from the underlying diffusers, they subject the organic fraction, contained within the effluent to extensive biodegradation. Any excess microbial growth attached to the media is sloughed off continually by the gentle shearing action of the bubble movement through the media. This excess biomass passes through the aeration phase with the treated effluent and is allowed to settle in the secondary settlement phase.

Secondary Settlement

Precast 36m³ benched concrete tanks shall be used to provide secondary settlement of the wastewater. Duty/standby Ebarra Right 75 pumps return settled secondary sludge twice daily back to the primary settlement tank.

Sludge Holding Tank

The sludge holding tank consists of a 23m³ precast concrete tank. Multilevel overflow/decant lines return back to the inlet works pump chamber.

Phosphorous Removal

Phosphorous removal shall be achieved by chemical dosing with Ferric Sulphate. Duty/standby Milton Roy dosing pumps are linked to the forward feed pumps to proportion the Ferric Sulphate. Bunded storage of ferric sulphate shall be provided with a minimum of 110% of stored volume. Emergency shower and eye wash facilities are also be provided.

Outlet Works Details

An open channel flow flume with a ultrasonic device to measure liquid volume discharged from the wastewater treatment plant and an automatic composite sampler are provided.

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.
- No Storm overflows.

C.1.2 Pumping Stations

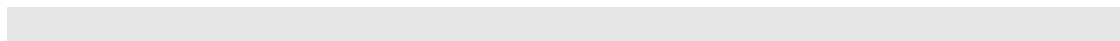
For each pump station operating within the waste water works, provide details of the following:

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

There are no pumping stations within the agglomeration, other than the forward feed sump at the WWTP, mentioned above.

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 - BY | Primary | Cork County Council | River | Knoppoge River | U/S of Salmonid River | 182060 | 087763 |

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 | 181919 | 087883 | N |
| aSW01u | u/s | Sampling | 181853 | 087552 | N |
| aSW01d | d/s | Sampling | 182316 | 087884 | 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 has been recently upgraded there are no improvements planned at present for the Bartlemy 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 Knoppoge 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 Knoppoge 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 Bartlemy Wastewater Treatment Plant cannot cause deterioration in good water quality under the Water Framework Directive at present.

The Knoppoge 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 Knoppoge River is a tributary of the River Flesk, which in turn is a tributary of the River Bride.

The Knoppoge 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 Flesk River joins, is designated Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988.

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

The Knoppoge 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 Bartlemy Wastewater Treatment wastewater works.

Water is not abstracted from the Knoppoge 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, is a designated Special Area of Conservation.

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 Knoppoge 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 Knoppoge 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 Knoppoge 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 Knoppoge River was obtained from Cork County Council. There are EPA stations along the Knoppoge River. These stations are the following:

- Br U/S of Ballinwillin Br – 0.15km upstream of the discharge point
- Br S of Bluebell Bridge - 2.4Km Downstream of the Discharge point

Table F1-1: Biological Quality Rating for River Bride – Upstream & Downstream of of Confluence of the River Bride & Knoppoge River

| Sampling Location | EPA Biological Quality Rating (Q values) | | |
|---------------------------|--|-------------|--------|
| | 1995 -1997 | 2001 – 2003 | Target |
| Br U/S of Ballinwillin Br | 4 | 3-4 | 4 |
| Br S of Bluebell Bridge | 4-5 | 4 | 4 |

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) | June 2009 Results |
|--------------------------------|---------------------------|--------------------------------|-------------------|
| Biological Oxygen Demand (BOD) | 25 | 51.75 | 11 |
| Suspended Solids (SS) | 35 | 441.25 | 31 |

*Actual Concentration is the average effluent concentrations recorded at the outlet of the WWTP by Cork County Council Wastewater Laboratory during the period Fed '09 to Sept '09.

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

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

Median flow of River = 0.533m³/sec
 Median oPO₄-P in River (upstream) = 0.083mg/L

Average volume of discharge = 0.0014 m³/sec
 Median value for oPO₄-P in discharge = 4.95mg/l

$$C_{\text{final}} = \frac{(.533 \times .083) + (0.0014 \times 4.95)}{0.533 + 0.083}$$

C_{final} = 0.0831 mg/L oPO₄-P

The increase in Orthophosphate due to the discharge is 0.001 mg/L

b) **Mass Balance Equation for BOD (june Results):**

Flow of River (95%) = 0.0832 m³/sec
 Average BOD in River (upstream) = 2 mg/L

Average volume of discharge = 0.0014 m³/sec
Average BOD in discharge = 11 mg/L

$$C_{\text{final}} = \frac{(0.0832 \times 2) + (0.0014 \times 11)}{0.0832 + 0.0014}$$

$$C_{\text{final}} = 2.15 \text{ mg/L BOD}$$

The increase in BOD due to the discharge is 0.15 mg/L.

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

Flow of River (95%) = 0.0832 m³/sec
Average Suspended Solids in River (upstream) = 4.13mg/L

Average volume of discharge = 0.0014 m³/sec
Average Suspended Solids in discharge = 31 mg/L

$$C_{\text{final}} = \frac{(0.0832 \times 4.13) + (0.0014 \times 31)}{0.0832 + 0.0014}$$

$$C_{\text{final}} = 4.57 \text{ mg/L Suspended Solids}$$

The increase in Suspended Solids due to the discharge is 0.44 mg/L.

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

50% Median flow of River = 0.533 m³/sec
Median TPO₄-P in River (upstream) = 2.75 mg/L

Average volume of discharge = 0.0014 m³/sec
Median TPO₄-P in discharge = 4.95 mg/L

$$C_{\text{final}} = \frac{(0.533 \times 2.75) + (0.0014 \times 4.95)}{0.533 + 0.0014}$$

$$C_{\text{final}} = 2.76 \text{ mg/L TPO}_4\text{-P}$$

The increase in Total Phosphate due to the discharge is 0.01mg/L

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

No Information

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

No Information

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

Flow of River (95%) = 0.0832m³/sec

Average Ammonia-N in River (upstream) = 0.2 mg/L

Average volume of discharge = 0.0014 m³/sec

Average Ammonia-N in discharge = 4.22mg/L

Average Ammonia-N in River (downstream) = 0.067mg/L

$$C_{\text{final}} = \frac{(0.0832 \times 0.2) + (0.0014 \times 4.22)}{0.0832 + 0.0014}$$

C_{final} = 0.27 mg/L Ammonia

The increase in Ammonia due to the discharge is 0.07mg/L.

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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 Feb 2009 to Sept 2009.

Table F1-4: Upstream Water Quality

| Parameter | Upstream Monitoring Station | | |
|-----------------|-----------------------------|----------|----------|
| | 05/02/09 | 05/03/09 | 17/04/09 |
| Ph | 7.2 | 7.7 | 7.5 |
| BOD | 2 | 2 | 4 |
| SS | 2 | 5.4 | 5 |
| Ammonia | 0.1 | 0.34 | 0.17 |
| Ortho-Phosphate | 0.06 | 0.1 | 0.09 |

Table F1-5: Downstream Water Quality

| Parameter | Downstream Monitoring Station | | |
|-----------------|-------------------------------|----------|----------|
| | 05/02/09 | 05/03/09 | 17/04/09 |
| Ph | 7.2 | 7.5 | 7.5 |
| BOD | 2 | 2 | 2 |
| SS | 4 | 2 | 5 |
| Ammonia | 0.06 | 0.09 | 0.05 |
| Ortho-Phosphate | 0.05 | 0.06 | 0.07 |

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

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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 500 PE 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

The EPA also takes samples from one location along the River Bride upstream & downstream of the confluence of the rivers. These are located at the following:

- Br U/S of Ballinwillin Br - 0.15km upstream of the discharge point
- Br S of Bluebell Bridge - 2.4Km Downstream of the Discharge point

Table G1-1: Upstream Water Quality

| Parameter | Upstream Monitoring Station | | |
|-----------------|-----------------------------|----------|----------|
| | 05/02/09 | 05/03/09 | 17/04/09 |
| Ph | 7.2 | 7.7 | 7.5 |
| BOD | 2 | 2 | 4 |
| SS | 2 | 5.4 | 5 |
| Ammonia | 0.1 | 0.34 | 0.17 |
| Ortho-Phosphate | 0.06 | 0.1 | 0.09 |

Table G1-2: Downstream Water Quality

| Parameter | Downstream Monitoring Station | | |
|-----------------|-------------------------------|----------|----------|
| | 05/02/09 | 05/03/09 | 17/04/09 |
| Ph | 7.2 | 7.5 | 7.5 |
| BOD | 2 | 2 | 2 |
| SS | 4 | 2 | 5 |
| Ammonia | 0.06 | 0.09 | 0.05 |
| Ortho-Phosphate | 0.05 | 0.06 | 0.07 |

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 Knoppoge 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.

