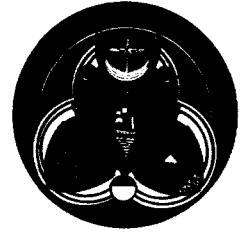


Comhairle Contae Chorcaí Cork County Council

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 Tullylease

Dear Sir / Madam,

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

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



Recycled

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.

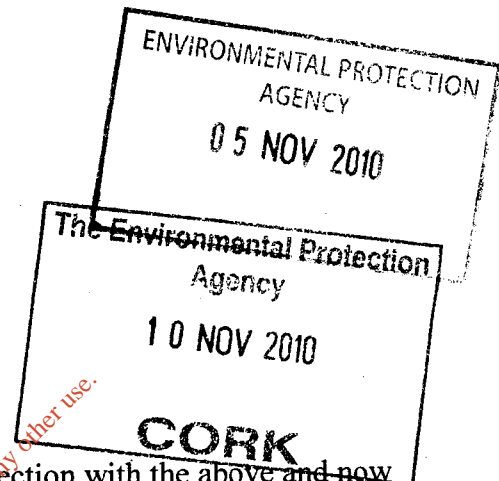
Phone: 022/54806
Email: june.white@corkcoco.ie

Annabella,
Mala,
Co. Chorcaí.

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

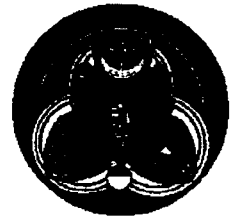
Annabella,
Mallow,
Co. Cork.

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,

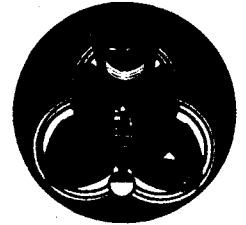
A handwritten signature in black ink, appearing to read 'Louis Duffy'.

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>	A0338-01
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Environmental Protection Agency
PO Box 3000, Johnstown Castle Estate, Co. Wexford
Lo Call: 1890 335599 Telephone: 053-9160600 Fax: 053-9160699
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

Tullylease is situated approximately 15km northeast of Newmarket and is close to the Limerick Border.

The Waste Water Works and the Activities Carried Out Therein

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

Tullylease WWTP is designed for a Population Equivalent (PE) of 300, which was commissioned in 1998. The WWTP is a Sequence Batch Reactor, consisting of an inlet sump which pumps the influent to the 2 Nr SBR Tanks. Each tank operates in a sequential arrangement of Fill, Aerate, Settle, Decant.

Currently the WWTP is receiving flows ranging from 35m³/d to 90m³/d, with an average DWF of 30m³/d entering the plant. Based average hydraulic load of 220l/d/p, the PE equates to 160.

Tullylease 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 Tullylease agglomeration arises from the following areas:

- Domestic population
- Commercial premises
- School
- Infiltration

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 35m³/d to 90m³/d, with an average DWF of 30m³/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 a tributary of the Mullaheera River, which is adjacent to the wastewater treatment plant site. The maximum flow to the existing WWTP is in the order of 35m³/d to 90m³/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:

- Forward Feed Sump
- 2 Nr SBR Tanks
- RAS/WAS Pumps
- Outfall to stream

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

Currently there are no works listed to be undertaken under the Waste Service Investment Programme 2007-2009.

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 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 |

SECTION B: GENERAL

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

B.1 Agglomeration Details

Name of Agglomeration:	Tullylease & 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*:	Cork County Council
Address:	Cork County Council
	Tullylease
	Charleville
	Co. Cork
Grid ref (6E, 6N)	135968E, 118755N
Level of Treatment	Secondary

*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 stream
Unique Point Code	SW01- TL
Location	Adjacent to WWTP at Tullylease
Grid ref (6E, 6N)	135963E, 118768N

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	170
Data Compiled (Year)	2009
Method	House Count

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 Tullylease WWTP is 160 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 10 p.e. There are currently no planning permission in relation to non domestic activities.

The 200 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.

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.

Description of Wastewater Treatment Plant

The influent arising from the agglomeration of Tullylease is conveyed by a partially combined sewerage system. The combined sewerage system does not suffer from high infiltration or storm. The gravity sewerage system initially enters a header manhole at the plant and then enters the concrete forward feed sump which has 2 Nr Pumps (Duty/Standby).

Forward Feed Sump:

- Number of duty and standby pumps at each pump station - 1 Nr Duty & 1 Nr Standby, each with a capacity of 3.33l/sec
- The measures taken in the event of power failure – Electrical power failures are rare occurrence, and generally the effluent backs up from the sump up the sewer lines.
- Details of storage capacity at each pump station – The capacity of the sump is 2.7m³
- Frequency and duration of activation of emergency overflow to receiving waters. Clarify the location where such discharges enter the receiving waters. – Not Applicable

The effluent is then pumped from the Forward Feed Sump to the duty Sequence Batch Reactor Tank. There are 2Nr SBR Tanks, with measurements of 3.65m x 3.65m x 3.0m deep, with common concrete dividing wall. The effective liquid depth is 2.7m, equating to a effective total volume of 72m³.

The treatment process employed is the extended aeration activated sludge process. Either tank is used as a aerator, while the other tank is used as a clarifier.

The Plant Comprises of the following elements:

1. Aeration system using fine bubble diffused air complete with duty/standby blowers, air delivery manifold, control valves, and integral condensate bleed system.
2. Clarification equipment comprising adjustable decanting bellmouth pipes and pneumatically operated rams for level control
3. Compressor complete with pneumatically operated auto pinch valves for hydraulic stream control
4. Sump & pumps
5. Interconnecting equalisation pipework & fittings between each cell
6. Desludging valve for each cell

Design Details of the WWTP:

Design Population	200
Daily BOD Load	14kg (at 70g/person)
Hydraulic Load	230l/h/d
Peak Load	6DWF
Dry weather flow	0.53l/s
Peak Flow	3.18l/s

- There are 8 Nr diffusers per SBR Tank and also 2 Nr Air Blowers (Duty Standby).
- The air blower capacity is 42m³/h
- The WWTP at Tullylease is design for 6DWF and the Tullylease sewerage system does not experience significant infiltration or storm ingress.

Following the aeration process (2 hours), the clarification process (2 hours) takes place. Following completion of the clarification the effluent is drawn off by means of a pneumatically operated bellmouth decanting pipe, which drops the level in the clarification unit in stages over one metre travel.

The effluent arising from the WWTP is discharged to adjacent watercourse, which is a tributary of the Mullaheera River, which in turns is a tributary of the River Deal.

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.

The WWTP is capable of 6DWF.

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

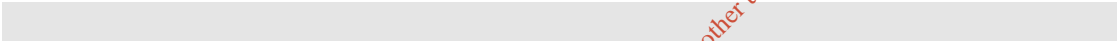
Forward Feed Sump:

- Number of duty and standby pumps at each pump station - 1 Nr Duty & 1 Nr Standby, each with a capacity of 3.33l/sec

- The measures taken in the event of power failure – Electrical power failures are rare occurrence, and generally the effluent backs up from the sump up the sewer lines.
- Details of storage capacity at each pump station – The capacity of the sump is 2.7m³
- Frequency and duration of activation of emergency overflow to receiving waters. Clarify the location where such discharges enter the receiving waters. – Not Applicable

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
	✓	



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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 - TL	Primary	Cork County Council	River	Mulleheera River	U/S of Salmonid River	135963	118768

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	135963	118768	N
aSW01u	u/s	Sampling	135938	118759	N
aSW01d	d/s	Sampling	137243	118890	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 installed in the late 1990's, there are currently no improvements planned at present for the Tullylease 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 Shannon District encompasses large areas of counties Limerick, Clare, North Tipperary, Offaly, Westmeath, Longford and Roscommon as well as significant portions of counties Kerry, Galway, Leitrim and Cavan. Other counties that have smaller portions in the Shannon District include Sligo, South Tipperary, Mayo, Cork, Laois, Meath and Fermanagh. All of Limerick City is located within the District.

The Mullaheera River is included in the SRBD. The overall objectives of the SRBD 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 SRBD has proposed water quality standards for the Mullaheera 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 Tullylease Wastewater Treatment Plant cannot cause deterioration in good water quality under the Water Framework Directive at present.

The Mullaheera River is not a designated Shellfish area under the Shellfish Waters Regulations, S.I.200 of 1994. The River Shannon, into which the River Deel flows, is also not designated under these regulations. The Mullaheera River is a tributary of the River Deel.

The Mullaheera River is not designated a Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988, the River Deel and River Shannon which the Mullaheera River joins, are also not designated Salmonid Water under Salmonid Water Regulations, S.I. 293 of 1988.

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

The Mullaheera River or the Deel River are not a designated Sensitive Area under the Urban Wastewater Treatment Regulations 2001 (S.I. 254 of 2001).

Water is not abstracted from the Mullaheera 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 Shannon River cSAC (Site Code: 002165) is very large site stretching from along the Shannon Valley from Killaloe to Loop Head/Kerry Head, a distance of 120km.

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 Shannon, however a number may be present in the Mullaheera 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 Shannon River Site Synopsis is included in this attachment.

Natural Heritage Areas

The Mullaheera River does 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 Mullaheera River.

Receiving Water Quality Requirement

Water Quality analysis data for the Mullaheera River was obtained from Cork County Council. There are no EPA stations along the Mullaheera River, however the EPA takes samples from the River Deel, downstream of the confluence of the Mullaheera River and River Deel. This is listed below:

- Bridge Milford Village – 10km downstream of the discharge point.

The confluence of the Mullaheera River and River Deel is approximately by 8km downstream of the discharge point at Tullylease WWTP.

Table F1-1: Biological Quality Rating for River Deel – Downstream of the discharge point

Sampling Location	EPA Biological Quality Rating (Q values)		
	1995 -1997	2006	Target
Bridge in Milford	3	4	3-4

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)
Biological Oxygen Demand (BOD)	25	2
Suspended Solids (SS)	35	8

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

From Table 3 above, it is evident that treated effluent from the Tullylease 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 = 0.1766 m³/sec
 Median oPO₄-P in River (upstream) = 0.05mg/L

Average volume of discharge = 0.0013 m³/sec
 Median value for oPO₄-P in discharge = 3.7mg/l

$$C_{\text{final}} = \frac{(.1766 \times .05) + (0.0013 \times 3.7)}{0.1766 + 0.0013}$$

$$C_{\text{final}} = 0.077 \text{ mg/L oPO}_4\text{-P}$$

The increase in Orthophosphate due to the discharge is 0.022 mg/L

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

Flow of River (95%) = 0.0146 m³/sec
 Average BOD in River (upstream) = 2 mg/L

Average volume of discharge = 0.0013 m³/sec
 Average BOD in discharge = 2 mg/L

$$C_{\text{final}} = \frac{(0.0146 \times 2) + (0.0013 \times 2)}{0.0146 + 0.0013}$$

$$C_{\text{final}} = 2 \text{ mg/L BOD}$$

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

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

Flow of River (95%) = 0.0146 m³/sec
Average Suspended Solids in River (upstream) = 8mg/L

Average volume of discharge = 0.0013 m³/sec
Average Suspended Solids in discharge = 8 mg/L

$$C_{\text{final}} = \frac{(0.0146 \times 8) + (0.0013 \times 8)}{0.0146 + 0.0013}$$

C_{final} = 8 mg/L Suspended Solids

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

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

50% Median flow of River = 0.1766 m³/sec
Median TPO₄-P in River (upstream) = 0.07 mg/L

Average volume of discharge = 0.0013 m³/sec
Median TPO₄-P in discharge = 3.7 mg/L

$$C_{\text{final}} = \frac{(0.1766 \times 0.07) + (0.0013 \times 3.7)}{0.1766 + 0.0013}$$

C_{final} = 0.097 mg/L TPO₄-P

The increase in Total Phosphate due to the discharge is 0.027mg/L

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

Flow of River (95%) = 0.0146 m³/sec
Average Total Nitrogen in River (upstream) = 3.25mg/L

Average volume of discharge = 0.0013 m³/sec
Average Total Nitrogen in discharge = 9.47mg/L

$$C_{\text{final}} = \frac{(0.0146 \times 3.25) + (0.0013 \times 9.47)}{0.0146 + 0.0013}$$

$$C_{\text{final}} = 3.76 \text{ mg/L Total Nitrogen}$$

The increase in Total Nitrogen due to the discharge is 0.51 mg/L.

