

CORK COUNTY COUNCIL

WESTERN DIVISION

WATER SERVICES

Courthouse, Skibbereen, Co. Cork

**Re: Waste Water Discharge Certificate Application
for the Agglomeration of Ardroom**

Dear Sir/Madam,

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

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 (OCR'd format)
- 1 Nr. CD-ROM with GIS Data, Tabular Data

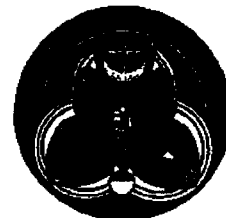
The content of the electronic files is a true copy of the original hardcopy.

Niall O'Mahony,
Senior Engineer.

Environmental Protection Agency	
Licensing Cork	
Received	
30 NOV 2010	
Initials	_____

Comhairle Contae Chorcaí Cork County Council

Environmental Directorate,
Inniscarra, Co. Cork.
Tel. No. (021) 4532700 • Fax No. (021) 4532727
Web: www.corkcoco.ie
An Stiúirthóireacht 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', written over a horizontal line.

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



This is a draft document and is subject to revision.



Waste Water Discharge Certificate of Authorisation Application Form

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

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

Tracking Amendments to Draft Application Form

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

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

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ABOUT THIS APPLICATION FORM

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

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

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

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

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

PROCEDURES

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

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

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

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

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

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

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

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

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

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

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

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SECTION A: NON-TECHNICAL SUMMARY

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

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

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

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**

Non-Technical Summary

Ardgroom village is a small village located on the Beara peninsula north of Castetownbere in West Cork.

Waste water works and the activities carried out therein

The waste water in Ardgroom village is currently being treated via a septic tank located adjacent to the river Owenagappul, with a discharge into the river. A new wastewater treatment plant has recently been constructed for the village. The plant was constructed in 2008 as a joint venture between Cork County Council and a housing development in the village and currently treats the wastewater from this housing development only. Cork County Council is planning to connect the village via a new sewer line to the new treatment plant in early 2010, resulting in the septic tank which is currently treating the wastewater from the village becoming redundant. The new wastewater treatment plant is located just north of the village. Treatment is by means of a preliminary, primary and secondary treatment, with tertiary treatment taking place using UV Radiation. The plant discharges to the adjacent Owenagappul River via 225mm diameter cast iron pipe.

Sources of emissions from the waste water works

The majority of the properties in the village are dwelling houses with the remainder being community based properties such as pubs, shops and church.

The existing PE is estimated at 220 peak summer population with a subsequent peak dry weather flow (DWF) of 48.4m³ per day in the summer. A final effluent standard of 10 mg/l BOD; 15 mg/l SS it to be achieved from this new WWTP. For the purpose of this application the relevant PE chosen for the licence period is 400PE.

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 sources of wastewater in the village would all be considered domestic wastewater. The majority of the properties in the village are dwellings with the remainder being community based properties where all the wastewater from the properties would be considered domestic.

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

The existing septic tank has a design PE of 167. The new wastewater treatment plant has a design pe of 400pe. The existing pe within the agglomeration is 220pe, (assuming a pe of 3 per dwelling). The septic tank is currently being desludged on a regular basis by Cork County Council. Once connected the new wastewater treatment plant will also be desludged on a regular basis.

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

At present all treatment plants under the control of Cork County Council are monitored and maintained by full time Cork County Council personnel and are desludged when deemed necessary, thus reducing the possibility of significant pollution. Ultraviolet Radiation treatment has been included in the new plant for the purposes of ensuring no negative impact on Ardgroom Harbour which is part of a designated Shellfish Area.

Measures planned to monitor emissions into the environment.

The emissions from the existing septic tank and new treatment plant can be monitored through the sampling points located in drawing ARDG B3-01& B4-01.

SECTION B: GENERAL

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

B.1 Agglomeration Details

Name of Agglomeration: Ardgroom
--

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:	Water Services (Western Division)
	Courthouse
	Skibbereen
	Co. Cork
Tel:	028 21299
Fax:	028 21995
e-mail:	niall.omahony@corkcoco.ie

*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*:	Naill O'Mahony
Address:	Cork County Council
	Courthouse
	Skibbereen
	Co. Cork
Tel:	028 21299
Fax:	028 21995
e-mail:	niall.omahony@corkcoco.ie

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

Co-Applicant's Details

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

*This should be the name of a Water Services Authority, other than the lead authority, where multiple authorities are the subject of a waste water discharge 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.

Septic Tank:

Name*:	Michael O'Driscoll
Address:	Cork County Council
	Foildarrig
	Castletownbere
	Co Cork
Grid ref (6E, 6N)	068940E, 055193N
Level of Treatment	Primary

New Wastewater Treatment Plant:

Name*:	Michael O'Driscoll
Address:	Cork County Council
	Foildarrig
	Castletownbere
	Co Cork
Grid ref (6E, 6N)	068945E, 055545N
Level of Treatment	Tertiary

*This should be the name of the person responsible for the supervision of the waste water treatment plant.

It should be noted that the existing septic tank, which is currently the main treatment works in the village, will be decommissioned in early 2010.

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
Type of Discharge	150mm Open Pipe
Unique Point Code	SW01 - ARDG

Location	Ardgroom Outward
Grid ref (6E, 6N)	068930E, 055190N

It should be noted that the current primary discharge point will be decommissioned in early 2010 and the current secondary discharge point will become the primary and only discharge from the agglomeration.

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	Surface
Type of Discharge	225mm Cast Iron Pipe
Unique Point Code	SW02 - ARDG
Location	Ardgroom Outward
Grid ref (6E, 6N)	068941E, 055626N

*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.

It should be noted that the current primary discharge point will be decommissioned in early 2010 and the current secondary discharge point will become the primary and only discharge from the agglomeration.

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	
Location	
Grid ref (6E, 6N)	

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

Attachment included	Yes	No
		√

B.6 Planning Authority

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

Name:	Cork County Council
Address:	Planning Department
	Norton House
	Skibbereen
	Co Cork
Tel:	028 40340
Fax:	028 21660
e-mail:	

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

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

Local Authority Planning File Reference N^o:	Part 8 Planning
---	-----------------

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:	Area Headquarters
	Hospital Grounds
	Skibbereen
Tel:	028 40400
Fax:	028 21006
e-mail:	info@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.

Existing

Population Equivalent	220
Data Compiled (Year)	2009
Method	House count

Proposed:

Population Equivalent	400
Data Compiled (Year)	2009
Method	House count, Planning & Future Zoning

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.

Planning permissions has been granted for 4 no. dwelling within the agglomeration boundary. These have not yet been constructed/completed.

It can be estimated that approximately 12pe will be added to the wastewater scheme once construction is complete. These would all be considered domestic wastewater. The new treatment plant has a design PE of 400 and therefore can cater for the increase in loading. For the purpose of this application the relevant PE chosen for the licence is 400PE, being the design PE of the new wastewater treatment plant.

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 €)
Less than 500pe	€3,000

Appropriate Fee Included	Yes	No
		√ *

* Please see copy of attached letter sent by registered post to Mr F. Clinton, Programme Manager, Licencing 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.

As a new plant has only recently been constructed Ardroom is not included on the Capital Investment Programme.

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.

Not 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.

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.

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.

Description of the waste water treatment plant and design capacity

Septic Tank

The existing septic tank has a design PE of 167. This tank will be decommissioned once the village collection network is connected to the new wastewater treatment plant. This is due to take place in early 2010.

New Waste Water Treatment Plant

The treatment plant has a design p.e of 400. The WWTP consists of preliminary, primary, and secondary treatment. The resultant effluent is disinfected using Ultra Violet Radiation technology to achieve a final effluent standard of 10 mg/l BOD; 15 mg/l SS.

The plant is a 'DC16 Modular RBC System' together with a 'Hiagh 590ACE' Semi-Rotary Brush screen, and includes the following:

- An integrated screen and screenings conditioning system
- A primary Settlement tank
- DC16 Rotor Module

- Chemical Dosing
- Final Settlement
- Sludge Return pump chamber
- UV chamber

1. Inlet Screen

Haigh Ace 590 inlet screen removes all grit, rags etc. from the influent.

2. Primary Settlement Tank

Waste water enters the Primary Settlement Tank of the system, where solid matter is settled out and retained. The retained solids (primary sludge) is drawn off at regular intervals by a vacuum tanker. The settled or partially clarified liquor then passes into the Rotor Modules via a flow splitter. The primary zone is designed to have sufficient capacity to accept high flows within the unit over short intervals of time.

3. Rotor Modules

The Rotor Module (biozone) is semi-circular in cross section and rectangular in plan. Clarified liquor enters the first stage of the biozone, which contains the first stage 'roughing' media bank. The second stage of the biozone is hydraulically sealed from first stage and maintains a constant water level. This second stage is fed via a bucket lift transfer (Managed Flow) system contained in the first stage of the biozone. The RBC (Rotating Biological Contractor) consists of banks of polypropylene media attached to a central shaft and is supported by bearings, which are mounted on the main steel frames at each end of the unit. One of here frames includes the fixing assembly for the drive motor unit. The main operational features of the rotor unit are outlined below;

- The RBC is divided into two stages by means of a fixed baffle attached to the biozone. The media is split into stages by the means of rotating baffles fixed to the shaft, designed to promote effective and efficient growth of bio-culture to effect treatment.
- The RBC is rotated slowly through a reduction gearbox and is arranged so that a proportion of its surface area is submerged in the effluent at any one time. As the RBC rotates, biologically active film of micro-organisms (biomass) to become established on each side of the media sheets. This biologically active film grows in size, is self regulating and oxidises the pollutants in the sewage. The micro organisms use the polluting material (measure as BOD) as a substrate (food) and as they do so, multiply in number, maintaining a specific biomass thickness to ensure optimum process efficiency. Material from the first stages of the RBC falls to the base of the first stage of the biozone, whereas material from the remaining stages of the RBC is kept in suspension and carried forward into the Final Settlement Tank.
- In order to ensure a balanced and constant flow and, therefore, a stable environment, dosing buckets fitted to the first stage of the RBC shaft lift and transfer the partially clarified liquor to the final stages of the RBC at a constant rate, irrespective of changes to incoming flow rates and water level.

4. Final Settlement Tank c/w sludge return

The Final Settlement Tanks comprises of the secondary settlement or final zone and it is in this final zone that any biological culture, which has fallen from the latter stages of the RBCs, is allowed to settle out. The treated effluent enters this zone from the biozone and then travels to the Flow Collection Chamber. The settled sludge is drawn off hydrostatically and transferred via a pump unit in the Sludge Return Chambers to the Primary Settlement Tank.

5. Channel UV System

UV System is situated inside a concrete channel and provides tertiary treatment in the form of sterilisation.

Stormwater Overflows

There are no stormwater overflows attached to the sewerage scheme. However there is an emergency overflow from the pump sump where the influent enters the treatment plant, in case of pump failure.

Pumping Stations

There are no pumping stations associated with the collection network. There is however pumping associated with the treatment plant itself.

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

Attachment included	Yes	No
	√	

SECTION D: DISCHARGES TO THE AQUATIC ENVIRONMENT

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

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

Details of all discharges of waste water from the agglomeration should be submitted via the following web based link: http://78.137.160.73/epa_wwd_licensing/. *The applicant should address in particular all discharge points where the substances outlined in Tables 'Emissions to Surface/Groundwaters and 'Dangerous Substances Emissions' are emitted*

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

D.1(i) Discharges to Surface Waters

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

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

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

Attachment included	Yes	No
	√	

D.1(ii) Discharges to Groundwater

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

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

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

Attachment included	Yes	No
		√

D.1 (iii) Private Waste Water Treatment Plants

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

There are no private waste water treatment plants within the agglomeration boundary.

D.2 Tabular Data on Discharge Points

Applicants should submit the following information for each discharge point:

Table D.2:

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING
Point Code Provide label ID's	Point Type (e.g., Primary/ Secondary/ Storm Water Overflow)	Local Authority Name (e.g., Donegal County Council)	Receiving Water Body Type (e.g., River, Lake, Groundwater, Transitional, Coastal)	Receiving Water Body Name (e.g., River Suir)	Protected Area Type (e.g., SAC, candidate SAC, NHA, SPA etc.)	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference
SW01	Primary	Cork County Council	River	Owenagappul River	SAC, pNHA	068930	055190
SW02	Secondary	Cork County Council	River	Owenagappul River	SAC, pNHA	068941	055626

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.

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

Attachment E.2 should contain any supporting information.

Attachment included	Yes	No
	√	

E.3. Tabular data on Monitoring and Sampling Points

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

PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
Point Code Provide label ID's assigned in section E of application	Point Type (e.g., Primary, Secondary, Storm Water Overflow)	Monitoring Type M = Monitoring S = Sampling	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference	Y = GPS used N = GPS not used
SW01	Primary	Sampling	068940	055193	N
SW02	Secondary	Sampling	068943	055550	N
aSW01-u	Upstream	Sampling	069010	054997	N
aSW01-d	Downstream	Sampling	069010	055721	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.

Ardgroom Harbour and its environs are within the designated Special Area of Conservation of “Kenmare River” (002158). The area surrounding Ardgroom also has the designation of a proposed National Heritage Area and a Special Area of Conservation and is known as “Glanmore Bog” (001879). The site synopsis for both sites are attached in Attachment F1.

The discharge points from the waste water treatment plants enters the Owenagappul River which has a 2a status according to the South Western River Basin District Project i.e. probable not at risk. The river flows into the Ardgroom Harbour which has a 2b status i.e. not at significant risk.

Assimilative Capacity of the Receiving Water

The effluent discharge for both the primary and secondary discharge points are combined to calculate the average value of data in discharge for the equations below. Sample results can be found in Attachment E.4.

a) Mass Balance Equation for Orthophosphate

Median flow of River = 0.498 m³/sec
 Median oPO₄-P in River (upstream) = 0.05mg/l

Average volume of Discharge = 0.001 m³/sec
 Median value of oPO₄-P in discharge = 5.52mg/l

$$C_{\text{final}} = \frac{(0.498 \times 0.05) + (0.001 \times 5.52)}{0.498 + 0.001}$$

C_{final} = 0.061 mg/l oPO₄-P

The increase in Orthophosphate due to the discharge of Ardgroom WWTP is 0.011mg/l

b) Mass Balance Equation for BOD

Flow of River (95%) = 0.0765 m³/sec
 Average BOD in River (upstream) = 2mg/l

Average volume of Discharge = 0.001 m³/sec
 Average BOD in Discharge = 43 mg/l

$$C_{\text{final}} = \frac{(0.0765 \times 2) + (0.001 \times 43)}{0.0765 + 0.001}$$

C_{final} = 2.53 mg/l BOD

The increase in BOD due to the discharge of Ardgroom WWTP is 0.53mg/l.

c) Mass Balance Equation for Suspended Solids

Flow of River (95%) = 0.0765 m³/sec
Average SS in River (upstream) = 2.5mg/l

Average volume of Discharge = 0.001 m³/sec
Average SS in Discharge = 67 mg/l

$$C_{\text{final}} = \frac{(0.0765 \times 2.5) + (0.001 \times 67)}{0.0765 + 0.001}$$

$$C_{\text{final}} = 3.33 \text{ mg/l SS}$$

The increase in SS due to the discharge of Ardroom WWTP is 0.83mg/l.

d) Mass Balance Equation Total Phosphate

50% Median flow of River = 0.249 m³/sec
Median TP in River (upstream) = 0.05mg/l

Average volume of Discharge = 0.001 m³/sec
Median value of TP in discharge = 6.41 mg/l

$$C_{\text{final}} = \frac{(0.249 \times 0.05) + (0.001 \times 6.41)}{0.249 + 0.001}$$

$$C_{\text{final}} = 0.075 \text{ mg/l TP}$$

The increase in Total Phosphate due to the discharge of Ardroom WWTP is 0.25mg/l.

e) Mass Balance Equation for Total Nitrogen

Flow of River (95%) = 0.0765 m³/sec
Average Total Nitrogen in River (upstream) = 0.388mg/l

Average volume of Discharge = 0.001 m³/sec
Average Total Nitrogen in Discharge = 24.4 mg/l

$$C_{\text{final}} = \frac{(0.0765 \times 0.388) + (0.001 \times 24.4)}{0.0765 + 0.001}$$

$$C_{\text{final}} = 0.698 \text{ mg/l Total Nitrogen}$$

The increase in Total Nitrogen due to the discharge of Ardroom WWTP is 0.31mg/l.

f) Mass Balance Equation for Sulphate

Flow of River (95%) = 0.0765 m³/sec
Average Sulphate in River (upstream) = 30mg/l

Average volume of Discharge = 0.001 m³/sec
Average Sulphate in Discharge = 30mg/l

$$C_{\text{final}} = \frac{(0.0765 \times 30) + (0.001 \times 30)}{0.0765 + 0.001}$$

$$C_{\text{final}} = 30 \text{ mg/l Sulphate}$$

The increase in Sulphate due to the discharge of Ardroom WWTP is 0.0mg/l.

g) Mass Balance Equation for Ammonia - N

Flow of River (95%) = 0.0765 m³/sec
Average Ammonia-N in River (upstream) = 0.1mg/l

Average volume of Discharge = 0.001 m³/sec
Average Ammonia-N in Discharge = 9.2mg/l

$$C_{\text{final}} = \frac{(0.0765 \times 0.1) + (0.001 \times 9.2)}{0.0765 + 0.001}$$

$$C_{\text{final}} = 0.217 \text{ mg/l Ammonia-N}$$

The increase in Ammonia-N due to the discharge of Ardroom WWTP is 0.117mg/l.