Bartlemy (Hightown) is the closest PWS that utilise ground water for medium sized water supplies. This located approximately 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 Knoppoge River or River Blackwater downstream of Bartlemy 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 Bartlemy Wastewater Treatment Plant was commissioned in 2008 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 Bartlemy 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 Knoppoge 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 Bartlemy 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 Knoppoge 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 Knoppoge 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 Knoppoge 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 Bartlemy 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 Knoppoge River, which flows adjacent to the WWTP site boundary. The Knoppoge River is a tributary of the River Bride which is a tributary of the Blackwater River (Munster).

The EPA do not have any stations along the Knoppoge River, however they have a number stations on the River Bride upstream and downstream of the confluence of the two water bodies.

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 Bartlemy. 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 | |
|-----------------|--------------------------|----------|
| | 05/03/09 | 17/04/09 |
| Ortho-Phosphate | 13 | 14 |

Table G2-4: Phosphorus Levels in Effluent from WWTP

| Parameter | Outlet Monitoring Station | |
|-----------------|---------------------------|----------|
| | 05/03/09 | 17/04/09 |
| Ortho-Phosphate | 5.8 | 4.7 |

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 and Pumping Station was upgraded at a cost of €0.3 M. These projects were upgraded under the Small Schemes 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 |
|---------------------|-----|----|
| | | |

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 STRETCH

Position in organisation: DIRECTOR OF SERVICE

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 | Bartlemy |
| Population Equivalent | 370 |
| Level of Treatment | Tertiary |
| Treatment plant address | Garryantagart, Bartlemy, Fermoy, Co. Cork |
| Grid Ref (12 digits, 6E, 6N) | 181919 / 087883 |
| 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 BY | |
| Source of Emission: | Bartlemy WWTP | |
| Location: | Garryantaggart, Barlemy | |
| Grid Ref (12 digits, 6E, 6N) | 182062 / 087763 | |
| Name of Receiving waters: | Knoppoge River | |
| Water Body: | River Water Body | |
| River Basin District | South Western RBD | |
| Designation of Receiving Waters: | U/S of Salmoid River | |
| Flow Rate in Receiving Waters: | 0.045 | m ³ .sec ⁻¹ Dry Weather Flow |
| | 0.0831 | 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 | 27 m ³ | Maximum/day | 120 m ³ |
| Maximum rate/hour | 5 m ³ | Period of emission (avg) | 60 min/hr 24 hr/day 365 day/yr |
| Dry Weather Flow | 0.0003125 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 | 8.5 |
| Ammonia (as N) | mg/l | 24 hr composite | = 0 | 0 |
| Biochemical Oxygen Demand | mg/l | 24 hr composite | = 25 | 6.1 |
| Chemical Oxygen Demand | mg/l | 24 hr composite | = 125 | 30.4 |
| Total Nitrogen (as N) | mg/l | 24 hr composite | = 15 | 3.6 |
| 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 | 0.49 |
| OrthoPhosphate (as P) | mg/l | 24 hr composite | = 1.7 | 0.4 |
| 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 | 9855 |

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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) | 182316 / 087884 |

| Parameter | Results (mg/l) | | | | Sampling method | Limit of Quantitation | Analysis method / technique |
|----------------------------------|----------------|----------|--|--|-----------------|-----------------------|-----------------------------|
| | 01/01/09 | 05/02/09 | | | | | |
| pH | | = 7.2 | | | Grab | 2 | Electrochemical |
| Temperature | = 0 | | | | Grab | 0.5 | Electrochemical |
| Electrical Conductivity (@ 25°C) | | = 231 | | | Grab | 0.5 | Electrochemical |
| Suspended Solids | | = 4 | | | Grab | 0.5 | Gravimetric |
| Ammonia (as N) | | = 0.06 | | | Grab | 0.02 | Colorimetric |
| Biochemical Oxygen Demand | | = 2 | | | Grab | 0.06 | Electrochemical |
| Chemical Oxygen Demand | | = 6 | | | Grab | 8 | Digestion & Colorimetric |
| Dissolved Oxygen | = 0 | | | | Grab | 0.2 | ISE |
| Hardness (as CaCO ₃) | = 0 | | | | Grab | 1 | Titrimetric |
| Total Nitrogen (as N) | = 0 | | | | Grab | 0.5 | Digestion & Colorimetric |
| Nitrite (as N) | = 0 | | | | Grab | 0.1 | Colorimetric |
| Nitrate (as N) | = 0 | | | | Grab | 0.5 | Colorimetric |
| Total Phosphorous (as P) | | = 0.08 | | | Grab | 0.2 | Digestion & Colorimetric |
| OrthoPhosphate (as P) | | = 0.05 | | | Grab | 0.02 | Colorimetric |
| Sulphate (SO ₄) | = 0 | | | | Grab | 30 | Turbidimetric |
| Phenols (Sum) | = 0 | | | | Grab | 0.1 | GC-MS2 |

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

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

| | |
|----------------------|--|
| Additional Comments: | Default of 01/01/09 and 0 where 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-1d |
| Grid Ref (12 digits, 6E, 6N) | 182316 / 087884 |

| Parameter | Results (µg/l) | | | | Sampling method | Limit of Quantitation | Analysis method / technique |
|-----------------|----------------|--|--|--|-----------------|-----------------------|-----------------------------|
| | 01/01/09 | | | | | | |
| 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 | = 0 | | | | Grab | 20 | ICP-OES |
| Copper | = 0 | | | | Grab | 20 | ICP-OES |
| Cyanide | = 0 | | | | Grab | 5 | Colorimetric |
| Flouride | = 0 | | | | Grab | 100 | ISE |
| Lead | = 0 | | | | Grab | 20 | ICP-OES |
| Nickel | = 0 | | | | Grab | 20 | ICP-OES |
| Zinc | = 0 | | | | Grab | 20 | ICP-OES |
| Boron | = 0 | | | | Grab | 20 | ICP-OES |
| Cadmium | = 0 | | | | Grab | 20 | ICP-OES |
| Mercury | = 0 | | | | Grab | 0.2 | ICP-MS |
| Selenium | = 0 | | | | Grab | 0.74 | ICP-MS |
| Barium | = 0 | | | | Grab | 20 | ICP-OES |

| | |
|----------------------|---|
| Additional Comments: | TBT value is 0.02ug/l as Sn Default of 01/01/09 and 0 where no results are available, TBT testing not required |
|----------------------|---|