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

No Results

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

Flow of River (95%) = 0.0146m³/sec

Average Ammonia-N in River (upstream) = 0.07 mg/L

Average volume of discharge = 0.0013 m³/sec

Average Ammonia-N in discharge = 0.1 mg/L

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

$$C_{\text{final}} = \frac{(0.0146 \times 0.07) + (0.0013 \times 0.1)}{0.0146 + 0.0013}$$

$$C_{\text{final}} = 0.072 \text{ mg/L Ammonia}$$

The increase in Ammonia due to the discharge is 0.002mg/L.

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

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

Discharges in proximity of Wastewater Works

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

Table F1-4: Upstream Water Quality

Parameter	Upstream Monitoring Station
	17/09/09
Ph	7.2
BOD	2
SS	8
Ammonia	0.07
Ortho-Phosphate	0.05

Table F1-5: Downstream Water Quality

Parameter	Upstream Monitoring Station
	20/08/09
Ph	7.2
BOD	2
SS	8
Ammonia	0.05
Ortho-Phosphate	0.05

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 Shannon, 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
	Foynes, Askeaton, Shanagolden,	17,500m ³ /day (2,500m ³)			134345	149180	N

	Pallaskerry	/day to serve agglomeration, 15,000m ³ /day to Aughinish Alumina)					
	Newcastle West	2,700m ³ /day			131401	131202	N

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 with Cork County. The information above was supplied by Limerick County Council.

Attachment F.2 should contain any supporting information.

Risk Assessment Attached.

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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 1,200 PE WWTP and pumping station.

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 Shannon District encompasses large areas of counties Limerick, Clare, North Tipperary, Offaly, Westmeath, Longford and Roscommon as well as significant portions of counties Kerry, Galway, Leitrim and Cavan. Other counties that have smaller portions in the Shannon District include Sligo, South Tipperary, Mayo, Cork, Laois, Meath and Fermanagh. All of Limerick City is located within the District.

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

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

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

- Identify pressures on water bodies and assess risk of not achieving compliance with the Water Framework Directive

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

There are no EPA stations along the Mullaheera River, however the EPA takes samples from the River Deel, downstream of the confluence of the Mullaheera River and River Deel. This is listed below:

- Bridge Milford Village – 10km downstream of the discharge point.

Table F1-1: Biological Quality Rating for River Deel – Downstream of the discharge point

Sampling Location	EPA Biological Quality Rating (Q values)		
	1995 -1997	2006	Target
Bridge in Milford	3	4	3-4

Table G1-1: Upstream Water Quality

Parameter	Upstream Monitoring Station
	17/09/09
Ph	7.2
BOD	2
SS	8
Ammonia	0.07
Ortho-Phosphate	0.05

Table G1-2: Downstream Water Quality

Parameter	Upstream Monitoring Station
	20/08/09
Ph	7.2
BOD	2
SS	8
Ammonia	0.05
Ortho-Phosphate	0.05

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

Birds Directive 79/409/EEC

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

No designated special protected areas are located along the Mullaheera River. There are areas of the River Shannon 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.

Coolroe (Fermoy) is the closest PWS that utilise ground water for medium sized water supplies. This located approximately 10km.

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 Mullaheera River or River Shannon downstream of Tullylease 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 Tullylease Wastewater Treatment Plant was commissioned in 2006 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 Tullylease 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 Mullaheera River is not a designated Sensitive Area.

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 Mullaheera River is not a designated Shellfish Area under the Shellfish Waters Regulations, S.I. 200 of 1994. The River Shannon, into which the River Deel flows (after joining the Mullaheera 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 Shannon River cSAC (Site Code: 002165) is very large site stretching from along the Shannon Valley from Killaloe to Loop Head/Kerry Head, a distance of 120km

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 Shannon 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 Mullaheera 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 Tullylease 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 Mullaheera River, which flows adjacent to the WWTP site boundary. The Mullaheera River is a tributary of the River Deel which is a tributary of the Shannon River (Munster).

The EPA do not have any stations along the Mullaheera River, however they have a number stations on the River Deel 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 Tullylease. 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
	17/09/09
Ortho-Phosphate	1

Table G2-4: Phosphorus Levels in Effluent from WWTP

Parameter	Outlet Monitoring Station
	17/09/09
Ortho-Phosphate	3.7

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.

Since the upgrade of the WWTP in 1998 there are no further works are listed to be carried out under the current Water Services Investment Programme 2007 -2009

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	Tullylease
Population Equivalent	180
Level of Treatment	Secondary
Treatment plant address	Tullylease, Charleville, Co. Cork
Grid Ref (12 digits, 6E, 6N)	135968 / 118755
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 TY	
Source of Emission:	WWTP	
Location:	Tullylease	
Grid Ref (12 digits, 6E, 6N)	135963 / 118768	
Name of Receiving waters:	Tributary of Mullaheera	
Water Body:	River Water Body	
River Basin District	Shannon IRBD	
Designation of Receiving Waters:	Unknown	
Flow Rate in Receiving Waters:	0.0075	m ³ .sec ⁻¹ Dry Weather Flow
	0.015	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	37.4 m ³	Maximum/day	112 m ³
Maximum rate/hour	4.7 m ³	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.00043 m ³ /sec		

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

Discharge Point Code: SW-1

Substance	As discharged			
	Unit of Measurement	Sampling Method	Max Daily Avg.	kg/day
pH	pH	Grab	= 9	
Temperature	°C	Grab	= 30	
Electrical Conductivity (@ 25°C)	µS/cm	Grab	= 1000	
Suspended Solids	mg/l	Grab	= 35	3.9
Ammonia (as N)	mg/l	Grab	= 0	0
Biochemical Oxygen Demand	mg/l	Grab	= 25	2.8
Chemical Oxygen Demand	mg/l	Grab	= 125	14
Total Nitrogen (as N)	mg/l	Grab	= 35	3.9
Nitrite (as N)	mg/l	Grab	= 0	0
Nitrate (as N)	mg/l	Grab	= 0	0
Total Phosphorous (as P)	mg/l	Grab	= 8	0.9
OrthoPhosphate (as P)	mg/l	Grab	= 6	0.7
Sulphate (SO ₄)	mg/l	Grab	= 0	0
Phenols (Sum)	µg/l	Grab	= 0	0

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

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

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

Discharge Point Code: SW-1

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

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

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

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TABLE E.1(i): WASTE WATER FREQUENCY AND QUANTITY OF DISCHARGE – Primary and Secondary Discharge Points

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m ³ /annum)
SW-1	365	13651

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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)	137243 / 118890

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	17/09/09					
pH		= 7.2			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 170			Grab	0.5	Electrochemical
Suspended Solids		= 8			Grab	0.5	Gravimetric
Ammonia (as N)		= 0.05			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		< 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		= 7			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	ISE
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 3.16			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)		= 0.06			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. TBT testing not required.
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TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1d
Grid Ref (12 digits, 6E, 6N)	137243 / 118890

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	17/09/09				
Atrazine	= 0			Grab	0.96	HPLC
Dichloromethane	= 0			Grab	1	GC-MS1
Simazine	= 0			Grab	0.01	HPLC
Toluene	= 0			Grab	0.02	GC-MS1
Tributyltin	= 0			Grab	0.02	GC-MS1
Xylenes	= 0			Grab	1	GC-MS1
Arsenic	= 0			Grab	0.96	ICP-MS
Chromium		< 20		Grab	20	ICP-OES
Copper		< 20		Grab	20	ICP-OES
Cyanide	= 0			Grab	5	Colorimetric
Flouride	= 0			Grab	100	ISE
Lead		< 20		Grab	20	ICP-OES
Nickel		< 20		Grab	20	ICP-OES
Zinc		< 20		Grab	20	ICP-OES
Boron		< 20		Grab	20	ICP-OES
Cadmium		< 20		Grab	20	ICP-OES
Mercury	= 0			Grab	0.2	ICP-MS
Selenium	= 0			Grab	0.74	ICP-MS
Barium		< 20		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn Default of 01/01/09 and 0 where no results are available. TBT testing not required.
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TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	135938 / 118759

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	17/09/09					
pH		= 7.2			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 166			Grab	0.5	Electrochemical
Suspended Solids		= 8			Grab	0.5	Gravimetric
Ammonia (as N)		= 0.07			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		< 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		= 11			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	ISE
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 3.25			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)		= 0.07			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. TBT testing not required.
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TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	135938 / 118759

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	17/09/09				
Atrazine	= 0			Grab	0.96	HPLC
Dichloromethane	= 0			Grab	1	GC-MS1
Simazine	= 0			Grab	0.01	HPLC
Toluene	= 0			Grab	0.02	GC-MS1
Tributyltin	= 0			Grab	0.02	GC-MS1
Xylenes	= 0			Grab	1	GC-MS1
Arsenic	= 0			Grab	0.96	ICP-MS
Chromium		< 20		Grab	20	ICP-OES
Copper		< 20		Grab	20	ICP-OES
Cyanide	= 0			Grab	5	Colorimetric
Flouride	= 0			Grab	100	ISE
Lead		< 20		Grab	20	ICP-OES
Nickel		< 20		Grab	20	ICP-OES
Zinc		< 20		Grab	20	ICP-OES
Boron		< 20		Grab	20	ICP-OES
Cadmium		< 20		Grab	20	ICP-OES
Mercury	= 0			Grab	0.2	ICP-MS
Selenium	= 0			Grab	0.74	ICP-MS
Barium		< 20		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn Default of 01/01/09 and 0 where no results are available. TBT testing not required.
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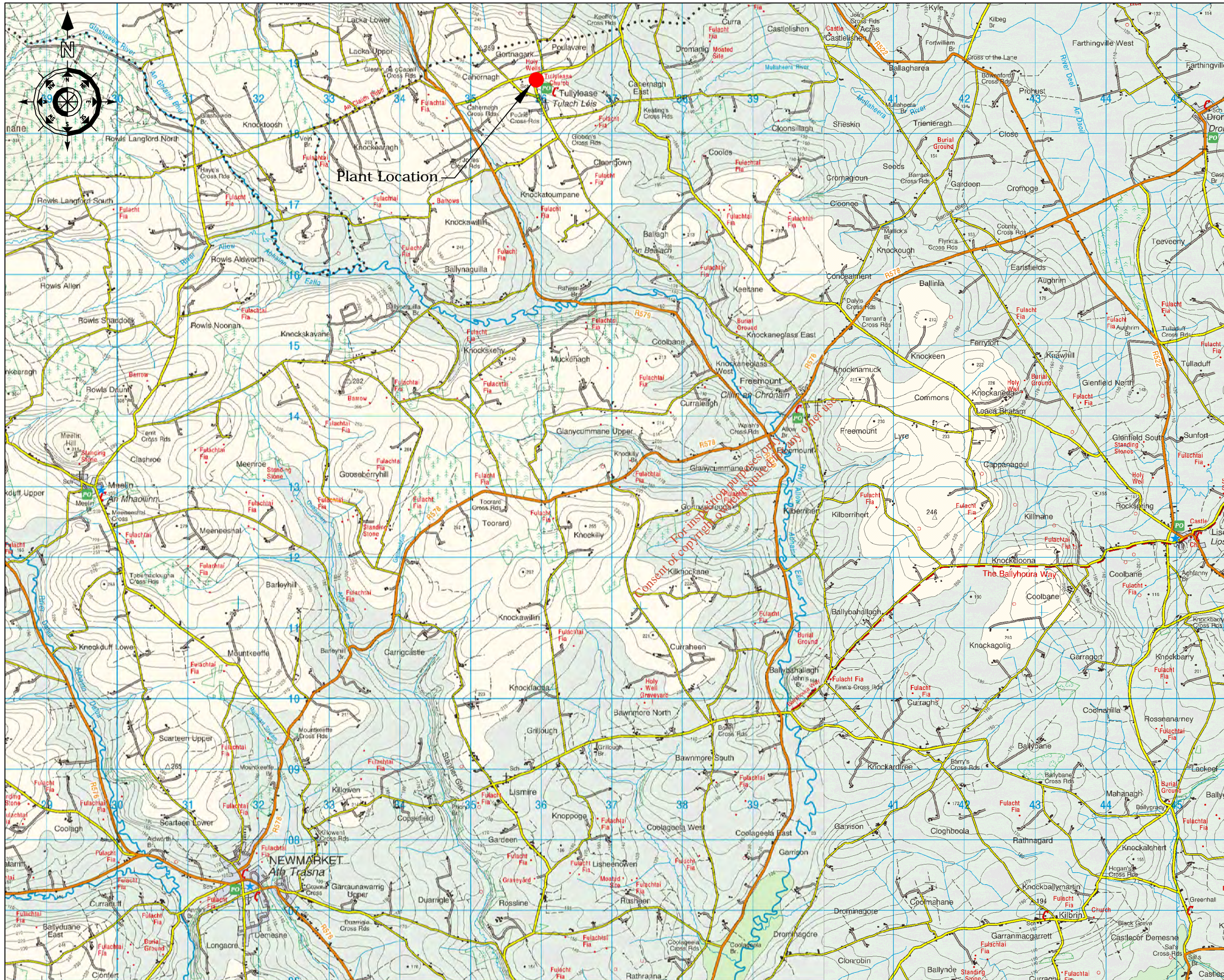
Annex 2: Check List For Regulation 16 Compliance