- 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.

The Dangerous Substances Regulations define the main polluting pesticides, solvents and metals which have significant effects on the environment. As the load to the WWTP is mainly domestic with no industrial contribution it can be assumed that the presence of these substances is negligible. This has been confirmed by results of analysis of receiving water outlined in Table E4. The main parameters which impact the receiving environmental are limited to BOD, suspended solid and bacteria (total and faecal Streptococci).

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

Not applicable as there are no water abstraction points downstream/down gradient of the agglomeration boundary.

- 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)

Ardgroom Harbour and its environs are within the designated Special Area of Conservation of “Kenmare River” (002158). The area surrounding Ardgroom also has the designation of a proposed National Heritage Area and a Special Area of Conservation and is known as “Glanmore Bog” (001879). The site synopsis for both sites are attached in Attachment F1. Ardgroom Harbour is also designated a Shellfish Area.

An Environmental assessment for the proposed upgrade to the wastewater treatment system at Ardgroom was carried out by Dixon Brosnan Environmental Consultants in July 2005 and is attached in F1. The results of chemical and biological surveying indicate that water quality in the Owenagappul River is satisfactory at present. Ultra violet disinfection system has been put in place due to mussel (marine) farming in Ardgroom Harbour. The discharge point from the WWTP was identified as being the point that would have no negative impact on the population of Margaritifera

margaritifera (pearl mussels) in the Owenagappul River. Sampling of the river water was carried out in 2004 and 2005 for various parameters including BOD, SS Nitrates and Phosphorus (see Section 7.1 of Dixon-Brosnan Report in Attachment F.1). There were no breaches of the relevant limits in samples taken by Cork County Council. Results were generally significantly lower than the specified limits and this would be expected in an oligotrophic low-nutrient system. These results predated the commissioning of the new Ardroom Waste Water Treatment Plant which would indicate that there will be no negative impact on the river or harbour from the discharge from the new plant.

- 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**.

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

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

Not applicable as there are no water abstraction points downstream or down gradient of the agglomeration.

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

Attachment F.2 should contain any supporting information.

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).

Dangerous Substances Directive 2006/11/EC

The wastewater entering into the septic tank and treatment plant is all considered domestic and would therefore not contain any dangerous substances. This can also be seen from the results of the samples taken from the tank as seen in attachment E4.

Water Framework Directive 2000/60/EC

2000/60/EC is establishing a framework for Community action in the field of water policy. Under the Water Framework Directive local authorities are obliged to prepare river basin management plans. A management programme is currently under preparation for the Cork area.

The discharge points from the waste water treatment plants enters the Owenagappul River which has a 2a status according to the South Western River Basin District Project i.e. probable not at risk. The river flows into the Ardgroam Harbour which has a 2b status i.e. not at significant risk. As the new wastewater treatment plant will improve the quality of effluent discharging to the river it is envisaged that the river and harbour water qualities will be ameliorated.

Birds Directive 79/409/EEC & Habitats Directive 92/43/EEC

Ardgroam Harbour and its environs are within the designated Special Area of Conservation of “Kenmare River” (002158). The area surrounding Ardgroam also has the designation of a proposed National Heritage Area and a Special Area of Conservation and is known as “Glanmore Bog” (001879). Improvement works have already been carried out to this scheme as this plant has recently been upgraded and the discharge point has been relocated to an area in the river which is considered to not to have any negative impacts on the *Margaritifera margaritifera* in the Owenagappul River.

Improvement works have already been carried out to this scheme as this plant has recently been upgraded. The treatment standards of the new plant will ensure that the water quality of the harbour will be improved ensuring no impact on the SAC and any birdlife associated with it. The current primary discharge point (from the septic tank) will be decommissioned in early 2010 and the current secondary discharge point will become the primary and only discharge point from the agglomeration.

Groundwater Directives 80/68/EEC & 2006/118/EC

Not applicable as the discharge from the agglomeration is to surface waters.

Drinking Water Directives 80/778/EEC

This Directive is concerned with standards of water intended for human consumption. As there is no drinking water abstraction point in the vicinity of the discharge point, this directive is not applicable.

Urban Waste Water Treatment Directive 91/271/EEC

The Environmental Protection Agency Act, 1992 (Urban Wastewater Treatment) Regulations, 1994 (S.I. No. 419 of 1994) were issued to give effect to EU Council Directive 91/271/EEC concerning urban wastewater treatment. The Regulations specify that wastewater arising from populations of less than 2,000 shall, by the end of 2005, be subject to appropriate treatment prior to discharge. Appropriate treatment is defined as

...any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the Directive and of other Community Directives.

This requirement applies to freshwater and estuarine discharges. It also applies to coastal discharges from agglomerations of more than 10,000.

Wastewater quality limits specified in the Second Schedule of the Regulations note that the final concentrations of BOD and suspended solids shall not exceed 25 mg/l and 35 mg/l respectively. These limits apply however, only to treated discharges from populations over 2,000 (10,000 where the discharge is coastal).

The Urban Wastewater Directive notes in Annex IIA that a water body (freshwater, estuarine or coastal) must be identified as a sensitive area if certain criteria are met and to where treated waste from agglomerations of greater than 10,000 p.e. will discharge. The Owenagappul River has not been designated as a sensitive area. The designation process is directed at agglomerations significantly larger than that under consideration here.

The Directive specifies a number of obligations regarding the design of wastewater treatment plants as follows:

- (a) Such plants shall be designed, constructed, operated and maintained to ensure sufficient performance under all normal local climatic conditions.
- (b) When designing the plants, seasonal variations of the load shall be taken into account.

- (c) Waste water treatment plants shall be designed or modified so that representative samples of the incoming wastewater and of treated effluent can be obtained before discharge to receiving waters.
- (d) The points of discharge of urban wastewater shall be chosen, as far as possible, so as to minimize the effects on receiving waters.

These points were all taken into consideration when designing and location the treatment plant and discharge point. Therefore it would be considered that the new wastewater treatment plant is compliant with this directive.

Environmental Liabilities Directive 2004/35/EC

The Environmental Liabilities 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. The new plant will be operated to a high standard with regular maintenance to ensure a little risk of environmental damage.

Bathing Water Directive 76/160/EEC

In Ireland the legislation governing the quality of bathing waters is set out in the Quality of Bathing Waters Regulations, 1992 (S.I. 155 of 1992) and amendments which transpose the EU Directive 76/160/EC concerning the quality of bathing water. The quality standards refer chiefly to microbiological parameters with provision for monitoring of other parameters where it is suspected that conditions have deteriorated.

There are no designated bathing areas in the stretch of water under examination and hence Directive and its regulations do not apply.

Shellfish Waters Directive (2006/113/EC)

Council Directive 79/923/EEC on the quality required by shellfish waters and the associated Quality of Shellfish Waters Regulations, 1994 (S.I. No. 200 of 1994) specify designated coastal and brackish waters needing protection or improvement in order to support shellfish. Specified limit values apply to these areas. Pursuant to Council Directive 91/492/EEC (as amended by Council Directive 97/61/EC) which lays down the health conditions for the production and the placing on the market of live bivalve molluscs, the Minister for the Marine and Natural Resources issued the Live Bivalve Molluscs (Production Areas) in which a number of production areas are listed from which molluscs may be taken.

Under the classification scheme for shellfish production areas operated by the Department of the Marine and Natural Resources under Directive 91/492/EEC Ardroom Harbour has been issued with an A classification which is achieved when there are less than 300 faecal coliforms or 230 E. coli per 100 g of shellfish flesh. An A classification scheme allows sale for direct human consumption i.e. no purification or relaying required. Licensed shellfish sites in the harbour are indicated in attachment F1 –Environmental Assessment: Proposed upgrade to the waste water treatment system at Ardroom, Co. Cork.

Ultra violet disinfection system has been put in place in the new wastewater treatment plant due to mussel (marine) farming in Ardgroom Harbour. This will ensure that there is no negative impact on the designated Shellfish Area.

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).

The Owenagappul river was given a Q4-5 (unpolluted) rating in 2003. It has been assigned moderate status and rated “probably not at risk” by the South Western Regional Basin District.

Sampling of the river water was carried out in 2004 and it was found that the orthophosphate levels, often the limiting factor in freshwater, were particularly low at less than 0.006 mg/l P at all sites. The introduction of the new wastewater treatment plant should ensure at least no disimprovement in these levels. For further details on assessment of impact of Phosphorus in the discharge see Section Dixon-Brosnan Report in Attachment F.1.

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.

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.

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

Attachment included	Yes	No
		√

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SECTION H: DECLARATION


Declaration

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

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

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

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

Signed by :  Date : 11-12-09
(on behalf of the organisation)

Print signature name: Moira MURRELL

Position in organisation: Director of Service

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SECTION I: JOINT DECLARATION

Joint Declaration ^{Note1}

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

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

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

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

Lead Authority

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

Print signature name: _____

Position in organisation: _____

Co-Applicants

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

Print signature name: _____

Position in organisation: _____

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

Print signature name: _____

Position in organisation: _____

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

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Section A – Non Technical Summary

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Section B - General

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Attachment B3 - ARDG B3-01 – Primary Discharge Point

Attachment B4 - ARDG B4-01 – Secondary Discharge Point

Attachment B6 – Part Part 8 Planning Documentation

Drawings: ARD-06-001 Site Location

ARD-06-002 Site layout

ARD-06-003 Site Layout

ARD-06-004 Site Section

Report: Managers Report on Part 8 Planning

Section C – Infrastructure & Operation

Attachment C1- ARDG C1.01 – WWTP Site Layout Plan

ARDG C1.01 – WWTP Site Layout Plan

Section E - Monitoring

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Attachment E4 – Sampling Data

Section F – Existing Environment and Impact of the Discharges

Attachment F1 – Environmental assessment: Proposed upgrade to the wastewater treatment system at Ardroom, Co. Cork.

SITE SYNOPSIS: Kenmare River: Site Code: 002158

SITE SYNOPSIS: Glanmore Bog: Site Code: 001879

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Table F.1(ii)(b) Surface/Ground Water Monitoring (dangerous substances) – Secondary discharge

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Attachment A.1

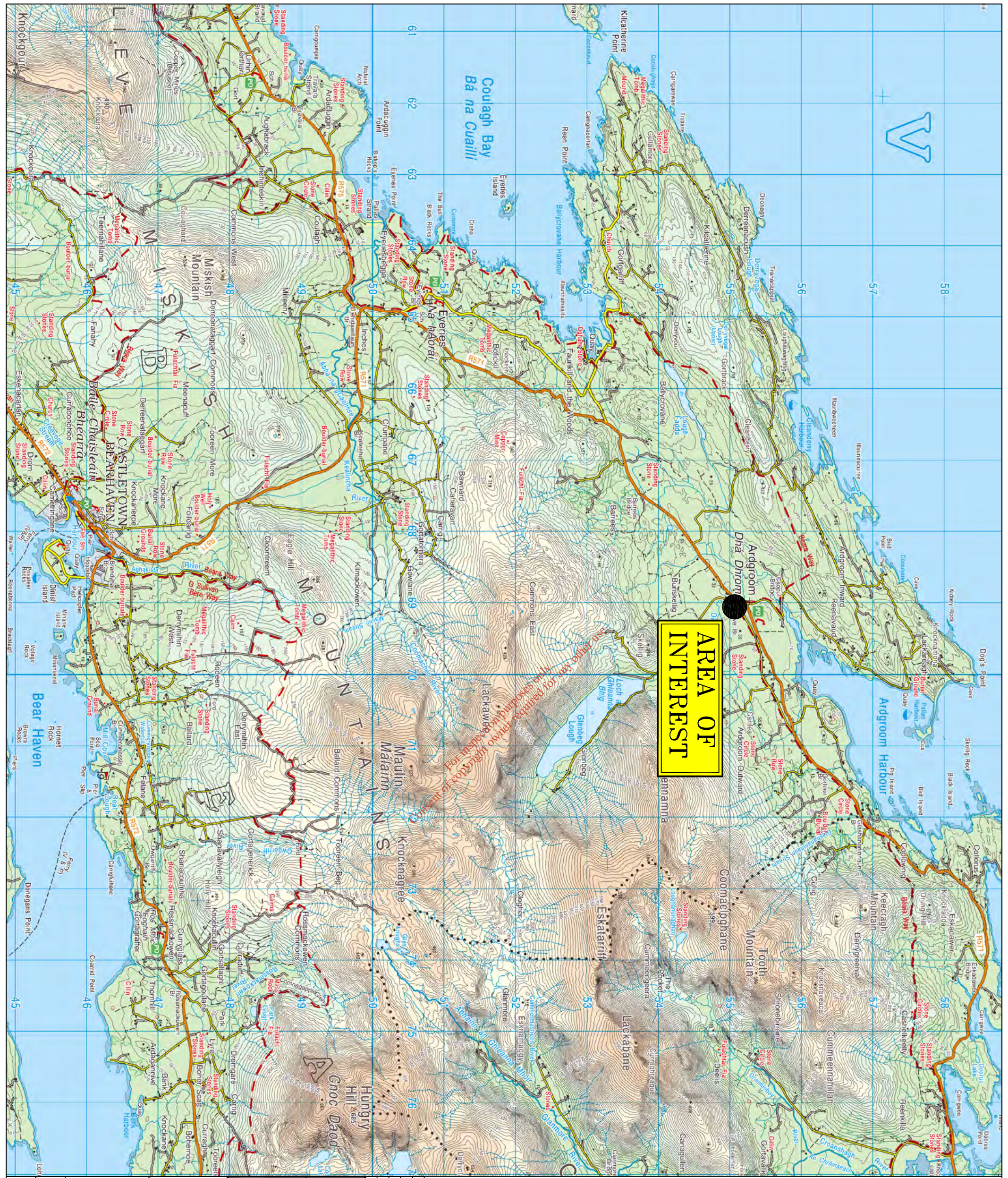
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Attachment A1

Map:

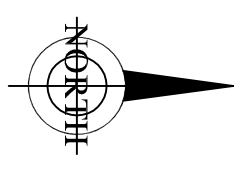
- ARDG A1.01 - Site Location Map

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Western Division.**

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SENIOR ENGR. (WATER SERVICES),
COURTHOUSE, SHIBBERDEN,
M. MURRELL,
DIRECTOR OF SERVICES
WEST CORK

Job Title:
**ARDROOM_WASTE_WATER
DISCHARGE_CERTIFICATE
APPLICATION**

Drawing Title:
**ATTACHMENT_A1
AGGLOMERATION_LOCATION_MAP**

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_A1_01	Scale: 1/50000	Rev: -