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) | 181853 / 087552 |

| Parameter | Results (mg/l) | | | | Sampling method | Limit of Quantitation | Analysis method / technique |
|----------------------------------|----------------|----------|----------|----------|-----------------|-----------------------|-----------------------------|
| | 01/01/09 | 05/02/09 | 05/03/09 | 17/04/09 | | | |
| pH | | = 7.2 | = 7.7 | = 7.5 | Grab | 2 | Electrochemical |
| Temperature | = 0 | | | | Grab | 0.5 | Electrochemical |
| Electrical Conductivity (@ 25°C) | | = 217 | = 209 | = 229 | Grab | 0.5 | Electrochemical |
| Suspended Solids | | = 2 | = 5 | = 5 | Grab | 0.5 | Gravimetric |
| Ammonia (as N) | | = 0.1 | = 0.34 | = 0.17 | Grab | 0.02 | Colorimetric |
| Biochemical Oxygen Demand | | = 2 | = 2 | = 4 | Grab | 0.06 | Electrochemical |
| Chemical Oxygen Demand | | = 5 | = 20 | = 9 | Grab | 8 | Digestion & Colorimetric |
| Dissolved Oxygen | = 0 | | | | Grab | 0.2 | ISE |
| Hardness (as CaCO ₃) | = 0 | | | | Grab | 1 | Titrimetric |
| Total Nitrogen (as N) | = 0 | | | | Grab | 0.5 | Digestion & Colorimetric |
| Nitrite (as N) | = 0 | | | | Grab | 0.1 | Colorimetric |
| Nitrate (as N) | = 0 | | | | Grab | 0.5 | Colorimetric |
| Total Phosphorous (as P) | | = 0.1 | = 0.14 | = 8 | Grab | 0.2 | Digestion & Colorimetric |
| OrthoPhosphate (as P) | | = 0.06 | = 0.1 | = 0.09 | Grab | 0.02 | Colorimetric |
| Sulphate (SO ₄) | = 0 | | | | 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) | 181853 / 087552 |

| Parameter | Results (µg/l) | | | | Sampling method | Limit of Quantitation | Analysis method / technique |
|-----------------|----------------|--|--|--|-----------------|-----------------------|-----------------------------|
| | 01/01/09 | | | | | | |
| 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 | = 0 | | | | Grab | 20 | ICP-OES |
| Copper | = 0 | | | | Grab | 20 | ICP-OES |
| Cyanide | = 0 | | | | Grab | 5 | Colorimetric |
| Flouride | = 0 | | | | Grab | 100 | ISE |
| Lead | = 0 | | | | Grab | 20 | ICP-OES |
| Nickel | = 0 | | | | Grab | 20 | ICP-OES |
| Zinc | = 0 | | | | Grab | 20 | ICP-OES |
| Boron | = 0 | | | | Grab | 20 | ICP-OES |
| Cadmium | = 0 | | | | Grab | 20 | ICP-OES |
| Mercury | = 0 | | | | Grab | 0.2 | ICP-MS |
| Selenium | = 0 | | | | Grab | 0.74 | ICP-MS |
| Barium | = 0 | | | | Grab | 20 | ICP-OES |

| | |
|----------------------|--|
| Additional Comments: | TBT value is 0.02 ug/l as Sn Default of 01/01/09 and 0 where no results are available, TBT testing not required |
|----------------------|--|

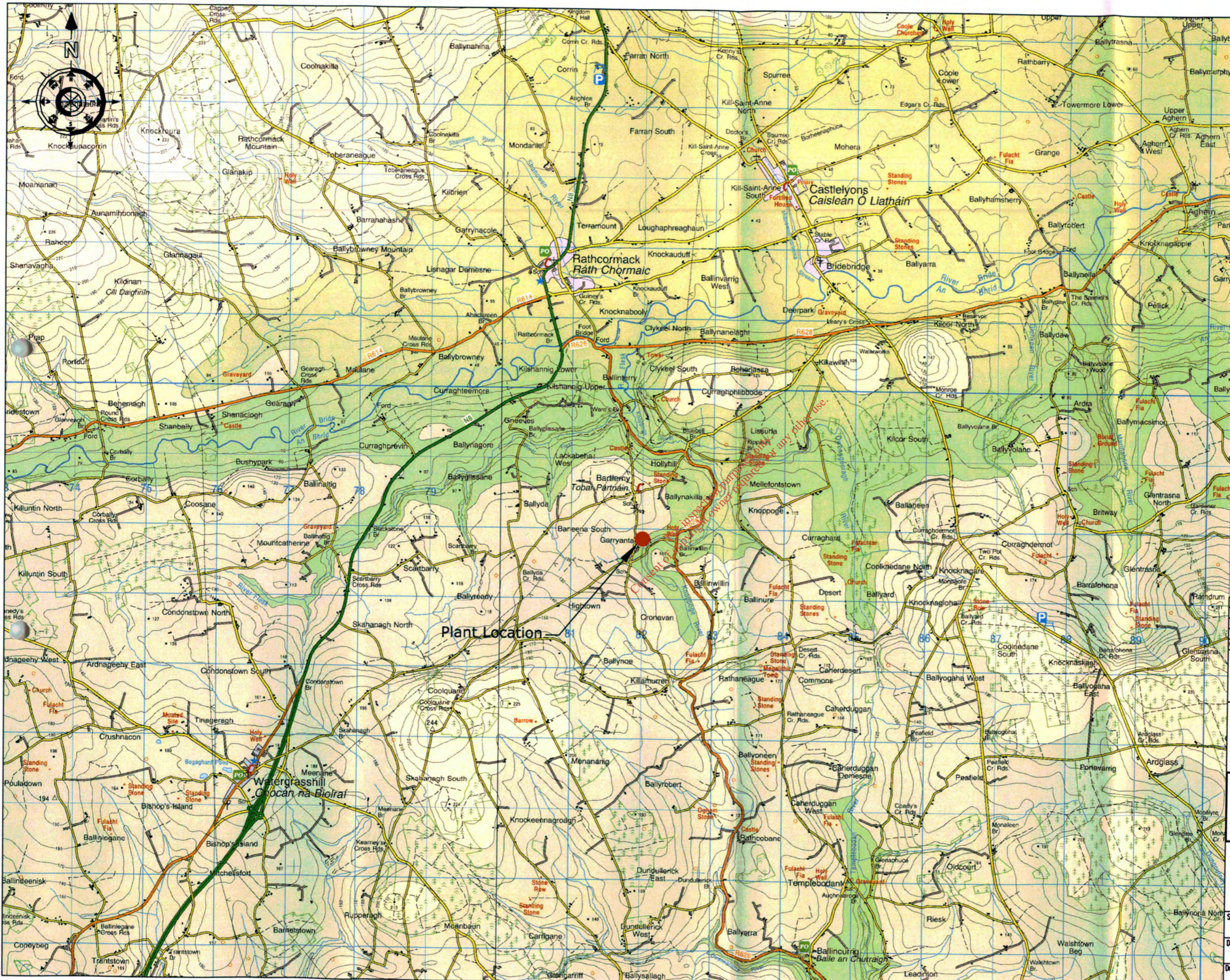
Annex 2: Check List For Regulation 16 Compliance

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.

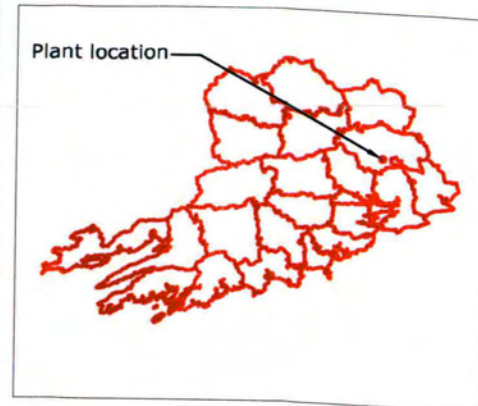
| Regulation 16(1) In the case of an application for a waste water discharge licence, the application shall - | | Attachment Number | Checked by Applicant |
|--|---|--------------------------|-----------------------------|
| (a) | give the name, address, telefax number (if any) and telephone number of 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.