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

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

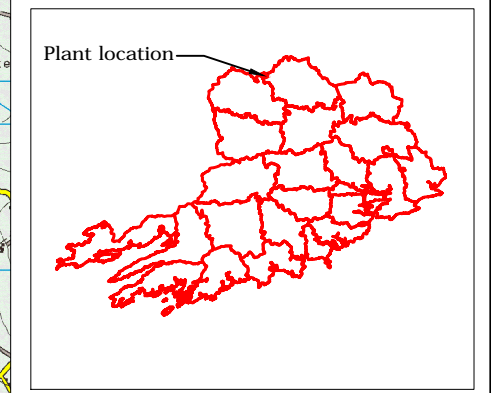
Regulation 16(1) In the case of an application for a waste water discharge licence, the application shall -		Attachment Number	Checked by Applicant
(a)	give the name, address, telefax number (if any) and telephone number of the applicant (and, if different, of the operator of any treatment plant concerned) and the address to which correspondence relating to the application should be sent and, if the operator is a body corporate, the address of its registered office or principal office,		
(b)	give the name of the water services authority in whose functional area the relevant waste water discharge takes place or is to take place, if different from that of the applicant,		
(c)	give the location or postal address (including where appropriate, the name of the townland or townlands) and the National Grid reference of the location of the waste water treatment plant and/or the waste water discharge point or points to which the application relates,		
(d)	state the population equivalent of the agglomeration to which the application relates,		
(e)	specify the content and extent of the waste water discharge, the level of treatment provided, if any, and the flow and type of discharge,		
(f)	give details of the receiving water body, including its protected area status, if any, and details of any sensitive areas or protected areas or both in the vicinity of the discharge point or points likely to be affected by the discharge concerned, and for discharges to ground provide details of groundwater protection schemes in place for the receiving water body and all associated hydrogeological and geological assessments related to the receiving water environment in the vicinity of the discharge.		
(g)	identify monitoring and sampling points and indicate proposed arrangements for the monitoring of discharges and, if Regulation 17 does not apply, provide details of the likely environmental consequences of any such discharges,		
(h)	in the case of an existing waste water treatment plant, specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application,		
(i)	describe the existing or proposed measures, including emergency procedures, to prevent unintended waste water discharges and to minimise the impact on the environment of any such discharges,		
(j)	give particulars of the nearest downstream drinking water abstraction point or points to the discharge point or points,		
(k)	give details, and an assessment of the effects, of any existing or proposed emissions on the environment, including any environmental medium other than those into which the emissions are, or are to be made, and of proposed measures to prevent or eliminate or, where that is not practicable, to limit any pollution caused in such discharges,		
(l)	give detail of compliance with relevant monitoring requirements and treatment standards contained in any applicable Council Directives of Regulations,		
(m)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work.		
(n)	Any other information as may be stipulated by the Agency.		
Regulation 16(3) Without prejudice to Regulation 16 (1) and (2), an application for a licence shall be accompanied by -		Attachment Number	Checked by Applicant
(a)	a copy of the notice of intention to make an application given pursuant to Regulation 9,		No
(b)	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,		No
(c)	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -		Yes
(c) (i)	the point or points, including storm water overflows, from which a discharge or discharges take place or are to take place, and		Yes
(c) (ii)	the point or points at which monitoring and sampling are undertaken or are to be undertaken,		Yes
(d)	such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		Yes

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



NOTES

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



Key Map

No.	Date	Drawn	Surv	Chkd	Revision	Description

Cork County Council,
Northern Division.

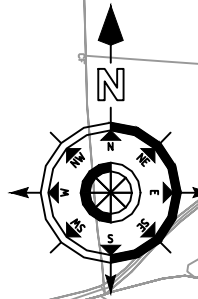


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title: Tullylease & Environs
Waste Water Discharge
Licence Application

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

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



NOTES

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No.	Date	Drawn	Survey	Checked	Revision	Description

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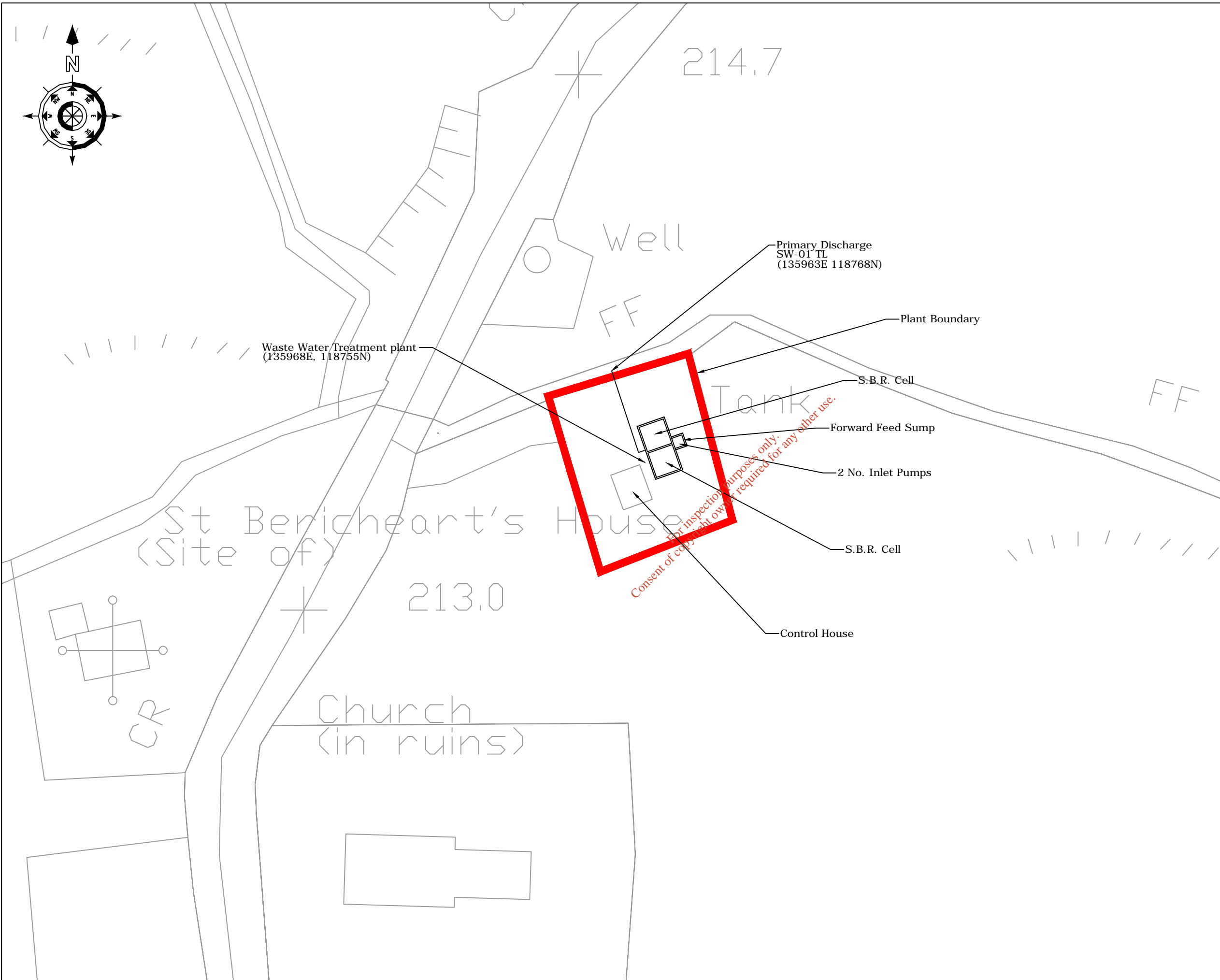
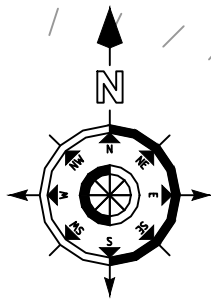


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COUNTY ENGINEER,
COUNTY HALL,
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Job Title:
Tullylease & Environs
Waste Water Discharge
Licence Application

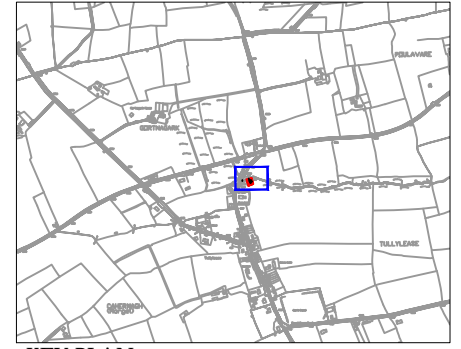
Drawing Title:
Site Locations of W.W.T.P.
Attachment A1 - Map 2

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



NOTES

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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