Attachment B.1

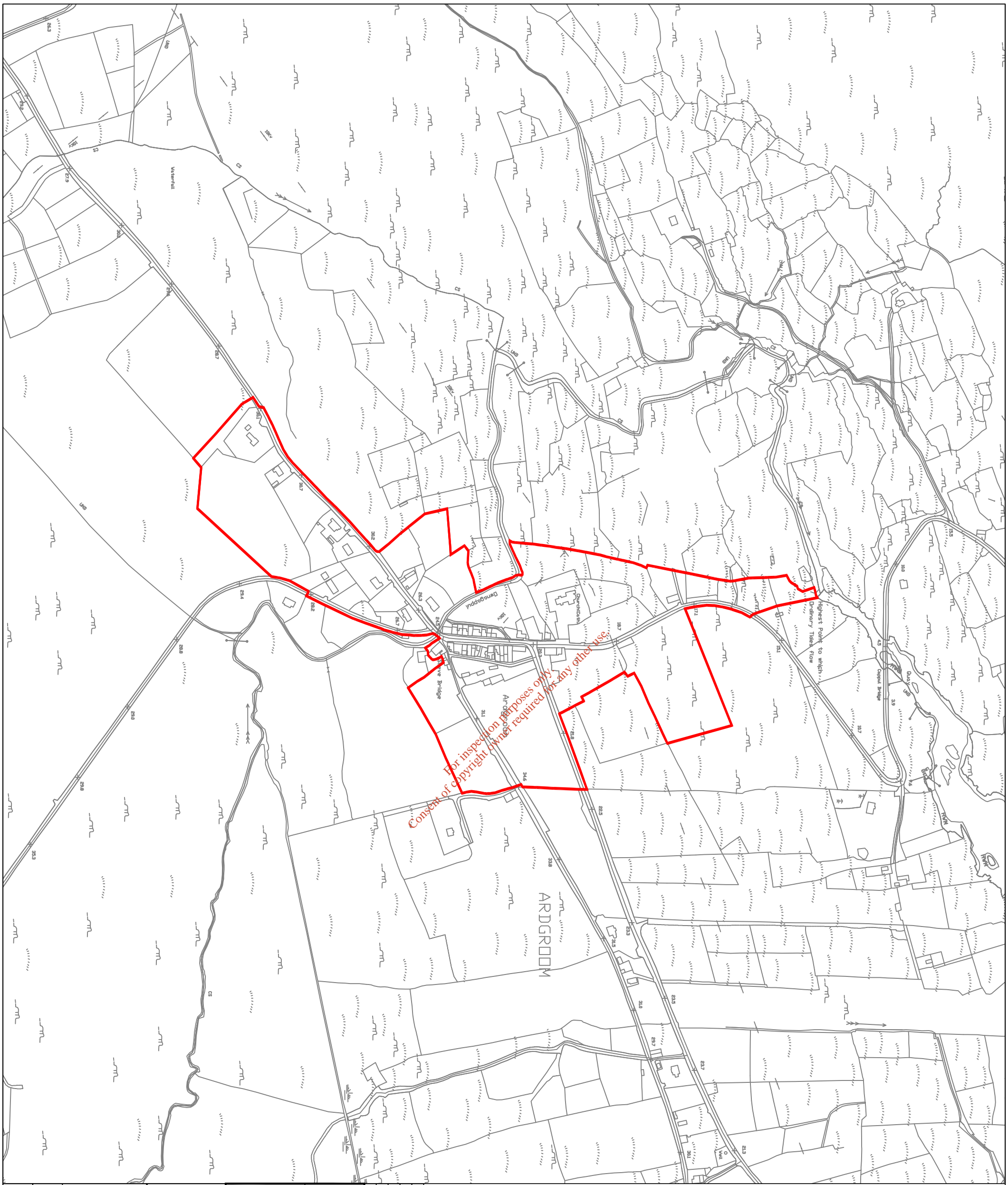
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Attachment B1

Map:

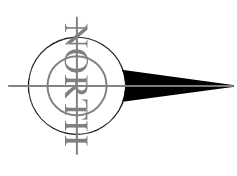
- ARDG B1.01 – Agglomeration Boundary Map

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LEGEND
 ——— AGGLOMERATION BOUNDARY

No.	Date	Drawn	Checked	Revision Description

Cork County Council,
 Western Division.



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 SENIOR ENGR. (WATER SERVICES),
 COURTHOUSE, SHIBBERDEN,
 M. MURRELL,
 DIRECTOR OF SERVICES
 WEST CORK

Job Title:
 ARDGROOM_WASTE_WATER
 DISCHARGE_CERTIFICATE
 APPLICATION

Drawing Title:
 ATTACHMENT_B.1
 AGGLOMERATION_BOUNDARY
 SERVED_BY_WASTE_WATER
 TREATMENT_PLANT

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_B1_01	Scale: 1/5000	Rev: -

Attachment B.2

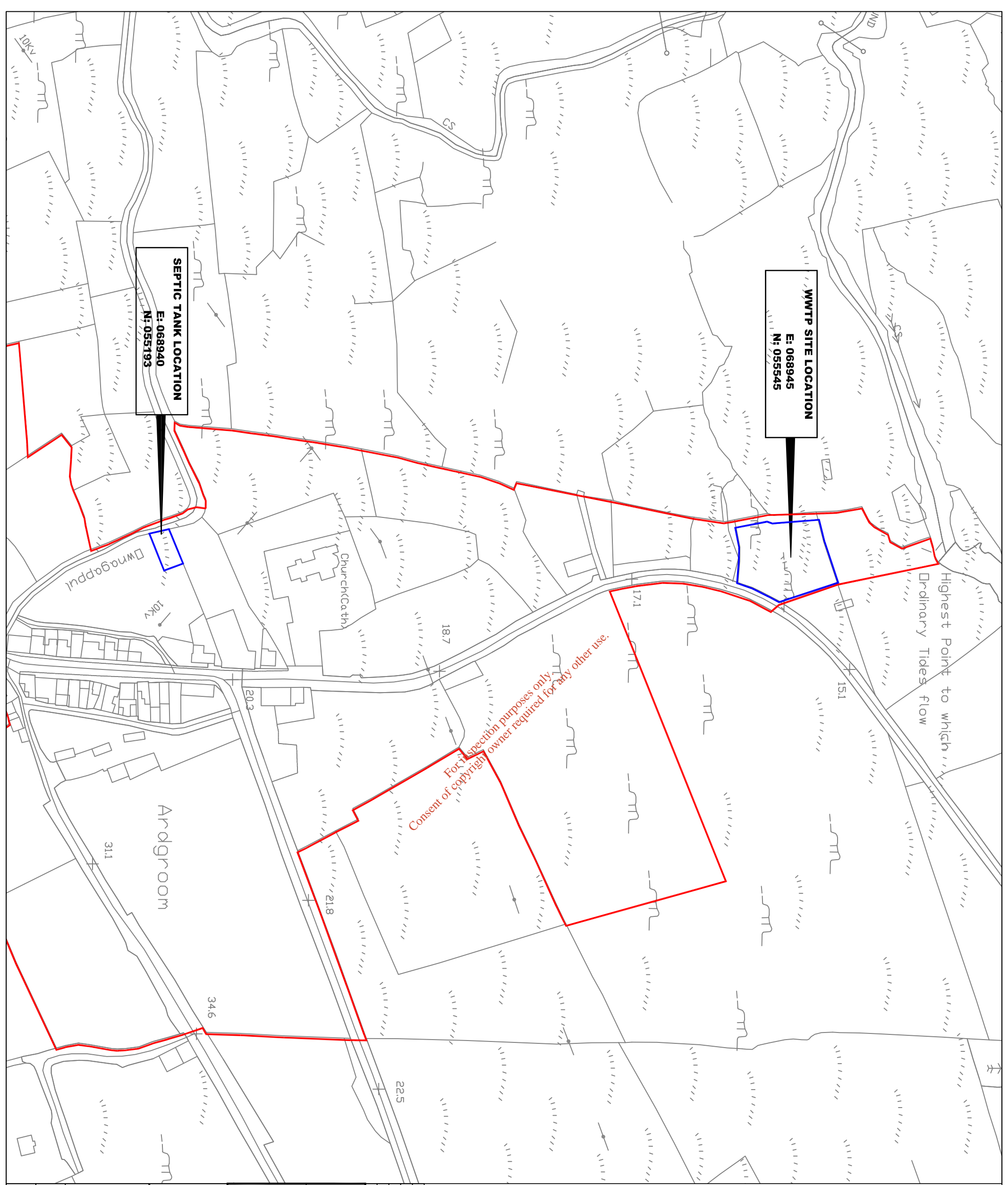
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Attachment B2

Map :

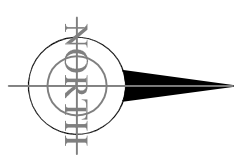
- **ARDG B2.01** - Site Location Map of Wastewater Treatment Plant

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LEGEND

- AGGLOMERATION BOUNDARY
- WWT SITE BOUNDARY

**Cork County Council,
Western Division.**



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SENIOR ENGR. (WATER SERVICES),
COURTHOUSE, SHIBBEREN,
M. MURRELL,
DIRECTOR OF SERVICES
WEST CORK**

**Job Title:
ARDDROOM_WASTE_WATER
DISCHARGE_CERTIFICATE
APPLICATION**

**Drawing Title:
ATTACHMENT B.2
WASTE_WATER
TREATMENT_PLANT
SITE_LOCATION**

No.	Date	Drawn	Checkd	Revision Description

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_B2_01	Scales: 1/2000	Rev: -

Attachment B.3

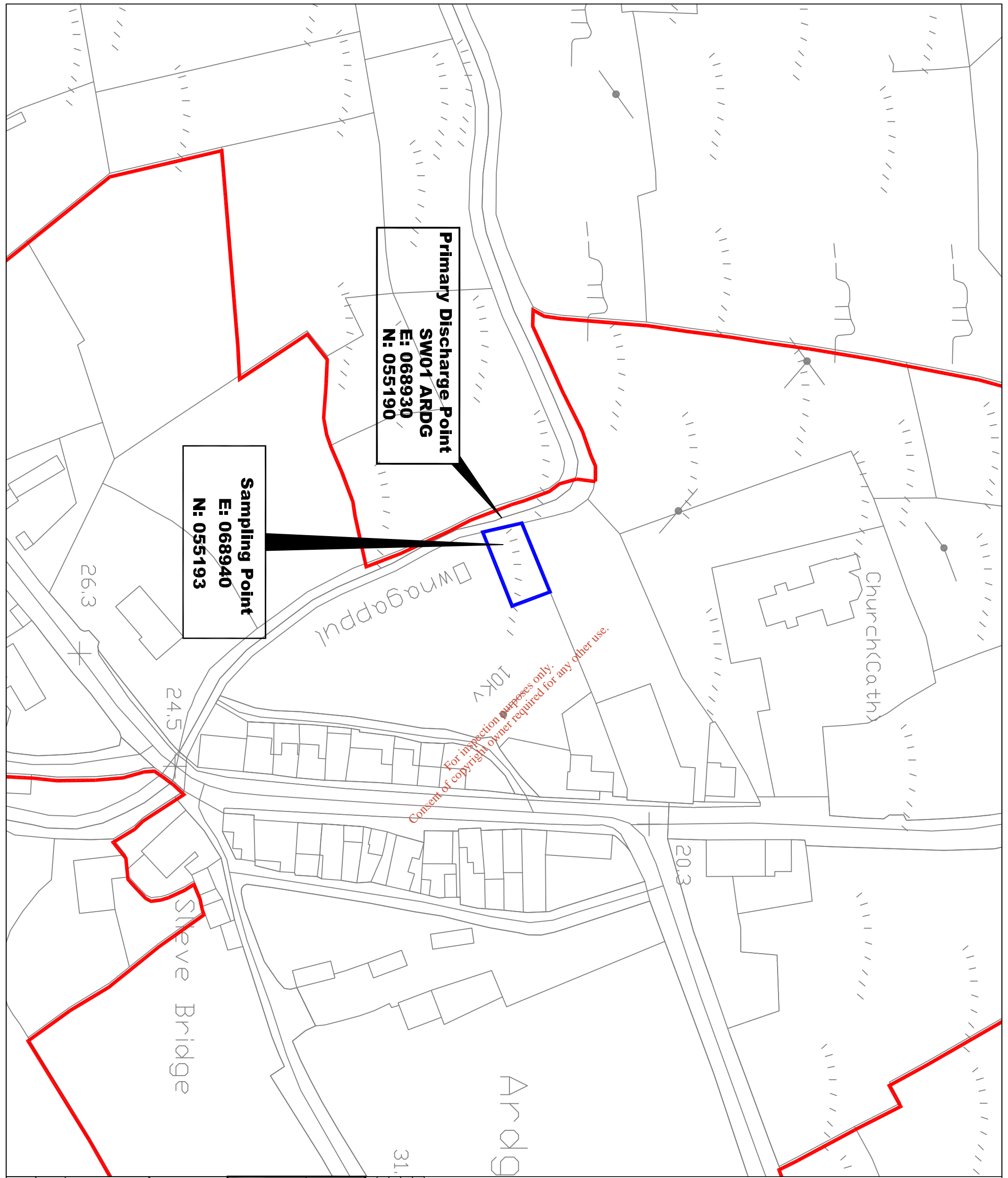
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Attachment B3

Map :

- **ARDG B3.01** – Primary Discharge Point

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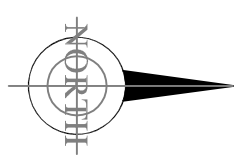
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Primary Discharge Point
 SW01 ARDG
 E: 068930
 N: 055190

Sampling Point
 E: 068940
 N: 055193

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- WWP SITE BOUNDARY

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 M. MURRELL,
 DIRECTOR OF SERVICES
 WEST CORK

Job Title:
 ARDGRROOM WASTE WATER
 DISCHARGE CERTIFICATE
 APPLICATION

Drawing Title:
 ATTACHMENT_B.3
 PRIMARY_DISCHARGE_POINT
 LOCATION_PLAN

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_B3_01	Scales: 1/1000	Rev: -

Attachment B.4

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Attachment B4

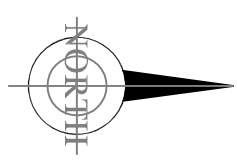
Map :

- **ARDG B4.01** – Secondary Discharge Point

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LEGEND

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- WWTp SITE BOUNDARY

No.	Date	Drawn	Checked	Revision Description

**Cork County Council,
Western Division.**

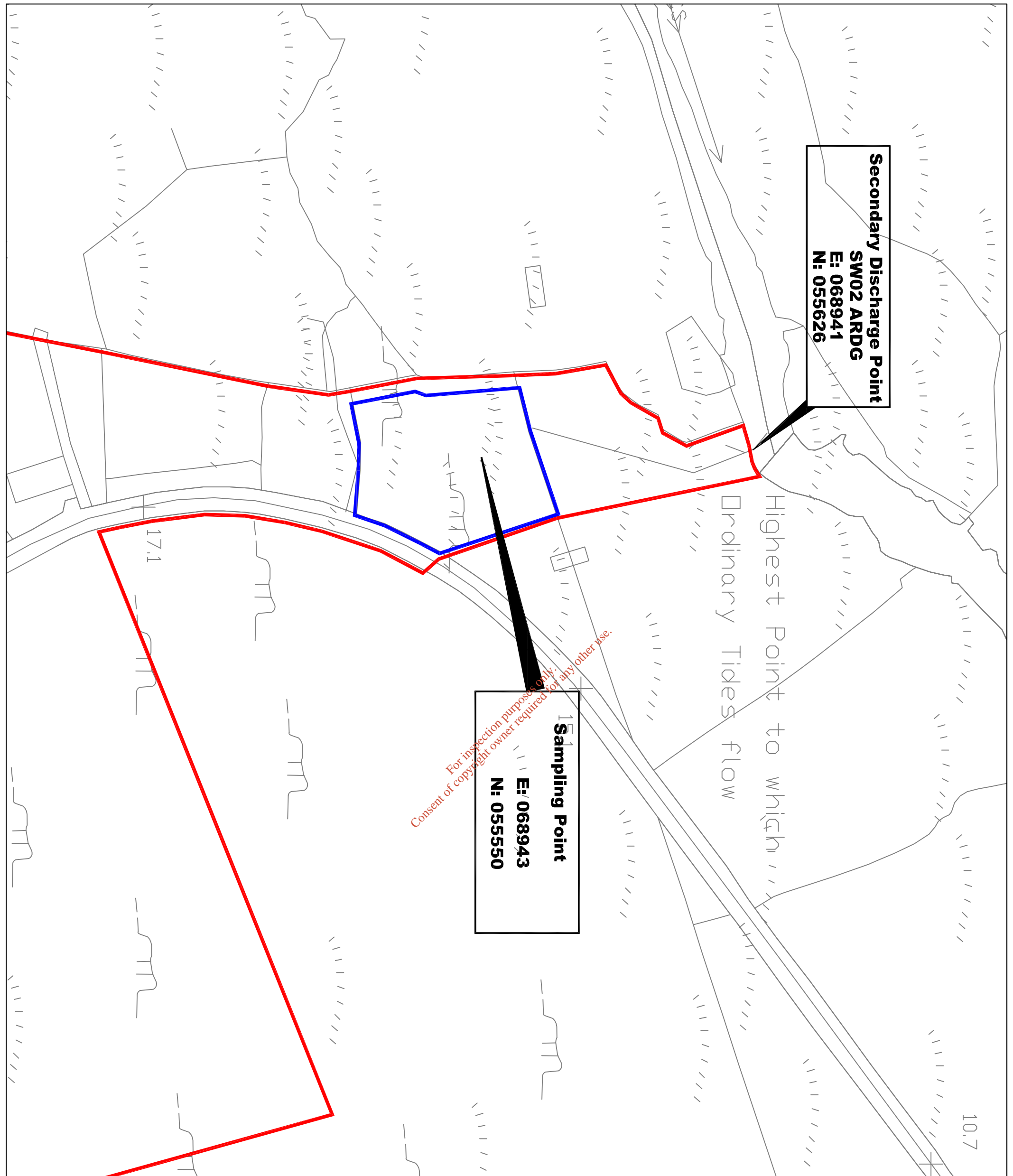
N. O'MAHONY, B.E.
SENIOR ENGR. (WATER SERVICES),
COURTHOUSE, SHIBBEREN,
WEST CORK.