Key Map

| No. | Date | Drawn | Survey | Checked | Revision | Description |
|-----|------|-------|--------|---------|----------|-------------|
| | | | | | | |

Cork County Council,
Northern Division.

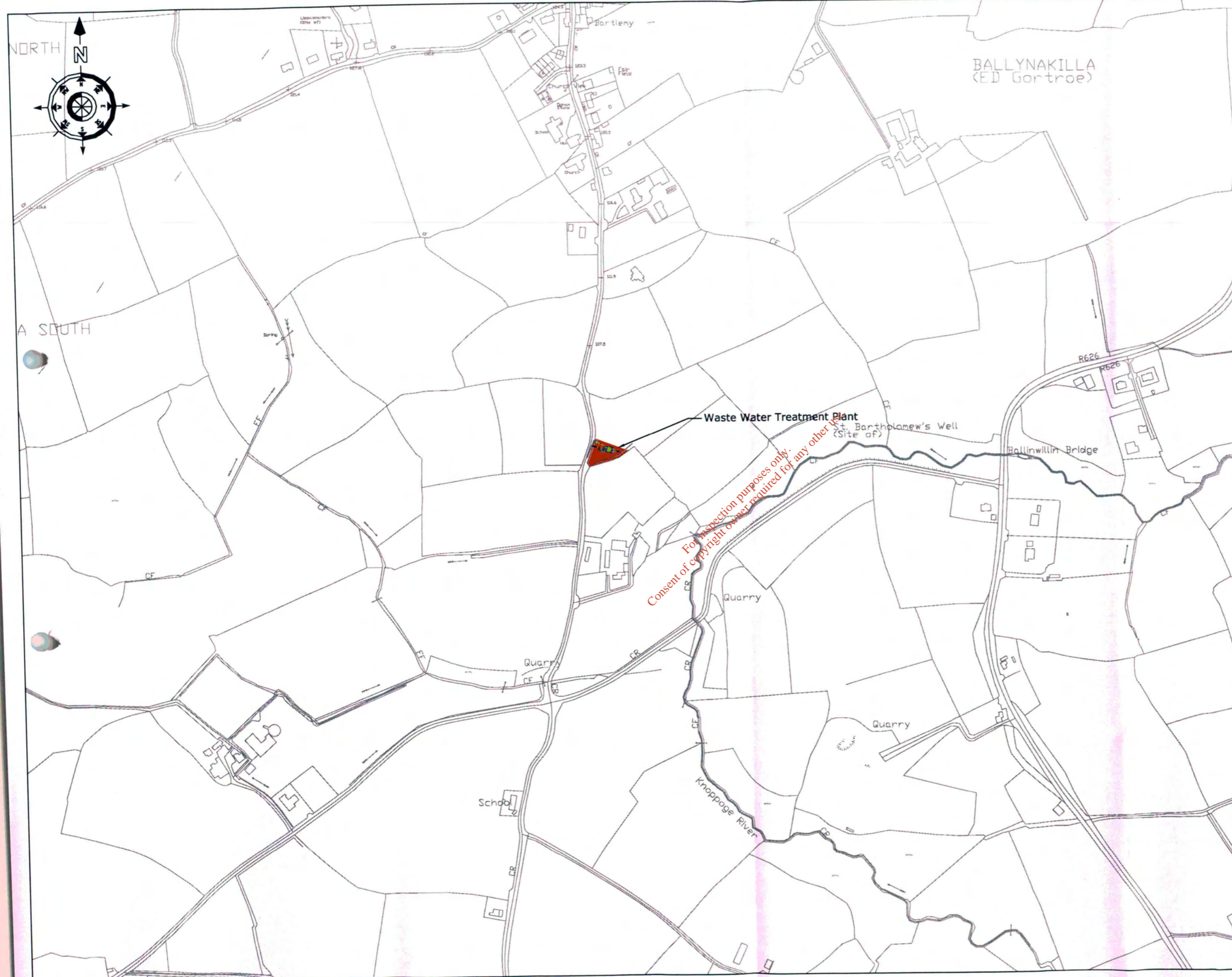


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title: **Bartlemy & Environs
Waste Water Discharge
Licence Application**

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

| | | |
|--------------------------------------|-----------------------|------------------------|
| Scale: 1:50,000 @ 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 1 | Rev: | - |



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| No. | Date | Drawn | Survey | Checked | Revision Description |
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| | | | | | |

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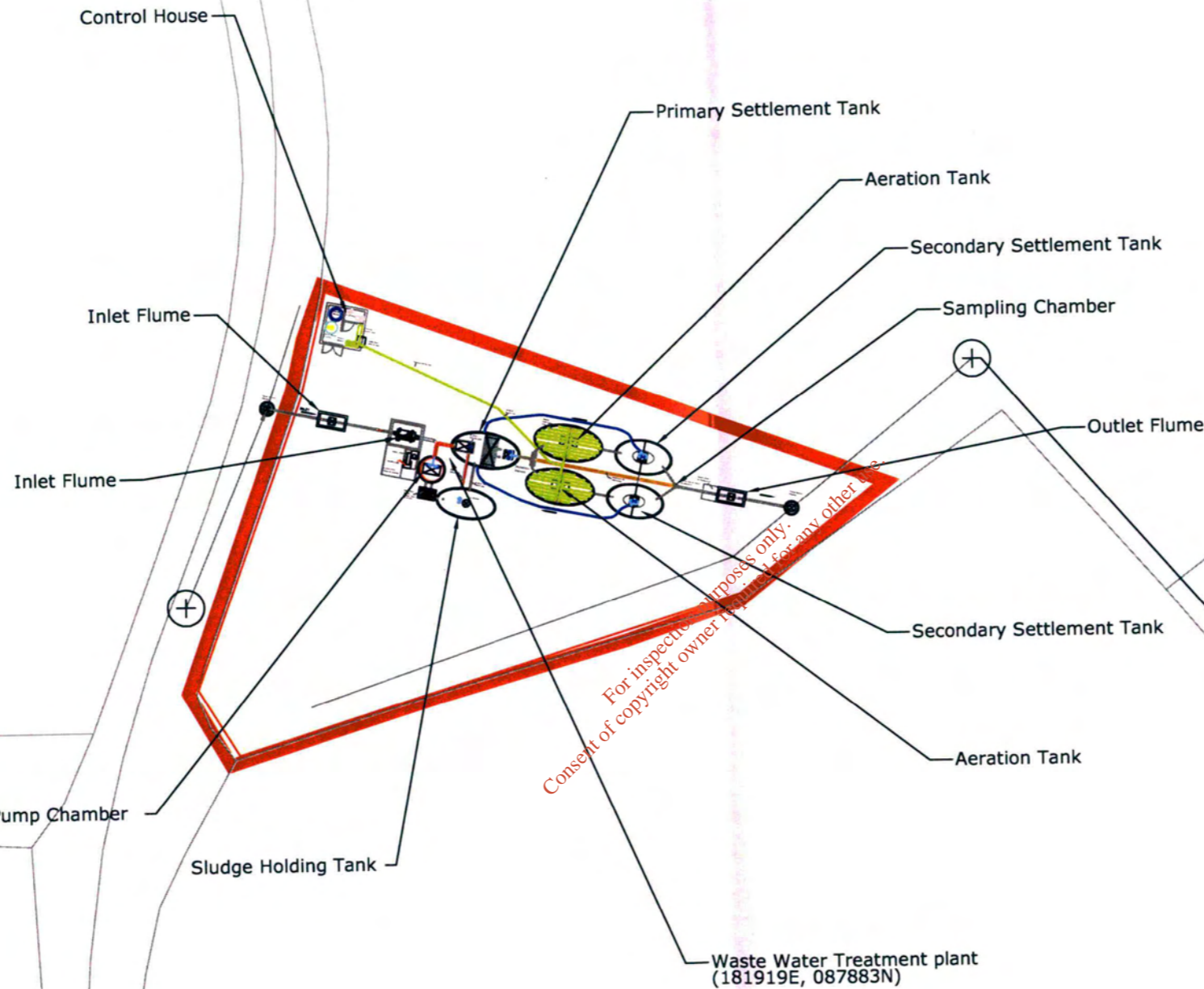
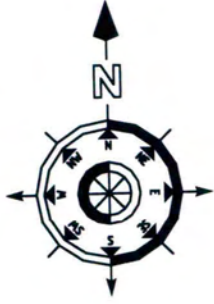