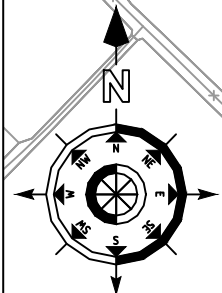
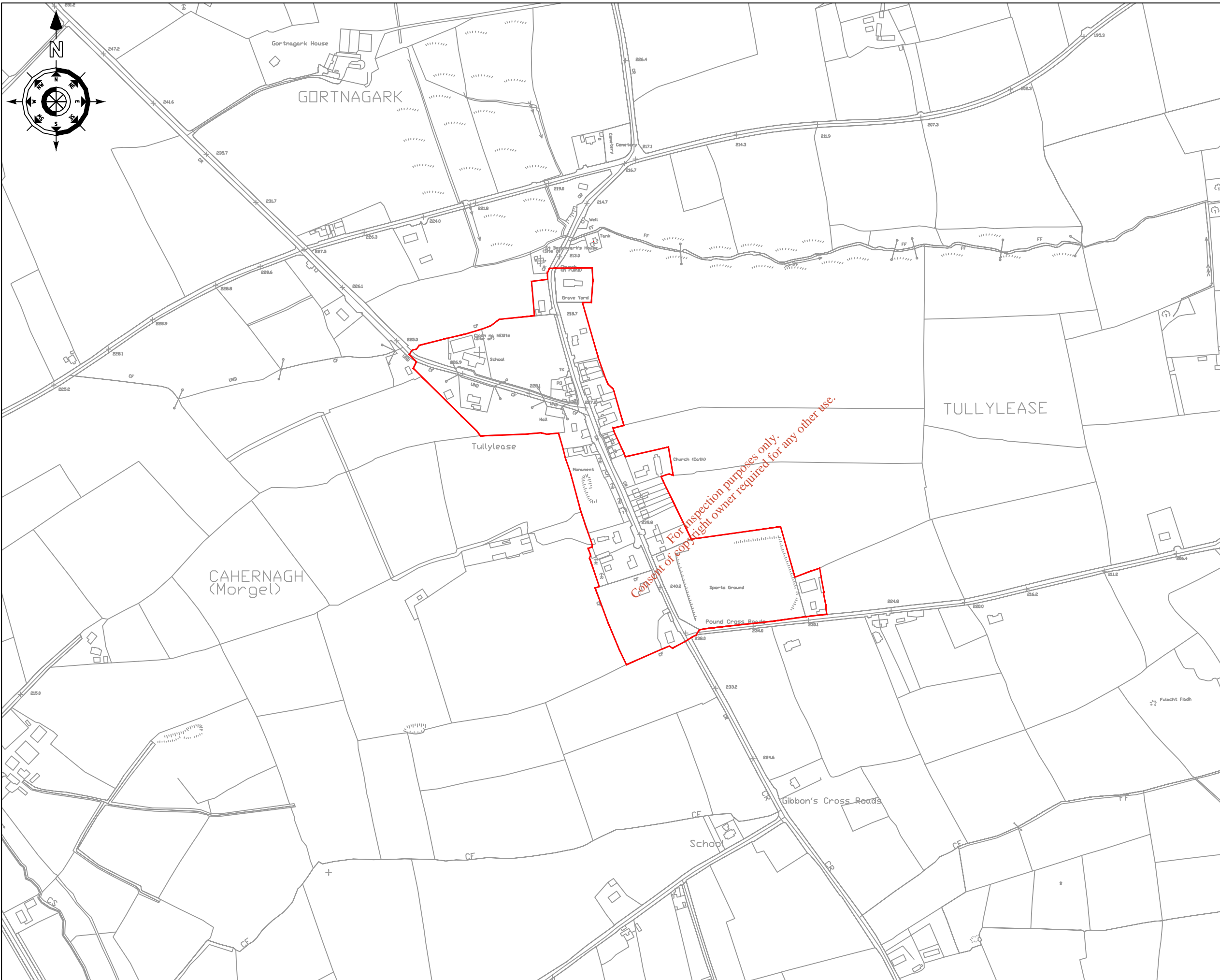


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COUNTY HALL,
CORK.

Job Title:
Tullylease & 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	Survey	Checked	Revision	Description

Cork County Council,
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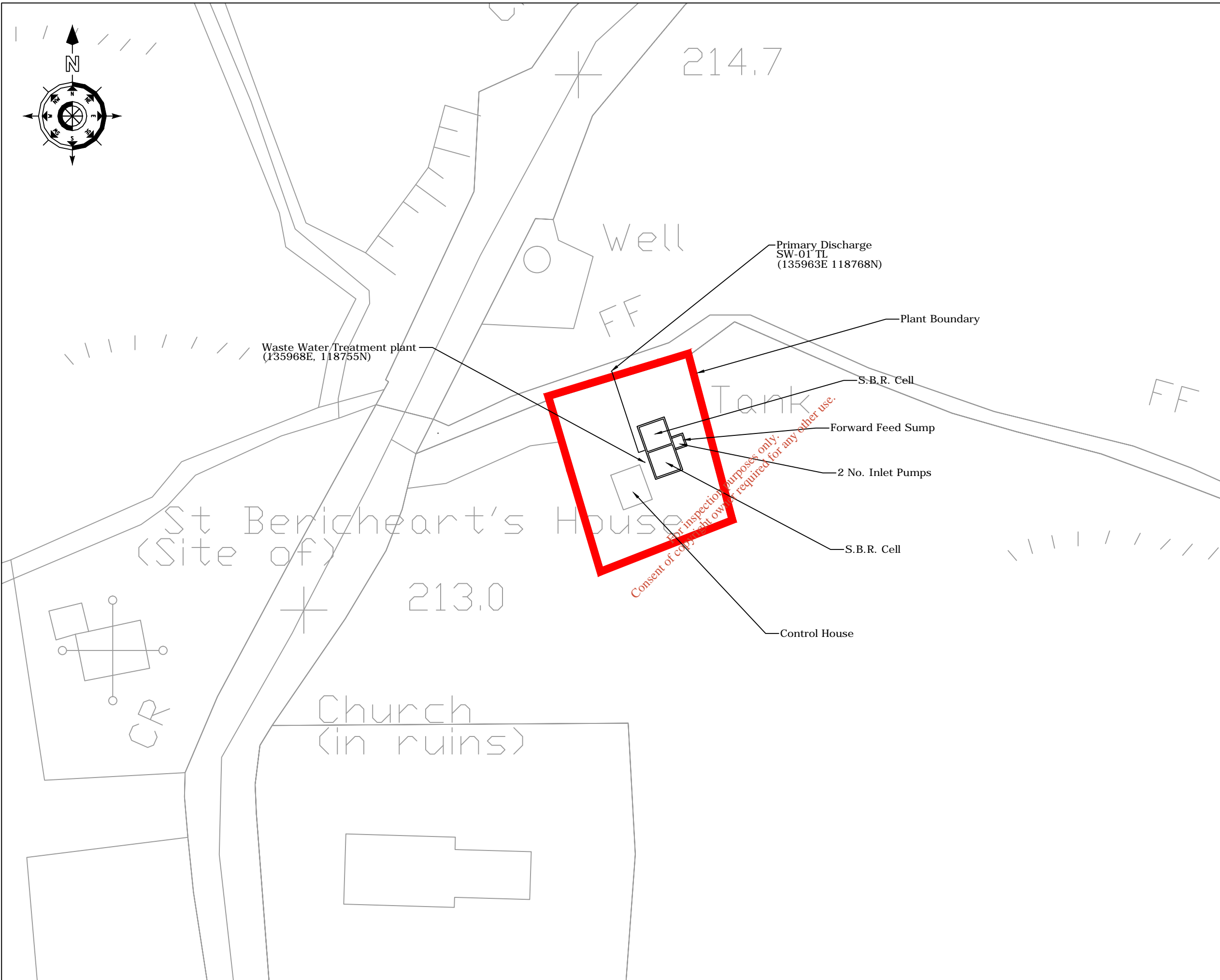
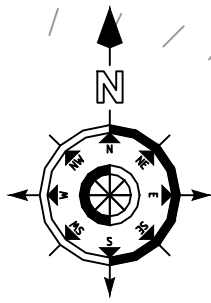


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Job Title:
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Waste Water Discharge
Licence Application

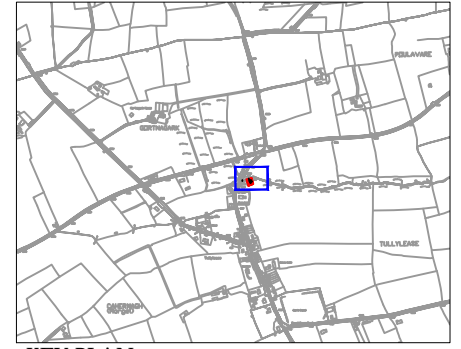
Drawing Title:
Agglomeration Boundary
Attachment B1 - Map 4

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



NOTES

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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Tullylease & 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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No.	Date	Drawn	Survey	Checked	Revision	Description

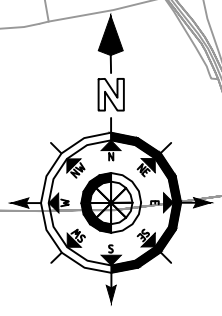
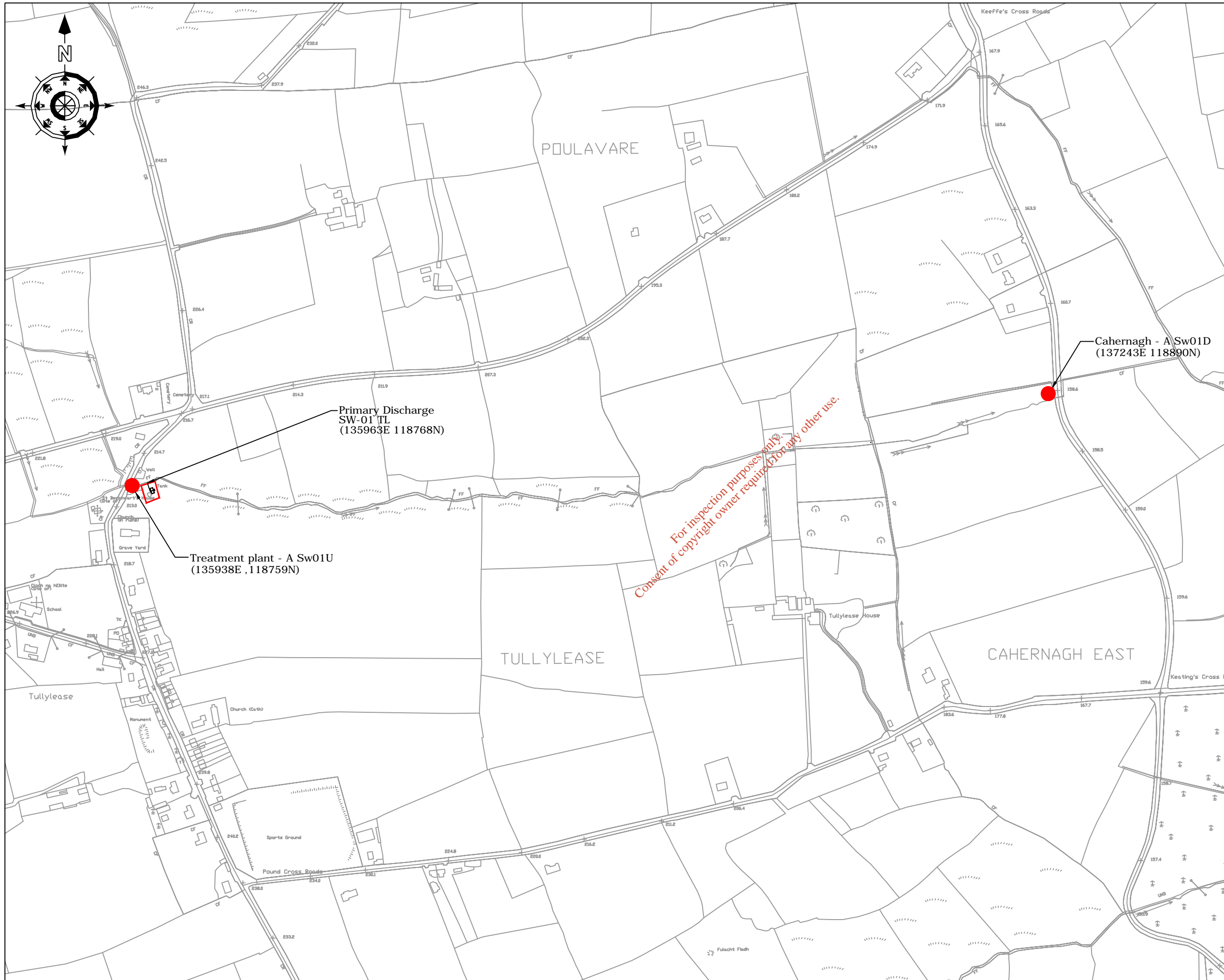
Cork County Council,
Northern Division.

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

Job Title:
Tullylease & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Location of Primary Discharge
Point SW01 - TL
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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 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.