M. MURRELL,
DIRECTOR OF SERVICES
WEST CORK.

Job Title:
ARDGROOM WASTE WATER
DISCHARGE CERTIFICATE
APPLICATION

Drawing Title:
ATTACHMENT_B.4
SECONDARY_DISCHARGE_POINT
LOCATION_PLAN

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_B4_01	Scales: 1/1000	Rev: -



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Attachment B.6

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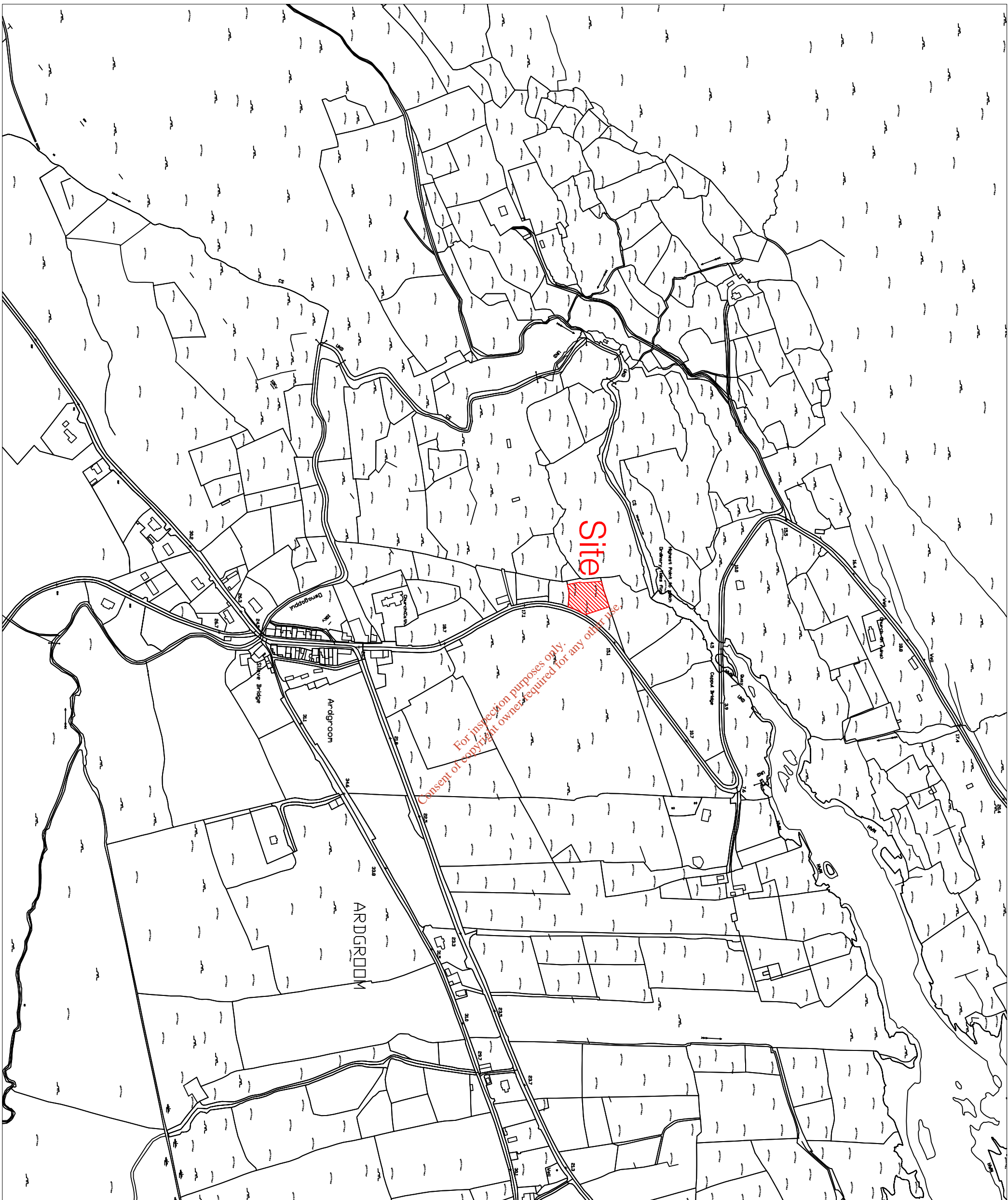
Attachment B6

- Part 8 Planning Documentation

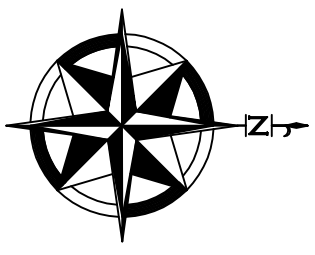
Drawings: ARD-06-001 Site Location
ARD-06-002 Site layout
ARD-06-003 Site Layout
ARD-06-004 Site Section

Report: Managers Report on Part 8 Planning

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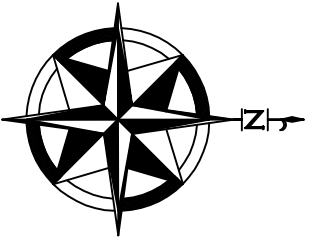
REV No.	DATE	REVISION

**paudie
 o'mahoney**
 and associates
 consulting engineers and architects

grossvcourc • upper high street • hillberry • co. Kerry
 telephone: (064) 33412 / 33416 • fax: (064) 33387
 mobile: (087) 522 1056 • email: paudie@omahoney.ie

CLIENT	
FLOIR HARRINGTON/ CORK CO CO	
PROJECT TITLE	
DEVELOPMENT AT ARDGROOM SEWERAGE PLANT PROPOSAL	
DRAWING	
SITE LOCATION	
SCALE	DATE
1/2500	AUG' 05
DRAWING No.	SCALE
ARD-06-001	A.S.
REV No.	CHANGED

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mahoney**
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consulting engineers and architects

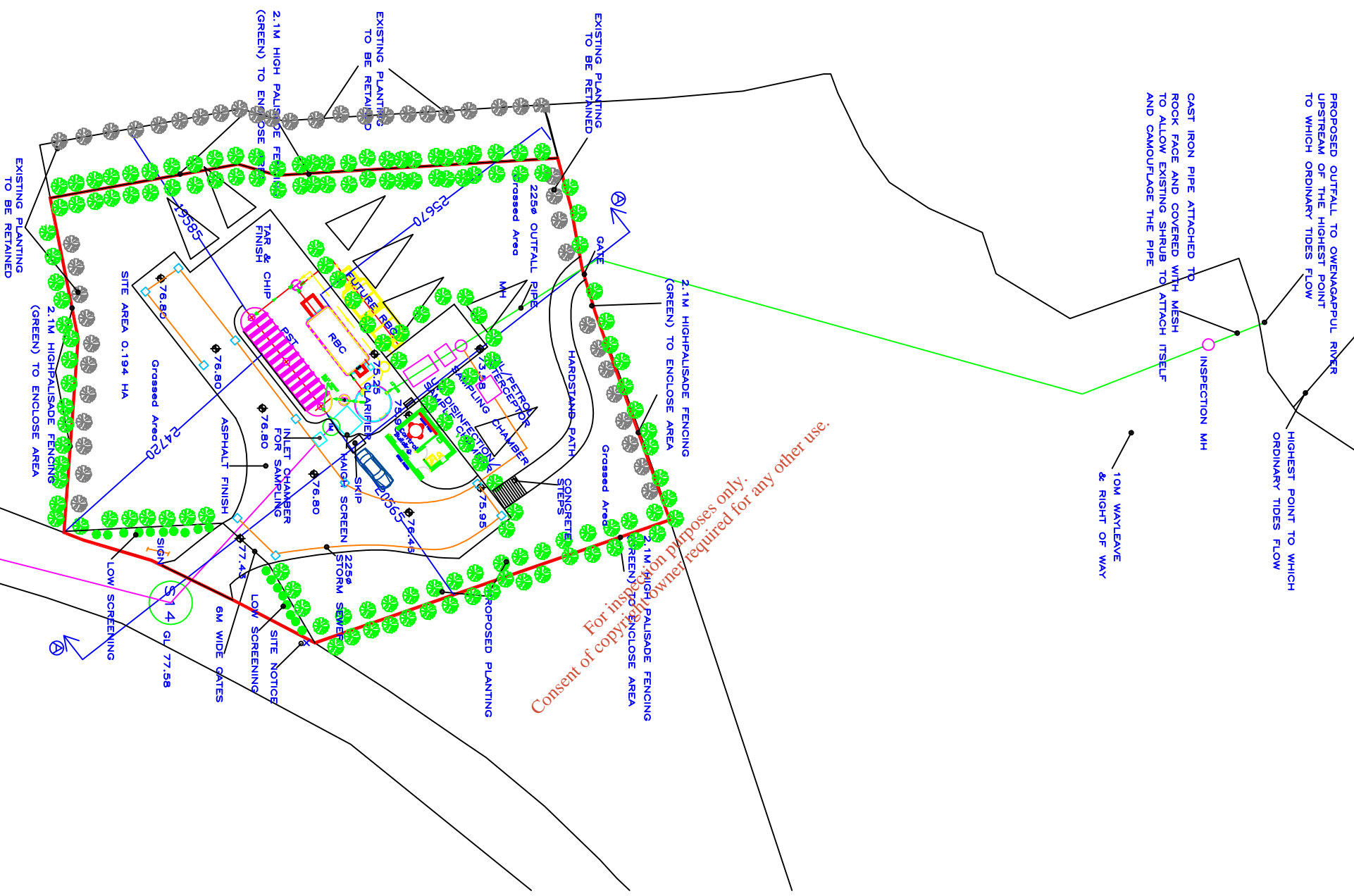
CDR: FLOIR HARRINGTON/ CORK CO CO

PRO TITLE:
DEVELOPMENT AT ARDGROOM
SEWERAGE PLANT PROPOSAL

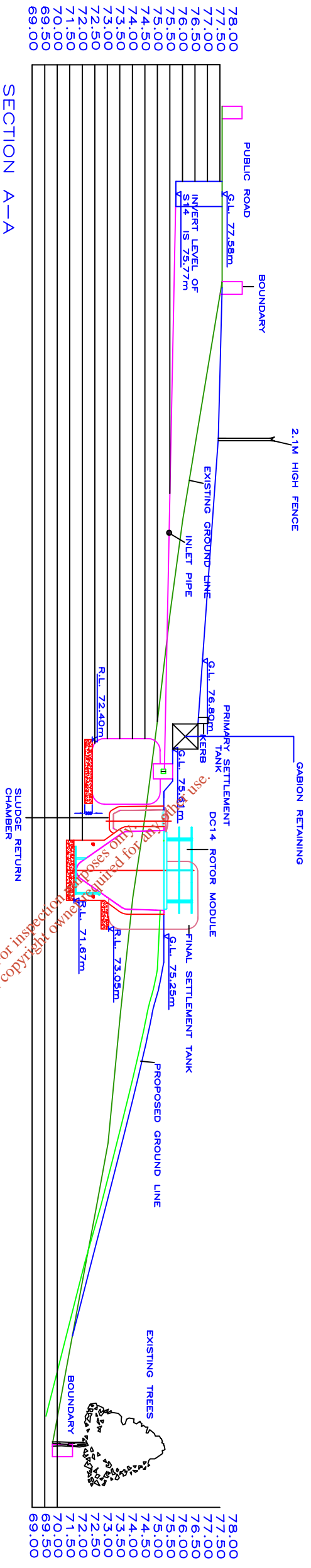
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SITE LAYOUT

SCALE: 1/250 DATE: AUG' 05

DRAWING No: ARD-06-002 DRAWN: A.S.
REV No: 0000 CHECKED:



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CLIENT FLOIR HARRINGTON / CORK CO CO	
PROJECT TITLE DEVELOPMENT AT ADDORROOM SEWERAGE PLANT PROPOSAL	
DATE AUG '05	
SCALE 1/100	
DRAWING No. ARD-06-004	
DATE A.S.	
REV No. 0000	

Comhairle Contae Chorcaí

CORK COUNTY COUNCIL
(WESTERN DIVISION)

Water Services Section



ARDGROOM SEWERAGE SCHEME

PLANNING AND DEVELOPMENT ACT 2000

**County Manager's Report on the Ardgroom
Sewerage Scheme in accordance with the
provisions of Part 8 of the Planning and
Development Regulations 2001.**

Prepared By: Niall O'Mahony, Senior Engineer.

1. DESCRIPTION OF THE NATURE AND EXTENT OF THE SCHEME

Ardgroom is a small village located on the Beara peninsula in West Cork. Wastewater from Ardgroom Village is collected via an existing collection system. This collection system is mainly separated with little stormwater entering the system. The collection system discharges the wastewater into a septic tank within the village West of the Regional Road R571. The septic tank provides primary treatment for the wastewater. The treated effluent discharges via an outfall pipe to the Owenagappul River.

It is proposed to construct a modern Wastewater Treatment Plant (WwTP) in Ardgroom to cater for the existing and future needs of the area. This proposal is in accordance with Objective INF 2-5 of the Cork County Development Plan 2003. The WWTP will be designed to serve a population equivalent of 400 persons. It is proposed to construct the new WwTP on a site located in lands to the North of Ardgroom Village in a green field site West of local road L4911. This site is situated between the local primary road L4911 and the Owenagappul River in the townland of Ardgroom Outward. The wastewater treatment plant will be screened to reduce its visual impact on the surrounding landscape.

It is proposed to discharge the treated effluent to the Owenagappul River upstream of the highest point to which ordinary tides flow.

The new wastewater treatment plant will consist of preliminary treatment, secondary treatment, and disinfection to achieve a final effluent of 10 mg/l BOD; 15 mg/l SS. Disinfection shall be achieved using ultra violet radiation technology. Mitigation measures will be installed to maintain noise and odour emissions within recognised and acceptable limits at the site boundary. Thickened sludges will be transported by tanker or skip off site for further treatment or disposal in accordance with the Sludge Management Plan for County Cork. Screenings arising from the Preliminary Treatment stage will be disposed of to the nearest licensed landfill site.