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Bartlemy & Environs
Waste Water Discharge
Licence Application

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

| | | |
|----------------------------|----------------------|------------------------|
| Scale: 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-Map2 | | Rev: - |




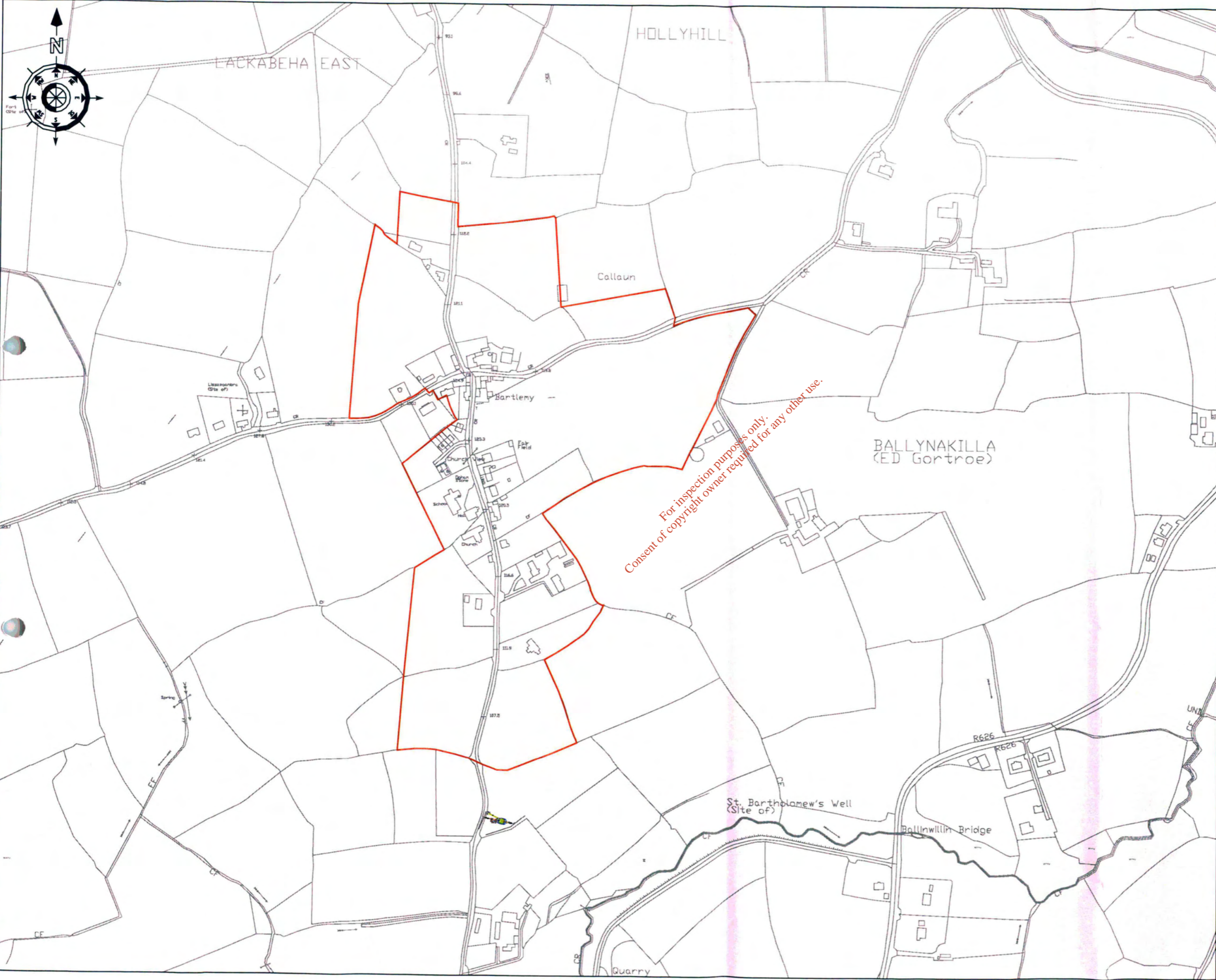
NOTES

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



KEY PLAN

| No. | Date | Drawn/Checked | Revision Description |
|---|------------------------------|-------------------------------|--|
| | | | |
| Cork County Council, Northern Division. | | | |
|  | | | N. D'KEEFE, B.E., COUNTY ENGINEER, COUNTY HALL, CORK. |
| Job Title: Bartlemy & 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

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| No. | Date | Drawn | Surv | Checked | Revision | Description |
|-----|------|-------|------|---------|----------|-------------|
| | | | | | | |

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Northern Division.

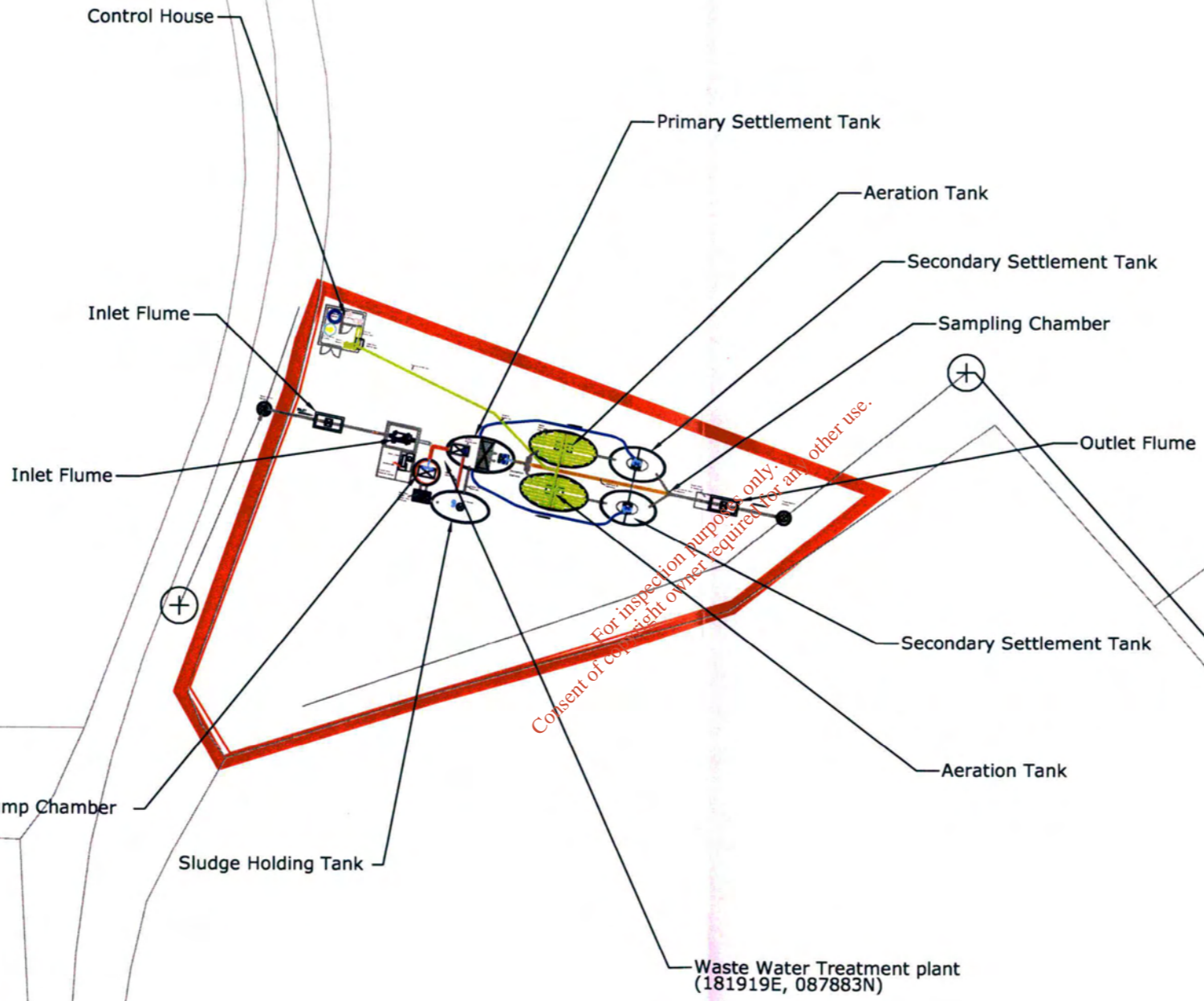
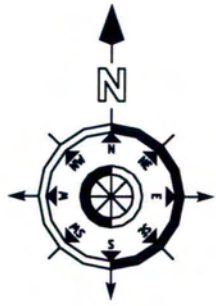