Primary Discharge
SW-01 TL
(135963E 118768N)

Treatment plant - A Sw01U
(135938E , 118759N)

Cahernagh - A Sw01D
(137243E 118890N)

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No.	Date	Drawn	Survey	Checked	Revision	Description

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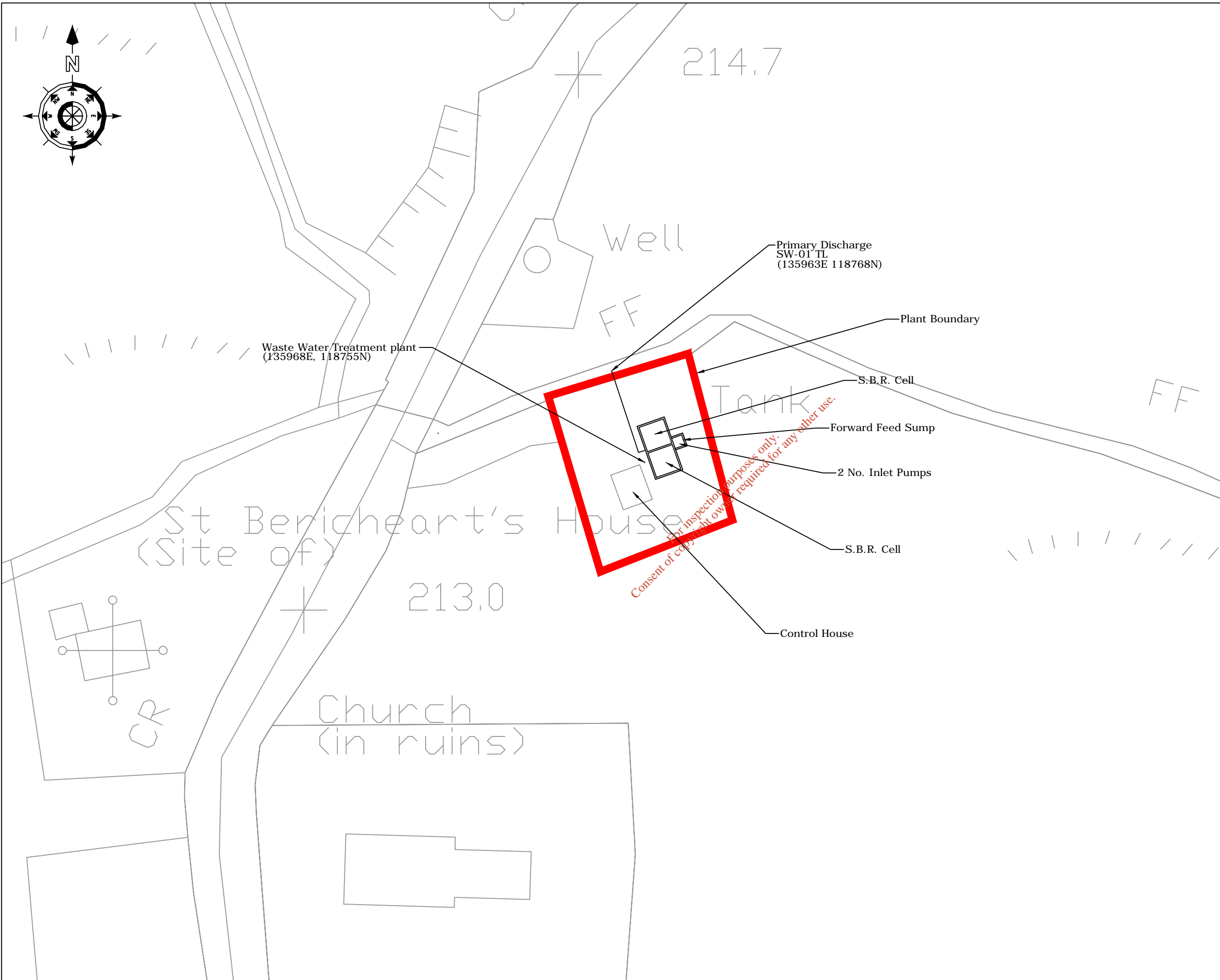
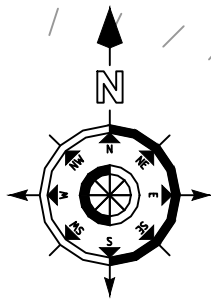


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Job Title:
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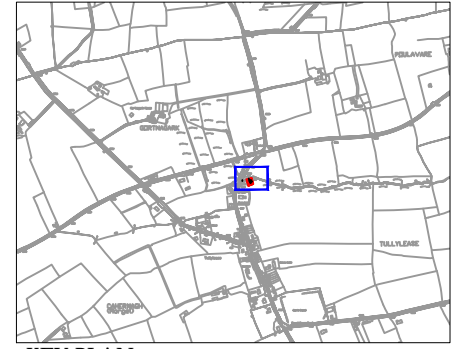
Drawing Title:
Locations of sampling points
Attachment B3 - Map 7

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



NOTES

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KEY PLAN

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
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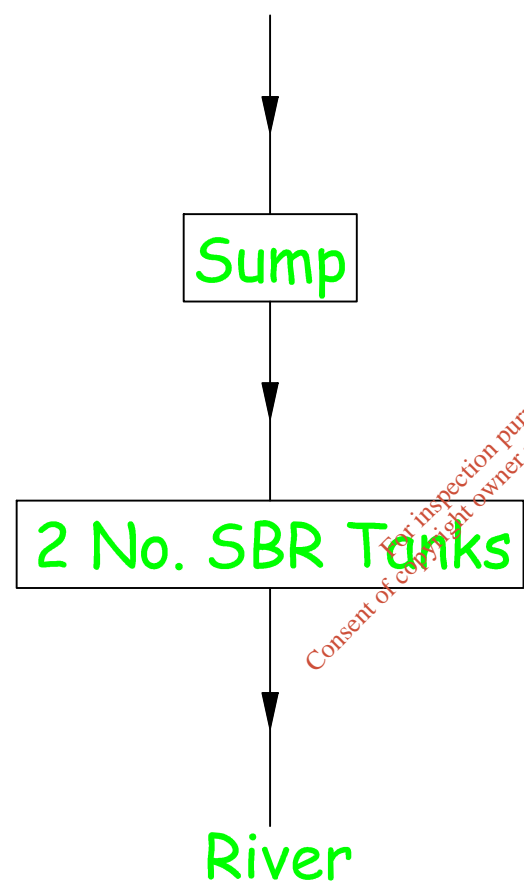


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COUNTY HALL,
CORK.

Job Title:
Tullylease & 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

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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Tullylease & Environs
Waste Water Discharge
Licence Application

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

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

Attachment E4 Tullylease analytical data for certification application

Sample Date	17/09/2009		17/09/2009		17/09/2009		17/09/2009
Sample	Influent		Effluent		River Upstream		River Downstream
Sample Code	GT1178		GT1179		GT1180		GT1181
Flow M ³ /Day	No result		No result		No result		No result
pH	6.4		7.2		7.2		7.2
Temperature °C	No result		No result		No result		No result
Conductivity uS/cm 20°C	476		166		166		170
Suspended Solids mg/L	11		8		8		8
Ammonia-N mg/L	5.1		0.1		0.07		0.05
BOD mg/L	27		<2		<2		<2
COD mg/L	80		14		11		7
TN-N mg/L	15.92		9.47		3.25		3.16
Nitrite-N mg/L	No result		0.838		No result		No result
Nitrate-N mg/L	No result		7.952		No result		No result
TP-P mg/L	1.5		3.7		0.07		0.06
O-PO4-P mg/L	1		3.7		<0.05		<0.05
SO4 mg/L	No result		33.1		No result		No result
Phenols µg/L	No result		<0.10		No result		No result
Atrazine µg/L	No result		<0.01		No result		No result
Dichloromethane µg/L	No result		<1		No result		No result
Simazine µg/L	No result		<0.01		No result		No result
Toluene µg/L	No result		<0.28		No result		No result
Tributyltin µg/L	Not required		Not required		Not required		Not required
Xylenes µg/L	No result		<0.73		No result		No result
Arsenic µg/L	No result		<0.96		No result		No result
Chromium ug/L	<20		<20		No result		No result
Copper ug/L	31.4		<20		<20		<20
Cyanide µg/L	No result		<5		<20		<20
Fluoride µg/L	No result		0.173		No result		No result
Lead ug/L	<20		<20		<20		<20
Nickel ug/L	<20		<20		<20		<20
Zinc ug/L	<20		<20		<20		<20
Boron ug/L	<20		83.9		<20		<20
Cadmium ug/L	<20		<20		<20		<20
Mercury µg/L	No result		<0.03		No result		No result
Selenium µg/L	No result		<0.74		No result		No result
Barium ug/L	<20		<20		<20		<20

SITE SYNOPSIS

SITE NAME : LOWER RIVER SHANNON

SITE CODE : 002165

This very large site stretches along the Shannon valley from Killaloe to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus Estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. The Shannon and Fergus flow through Carboniferous limestone as far as Foynes, but west of Foynes Namurian shales and flagstones predominate (except at Kerry Head, which is formed from Old Red Sandstone). The eastern sections of the Feale catchment flow through Namurian Rocks and the western stretches through Carboniferous Limestone. The Mulkear flows through Lower Palaeozoic Rocks in the upper reaches before passing through Namurian Rocks, followed by Lower Carboniferous Shales and Carboniferous Limestone. The Mulkear River itself, immediately north of Pallas Green, passes through an area of Rhyolites, Tuffs and Agglomerates. Rivers within the sub-catchment of the Feale include the Gale, Smearlagh, Oofagh, Allaughaun, Owveg, Clydagh, Caher, Breanagh and Glenacarne. Rivers within the sub-catchment of the Mulkear include the Killeenagariff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The site is a candidate SAC selected for lagoons and alluvial wet woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for floating river vegetation, *Molinia* meadows, estuaries, tidal mudflats, Atlantic salt meadows, Mediterranean salt meadows, *Salicornia* mudflats, sand banks, perennial vegetation of stony banks, sea cliffs, reefs and large shallow inlets and bays 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 – Bottle-nosed Dolphin, Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Atlantic Salmon and Otter.

The Shannon and Fergus Estuaries form the largest estuarine complex in Ireland. They form a unit stretching from the upper tidal limits of the Shannon and Fergus Rivers to the mouth of the Shannon estuary (considered to be a line across the narrow strait between Kilcredaun Point and Kilconly Point). Within this main unit there are several tributaries with their own 'sub-estuaries' e.g. the Deel River, Mulkear River, and Mague River. To the west of Foynes, a number of small estuaries form indentations in the predominantly hard coastline, namely Poulmasherry Bay, Ballylongford Bay, Clonderalaw Bay and the Feale or Cashen River Estuary.

Both the Fergus and inner Shannon estuaries feature vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics, e.g. Poulmasherry Bay is stony and unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there are some Eel-grass beds (*Zostera* spp.) and patches of green

algae (e.g. *Ulva* sp. and *Enteromorpha* sp.). The main macro-invertebrate community, which has been noted from the inner Shannon and Fergus estuaries, is a *Macoma-Scrobicularia-Nereis* community.

In the transition zone between mudflats and saltmarsh, specialised colonisers of mud predominate: swards of Common Cord-grass (*Spartina anglica*) frequently occur in the upper parts of the estuaries. Less common are swards of Glasswort (*Salicornia europaea* agg.). In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as Common Reed (*Phragmites australis*) and Club-rushes (*Scirpus maritimus*, *S. tabernaemontani* and *S. triquetrus*). In addition to the nationally rare Triangular Club-rush (*Scirpus triquetrus*), two scarce species are found in some of these creeks (e.g. Ballinacurra Creek): Lesser Bulrush (*Typha angustifolia*) and Summer Snowflake (*Leucojum aestivum*).