The control house which is to be located at the treatment works site will be constructed in blockwork and finished with a stone facing, and slated pitched roof. The appearance of the buildings will reflect the local traditional building styles. The paved areas will consist of concrete pavement and macadam. A 2.1 m high palisade fence will enclose the treatment works with screen planting on the external boundaries.

A connection from the Ardgroom Inward Group Water Supply Scheme will be taken from the adjacent main in the public road to the treatment works. A power supply will be brought to the site from the nearest available location in accordance with the requirements of the Electricity Supply Board. A telecommunications line will be brought to the site from the nearest available location in accordance with the requirements of Eircom.



Fig.1 Location Map

2. PART 8 PLANNING PROCESS APPLICABLE TO THIS PROJECT

Plans and particulars relating to the proposed development were on public display and available for inspection at the offices of Cork County Council, Castletownbere, Co. Cork during normal office hours- 9am to 1pm & 2pm to 5pm Monday to Friday (public holidays excepted) from Monday 6th March 2006 to Wednesday 5th April 2006.

Submissions and observations with respect to the proposed development, dealing with the proper planning and sustainable development of the area in which the development is to be situated could be made in writing to the Director of Services, Water Services Section, Cork County Council, The Courthouse, Skibbereen, Co. Cork before 4:00pm on Friday 21st April 2006.

The site notice was erected on site on 3rd March 2006.

An notice regarding Ardroom Sewerage Scheme Part 8 Planning was placed in the Southern Star newspaper on 4th March 2006.

The following documents and drawings were on public display in support of the Part 8 Planning process:

- Description of the Works.
- Press notice.
- Site notice
- Determination whether Ardroom Sewerage Scheme would or would not be likely to have significant effects on the environment.
- Dwg No.: ARD-06-001 – Site location map.
- Dwg No.: ARD-06-002 – Site Layout Map 1:250
- Dwg No.: ARD-06-003 – Site Layout Map 1:100
- Dwg No.: ARD-06-004 – Longitudinal section through WWTP site.

The Planning documentation and drawings for the proposed Ardroom Sewerage Scheme were sent to the following prescribed bodies as per the Planning & Development Regulations 2001:

The Heritage Council,
Rothe House,
Kilkenny.

South Western Regional
Fisheries Board,
1 Neville's Terrace,
Masseytown,
Macroom,
Co. Cork.

An Chomhairle Ealaion,
70 Merrion Square,
Dublin 2.

Minister for Environment,
Heritage, & Local Government,
Custom House,
Dublin 1.

Minister for Communications,
Marine & Natural Resources,
Lesson Lane,
Dublin 2.

Minister for Arts,
Sports, & Tourism.
Kildare Street,
Dublin 2.

An Taisce,
Tailor's Hall,
Back Lane,
Dublin 8.

Failte Ireland,
Baggot Street,
Dublin 2.

3. PLANNING EVALUATION

Development Control: -

The proposed development is consistent with the proper planning and sustainable development of the area. See attached report by Senior Planner in appendix 1.

Development Plan: -

The proposed development is consistent with the overall strategy and main policy as outlined in chapter 5 (Transport & Infrastructure) of Volume 1 of the Cork County Development Plan 2003, which states that:
Investment in the county's infrastructure should be made in a sustainable and efficient manner in order to promote the social and economic well being of the county and its population.

The proposed development is consistent with the objective for Sewerage Infrastructure as outlined in section 5.2 (Water Supplies, Sewerage and Drainage), which states that (INF 2-5):
It is an objective generally to provide support for the funding of sewerage infrastructural requirements as identified by the County Council in order to accommodate the planned levels of growth expected for the county.

It is an objective generally to improve and extend the sewerage infrastructure to serve the planned levels of growth, during the lifetime of this plan, in order to facilitate development.

The proposed development is within pNHA-1879 Glanmore Bog and is consistent with the Specific Objective (Heritage and Amenity) as outlined in chapter 3 Volume 2, which states that (ENV 2-5):

It is an objective to maintain the conservation value of all Natural Heritage Areas proposed for designation by Duchas the Heritage Service, either before or during the lifetime of this plan.

The proposed development is within cSAC-1879 Glanmore Bog and is consistent with the Specific Objective (Heritage and Amenity) as outlined in chapter 3 Volume 2, which states that (ENV 2-6):

It is an objective to maintain the conservation value of those sites identified by Duchas the Heritage Service as candidate Special Areas of Conservation as well as any other sites that may be so identified during the lifetime of this plan.

The proposed development may be visible at a distance from Scenic Route A132 Road, Eyeries to Ardgroom Coastal Route, but is consistent with key objectives as outlined in chapter 4 (Scenic Routes) which state that (ENV 3-4 & ENV 3-5):

It is a general objective to preserve the character of all important views and prospects, particularly sea views, river or lake views, views of unspoilt mountain, upland or coastal landscapes, views of historical or cultural significance (including buildings and townscapes) and views of natural beauty.

It is a particular objective to preserve the character of those views and prospects obtainable from scenic routes identified in this plan. These routes are shown on the scenic amenity maps in volume 4 and listed in volume 2 of the plan.

4. SUBMISSIONS RECEIVED

Submissions were received from the following (see appendix 2):

	Name	Address	Date
1	South Western regional Fisheries Board	1 Nevilles Terrace, Masseytown, Macroom, Co. Cork.	06-Apr-06

5. SUMMARY OF ISSUES IN SUBMISSIONS

Only one submission to the Part 8 Planning process was received by Cork County Council and the issues therein have been considered and our response is outlined in the paragraphs below:

Issue 1 in submission:

Given the limited dilution capacity available in the Owenagappul River at DWF and period of low flow the Board would ask the Council to consider a discharge to tidal waters. This is particularly relevant in that migratory fish may hold in pools at the tidal fringe during periods of low river flows when the tide retreats. Such fish would be particularly vulnerable to poor water conditions.

Response to Issue 1:

During the design process the Water Services Section of Cork County Council considered a number of locations for the proposed treated effluent outfall. A discharge at the existing septic tank location was ruled out in an effort to mitigate any ongoing deleterious effects on the established population of *Margaritifera margaritifera* (Freshwater Pearl Mussel).

Ardgroom Harbour is used extensively for shellfish farming and the waters here have an A classification under COUNCIL DIRECTIVE 91/492/EEC of 15 July 1991 laying down the health conditions for the production and the placing on the market of live bivalve molluscs. For this reason it was considered prudent to discharge the treated effluent at the riverine/tidal fringe, thus maintaining the optimum distance from the shellfishing areas. In addition to this the proposed treated effluent is to be treated to a high standard of 10 mg/l BOD & 15 mg/l SS. This high standard of treatment along with the dilution available in the Owenagappul River will improve the existing water quality.

Issue 2 in submission:

Given the location of active shellfish operations in close proximity of the proposed outfall the Board would ask that serious consideration be given to the level of disinfection necessary to ensure no deterioration of shellfish waters.

Response to Issue 2:

At present the collected wastewater in Ardgroom received only primary treatment in a septic tank.

The proposed new wastewater treatment plant has been designed to incorporate disinfection of the secondary treated effluent. Disinfection shall be achieved using ultra violet radiation technology. As stated above the proposed treated effluent is to be treated to a high standard of 10 mg/l BOD & 15 mg/l SS. This should lead to an improvement of the quality of the shellfish waters.

Issue 3 in submission:

Additionally the Board would ask that consideration is given to the manner in which all construction works, and particularly those below the waterline, are carried out with a view to minimising suspended solids pollution.

Response to Issue 3:

Cork County Council will ensure that all construction works are carried out in a manner that will cause as little disruption as possible to the river, river banks, and tidal areas. The engineering staff of Cork County Council will liaise with the contractor and will supervise the works to be carried out in the vicinity of the waterline. It is envisaged that all works will be undertaken from the land and that no construction plant will have to enter the areas below the waterline. This should substantially reduce any particulate matter being mobilised and keep the suspended solids generated to within acceptable limits.

In an effort to allay the concerns of the SWRFB raised in their submission Cork County Council will commit to sampling the treated effluent at regular intervals to ensure that the high standards being proposed are met. In addition to this Cork County Council will undertake an examination of the area around the proposed outfall before any treated effluent is discharged. Further examinations of this area will be undertaken after 12 & 24 months have elapsed to assess any adverse effects.

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6. MODIFICATIONS

No modifications to the Part 8 documentation or plans are recommended, however we will implement a monitoring programme to ensure that there is no deterioration of the water quality at the outfall location..

7. RECOMMENDATION

I recommend that the proposed construction of a new Wastewater Treatment Works, Administration building, Outfall pipe, and associated site works on lands located in the Townland of Ardgroom Outward, proceed as recommended in this report.

Signed: -

County Manager

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Appendix 1

Senior Planners Report.

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Appendix 2

Submissions to Part 8 Planning.

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Appendix 3 Maps.

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Attachment C.1

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Attachment C1.01

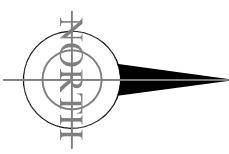
Map :

- **ARDG C1.01** – WWTP Site Layout Plan

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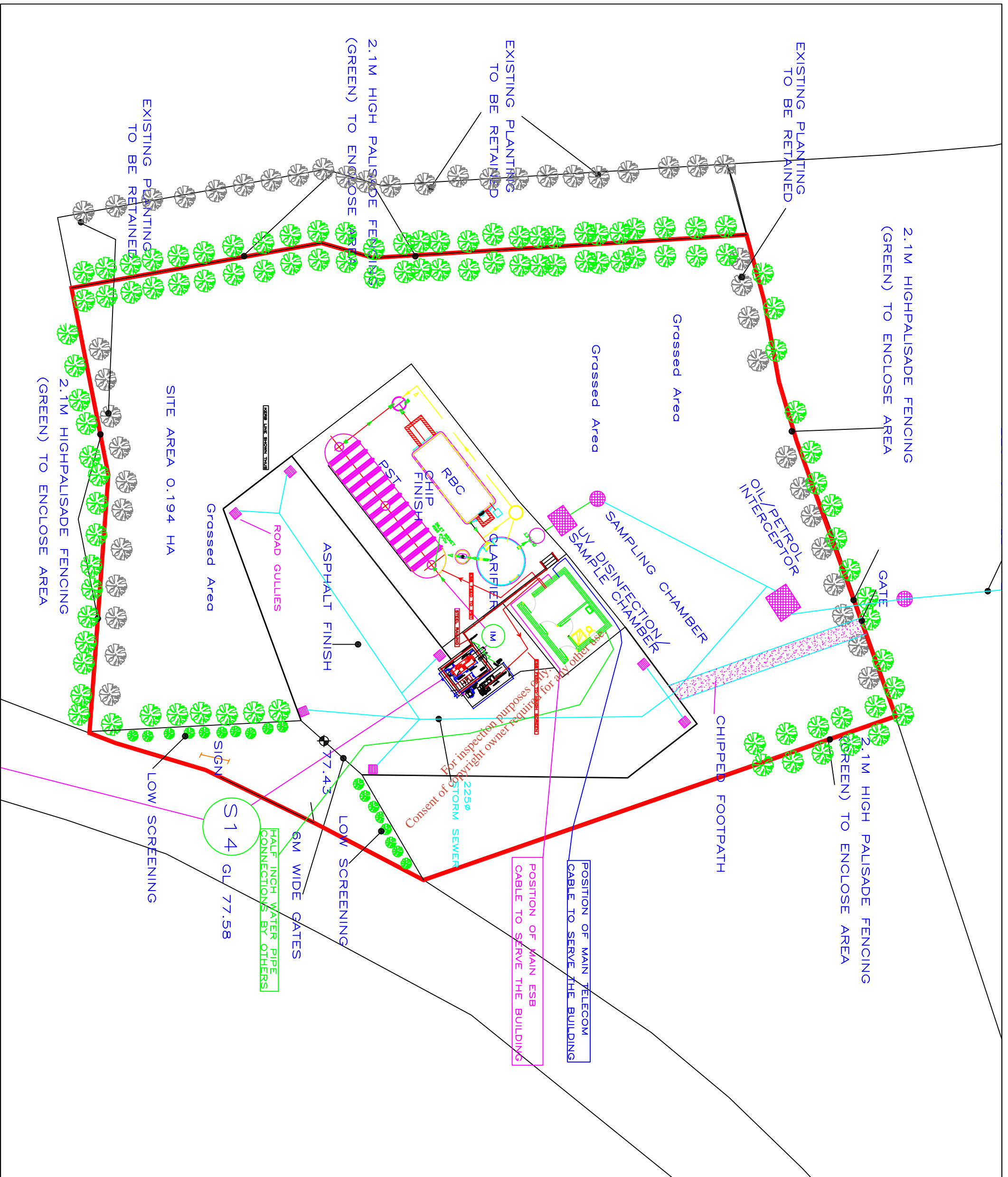


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WEST CORK

Job Title:
ARDGROOM WASTE WATER
DISCHARGE CERTIFICATE
APPLICATION

Drawing Title:
ATTACHMENT_C1
WASTE_WATER_TREATMENT_PLANT
SITE_LAYOUT_PLAN

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_CI_01	Scales: 1/250	Rev: -



Attachment C.1

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Attachment C1.02

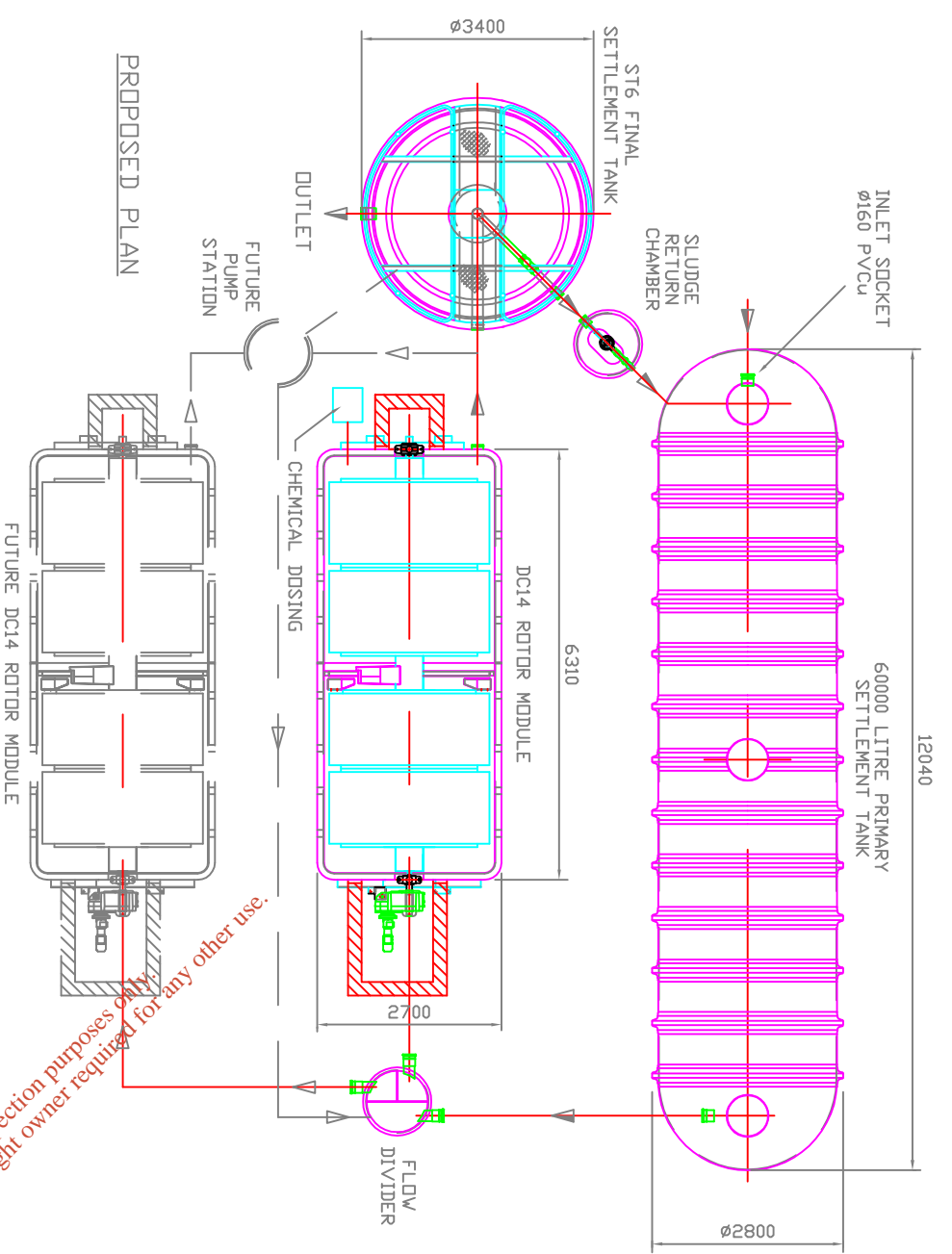
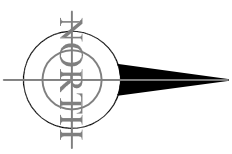
Map :