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
**Bartlemy & Environs
Waste Water Discharge
Licence Application**

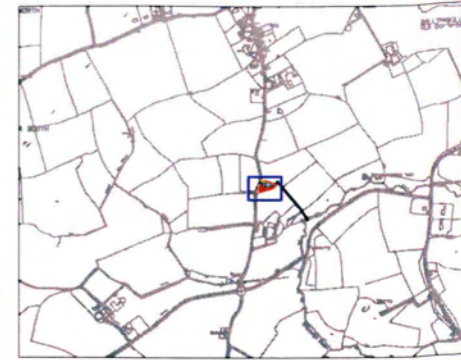
Drawing Title:
**Agglomeration Boundary
Attachment B1 - Map 4**

| | | |
|--------------------------------------|-----------------------|------------------------|
| Scale: 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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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 |
|-----|------|-------|--------|---------|----------|-------------|
| | | | | | | |

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Northern Division.

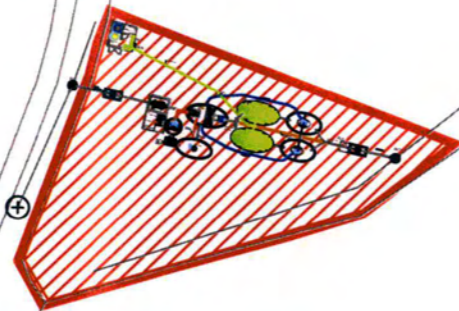
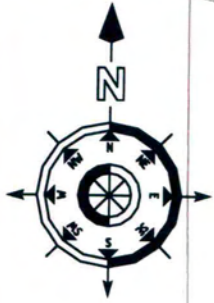


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
**Bartlemy & 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: - |



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Primary Discharge
SW-01 BY
(182062E, 087763N)

NOTES

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

| No. | Date | Drawn | Surv | Chief | Revision | Description |
|-----|------|-------|------|-------|----------|-------------|
| | | | | | | |
| | | | | | | |
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Cork County Council,
Northern Division.

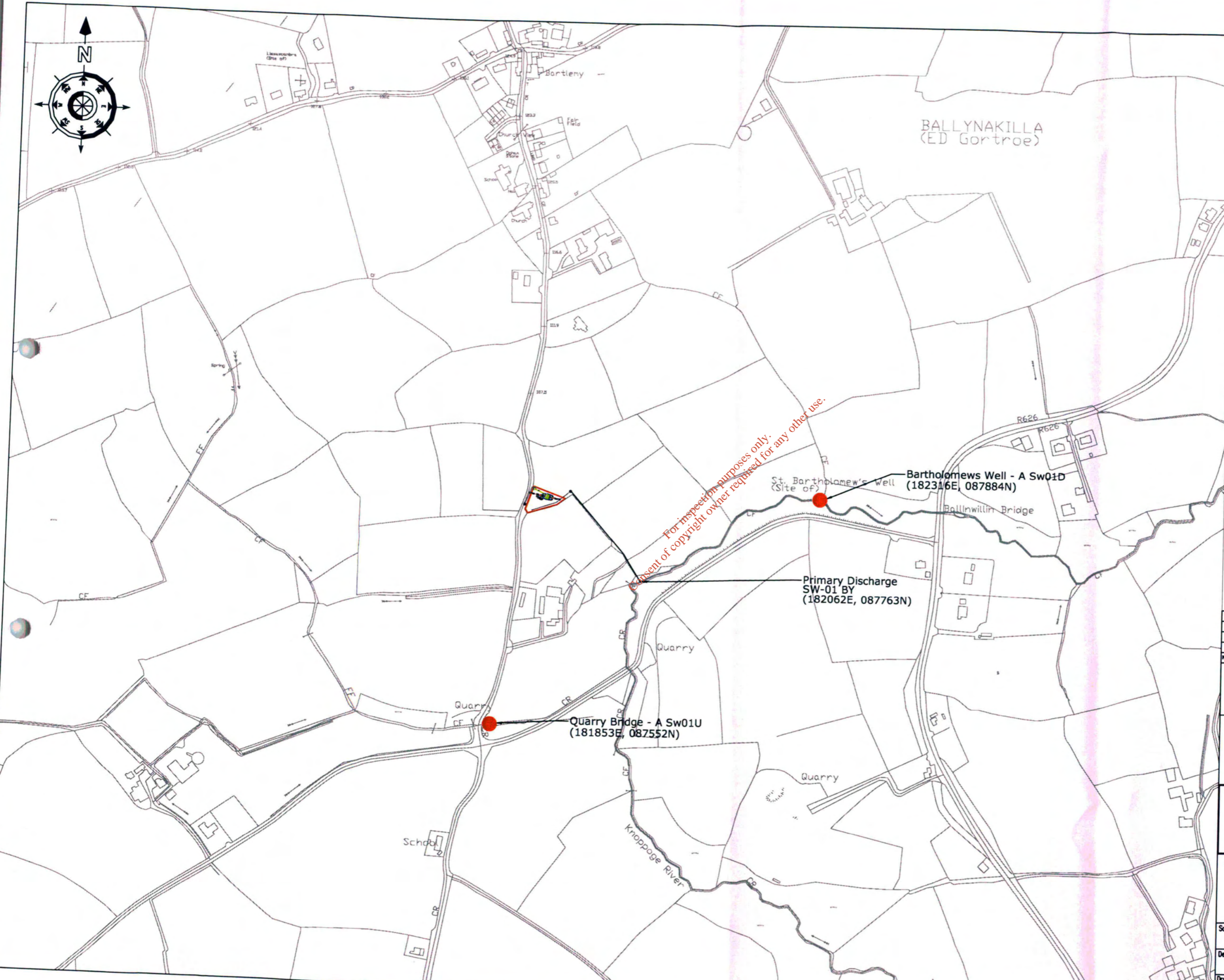
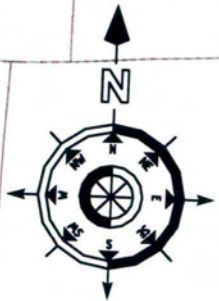


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Bartlemy & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Location of Primary Discharge
Point SW01 - BY
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 | Survey | Checked | Revision Description |
|-----|------|-------|--------|---------|----------------------|
| | | | | | |

Cork County Council,
Northern Division.