Saltmarsh vegetation frequently fringes the mudflats. Over twenty areas of estuarine saltmarsh have been identified within the site, the most important of which are around the Fergus Estuary and at Ringmoylan Quay. The dominant type of saltmarsh present is Atlantic salt meadow occurring over mud. Characteristic species occurring include Common Saltmarsh Grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea-milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*), Red Fescue (*Festuca rubra*), Creeping Bent (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardi*), Long-bracted Sedge (*Carex extensa*), Lesser Sea-spurrey (*Spergularia marina*) and Sea Arrowgrass (*Triglochin maritima*). Areas of Mediterranean salt meadows, characterised by clumps of Sea Rush (*Juncus maritimus*) occur occasionally. Two scarce species are found on saltmarshes in the vicinity of the Fergus Estuary: a type of robust Saltmarsh-grass (*Puccinellia foucaudii*), sometimes placed within the compass of Common Saltmarsh-grass (*Puccinellia maritima*) and Hard-grass (*Parapholis strigosa*).

Saltmarsh vegetation also occurs around a number of lagoons within the site. The two which have been surveyed as part of a National Inventory of Lagoons are Shannon Airport Lagoon and Clooncneen Pool. Clooncneen Pool (4-5 ha) is a natural sedimentary lagoon impounded by a low cobble barrier. Seawater enters by percolation through the barrier and by overwash. This lagoon represents a type which may be unique to Ireland since the substrate is composed almost entirely of peat. The adjacent shore features one of the best examples of a drowned forest in Ireland. Aquatic vegetation in the lagoon includes typical species such as Beaked Tasselweed (*Ruppia maritima*) and green algae (*Cladophora* sp.). The fauna is not diverse, but is typical of a high salinity lagoon and includes six lagoon specialists (*Hydrobia ventrosa*, *Cerastoderma glaucum*, *Lekanesphaera hookeri*, *Palaemonetes varians*, *Sigara stagnalis* and *Enochrus bicolor*). In contrast, Shannon Airport Lagoon (2 ha) is an artificial saline lake with an artificial barrier and sluiced outlet. However, it supports two Red Data Book species of Stonewort (*Chara canescens* and *Chara cf. connivens*).

Most of the site west of Kilcredaun Point/Kilconly Point is bounded by high rocky sea cliffs. The cliffs in the outer part of the site are sparsely vegetated with lichens, Red Fescue, Sea Beet (*Beta vulgaris*), Sea Campion (*Silene maritima*), Thrift and Plantains (*Plantago* spp.). A rare endemic Sea Lavender (*Limonium recurvum* subsp.

pseudotranswallinum) occurs on cliffs near Loop Head. Cliff-top vegetation usually consists of either grassland or maritime heath. The boulder clay cliffs further up the estuary tend to be more densely vegetated, with swards of Red Fescue and species such as Kidney Vetch (*Anthyllis vulneraria*) and Bird's-foot Trefoil (*Lotus corniculatus*).

The site supports an excellent example of a large shallow inlet and bay. Littoral sediment communities in the mouth of the Shannon Estuary occur in areas that are exposed to wave action and also in areas extremely sheltered from wave action. Characteristically, exposed sediment communities are composed of coarse sand and have a sparse fauna. Species richness increases as conditions become more sheltered. All shores in the site have a zone of sand hoppers at the top and below this each of the shores has different characteristic species giving a range of different shore types in the pcSAC.

The intertidal reefs in the Shannon Estuary are exposed or moderately exposed to wave action and subject to moderate tidal streams. Known sites are steeply sloping and show a good zonation down the shore. Well developed lichen zones and littoral reef communities offering a high species richness in the sublittoral fringe and strong populations of *Paracentrotus lividus* are found. The communities found are tolerant to sand scour and tidal streams. The infralittoral reefs range from sloping platforms with some vertical steps to ridged bedrock with gullies of sand between the ridges to ridged bedrock with boulders or a mixture of cobbles, gravel and sand. Kelp is very common to about 18m. Below this it becomes rare and the community is characterised by coralline crusts and red foliose algae.

Other coastal habitats that occur within the site include the following:

- stony beaches and bedrock shores - these shores support a typical zonation of seaweeds (*Fucus* spp., *Ascophyllum nodosum* and kelps).
- shingle beaches - the more stable areas of shingle support characteristic species such as Sea Beet, Sea Mayweed (*Matricaria maritima*), Sea Campion and Curled Dock (*Rumex crispus*).
- Sandbanks which are slightly covered by sea water at all times – there is a known occurrence of sand/gravel beds in the area from Kerry Head to Beal Head.
- sand dunes - a small area of sand dunes occurs at Beal Point. The dominant species is Marram Grass (*Ammophila arenaria*).

Flowing into the estuaries are a number of tidal rivers.

Freshwater rivers have been included in the site, most notably the Feale and Mulkear catchments, the Shannon from Killaloe to Limerick (along with some of its tributaries, including a short stretch of the Kilmastulla River), the Fergus up as far as Ennis, and the Cloon River. These systems are very different in character: the Shannon being broad, generally slow-flowing and naturally eutrophic; the Fergus being smaller and alkaline; while the narrow, fast-flowing Cloon is acid in nature. The Feale and Mulkear catchments exhibit all the aspects of a river from source to mouth. Semi-natural habitats, such as wet grassland, wet woodland and marsh occur by the rivers, however, improved grassland is most common. One grassland type of particular

conservation significance, *Molinia* meadows, occurs in several parts of the site and the examples at Worldsend on the River Shannon are especially noteworthy. Here are found areas of wet meadow dominated by rushes and sedges and supporting a diverse and species-rich vegetation, including such uncommon species as Blue-eyed Grass (*Sisyrinchium bermudiana*) and Pale Sedge (*Carex pallescens*).

Floating river vegetation characterised by species of Water-crowfoot (*Ranunculus* spp.), Pondweeds (*Potamogeton* spp.) and the moss *Fontinalis antipyretica* are present throughout the major river systems within the site. The rivers contain an interesting bryoflora with *Schistidium alpicola* var. *alpicola* recorded from in-stream boulders on the Bilboa, new to county Limerick.

Alluvial woodland occurs on the banks of the Shannon and on islands in the vicinity of the University of Limerick. The woodland is up to 50m wide on the banks and somewhat wider on the largest island. The most prominent woodland type is gallery woodland where White Willow (*Salix alba*) dominates the tree layer with occasional Alder (*Alnus glutinosa*). The shrub layer consists of various willow species with sally (*Salix cinerea* ssp. *oleifolia*) and what appear to be hybrids of *S. alba* x *S. viminalis*. The herbaceous layer consists of tall perennial herbs. A fringe of Bulrush (*Typha* sp.) occurs on the riverside of the woodland. On slightly higher ground above the wet woodland and on the raised embankment remnants of mixed oak-ash-alder woodland occur. These are poorly developed and contain numerous exotic species but locally there are signs that it is invading open grassland. Alder is the principal tree species with occasional Oak (*Quercus robur*), Elm (*Ulmus glabra*, *U. procera*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and the shrubs Guelder-rose (*Viburnum opulus*) and willows. The ground flora is species-rich.

Woodland is infrequent within the site, however Cahiracon Wood contains a strip of old Oak woodland. Sessile Oak (*Quercus petraea*) forms the canopy, with an understorey of Hazel and Holly (*Ilex aquifolium*). Great Wood-rush (*Luzula sylvatica*) dominates the ground flora. Less common species present include Great Horsetail (*Equisetum telmateia*) and Pendulous Sedge (*Carex pendula*).

In the low hills to the south of the Slievefelim mountains, the Cahernahallia River cuts a valley through the Upper Silurian rocks. For approximately 2km south of Cappagh Bridge at Knockanavar, the valley sides are wooded. The woodland consists of Birch (*Betula* spp.), Hazel, Oak, Rowan (*Sorbus aucuparia*), some Ash (*Fraxinus excelsior*) and Willow (*Salix* spp.). Most of the valley is not grazed by stock, and as a result the trees are regenerating well. The ground flora feature prominent Greater wood-rush and Bilberry (*Vaccinium myrtillus*) with a typical range of woodland herbs. Where there is more light available, Bracken (*Pteridium aquilinum*) features.

The valley sides of the Bilboa and Gortnageragh Rivers, on higher ground north east of Cappamore, support patches of semi-natural broadleaf woodland dominated by Ash, Hazel, Oak and Birch. There is a good scrub layer with Hawthorn, Willow, Holly and Blackthorn (*Prunus spinosa*) common. The herb layer in these woodlands is often open with a typically rich mixture of woodland herbs and ferns. Moss species diversity is high. The woodlands are ungrazed. The hazel is actively coppiced in places.

There is a small area of actively regenerating cut away raised bog at Ballyrorheen. It is situated approx. 5km north west of Cappamore Co. Limerick. The bog contains some wet areas with good moss (*Sphagnum*) cover. Species of particular interest include the Cranberry (*Vaccinium oxycoccos*) and the White Sedge (*Carex curta*) along with two other regionally rare mosses including *S. fimbriatum*. The site is being invaded by Birch (*Betula pubescens*) scrub woodland. Both commercial forestry and the spread of rhododendron has greatly reduced the overall value of the site.

A number of plant species that are Irish Red Data Book species occur within the site - several are protected under the Flora (Protection) Order, 1999:

- Triangular Club-rush (*Scirpus triquetrus*) - in Ireland this protected species is only found in the Shannon Estuary, where it borders creeks in the inner estuary.
- Opposite-leaved Pondweed (*Groenlandia densa*) - this protected pondweed is found in the Shannon where it passes through Limerick City.
- Meadow Barley (*Hordeum secalinum*) - this protected species is abundant in saltmarshes at Ringmoyle and Mantlehill.
- Hairy Violet (*Viola hirta*) - this protected violet occurs in the Askeaton/Foynes area.
- Golden Dock (*Rumex maritimus*) - noted as occurring in the River Fergus Estuary.
- Bearded Stonewort (*Chara canescens*) - a brackish water specialist found in Shannon Airport lagoon.
- Convergent Stonewort (*Chara connivens*) - presence in Shannon Airport Lagoon to be confirmed.

Overall, the Shannon and Fergus Estuaries support the largest numbers of wintering waterfowl in Ireland. The highest count in 1995-96 was 51,423 while in 1994-95 it was 62,701. Species listed on Annex I of the E.U. Birds Directive which contributed to these totals include: Great Northern Diver (3; 1994/95), Whooper Swan (201; 1995/96), Pale-bellied Brent Goose (246; 1995/96), Golden Plover (11,067; 1994/95) and Bar-tailed Godwit (476; 1995/96). In the past, three separate flocks of Greenland White-fronted Goose were regularly found but none were seen in 1993/94.

Other wintering waders and wildfowl present include Greylag Goose (216; 1995/96), Shelduck (1,060; 1995/96), Wigeon (5,976; 1995/96); Teal (2,319; 1995-96); Mallard (528; 1995/96), Pintail (45; 1995/96), Shoveler (84; 1995/96), Tufted Duck (272; 1995/96), Scaup (121; 1995/96), Ringed Plover (240; 1995/96), Grey Plover (750; 1995/96), Lapwing (24,581; 1995/96), Knot (800; 1995/96), Dunlin (20,100; 1995/96), Snipe (719; 1995/96), Black-tailed Godwit (1062; 1995/96), Curlew (1504; 1995/96), Redshank (3228; 1995/96), Greenshank (36; 1995/96) and Turnstone (107; 1995/96). A number of wintering gulls are also present, including Black-headed Gull (2,216; 1995/96), Common Gull (366; 1995/96) and Lesser Black-backed Gull (100; 1994/95). This is the most important coastal site in Ireland for a number of the waders including Lapwing, Dunlin, Snipe and Redshank. It also provides an important staging ground for species such as Black-tailed Godwit and Greenshank.

A number of species listed on Annex I of the E.U. Birds Directive breed within the site. These include Peregrine Falcon (2-3 pairs), Sandwich Tern (34 pairs on Rat Island, 1995), Common Tern (15 pairs: 2 on Sturamus Island and 13 on Rat Island, 1995), Chough (14-41 pairs, 1992) and Kingfisher. Other breeding birds of note include Kittiwake (690 pairs at Loop Head, 1987) and Guillemot (4010 individuals at Loop Head, 1987)

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary consisting of at least 56-68 animals (1996). This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. Otter, a species also listed on Annex II of this directive, is commonly found on the site.