- **ARDG C1.02** – Treatment Plant Process

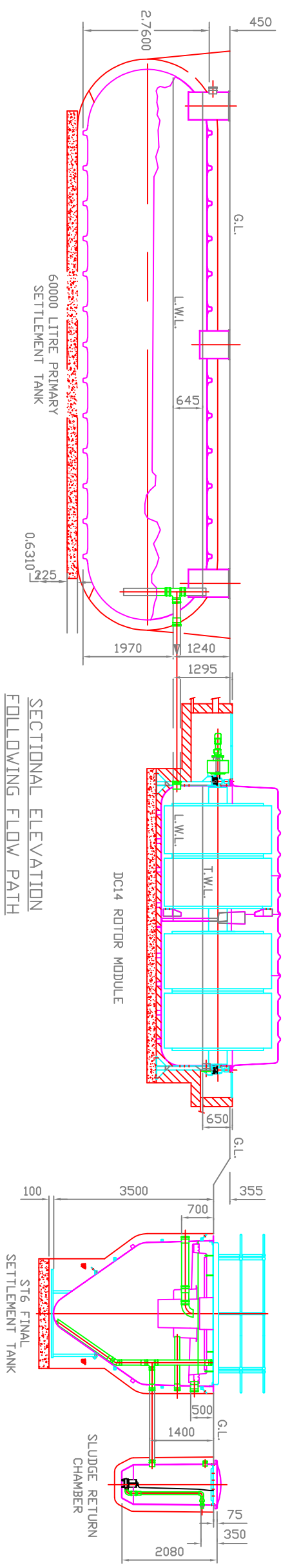
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DISCHARGE CERTIFICATE
APPLICATION

Drawing Title:
ATTACHMENT_C1
TREATMENT_PLANT
PROCESS

Prepared By: OOB	Checked By: DG	Date: JUL.Y.2009
Drawing number: ARDG_CI_02	Scales: NTS	Rev: -

Attachment E.2

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Attachment E.2

- Sampling Data

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Attachment E.2 - Ardgroom Waste Water Discharge Certificate
Application – Monitoring and Sampling Points

Grab samples have been collected recently of the effluent from the primary discharge as well as receiving waters and the results are included in Attachments E.4 and F.1 of this application.

Upstream and downstream samples were also carried out on the Owenagappul River.

There is no drinking water abstraction point downstream of the plant and therefore the Abstraction Directive is not applicable.

The recent sample analysis has been carried out by the Laboratory of Cork County Council which is accredited for a number of analytical tests under the Irish National Accreditation Board (INAB) under the ISO 17025 international standard. It is currently accredited for the following parameters under that standard system:

- pH
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Suspended Solids
- Ammonia
- Ortho Phosphate
- Total Phosphate
- Chloride
- Sulphate

It is proposed to sample the influent and effluent from treatment plants where accessible and receiving waters once a year in the future for the following parameters at the Cork County Council Laboratory in Skibbereen:

- pH
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Suspended Solids
- Ammonia
- Ortho Phosphate
- Total Nitrogen

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Attachment E.4

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Attachment E.4

- Sampling Data

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Attachment E4 Ardroom analytical data for certification application

Sample Date	16/09/2009	16/09/2009		16/09/2009	16/09/2009		16/09/2009		16/09/2009
Sample	Influent to septic tank	Influent to WWTP		Effluent Discharge WWTP	Effluent Discharge Septic tank		River Upstream		River Downstream
Sample Code	GT1168	GT1170		GT1171	GT1169		GT1172		GT1173
Flow M ³ /Day	No result	No result		No result	No result		No result		No result
pH	7.4	7.3		7.8	7.2		7.3		7.6
Temperature °C	No result	No result		No result	No result		No result		No result
Conductivity uS/cm 20 °C	578	404		327	273		57		3.9
Suspended Solids mg/L	362	58		4	63		<2.5		<2.5
Ammonia-N mg/L	31.4	21.7		0.2	9		<0.1		<0.1
BOD mg/L	120	149		1	42		2		2
COD mg/L	462	214		24	214		<21		<21
TN-N mg/L	54.58	31.81		12.89	11.51		0.388		0.537
Nitrite-N mg/L	<0.1	<0.1		0.531	0.317		<0.1		<0.1
Nitrate-N mg/L	<0.5	<0.5		10.369	<0.5		<0.5		<0.5
TP-P mg/L	4.71	4.63		4.81	1.6		<0.05		<0.05
O-PO4-P mg/L	2.98	3.72		4.67	0.85		<0.05		<0.05
SO4 mg/L	<30	<30		<30	<30		<30		174.2
Phenols µg/L	No result	No result		<0.10	<0.10		No result		<0.10
Atrazine µg/L	No result	No result		<0.01	<0.01		No result		<0.01
Dichloromethane µg/L	No result	No result		<1	<1		No result		<1
Simazine µg/L	No result	No result		<0.01	<0.01		No result		<0.01
Toluene µg/L	No result	No result		<0.28	<0.28		No result		<0.28
Tributyltin µg/L	Not required	Not required		Not required	Not required		Not required		Not required
Xylenes µg/L	No result	No result		<0.73	<0.73		No result		<1
Arsenic µg/L	No result	No result		1.5	<0.96		No result		<0.96
Chromium ug/L	<20	<20		<20	<20		<20		<20
Copper ug/L	75.7	29.5		<20	<20		<20		<20
Cyanide µg/L	No result	No result		<5	<5		No result		<5
Fluoride µg/L	34	33		30	40		28		83
Lead ug/L	<20	<20		<20	<20		<20		<20
Nickel ug/L	<20	<20		<20	<20		<20		<20
Zinc ug/L	93.8	41		113.3	<20		<20		<20
Boron ug/L	<20	25.3		<20	<20		<20		254.4
Cadmium ug/L	<20	<20		<20	<20		<20		<20
Mercury µg/L	No result	No result		0.034	<0.03		No result		0.036
Selenium µg/L	No result	No result		<0.74	<0.74		No result		<0.74
Barium ug/L	26.5	<20		<20	<20		68.5		<20

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

Attachment F.1

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Attachment F.1

- Environmental assessment: Proposed upgrade to the wastewater treatment system at Ardgroom, Co. Cork.
- SITE SYNOPSIS: Kenmare River: Site Code: 002158
- SITE SYNOPSIS: Glanmore Bog: Site Code: 001879

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project title

Environmental assessment:
Proposed upgrade to the wastewater treatment
system at Ardgroom, Co. Cork.

client

Cork County Council

client ref.

Ger Murphy

project ref.

05999

report ref.

05999

revision

0 – issue to client

date

22nd July 2005

approved by

Carl Dixon

certified only where signed

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0. EXECUTIVE SUMMARY

0.1 Dixon.Brosnan Environmental Consultants were commissioned by Cork County Council to carry out an environmental assessment of a proposed upgrade to the sewage treatment system serving Ardroom, Co. Cork. This assessment included an examination of the most suitable means of disposal of treated wastewater and the treatment standard required. The impacts of the proposed development were examined with respect to the existing environment.

0.2 Ardroom village is currently served by a septic tank system discharging to the Owenagappul River adjacent to Ardroom village. It is proposed to install a new wastewater treatment plant on a new site. In order to facilitate future development at Ardroom, it is proposed that the upgraded system will cater for up to 400 people.

0.3 The Owenagappul River is a fast flowing river which drains a large upland area including Glenbeg Lake. Downstream of Ardroom the river discharges to Ardroom harbour via a narrow inlet. The river has been designated as a Special Area of Conservation and supports a population of the protected freshwater pearl mussel. The river also supports salmonid fish and Ardroom Harbour is used for growing mussels (marine). The results of chemical and biological surveying indicate that water quality in the Owenagappul River is satisfactory at present. Water is abstracted from Glenbeg Lake and the Owenagappul River for the Castletownbere and Ardroom water schemes respectively.

0.4 No specific flow data are available for the river and comparisons were therefore made with the Adrigole catchment which is broadly similar. However following a comparison of the estimated flow rates and the rate of abstraction it is considered probable that there is a large margin of error due primarily to the presence of Glenbeg Lake within the catchment.

0.5 This report is based on a worst case scenario. Following an assessment of disposal options the target treatment standards recommended are as follows: 10 mg/l BOD, 15 mg/l suspended solids, 1.0 mg/l total phosphorous. Nitrogen removal is not deemed necessary initially, although provision should be made at the design stage to allow for subsequent installation if required. It is recommended that an ultra violet disinfection system be put in place due to mussel (marine) farming in Ardroom Harbour.

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1. INTRODUCTION

1.1 Dixon.Brosnan Environmental Consultants were commissioned by Cork County Council to carry out an environmental assessment of a proposed upgrade to the sewage treatment plant serving Ardgroom, Co. Cork. The assessment included the examination of the treatment options available and the most suitable means of disposal of treated wastewater. The impacts of the various options were examined with respect to the existing environment.

1.2 Ardgroom is a small village located on the Beara peninsula in West Cork. The village is currently served by a septic tank located in immediate proximity to the village and discharging to the Owenagappul River. Cork County Council proposes to install an improved wastewater treatment plant (WWTP). The existing septic tank system may be decommissioned or linked to the upgraded facility.

1.3 The proposed development is below the threshold above which an Environmental Impact Assessment is required under the European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989), and accordingly this report does not purport to be an Environmental Impact Statement. However, the Environmental Protection Agency documents *Guidelines on the information to be contained in Environmental Impact Statements* (2002) and *Advice notes on current practice in the preparation of Environmental Impact Statements* (2003) were consulted during the preparation of the report.

1.4 This report is presented in four parts as follows.

Part 1: Existing environment

Part 2: Legislation & standards

Part 3: Treatment & disposal options

Part 4: Impacts & recommendations.

PART 1: EXISTING ENVIRONMENT

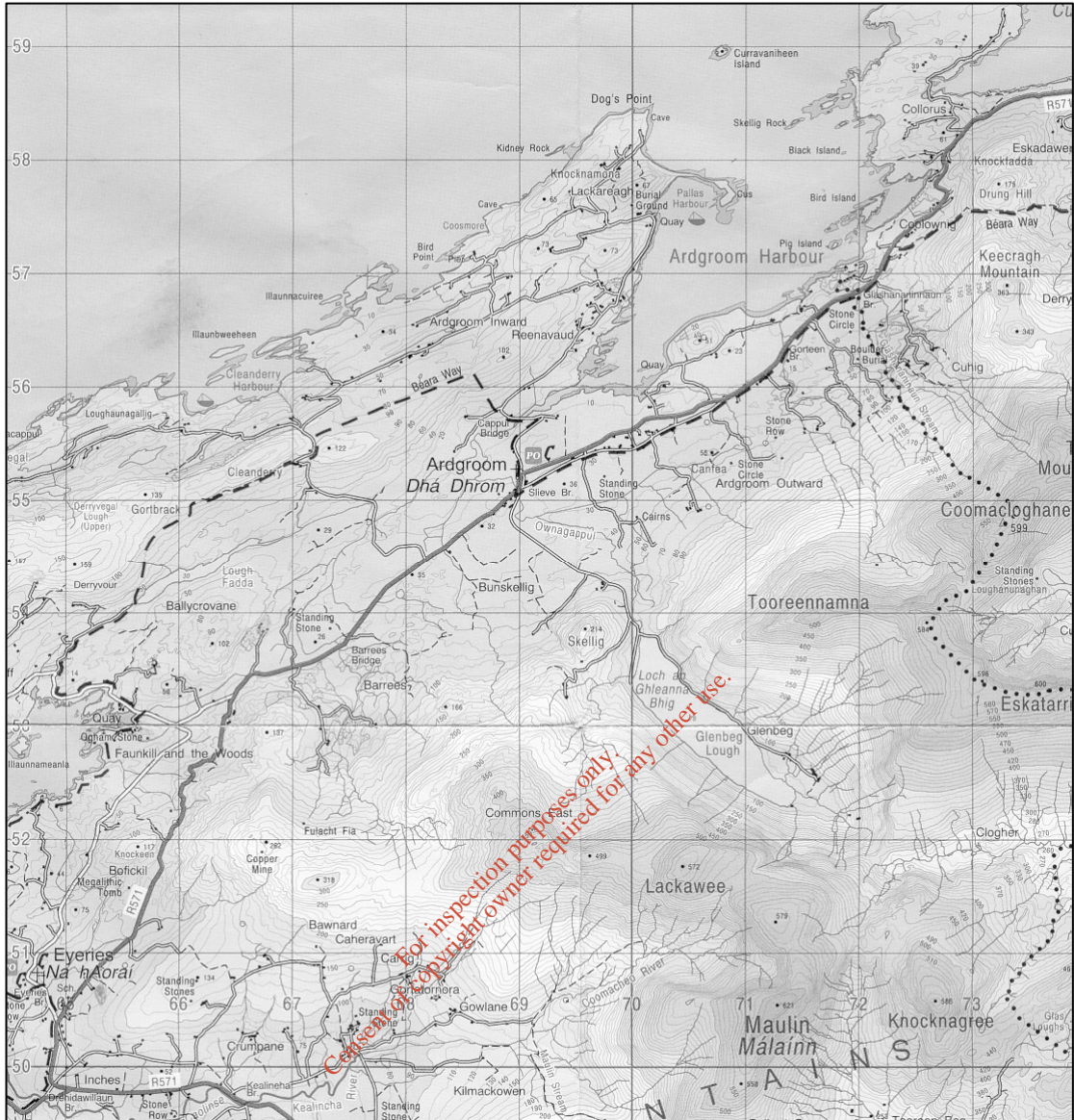
2. CATCHMENT OVERVIEW

2.1 Ardgroom village is located at the northeast boundary of a flat valley constrained by the Cahra Mountains to the south/southeast and a band of lower hills to the north/northwest. Much of the valley to the west of the village consists of bog and until recently turf was cut from a large area of this valley. Ardgroom harbour, which is located approximately 1km northeast of the village is a large, sheltered bay and is an important centre for mussel farming. The area is indicated in Map 1.

2.2 Due to the mountainous nature of the catchment to the southeast and northwest and the bog to the west, intensive agricultural management is limited in extent. The vast majority of the land in the catchment consists of natural grassland dominated by common upland/bog species such as purple moor grass, heathers, etc. There is a small amount of coniferous forestry in the catchment, and small areas of native woodland persist in several locations within the area.

2.3 Two lakes are found within the catchment, namely Lough Fadda and Glenbeg Lake. Lough Fadda is a long peaty and relatively shallow lake located on the valley floor at altitude 30 m approximately 2 km west of Ardgroom village. Glenbeg Lake is a larger deeper lake at an altitude of 78 m located to the southeast of the village. It is surrounded by steep rocky slopes. There are small areas of native woodland on the western shore and some limited farming at the southern end of the lake.