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

Job Title: **Bartlemy & 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

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Annabella,
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Suíomh Gréasáin: www.corkcoco.ie



Direct Dial: 021-4285454

Fax: 021-4345425

Email: corporate.affairs@corkcoco.ie

26th September, 2005.

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

i) New Package Type Wastewater Treatment Plant, Freemount,
Charleville, Co. Cork.

ii) Extension of existing Newmarket Wastewater Treatment Plant by
means of two number temporary treatment units.

iii) New Package Type Wastewater Treatment Plant, Garryantaggart,
Bartlemy, Co. Cork.

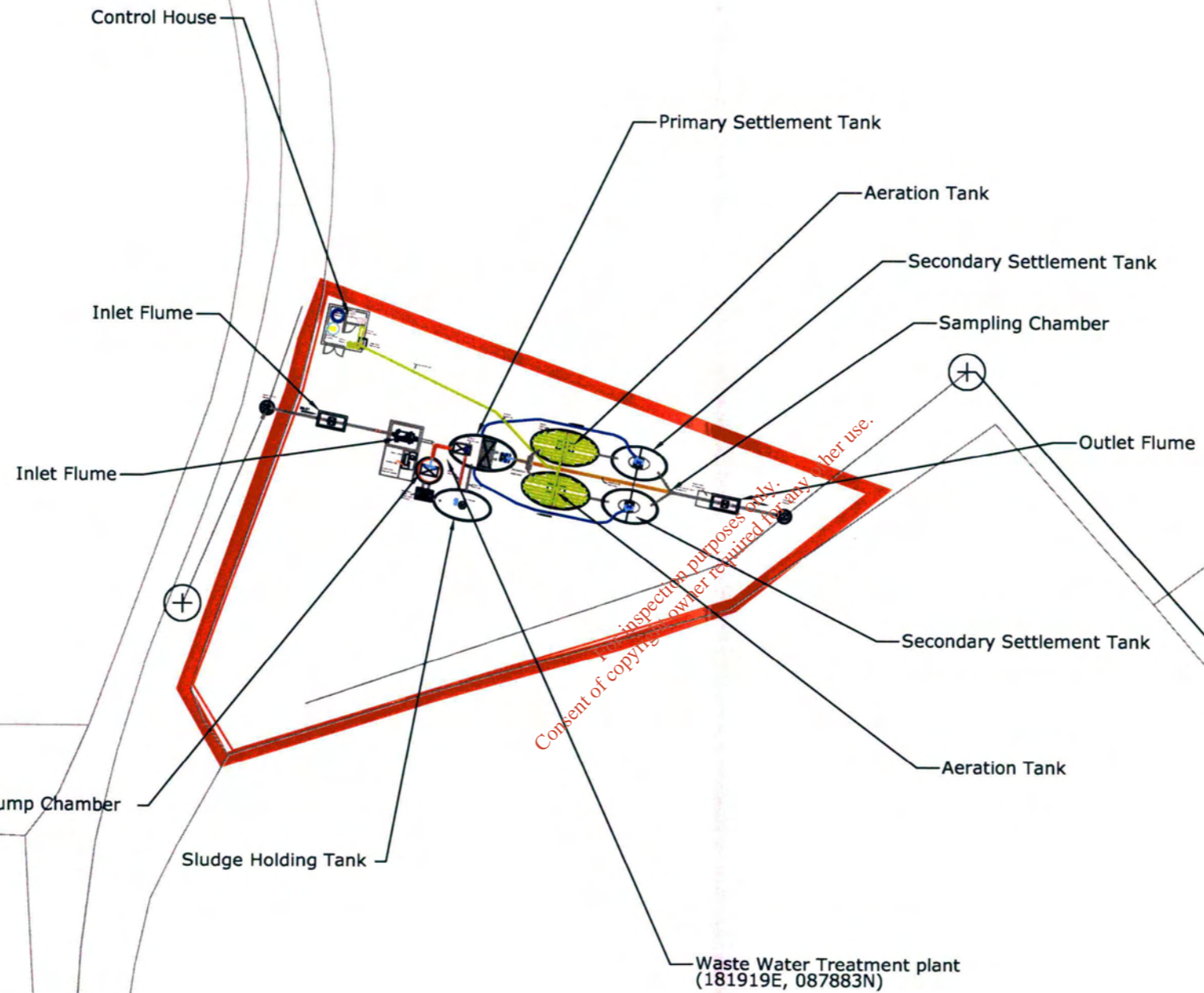
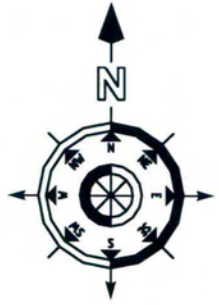
I refer to your letter dated 19th September, 2005, in connection with the above.

At the meeting of Cork County Council held on 26th September, 2005, the
recommendations of the Northern Committee were approved.


KEVIN O'REGAN,
A/SENIOR EXECUTIVE OFFICER.

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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.



KEY PLAN

| No. | Date | Drawn/Survey/Checked | Revision | Description |
|-----|------|----------------------|----------|-------------|
| | | | | |

Cork County Council,
Northern Division.