Five species of fish listed on Annex II of the E.U. Habitats Directive are found within the site. These are Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Twaite Shad (*Allosa fallax fallax*) and Salmon (*Salmo salar*). The three lampreys and Salmon have all been observed spawning in the lower Shannon or its tributaries. The Fergus is important in its lower reaches for spring salmon while the Mulkear catchment excels as a grilse fishery though spring fish are caught on the actual Mulkear River. The Feale is important for both types. Twaite Shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of Lamprey.

Two additional fish of note, listed in the Irish Red Data Book, also occur, namely Smelt (*Osmerus eperlanus*) and Pollan (*Coregonus autumnalis pollan*). Only the former has been observed spawning in the Shannon.

Freshwater Pearl-mussel (*Margaritifera margaritifera*), a species listed on Annex II of the E.U. Habitats Directive, occurs abundantly in parts of the Cloon River.

There is a wide range of land uses within the site. The most common use of the terrestrial parts is grazing by cattle and some areas have been damaged through over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus Estuary). Further, reclamation continues to pose a threat as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale.

In the past, Cord-grass (*Spartina* sp.) was planted to assist in land reclamation. This has spread widely, and may oust less vigorous colonisers of mud and may also reduce the area of mudflat available to feeding birds.

Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory - except in the upper estuary, reflecting the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences by industrial discharges apparent. Further industrial development along the Shannon and water polluting operations are potential threats.

Fishing is a main tourist attraction on the Shannon and there are a large number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. The River Feale is a designated Salmonid Water under the

E.U. Freshwater Fish Directive. Other uses of the site include commercial angling, oyster farming, boating (including dolphin-watching trips) and shooting. Some of these may pose threats to the birds and dolphins through disturbance. Specific threats to the dolphins include underwater acoustic disturbance, entanglement in fishing gear and collisions with fast moving craft.

This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitat lagoon, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding. Indeed, the Shannon and Fergus Estuaries form the largest estuarine complex in Ireland and support more wintering wildfowl and waders than any other site in the country. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter.

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17.05.2005

Water Supply Name: Shannon Estuary

Raw Water Source Description: Abstraction from the River Deel

Item No.	Risk Factor	Applic. Score	Score
Section 1 - Animals Within the Catchment			
1.1.1	Cattle/Calves at less than or equal to one livestock unit per hectare of forage area	5	
1.1.2	Cattle/Calves at more than one livestock unit per hectare of forage are	10	10
1.1.3	No cattle/calves in the catchment	0	
1.2.1	Sheep/Lambs at less than or equal to one livestock unit per hectare of forage area	5	5
1.2.2	Sheep/Lambs at more than one livestock unit per hectare of forage area	10	
1.2.3	No sheep/lambs in the catchment	0	
1.3.1	Wild or farmed deer in the catchment	2	
1.3.2	No wild or farmed deer in the catchment	0	0
1.4.1	Pig farms in the catchment	2	2
1.4.2	No pig farms in the catchment	0	
1.5.1	Animals have direct access to water sources including feeder streams	4	4
1.5.2	Fencing prevents access to water sources including feeder streams	-4	
1.6	High numbers of birds	2	
1.7	Any other farmed animal or bird	1	1
S.1	Total Score for Animals Within Catchment		22
Section 2 - Agricultural practices within the Catchment			
2.1	Slurry or sewage sludge spreading within the catchment	6	6
2.2	Dung Spreading within the catchment	3	3
2.3	Slurry or Dung Stores	3	3
2.4	Sheep pens or cattle sheds	6	6
2.5	Lambing or calving on the catchment	8	8
2.6	Full compliance with Good Agricultural Practice Regulations verified by catchment inspection	-6	
S.2	Total Score for Agricultural practices within the Catchment		26
Section 3 - Discharges to the Catchment / Water Source			
3.1.1	Population equivalent served by individual on-site wastewater treatment systems <100 PE	4	
3.1.2	Population equivalent served by individual on-site wastewater treatment systems >100 PE	6	6
3.2	Flooding of septic tanks on flood plains	4	4
3.3.1	Population equivalent served by all wastewater works <500	4	
3.3.2	Population equivalent served by all wastewater works 500 to 5000	5	
3.3.3	Population equivalent served by all wastewater works 5001 to 20,000	6	6
3.3.4	Population equivalent served by all wastewater works 20,001 to 50,000	7	
3.3.5	Population equivalent served by all wastewater works >50,000	8	
3.4	Stormwater overflows	2	2
3.5	Section 4 or IPPC Licence discharge from intensive agricultural activity or related discharge	2	
3.6.1	All wastewater treatment plants complying with UWWT regulations quality standards	-1	
3.6.2	UV inactivation at outlet of wastewater treatment plants	-2	
S.3	Total Score for Discharges to the Catchment / Water Source		18
Section 4 - Water Source Type			
4.1.1	Upland Reservoir/lake	2	
4.1.2	Lowland long-term storage Reservoir/lake	4	
4.1.3	Upland River or Stream - bankside storage	5	
4.1.4	Upland River or Stream - direct abstraction	6	
4.1.5	Lowland River or Stream - direct abstraction or bankside storage	8	8
S.4	Total Score for Water Source Type		8
Section 5 - Catchment Inspections			
5.1.1	Catchment inspections carried out at least monthly	-3	
5.1.2	Catchment inspections carried out less frequently	6	6
5.2	Procedures in place to deal with irregularities on the Catchment	-3	-3
S.5	Total Score for Catchment Inspections		3
Section 6 - Raw Water Intake Management for Abstractions			
6.1.1	No appropriate water quality monitor on intake	3	
6.1.2	Appropriate water quality monitor on intake that is alarmed and on telemetry	-2	-2
6.2.1	Automatic intake shutdown when poor water quality	-4	
6.2.2	Manual intake shutdown when poor water quality	-1	-1
6.2.3	No intake shutdown when poor water quality	3	
S.6	Total Score for Raw Water Intake Management for Abstractions		-3
Section 7 - Water Treatment Factors			
7.1.1	Simple sand filtration (not slow sand filtration)	8	

7.1.2	Simple sand filtration (not slow sand filtration) with UV treatment	6	
7.1.3	Coagulation followed by DAF/sedimentation and filtration	-10	-10
7.1.4	Coagulation followed by DAF/sedimentation and filtration followed by UV treatment	-16	
7.1.5	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation)	-7	
7.1.6	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation) followed by UV Treatment	-13	
7.1.7	Slow sand filtration	-9	
7.1.8	Slow sand filtration followed by UV treatment	-15	
7.1.9	Membrane filtration (DWI approved)	-16	
7.1.10	Membrane filtration (not DWI approved)	-2	
S.7	Total Score for Water Treatment Factors		-10
Section 8 - Treatment Works Monitoring of Coagulation and Filtration			
8a Coagulation			
8a.1.1	Manual coagulant dose control - not flow proportional	5	
8a.1.2	Manual coagulant pH control	5	
8a.1.3	Coagulant pH monitored and alarmed	-5	
S.8a	Total Score for Coagulation		0
8b Clarification			
8b.2.1	Clarified water turbidity monitor / particle counters	-1	
8b.2.2	Clarified water turbidity alarm / particle counters	-1	
S.8b	Total Score for Clarification		0
8c Rapid Gravity & Pressure Filters			
8c.3.1	Turbidity meter/particle counter on each filter with alarm on telemetry	-5	-5
8c.3.2	Turbidity meter/particle counter on each filter but no alarm on telemetry	0	
8c.3.3	One turbidity meter/particle counter shared by more than one filter with alarm on telemetry	-2	
8c.3.4	One turbidity meter/particle counter shared by more than one filter but no alarm on telemetry	2	
8c.3.5	No turbidity meters/particle counters monitoring filter performance	10	
8c.4.1	Final water turbidity meter/particle counter with alarm on telemetry	-2	-2
8c.4.2	Final water turbidity meter/particle counter but no alarm on telemetry	2	
8c.4.3	No final water turbidity meter/particle counter	5	
8c.5.1	Continuous residual coagulant monitor on combined filtrate or works outlet with alarm	-5	-5
8c.5.2	Continuous residual coagulant monitor on combined filtrate or works outlet but no alarm	-1	
8c.5.3	No continuous residual coagulant monitor on combined filtrate or works outlet	5	
8c.6.1	Routine discrete monitoring of treated water for turbidity/residual coagulant	-2	-2
8c.6.2	No routine discrete monitoring of treated water for turbidity/residual coagulant	2	
8c.7.1	Turbidity of backwash supernatant monitored when recycled	-2	
8c.7.2	Turbidity of backwash supernatant not monitored when recycled	2	
S.8c	Total Score for Rapid Gravity & Pressure Filters		-14
8d Slow Sand Filters			
8d.8.1	Turbidity meter/particle counter on each filter with alarm on telemetry	-5	
8d.8.2	Turbidity meter/particle counter on each filter but no alarm on telemetry	0	
8d.8.3	One turbidity meter/particle counter shared by more than one filter with alarm on telemetry	-2	
8d.8.4	One turbidity meter/particle counter shared by more than one filter but no alarm on telemetry	2	
8d.8.5	No turbidity meters/particle counters monitoring filter performance	10	
8d.9.1	Final water turbidity meter/particle counter with alarm on telemetry	-2	
8d.9.2	Final water turbidity meter/particle counter but no alarm on telemetry	2	
8d.9.3	No final water turbidity meter/particle counter	5	
8d.10.1	Filters matured and filtrate analysed for turbidity, coliforms and Cryptosporidium during maturation	-4	
8d.10.2	Filters matured but no analysis carried out on filtrate	5	
8d.10.3	Filters not matured	15	
S.8d	Slow Sand Filters		0
8e Membrane Filtration			
S.8e	Membrane Filtration		0
8f UV Inactivation			
S.8f	UV Inactivation		0
9 Rapid Gravity & Pressure Filters Work Performance			
9.1.1	Final water turbidity increases by more than 50%, excluding normal backwash period or turbidity in the final water >1.0 NTU	4	
9.1.2	Treated water turbidity increases by less than 50%, excluding normal backwash	0	0

	period or turbidity in the final water <1.0 NTU		
9.2.1	Media loss from any filter has brought media depth below design level	6	
9.2.2	Media depth above minimum design level with audit trail maintained	-2	-2
9.3	Signs of media cracking on any filter or any other damage to the filter	4	
9.4	All filters have been drained, inspected and any necessary remedial action taken within last year	-2	-2
9.5	Air scour and backwash maintained and operating efficiently as per maintenance manual	-2	-2
S.9	Rapid Gravity & Pressure Filters Work Performance		-6
10	Treatment Works Operation		
10.1.1	Plant with documented management systems that includes procedures and process control manuals	-2	-2
10.1.2	Process control manuals specific to works available	-1	
10.1.3	Process control manuals specific to works not available	1	
10.2.1	Auditable action plans available for dealing with deviations in quality and evidence of implementation of the plan	-1	-1
10.2.2	Auditable action plans not available for dealing with deviations in quality	1	
10.3.1	Slow start facility on filters operational	-4	
10.3.2	No slow start facility on filters, or slow start facility	4	4
10.4.1	Filters run to waste for appropriate period after backwash	-6	
10.4.2	Filters run to head of works for a period following backwash	-4	
10.4.3	Filters not run to waste or head of works for a period following backwash	4	4
10.5.1	Backwash water and/or sludge supernatant has to be recycled	2	
10.5.2	Other disposal route available for backwash water and sludge supernatant	-2	-2
10.6.1	Water flow through works when operating has not increased by >10% in <30 minutes in last 12 months	-2	-2
10.6.2	Water flow through works when operating has increased by >10% in <30 minutes in last 12 months	2	
10.7.1	Flow through works above design flow for >10% of time in last 12 months	4	
10.7.2	Flow through works above design flow for <=10% of time in last 12 months	0	0
10.7.3	Flow through works >130% above design flow for >50% of time in last 12 months	6	
10.8	Filters bypassed during the year	6	
S.10	Treatment Works Operation		1
Water Treatment Plant Risk Assessment Totals			
Section	Surface Water Catchment Risk Scores		
S.1	Total Score for Animals Within Catchment		22
S.2	Total Score for Agricultural practices within the Catchment		26
S.3	Total Score for Discharges to the Catchment / Water Source		18
S.4	Total Score for Water Source Type		8
S.5	Total Score for Catchment Inspections		3
S.6	Total Score for Raw Water Intake Management for Abstractions		-3
Total Surface Water Catchment Risk Scores			74
Surface Water Treatment, Operation and Management Risk Scores			
S.7	Total Score for Water Treatment Factors		-10
S.8a	Total Score for Coagulation		0
S.8b	Total Score for Clarification		0
S.8c	Total Score for Rapid Gravity & Pressure Filters		-14
S.8d	Slow Sand Filters		0
S.8e	Membrane Filtration		0
S.8f	UV Inactivation		0
S.9	Rapid Gravity & Pressure Filters Work Performance		-6
S.10	Treatment Works Operation		1
Total Surface Water Treatment, Operation and Management Risk Scores			-29
Total Surface Water Catchment Risk Scores			74
Total Surface Water Treatment, Operation and Management Risk Scores			-29
Surface Water Screening Score			45
Population est.			4886
Population Weighting Factor			1.48
FINAL WEIGHTED RISK SCREENING SCORE			66
WATER SUPPLY RISK CLASSIFICATION			Moderate