2.4 The Owenagappul River is a short fast flowing stream which drops from an altitude of 78 m at its exit from Glenbeg Lake to its discharge point into Ardgroom Harbour. Three tributaries drain into the Owenagappul, two flowing from the southeast and the Lough Fadda stream draining Lough Fadda to the west. The Fadda stream is joined by the Barrees tributary from the southwest. The characteristics of all tributaries vary. The Owenagappul and the two tributaries flowing from the southeast drop quite sharply and have sections of fast flowing water with hard substrates and little aquatic vegetation. The stream draining Lough Fadda drops less sharply through boggy terrain and is characterised by a peaty substrate and less turbulent flows. Beds of common reed have developed along the Lough Fadda stream while woodland is largely absent. In contrast areas of woodland can be found along some sections of the tributaries flowing from the southeast.



Map 1. Owenagappul catchment.

Scale 1:62000

3. ABSTRACTIONS & DISCHARGES

3.1 Public water for Ardgroom village is abstracted from the Owenagappul River downstream of Glenbeg Lake. The volume abstracted is 92 m³/day. It is estimated that a high proportion of this water will feed back into the river. A significantly larger volume of water, presently 1425 m³/day is abstracted from Glenbeg Lake for the Castletownbere supply. This water is not returned to the catchment. This abstraction rate may increase to a maximum of 4545 m³/day in the future.

3.2 The catchment in the vicinity of the site of the proposed WWTP is largely agricultural and most development is confined to the village. The catchment area was inspected during the preparation of the report in order to determine the existence of unlicensed discharges. No significant discharges were observed, although the possibility of agricultural or domestic discharges, whether from point or diffuse sources, cannot be discounted.

3.3 Wastewater arising in Ardgroom is discharged to the Owenagappul River at a site in immediate proximity to the village. A large septic tank is present close to the river. There is an obvious discharge from this tank. Sewage fungus was noted in the river over a 30 m stretch downstream of the discharge point and an obvious odour was apparent during site visits. It is likely that septic tank maintenance has been intermittent at best, and that wastewater treatment therein has been minimal due to reduced detention times within the system.

3.4 It is recommended that all discharges, existing and proposed, will be treated at the new facility and that there be no individual discharges in the village or its environs, outside of isolated domestic septic tanks.

4. FLOW DATA

4.1 An examination of the list of flow monitors maintained by the EPA indicates that there are no stations situated on the Owenagappul River and thus it is necessary to make reference to similar catchments for which data is available

4.2 Two measurements of low flow are commonly used for Irish waters, namely the 95% flow and the dry weather flow (DWF). The 95% flow is the flow which is equalled or exceeded at least 95% of the time (on average all but 18 days per year), and this measurement is generally used when assessing the impact of wastewater discharges. The DWF has been defined as the annual minimum daily mean flow rate with a return period of 50 years and is

therefore a measurement of extremely low flows. The accurate determination of the both the 95% flow and the DWF requires long term monitoring data.

4.3 It is noted that there is no accurate rule of thumb for estimating either the 95% or DWF and that the flow per unit area varies considerably between catchments. Factors which naturally affect low flows include the variability in geology and surface cover within and between catchments, the catchment area contributing to the flow and the amount of rainfall (EPA 2002).

4.4 Due to presence of the freshwater pearl mussel (*Margaritifera margaritifera*) in the Owenagappul River this system is considered particularly sensitive to increased levels of nutrients and/or siltation. For this reason the DWF rather than the more usually applied 95% flow is used in this report with respect to the Owenagappul in calculating possible impacts and assimilative capacity. This highly conservative approach allows a worst case scenario to be adopted. The 95% flow may be used with respect to tributaries draining from the southwest.

4.5 Upland water systems in the Beara peninsula rise and fall quickly and relatively short dry periods can significantly reduce flows. The closest catchment for which accurate data is available is the Adrigole River. This river drains the Caha hills and discharges to Adrigole Harbour at the southern side of the peninsula. Two lakes lie within the catchment, the larger of which is Glenkeel Lough located at altitude 332 m, with the smaller Glen Lough located on the valley floor at an altitude of 70 m. One large tributary (Clashduff) drains a large upland area and joins the main channel approximately 2 km upstream of the discharge point to the harbour.

4.6 For the purposes of comparison there are certain similarities between the catchments of the Owenagappul and Adrigole catchments. As part of its biological monitoring programme the EPA provides an assessment of the characteristics of each catchment surveyed. The information for the Adrigole and Owenagappul catchments are detailed in table 1.

Table 1. Comparison of Adrigole and Owenagappul Catchments.

EPA STATION	0100 OWENAGAPPUL	0200 ADRIGOLE
Catchment % siliceous	100	100
Catchment % calcareous	0	0
Pasture	1	7
Forestry	0	0
Bogs	75	88
Urban	0	0
Misc. Ag.	0	4
Water	6	1
Other	18	0

Source: EPA 2003

4.7 The following similarities are apparent between both catchments:

- (i) Both rivers drain upland areas and the headwaters of both are located within 8 kilometres of each other at their closest points
- (ii) The underlying geology of both catchments is broadly similar.
- (iii) Land use and thus vegetative cover is similar. The upper catchments of both rivers consist of upland grass used predominantly for sheep with little intensive agriculture on either catchment. Large scale commercial forestry is largely absent from both catchments.
- (iv) Given the proximity of both catchments rainfall is expected to be similar for both catchments. It is possible that the Adrigole catchment receives slightly less rainfall due to its sheltered location with respect to prevailing winds.

4.8 Several major differences in the characteristic of both catchments also occur:

- (i) Due to the size of Glenbeg Lake and the smaller overall catchment area, a much higher proportion of the Owenagappul catchment consists of waterbodies.
- (ii) The Adrigole River is longer and drains a larger catchment area.
- (iii) Most Glenbeg Lake tributaries are short and steep. In comparison many of the tributaries of the Adrigole river are longer and less steep. This has implications in terms of land cover and usage.

4.9 Notwithstanding the differences noted in 4.8, a comparison between the Owenagappul River and other catchments for which data are available suggests that its comparison with the Adrigole catchment is likely to provide the best data for estimating river flows.

4.10. The EPA Hydrometric Office has registered an automatic flow recorder on the Adrigole River at grid reference 81200 50600 and estimates the catchment area upstream of this point at 27.1 km². Records commenced in December 1977 and thus do not include records for the drought years in 1975 and 1976. The DWF is calculated at 0.0040 m³/s, and the unit area DWF at 0.0002 m³/s/km².

4.11 The catchment area discharging through the main channel of the Owenagappul River is 11.4 km². Based on a unit area DWF of 0.0002 m³/s/km² the DWF in the Owenagappul River through Ardgroom is 0.0023 m³/s. The catchment area draining through Lough Fadda and the Barrees tributary is 10.5 km², resulting in a DWF of 0.0021 m³/s here.

4.12 It was noted in 4.4 that the 95% flow may be applied to the Lough Fadda and Barrees tributaries. Information obtained from the EPA Hydrometric Office indicates that the 95% flow is usually at least 2-4 times the DWF in West Cork catchments. It follows that the 95% flow of these tributaries is at least twice the estimated DWF or 0.0042 m³/s.

4.13 From the foregoing, the minimum flows draining through Cappul Bridge at the foot of the whole catchment are 0.0023 m³/s (DWF in main channel) and 0.0042 m³/s (95% in southwest tributaries), equivalent to a total flow of 0.0065 m³/s.

4.14 It should be noted that the above calculations represent estimates at best. Large lakes within a catchment will generally reduce fluctuations and maintain higher DWFs. A much greater proportion of the catchment of the Owenagappul River is formed by lake habitat in comparison to the Adrigole catchment and thus it is expected that DWFs in the Owenagappul River are proportionally higher.

4.15 Southern Scientific Services Ltd. previously measured flows rates on the Owenagappul River at the existing discharge point on four occasions: 15.05.04, 22.05.04, 27.05.04 and 03.06.04. It is noted in their report that flows were below average during this period due to low rainfall. The average flow rate recorded was 0.0630 m³/s. As expected this is considerably higher than DWF estimated above.

4.16 Estimates of flows presented above do not take into account the abstraction of water from the lake and river for both water schemes. The amount abstracted by the Castletownbere scheme is currently 0.0165 m³/s; this may increase to 0.0530 m³/s in the future. The Ardgroom abstraction is considerably lower at 0.0010 m³/s, a high proportion of which is returned to the river. The figures would suggest that the current combined abstraction rate is in excess of the estimated DWF. However there is no evidence to suggest that the river has dried up in the past. It would appear therefore that the estimated flow readings may not be accurate and it is likely that the DWF is higher than estimated, possible due to flow balancing created by Glenbeg Lake and Lough Fadda

5. HABITAT DESIGNATIONS, FISHERIES & AQUACULTURE

5.1 The Owenagappul River is located within a Special Area of Conservation (Glanmore Bog SAC, No. 1879). Glanmore Bog is a large site which rises in altitude from Cappul Bridge to 602 m at Eskatarriff at the north of the site. The important terrestrial habitats found within the site include active blanket bog and wet heath.

5.2 The aquatic habitats of importance noted in the site synopsis are Glenbeg Lake and the Owenagappul River. Glenbeg Lake is an oligotrophic lake (an EU Habitats Directive Annex I habitat under Council Directive 92/43/EEC) which supports a number of plant species. Owenagappul River supports floating river vegetation (listed under Annex I of the Habitats Directive) and the species found within the river are typical of fast flowing acidic rivers which are oligotrophic. Of particular relevance is the presence of freshwater pearl mussel (*Margaritifera Margaritifera*) within the Owenagappul River and which is listed in Annex II of the Habitats Directive.

5.3 The pearl mussel is one of three species of large Unionacean bivalves found in Irish freshwaters. The species may occur in fast flowing oligotrophic calcium deficient streams and rivers where it can grow to lengths of 159 mm (Jackson 1925) and live to ages well in excess of 100 years (Ross 1984). *Margaritifera* has been recorded in most parts of Ireland with the exception of the central limestone plain although several studies have confirmed that a significant decline has occurred in some Irish populations, notably in northern and eastern areas (Ross 1988, Moorkens and Costello 1994, Beasley and Roberts 1996). Such declining populations are usually characterised by a predominance of older mussels and an absence of juvenile recruitment (Bauer 1983).

5.4 Although widely distributed across northern Europe, Eurasia and North America, *Margaritifera* is declining throughout its range and is extinct or seriously threatened in many parts of Europe (Wells *et al.* 1983). The main cause of this decline is deteriorating river water quality although a variety of other factors are also implicated (Moorkens 1999). The species is on the IUCN Invertebrate Red Data List and is protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). *Margaritifera* is also listed in Annex II and Annex V of the Habitats Directive and is protected by law in Ireland under the 1976 Wildlife Act (Statutory Instrument No. 112, 1990).

5.5 Glenbeg Lake supports a large population of relatively small brown trout. Historically the lake was regarded as a better fishery with larger trout. Both salmon and sea trout migrate up the Owenagappul River and works have been carried out to aid movement of these species upriver.

5.6 Ardroom Harbour is an important site for mariculture and large scale production of mussels occurs within the bay. In line with the provisions of Council Directive 91/492/EEC (as amended by Council Directive 97/61/EC) which lays down the health conditions for the production and the placing on the market of live bivalve molluscs, an A classification currently applies to Ardroom Harbour.

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6. WATER QUALITY MANAGEMENT PLAN

6.1 The Local Government (Water Pollution) Act, 1977, provides for one or more local authorities to take co-ordinated action on a river catchment basis by the preparation and implementation of river catchment water quality management plans. Cork County Council has formally adopted no such plans for the catchment under investigation.

6.2 The above management function has now been superseded by EU Directive 2000/60/EC establishing a framework for Community action in the field of water policy. Under the Water Framework Directive local authorities are obliged to prepare river basin management plans. A management programme is currently under preparation for the Cork area.

6.3 Phosphorus Regulations Implementation Report No. 3 prepared by Cork County Council notes that an objective for the Owenagappul River is to maintain a standard of Q4 at station 0200 Slieve Bridge. It also noted that the catchment has not been prioritised for farm surveys during the period 2004-2006.

7. EXISTING WATER QUALITY DATA: CORK COUNTY COUNCIL

7.1 Cork County Council do not routinely monitor water quality in the Owenagappul River. However due to the proposed upgrade of the existing treatment plant water quality has been assessed at a number of locations in the river. The results of this monitoring programme are detailed below in tables 2-4.

Table 2. Samples taken 25.08.04.

PARAMETER	SAMPLE A	SAMPLE B	SAMPLE C	SAMPLE D	SAMPLE E	LIMITS
MRP (mg/l P)	<0.006	<0.006	<0.006	<0.006	<0.006	0.03 ¹
NH ₄ (mg/l NH ₄)	0.028	0.069	<0.026	0.033	0.041	<1 ²
NO ₂ (mg/l NO ₂)	<0.013	<0.013	<0.013	<0.013	<0.013	<0.05 ³
NO ₃ (mg/l NO ₃)	<1.8	<1.8	<1.8	<1.8	<1.8	50 ⁴ 25 ³
BOD (mg/l)	<2	2	<2	<2	<2	5 ⁴ 7 ⁵
COD (mg/l)	18	3	14	17	2	40 ⁵
Susp. solids (mg/l)	5	5	3	<2	2	50 ⁴
Feecal Coli. (/100ml)	8	>100	>100	10	>100	-
Total Coli. (/100ml)	10	>100	>100	15	>100	-

Source: Cork County Council

¹Phosphorus Regulations

²Freshwater Fish Directive – salmonid & cyprinid waters

³Salmonid Water Regulations

⁴Surface Water Directive – A1 waters

⁵Surface Water Directive – A3 waters

Sample A: Slieve Bridge (u/s of discharge point)

Sample B: Downstream of septic tank (d/s of discharge point)

Sample C: Cappul Bridge (d/s of discharge point and d/s of confluence with L. Fadda tributary- tidal)

Sample D: L. Fadda tributary u/s of confluence with the Owenagappul (not affected by discharge)

Sample E: Owenagappul immediately u/s of confluence with L. Fadda tributary (d/s of discharge point).

Table 3. Samples taken 18.11.04.

PARAMETER	SAMPLE A	SAMPLE CX	SAMPLE DX	LIMIT
NO ₃ (mg/l N)	0.9	0.4	0.9	11.3 ¹

Source: Cork County Council

¹Surface Water Regulations

Sample A: Slieve Bridge (u/s of discharge point)

Sample CX: approximately 50m u/s of Cappul Bridge (d/s of discharge point-may be tidal).

Sample DX: L. Fadda tributary u/s of confluence with the Owenagappul (not affected by discharge).

Table 4. Samples taken 03.03.05.

PARAMETER	SAMPLE A	SAMPLE CX	SAMPLE DX	LIMITS
NH ₄ (mg/l N)	0.06	0.08	0.09	<1 ¹
NO ₂ + NO ₃ (mg/l N)	0.06	0.08	0.05	<0.05 ²
BOD (mg/l)	<2	<2	<2	5 ³ 7 ⁴
COD (mg/l)	<2	4	<2	40 ⁴
Susp. solids (mg/l)	17	22	15	50 ³

Source: Cork County Council

¹Freshwater Fish Directive – salmonid & cyprinid waters

²Salmonid Water Regulations

³Surface Water Directive – A1 waters

⁴Surface Water Directive – A3 waters

Sample A: Slieve Bridge (u/s of discharge point)

Sample CX: approximately 50m u/s of Cappul Bridge (d/s of discharge point-may be tidal).

Sample DX: L. Fadda tributary u/s of confluence with the Owenagappul (not affected by discharge).

7.2 There were no breaches of the relevant limits in samples taken by Cork County Council. Results were generally significantly lower than the specified limits and this would be expected in an oligotrophic low-nutrient system.

7.3 Orthophosphate levels, often the limiting factor in freshwater, were particularly low at less than 0.006 mg/l P at all sites. Under the Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations, 1998 (S.I. No. 258 of 1998) Q values of 4 or higher are taken to represent satisfactory water quality where eutrophication is unlikely to be a problem. Because annual median phosphate (P) values in such water rarely exceed 30 µg/l, this concentration may be considered indicative of satisfactory water quality. All recorded values were significantly lower than this 30 µg/l limit.

7.4 The results, while from a limited number of samples, do not indicate that water quality was significantly lower downstream of the wastewater discharge point. The main difference noted was an increase in ammonium from

0.028 mg/l NH₄ at Site A (upstream of the discharge point) to 0.069 mg/l at site B (downstream of the discharge point) on 25.08.04. However this increase is not highly significant given a limit of 1 mg/l specified by the Freshwater Fish Directive. Similarly no significant differences were noted in water quality in the Owenagappul River and the Lough Fada tributary.