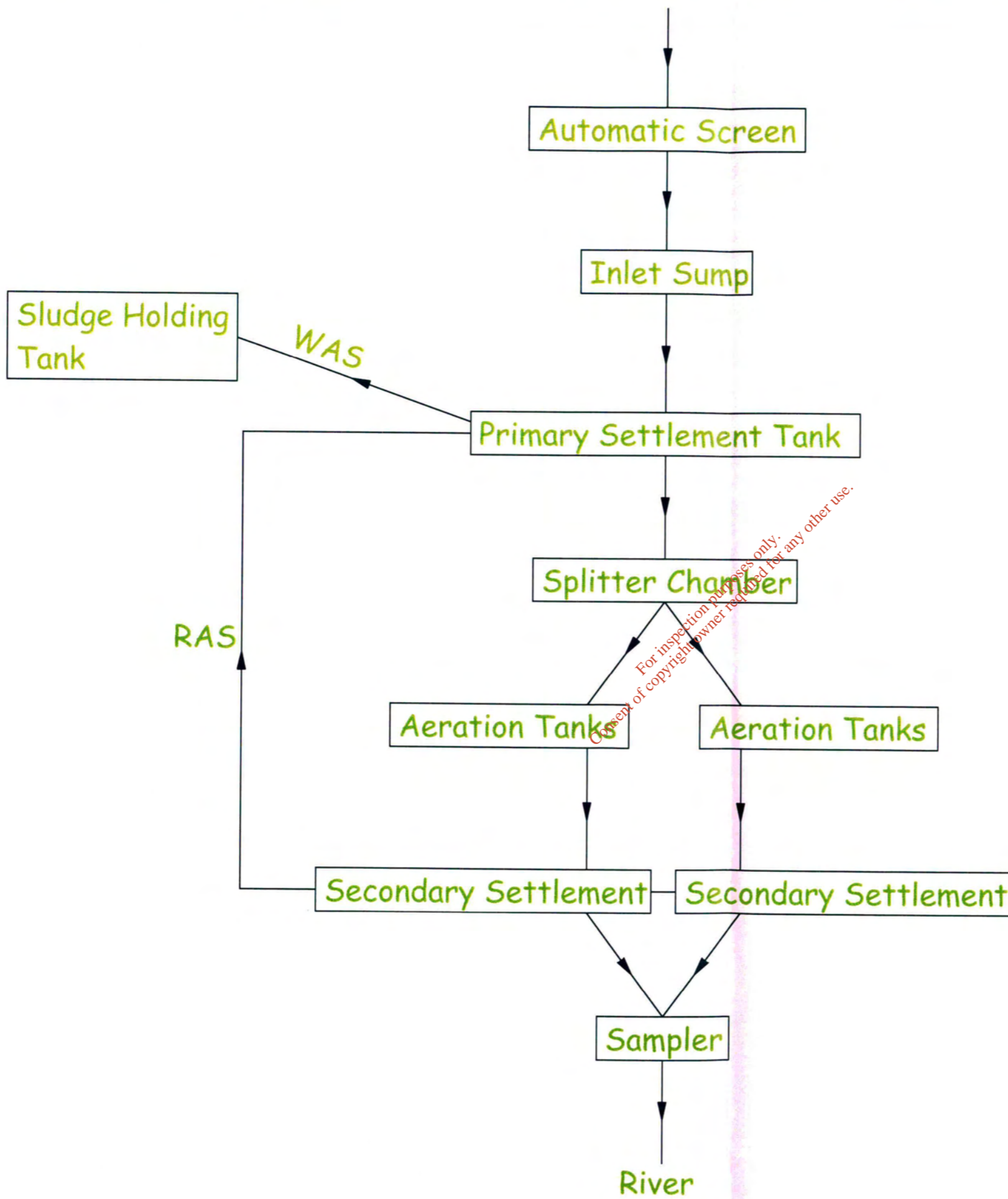


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Bartlemy & 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: | - |



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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 | Surveyed | Checked | Revision Description |
|-----|------|-------|----------|---------|----------------------|
| | | | | | |
| | | | | | |

Cork County Council,
Northern Division.



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

Job Title: Bartlemy & Environs
Waste Water Discharge
Licence Application

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

| | | | |
|-----------------------------------|----------------------|------------------------|--|
| Scale: 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: - | | |

| Attachment E4 Bartlemy analytical data for certification application | | | | | | | | | | | | | | |
|--|------------|--------------|------------|------------|--------------|------------|------------|--------------|------------|------------|------------|------------|------------|------------|
| Sample Date | 05/02/2009 | 05/03/2009 | 17/04/2009 | 05/02/2009 | 05/03/2009 | 17/04/2009 | 03/06/2009 | 09/09/2009 | 05/02/2009 | 05/03/2009 | 17/04/2009 | 05/02/2009 | 05/03/2009 | 17/04/2009 |
| Sample | Influent | Influent | Influent | Effluent | Effluent | Effluent | Effluent | Effluent | upstream | upstream | upstream | downstream | downstream | downstream |
| Sample Code | MT258 | GT380 | MT844 | MT259 | GT381 | MT845 | MT1162 | GT1142 | MT260 | MT541 | MT846 | MT261 | MT542 | MT847 |
| Flow M ³ /Day | * | No result | * | * | * | * | * | * | * | * | * | * | * | * |
| pH | 6.9 | 8.7 | 8.6 | 7.6 | 7.1 | 6.9 | 6.8 | * | 7.2 | 7.7 | 7.5 | 7.2 | 7.5 | 7.5 |
| Temperature °C | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Conductivity uS/cm 20°C | 934 | 1298 | 1406 | 463 | 918 | 687 | 665 | * | 217 | 209 | 229 | 231 | 224 | 234 |
| Suspended Solids mg/L | 1576 | 1285 | 515 | 154 | 138 | 565 | 31 | 908 | 2 | 5.4 | 5 | 4 | <2 | 5 |
| Ammonia-N mg/L | 48 | * | 105 | 3 | * | 8 | 0.68 | 5.2 | 0.1 | 0.34 | 0.17 | 0.06 | 0.09 | <0.05 |
| BOD mg/L | 1250 | 1630 | 820 | >16 | 120 | 60 | 11 | * | <2 | 2 | 4 | <2 | <2 | 2 |
| COD mg/L | 8010 | 2860 | 1840 | 183 | 278 | 330 | 82 | 1060 | <5 | 20 | 9 | 6 | 19 | 3 |
| TN-N mg/L | * | * | * | * | * | * | * | 78.62 | * | * | * | * | * | * |
| Nitrite-N mg/L | * | * | * | * | * | * | * | 1.313 | * | * | * | * | * | * |
| Nitrate-N mg/L | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| TP-P mg/L | 17.4 | 27.4 | 21.8 | 6.8 | 10.9 | 12.6 | * | 8.89 | 0.1 | 0.14 | 8 | 0.08 | 0.09 | 0.16 |
| O-PO4-P mg/L | 8.6 | 13 | 14 | 2.2 | 5.8 | 4.7 | * | 7.1 | 0.06 | 0.1 | 0.09 | 0.05 | 0.06 | 0.07 |
| SO4 mg/L | * | * | * | * | * | * | * | 54.5 | * | * | * | * | * | * |
| Phenols µg/L | * | * | * | * | * | * | * | <0.10 | * | * | * | * | * | * |
| Atrazine µg/L | * | * | * | * | * | * | * | <0.01 | * | * | * | * | * | * |
| Dichloromethane µg/L | * | * | * | * | * | * | * | <1 | * | * | * | * | * | * |
| Simazine µg/L | * | * | * | * | * | * | * | <0.01 | * | * | * | * | * | * |
| Toluene µg/L | * | * | * | * | * | * | * | <0.28 | * | * | * | * | * | * |
| Tributyltin µg/L | * | Not required | * | * | Not required | * | * | Not required | * | * | * | * | * | * |
| Xylenes µg/L | * | * | * | * | * | * | * | <0.73 | * | * | * | * | * | * |
| Arsenic µg/L | * | * | * | * | * | * | * | 2.1 | * | * | * | * | * | * |
| Chromium ug/L | * | <20 | * | * | <20 | * | * | <20 | * | * | * | * | * | * |
| Copper ug/L | * | 1089 | * | * | 287.5 | * | * | 2198 | * | * | * | * | * | * |
| Cyanide µg/L | * | * | * | * | * | * | * | <5 | * | * | * | * | * | * |
| Fluoride µg/L | * | * | * | * | * | * | * | 0.055 | * | * | * | * | * | * |
| Lead ug/L | * | 36.2 | * | * | <20 | * | * | 48.8 | * | * | * | * | * | * |
| Nickel ug/L | * | <20 | * | * | <20 | * | * | 22.5 | * | * | * | * | * | * |
| Zinc ug/L | * | 633 | * | * | 97.1 | * | * | 937.8 | * | * | * | * | * | * |
| Boron ug/L | * | 127 | * | * | <20 | * | * | <20 | * | * | * | * | * | * |
| Cadmium ug/L | * | <20 | * | * | <20 | * | * | <20 | * | * | * | * | * | * |
| Mercury µg/L | * | * | * | * | * | * | * | 0.044 | * | * | * | * | * | * |
| Selenium µg/L | * | * | * | * | * | * | * | 5.9 | * | * | * | * | * | * |
| Barium ug/L | * | 76.1 | * | * | 28.4 | * | * | 118 | * | * | * | * | * | * |

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SITE SYNOPSIS

SITE NAME: BLACKWATER RIVER (CORK/WATERFORD)

SITE CODE: 002170

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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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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SITE SYNOPSIS

SITE NAME: BLACKWATER RIVER (CORK/WATERFORD)

SITE CODE: 002170

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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