(Low Risk (<50), Moderate Risk (50-75), High Risk (76-100), Very High Risk (>100))

Water Supply Name: Newcastle West

Raw Water Source Description: Abstraction from the River Deel at Mahoonagh More

Item No.	Risk Factor	Applic. Score	Score
Section 1 - Animals Within the Catchment			
1.1.1	Cattle/Calves at less than or equal to one livestock unit per hectare of forage area	5	
1.1.2	Cattle/Calves at more than one livestock unit per hectare of forage are	10	10
1.1.3	No cattle/calves in the catchment	0	
1.2.1	Sheep/Lambs at less than or equal to one livestock unit per hectare of forage area	5	5
1.2.2	Sheep/Lambs at more than one livestock unit per hectare of forage area	10	
1.2.3	No sheep/lambs in the catchment	0	
1.3.1	Wild or farmed deer in the catchment	2	2
1.3.2	No wild or farmed deer in the catchment	0	
1.4.1	Pig farms in the catchment	2	2
1.4.2	No pig farms in the catchment	0	
1.5.1	Animals have direct access to water sources including feeder streams	4	4
1.5.2	Fencing prevents access to water sources including feeder streams	-4	
1.6	High numbers of birds	2	
1.7	Any other farmed animal or bird	1	1
S.1	Total Score for Animals Within Catchment		24
Section 2 - Agricultural practices within the Catchment			
2.1	Slurry or sewage sludge spreading within the catchment	6	6
2.2	Dung Spreading within the catchment	3	3
2.3	Slurry or Dung Stores	3	3
2.4	Sheep pens or cattle sheds	6	6
2.5	Lambing or calving on the catchment	8	8
2.6	Full compliance with Good Agricultural Practice Regulations verified by catchment inspection	-6	
S.2	Total Score for Agricultural practices within the Catchment		26
Section 3 - Discharges to the Catchment / Water Source			
3.1.1	Population equivalent served by individual on-site wastewater treatment systems <100 PE	4	
3.1.2	Population equivalent served by individual on-site wastewater treatment systems >100 PE	6	6
3.2	Flooding of septic tanks on flood plains	4	4
3.3.1	Population equivalent served by all wastewater works <500	4	
3.3.2	Population equivalent served by all wastewater works 500 to 5000	5	5
3.3.3	Population equivalent served by all wastewater works, 5001 to 20,000	6	
3.3.4	Population equivalent served by all wastewater works 20,001 to 50,000	7	
3.3.5	Population equivalent served by all wastewater works >50,000	8	
3.4	Stormwater overflows	2	2
3.5	Section 4 or IPPC Licence discharge from intensive agricultural activity or related discharge	2	2
3.6.1	All wastewater treatment plants complying with UWWT regulations quality standards	-1	
3.6.2	UV inactivation at outlet of wastewater treatment plants	-2	
S.3	Total Score for Discharges to the Catchment / Water Source		19
Section 4 - Water Source Type			
4.1.1	Upland Reservoir/lake	2	
4.1.2	Lowland long-term storage Reservoir/lake	4	
4.1.3	Upland River or Stream - bankside storage	5	
4.1.4	Upland River or Stream - direct abstraction	6	
4.1.5	Lowland River or Stream - direct abstraction or bankside storage	8	8
S.4	Total Score for Water Source Type		8
Section 5 - Catchment Inspections			
5.1.1	Catchment inspections carried out at least monthly	-3	
5.1.2	Catchment inspections carried out less frequently	6	6
5.2	Procedures in place to deal with irregularities on the Catchment	-3	-3
S.5	Total Score for Catchment Inspections		3
Section 6 - Raw Water Intake Management for Abstractions			
6.1.1	No appropriate water quality monitor on intake	3	
6.1.2	Appropriate water quality monitor on intake that is alarmed and on telemetry	-2	-2
6.2.1	Automatic intake shutdown when poor water quality	-4	-4
6.2.2	Manual intake shutdown when poor water quality	-1	
6.2.3	No intake shutdown when poor water quality	3	
S.6	Total Score for Raw Water Intake Management for Abstractions		-6
Section 7 - Water Treatment Factors			
7.1.1	Simple sand filtration (not slow sand filtration)	8	

7.1.2	Simple sand filtration (not slow sand filtration) with UV treatment	6	
7.1.3	Coagulation followed by DAF/sedimentation and filtration	-10	-10
7.1.4	Coagulation followed by DAF/sedimentation and filtration followed by UV treatment	-16	
7.1.5	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation)	-7	
7.1.6	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation) followed by UV Treatment	-13	
7.1.7	Slow sand filtration	-9	
7.1.8	Slow sand filtration followed by UV treatment	-15	
7.1.9	Membrane filtration (DWI approved)	-16	
7.1.10	Membrane filtration (not DWI approved)	-2	
S.7	Total Score for Water Treatment Factors		-10
Section 8 - Treatment Works Monitoring of Coagulation and Filtration			
8a Coagulation			
8a.1.1	Manual coagulant dose control - not flow proportional	5	
8a.1.2	Manual coagulant pH control	5	
8a.1.3	Coagulant pH monitored and alarmed	-5	
S.8a	Total Score for Coagulation		0
S.8b Total Score for Clarification			
			0
8c Rapid Gravity & Pressure Filters			
8c.3.1	Turbidity meter/particle counter on each filter with alarm on telemetry	-5	
8c.3.2	Turbidity meter/particle counter on each filter but no alarm on telemetry	0	0
8c.3.3	One turbidity meter/particle counter shared by more than one filter with alarm on telemetry	-2	
8c.3.4	One turbidity meter/particle counter shared by more than one filter but no alarm on telemetry	2	
8c.3.5	No turbidity meters/particle counters monitoring filter performance	10	
8c.4.1	Final water turbidity meter/particle counter with alarm on telemetry	-2	-2
8c.4.2	Final water turbidity meter/particle counter but no alarm on telemetry	2	
8c.4.3	No final water turbidity meter/particle counter	5	
8c.5.1	Continuous residual coagulant monitor on combined filtrate or works outlet with alarm	-5	
8c.5.2	Continuous residual coagulant monitor on combined filtrate or works outlet but no alarm	-1	
8c.5.3	No continuous residual coagulant monitor on combined filtrate or works outlet	5	5
8c.6.1	Routine discrete monitoring of treated water for turbidity/residual coagulant	-2	-2
8c.6.2	No routine discrete monitoring of treated water for turbidity/residual coagulant	2	
8c.7.1	Turbidity of backwash supernatant monitored when recycled	-2	
8c.7.2	Turbidity of backwash supernatant not monitored when recycled	2	
S.8c	Total Score for Rapid Gravity & Pressure Filters		1
S.8d Slow Sand Filters			
			0
S.8e Membrane Filtration			
			0
S.8f UV Inactivation			
			0
9 Rapid Gravity & Pressure Filters Work Performance			
9.1.1	Final water turbidity increases by more than 50%, excluding normal backwash period or turbidity in the final water >1.0 NTU	4	
9.1.2	Treated water turbidity increases by less than 50%, excluding normal backwash	0	0

	period or turbidity in the final water <1.0 NTU		
9.2.1	Media loss from any filter has brought media depth below design level	6	
9.2.2	Media depth above minimum design level with audit trail maintained	-2	
9.3	Signs of media cracking on any filter or any other damage to the filter	4	
9.4	All filters have been drained, inspected and any necessary remedial action taken within last year	-2	-2
9.5	Air scour and backwash maintained and operating efficiently as per maintenance manual	-2	-2
S.9	Rapid Gravity & Pressure Filters Work Performance		-4
10	Treatment Works Operation		
10.1.1	Plant with documented management systems that includes procedures and process control manuals	-2	
10.1.2	Process control manuals specific to works available	-1	-1
10.1.3	Process control manuals specific to works not available	1	
10.2.1	Auditable action plans available for dealing with deviations in quality and evidence of of the plan	-1	-1
10.2.2	Auditable action plans not available for dealing with deviations in quality	1	
10.3.1	Slow start facility on filters operational	-4	-4
10.3.2	No slow start facility on filters, or slow start facility	4	
10.4.1	Filters run to waste for appropriate period after backwash	-6	
10.4.2	Filters run to head of works for a period following backwash	-4	
10.4.3	Filters not run to waste or head of works for a period following backwash	4	4
10.5.1	Backwash water and/or sludge supernatant has to be recycled	2	
10.5.2	Other disposal route available for backwash water and sludge supernatant	-2	-2
10.6.1	Water flow through works when operating has not increased by >10% in <30 minutes in last 12 mont	-2	
10.6.2	Water flow through works when operating has increased by >10% in <30 minutes in last 12 months	2	2
10.7.1	Flow through works above design flow for >10% of time in last 12 months	4	
10.7.2	Flow through works above design flow for <=10% of time in last 12 months	0	0
10.7.3	Flow through works >130% above design flow for >50% of time in last 12 months	6	
10.8	Filters bypassed during the year	6	
S.10	Treatment Works Operation		-2
Abbeyfeale Water Treatment Plant Risk Assessment Totals			
Section	Surface Water Catchment Risk Scores		
S.1	Total Score for Animals Within Catchment		24
S.2	Total Score for Agricultural practices within the Catchment		26
S.3	Total Score for Discharges to the Catchment / Water Source		19
S.4	Total Score for Water Source Type		8
S.5	Total Score for Catchment Inspections		3
S.6	Total Score for Raw Water Intake Management for Abstractions		-6
	Total Surface Water Catchment Risk Scores		74
	Surface Water Treatment, Operation and Management Risk Scores		
S.7	Total Score for Water Treatment Factors		-10
S.8a	Total Score for Coagulation		0
S.8b	Total Score for Clarification		0
S.8c	Total Score for Rapid Gravity & Pressure Filters		1
S.8d	Slow Sand Filters		0
S.8e	Membrane Filtration		0
S.8f	UV Inactivation		0
S.9	Rapid Gravity & Pressure Filters Work Performance		-4
S.10	Treatment Works Operation		-2
	Total Surface Water Treatment, Operation and Management Risk Scores		-15
	Total Surface Water Catchment Risk Scores		74
	Total Surface Water Treatment, Operation and Management Risk Scores		-15
	Surface Water Screening Score		59
	Population est.		9459
	Population Weighting Factor		1.59
	FINAL WEIGHTED RISK SCREENING SCORE		94
	WATER SUPPLY RISK CLASSIFICATION		High

(Low Risk (<50), Moderate Risk (50-75), High Risk (76-100), Very High Risk (>100))