8. EXISTING WATER QUALITY DATA: EPA BIOLOGICAL MONITORING PROGRAMME

8.1 The Environmental Protection Agency carries out a biological assessment of most river channels in the country on a regular basis. The assessments are used to derive the Q-value – an indication of the biological quality of the water. The EPA Q-value scheme is summarised in table 5.

Table 5. EPA Biotic Index Scheme.

Q-VALUE	WATER QUALITY	POLLUTION	CONDITION (likelihood of interference with uses)
5	Good	Unpolluted	Satisfactory
4	Fair	Unpolluted	Satisfactory
3	Doubtful	Moderately polluted	Unsatisfactory
2	Poor	Seriously polluted	Unsatisfactory
1	Bad	Seriously polluted	Unsatisfactory

Source: EPA

8.2 The intermediate ratings Q1-2, 2-3, 3-4 and 4-5 are also used to denote transitional conditions, while ratings within parenthesis indicate borderline values. Great importance is attached to the EPA biotic indices derived and consequently it is this data that is generally used to form the basis of water quality management plans for river catchments.

8.3 The most recently published data for Hydrometric area no. 21, which includes Owenagappul and Lough Fadda Rivers, is for the year 2003. Survey results for the years 1994 to 2003 are listed in Table 6.

Table 6. EPA Q-values Owenagappul River and Lough Fadda tributary.

STATION	RIVER	LOCATION	1994	1997	2000	2003
0010	Lough Fadda tributary	Br downstream of Lough Fadda	4	4	4	4
0200	Owenagappul River	Slieve Bridge (u/s of existing discharge point)	4	4	4	4-5

Source: EPA Interim Water Quality Report 2003

8.4 Results presented in table 6 indicate that the biological water quality is generally satisfactory, with the EPA assigning a Q-value of between 4 and 4-5 (a characteristic of unpolluted waters) to the both the Owenagappul and Lough Fadda Rivers since 1994. A slight improvement in water quality was observed in 2003 at Slieve Bridge where water quality improved from Q4 to Q4-5. The reason for this improvement is unknown.

9. SITE SURVEYS

9.1 CHEMICAL SURVEY

9.1.1 In order to determine the current water quality of the Owenagappul River water samples were taken at two locations on 20.03.05. The sampling locations and results of analyses undertaken by Alcontrol Geochem are presented in tables 7 and 8 respectively.

Table 7. Sampling locations 20.03.05.

REF.	LOCATION	REASON FOR SELECTION
L1	Immediately upstream of the existing wastewater discharge	To ascertain current water quality in river u/s of the existing discharge.
L2	Immediately downstream of the existing wastewater discharge	To ascertain current water quality in the river d/s of the suspected discharge

Table 8. Water quality 20.03.05.

PARAMETER	L1	L2
pH	6.44	6.53
BOD (mg/l)	2	2
Suspended solids (mg/l)	<10	<10
Ammonia (mg/l N)	<0.2	1.0
Nitrate (mg/l N)	0.5	0.3
Nitrite (mg/l NO ₂)	0.10	<0.05

Analysis: Alcontrol Geochem Laboratories

9.2 The objective of these samples was to determine if the current discharge is having any impact on water quality. pH, BOD and suspended solids concentrations were similar and generally satisfactory at both sampling locations. Ammonia levels were satisfactory at L1 upstream of the discharge. The detected level of 1 mg/l N downstream of the discharge exceeded the 0.82 mg/l N limit specified in the Freshwater Fish Directive. The

elevated ammonia levels are almost certainly due to the discharge from the existing septic tank and confirm the indications of the visual survey.

9.2 NOISE & ODOUR OBSERVATIONS

9.2.1 The noise environment is dominated by traffic (local and through-flow). The local air environment is rural in character, with no sources of industrial atmospheric emissions present in the immediate locality. From the foregoing, the noise and odour environment at Ardgroom village is generally rural in character. The most intrusive feature is the noise level arising from passing traffic. It is recommended that the proposed upgrade to the WWTP does not give rise to intrusive noise or odour emissions in the village or its environs.

9.3 BIOLOGICAL SURVEY

9.3.1 Due to the presence of the freshwater mussel within the Owenagappul River it was considered prudent not to carry out a biological survey of invertebrate species as the disturbance of the substrate may have a negative affect on this species. The EPA Q-values will therefore be used for the purposes of this report.

10. INTERPRETATION: EXISTING ENVIRONMENT

10.1 This section provides a summary of information documented in Part 1 (Sections 2 to 9) regarding the existing environment.

10.2 No flow readings are available for the Owenagappul River and therefore the DWF was extrapolated from the flow data available for the Adrigole River. Based on this extrapolation a figure of 0.0015 m³/s was calculated for the DWF at the existing discharge point on the Owenagappul River. This figure is low when compared with the abstraction rate from the system. It is also noted that direct measurements of low flows (not DWFs) in May and June 2004 determined a significantly higher flow rate of 0.063 m³/s. The DWF in the Owenagappul River upstream of Cappul Bridge is estimated at 0.0032 m³/s. It is considered probable that the presence of a large lake is affecting DWF rates and thus there is a large margin of error associated with this estimate.

10.3 The Owenagappul River is located within an SAC (Glanmore Bog). Although a number of species and habitats are noted in the site synopsis, the freshwater pearl mussel is considered the highest priority for the purposes of this report. The Owenagappul River supports salmonid species and is most likely used for spawning.

Ardgroom Harbour is an important growing area for marine mussels (*Mytilus edulis*) and is classified as category A under live bivalve molluscs legislation.

10.4 Water chemistry results from Cork County Council and Dixon.Brosnan surveys indicate that the water quality of the Owenagappul River is generally satisfactory. However an elevated ammonia level immediately downstream of the existing discharge suggests that it is having an impact on water quality. Biological monitoring by the EPA indicates that water quality is satisfactory.

10.5 To enable the calculation of the assimilative capacity of the Owenagappul River it is necessary to determine mean values for certain background water quality parameters upstream of the discharge point. These mean values which are detailed in table 9 are based on the available data from Cork County Council and Dixon.Brosnan surveys. To enable mean values to be calculated it is assumed that where less than (<) is specified it is ignored. This represents a worst-case scenario in that the mean values calculated via this method suggest that background chemical levels are higher than they actually are.

Table 9. Background water chemistry (mean values).

PARAMETER	SAMPLE A SLIEVE BR CCC 25.08.05	SAMPLE A SLIEVE BR CCC 18.11.04	SAMPLE A SLIEVE BR CCC 03.03.05	SAMPLE L1 IMMEDIATELY U/S OF DISCHARGE D.B 20.03.05	MEAN VALUE
MRP (mg/l P)	<0.006	-	-	-	0.006 ¹
NH ₃ (mg/l N)	-	-	0.06	<0.2	0.13
NO ₂ (mg/l NO ₂)	<0.013	-	-	0.10	0.0565
NO ₃ (mg/l NO ₃)	<1.8	0.9	-	0.5	1.07
BOD (mg/l)	<2	-	<2	2	2
COD (mg/l)	18	-	<2	-	10
Susp. solids (mg/l)	5	-	17	<10	10.7

¹Chemical value only. Does not take into account EPA Q values.

PART 2: LEGISLATION & STANDARDS

11. SURFACE WATER DIRECTIVE

11.1 Council Directive 75/440/EEC concerning the quality of surface water intended for the abstraction of drinking water in the Member States was incorporated into Irish law by the European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989 (S.I. No. 294 of 1989). The Regulations set out quality standards for a total of 39 parameters for waters, which are to be treated for distribution, with the standards varying with the degree of treatment provided.

11.2 While the water supplies for Castletownbere and Ardgroom are abstracted from the Owenagappul catchment, neither abstraction point is located downstream of the existing or proposed wastewater discharge and thus the provisions of the Surface Water Directive are not directly applicable.

12. BATHING WATER DIRECTIVE

12.1 Council Directive 76/160/EEC concerning the quality of bathing water and the follow-up National Quality of Bathing Waters Regulations (the most recent being S.I. No. 177 of 1998) lay down quality requirements for inland and coastal waters as designated bathing areas. The quality standards refer chiefly to microbiological parameters with provision for monitoring of other parameters where it is suspected that conditions have deteriorated.

12.2 There are no designated bathing areas in the stretch of water under examination and hence Directive 76/160/EEC and its Regulations do not directly apply.

13. SHELLFISH DIRECTIVE

13.1 Council Directive 79/923/EEC on the quality required by shellfish waters and the associated Quality of Shellfish Waters Regulations, 1994 (S.I. No. 200 of 1994) specify designated coastal and brackish waters needing

protection or improvement in order to support shellfish. Specified limit values apply to these areas. Pursuant to Council Directive 91/492/EEC (as amended by Council Directive 97/61/EC) which lays down the health conditions for the production and the placing on the market of live bivalve molluscs, the Minister for the Marine and Natural Resources issued the Live Bivalve Molluscs (Production Areas) in which a number of production areas are listed from which molluscs may be taken.

13.2 Under the classification scheme for shellfish production areas operated by the Department of the Marine and Natural Resources under Directive 91/492/EEC Ardroom Harbour has been issued with an A classification which is achieved when there are less than 300 faecal coliforms or 230 E. coli per 100 g of shellfish flesh. An A classification scheme allows sale for direct human consumption i.e. no purification or relaying required. Licensed shellfish sites in the harbour are indicated in Appendix I.

13.3 Norwalk Like Viruses (NLVS) are a group of viruses which cause gastroenteritis in humans. Although the virus can be transmitted by a variety of sources bivalve molluscs present a particularly high risk because of their ability to concentrate viruses from contaminated waters in their tissues. Oysters are often consumed raw or lightly cooked which contributes to the risk. Available data show that bivalve molluscs present a well-documented source of NLV infection (Opinion of the Scientific Committee on *Veterinary measures relating to public health on Norwalk Virus*, 2002). Viruses can contaminate seafood either through contamination at source 'principally through sewage pollution' or during seafood preparation. Studies have shown that the higher the average number of E. coli at a site the more likely it is to be contaminated. The classification of harvesting areas based on E. coli numbers therefore provides a degree of protection against frequent episodes of viral contamination. Human faeces may contain millions of virus particles and viruses are therefore continually discharged into the marine environment. Viruses can last for weeks to months in the water column or in sediments. Although sewage treatment processes may be only partially effective at virus removal the reduction or prevention of sewage pollution in shellfish harvesting areas is considered the most effective method of tackling the problem. This is easier to accomplish in countries such as the Netherlands where shellfish production is concentrated in a few geographical areas. In Ireland the shellfish industry is widely dispersed and expenditure on adequate sewage treatment at some locations may seem disproportionate to the value of the shellfish industry at that location (opinion of the Scientific Committee).

14. FRESHWATER FISH DIRECTIVE & SALMONID REGULATIONS

14.1 Council Directive 78/659/EEC on the quality of fresh waters needing protection in order to support fish life was given Irish effect by the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988). The Regulations specify a separate range of standards for salmonid and cyprinid fish in waters designated as needing protection or improvement for their support.

14.2 The Freshwater Fish Directive and Quality of Salmonid Waters Regulations carry some weight, due to their strict limits and the consequent suitability of a watercourse for other uses should it meet these limits. The most significant wastewater parameters are examined in table 10.

Table 10. Freshwater Fish Directive limits.

PARAMETER	SALMONID WATERS
BOD	5 mg/l
Suspended solids	25mg/l
Non-ionised Ammonia (NH ₃)	0.02 mg/l
Total ammonium (NH ₄)	1 mg/l
Nitrite	0.05 mg/l
pH	6-9
Dissolved Oxygen	50% >9 mg/l

15. URBAN WASTE WATER TREATMENT DIRECTIVE

15.1 The Environmental Protection Agency Act, 1992 (Urban Wastewater Treatment) Regulations, 1994 (S.I. No. 419 of 1994) were issued to give effect to EU Council Directive 91/271/EEC concerning urban wastewater treatment. The Regulations specify that wastewater arising from populations of less than 2,000 shall, by the end of 2005, be subject to appropriate treatment prior to discharge. Appropriate treatment is defined as

...any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the Directive and of other Community Directives.

This requirement applies to freshwater and estuarine discharges. It also applies to coastal discharges from agglomerations of more than 10,000.

15.2 Wastewater quality limits specified in the Second Schedule of the Regulations note that the final concentrations of BOD and suspended solids shall not exceed 25 mg/l and 35 mg/l respectively. These limits apply however, only to treated discharges from populations over 2,000 (10,000 where the discharge is coastal); the relevant discharge standards to be applied are to be determined from '...other relevant Community Directives'. Other directives of immediate relevance are Directives 75/440/EEC, 76/160/EEC, 78/659/EEC and 79/923/EEC, all of which have been discussed above.

15.3 The Urban Wastewater Directive notes in Annex IIA that a water body (freshwater, estuarine or coastal) must be identified as a sensitive area if certain criteria are met and to where treated waste from agglomerations of greater than 10,000 p.e. will discharge. The Owenagappul River has not been designated as a sensitive area. The designation process is directed at agglomerations significantly larger than that under consideration here.

15.4 The Directive specifies a number of obligations regarding the design of wastewater treatment plants as follows:

- (a) Such plants shall be designed, constructed, operated and maintained to ensure sufficient performance under all normal local climatic conditions.
- (b) When designing the plants, seasonal variations of the load shall be taken into account.
- (c) Waste water treatment plants shall be designed or modified so that representative samples of the incoming wastewater and of treated effluent can be obtained before discharge to receiving waters.
- (d) The points of discharge of urban wastewater shall be chosen, as far as possible, so as to minimize the effects on receiving waters.

15.5 It is recommended that items (a), (b) and (c) are taken into account at the design and installation stage of the treatment plant. Item (d) is addressed in this report.

16. PHOSPHORUS REGULATIONS

16.1 The Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations, 1998 (S.I. No. 258 of 1998) were introduced to counter eutrophication observed throughout Irish watercourses and also to comply with Council Directive 76/464/EEC, on pollution caused by certain dangerous substances, discharged into the aquatic environment.

16.2 The Regulations oblige local authorities to maintain or improve the water quality at any part of a river, by 2007, by reference to the biotic index (Q-value) or to the concentration of molybdate-reactive phosphate (largely orthophosphate). The target values specified are set out in the third schedule of the Regulations and are reproduced in Table 11.

16.3 The target values specified in the Regulations were adopted on the basis of the empirical relationship between the biotic indices and orthophosphate concentrations in Irish waters as monitored extensively by the EPA. Some concern has been expressed that this simplistic approach does not apply equally throughout Irish watercourses, with consequent complications in the assessment of existing and proposed discharges. These and other difficulties may be addressed in the incorporation of the EU Water Framework Directive into Irish law.

Table 11. Phosphorus Regulations target values.

EXISTING Q-VALUE	EITHER TO BE APPLIED	
	TARGET Q-VALUE	TARGET MRP ($\mu\text{g/l}$)
5	5	15
4-5	4-5	20
4	4	30
3-4	4	30
3	3-4	50
2-3	3-4	50
<2	3	70

16.4 In practical terms Q values of 4 or more are taken to represent satisfactory water quality, where eutrophication is unlikely to be a problem. Because annual median phosphate (P) values in such waters rarely exceed $30 \mu\text{g/l}$ P, this concentration has been adopted as the target value to be achieved by 2007. The empirical relationship between phosphate and eutrophication suggests that once annual Median Reactive Phosphate (MRP) values exceed $30 \mu\text{g/l}$ P there is a strong statistical likelihood that the stretch of river in question will have a significant eutrophication problem.

16.5 It is also noted that, although on average a Q value of 4 correlates with an orthophosphate level of 0.03 mg/l , this does not hold true for all situations. In addition elevated orthophosphate levels affect watercourses by causing eutrophication which in turn causes depletion of oxygen levels. However all rivers are dynamic and variable systems and high phosphate levels are not always correlated with low oxygen levels. For example the presence of turbulent water, waterfalls or weirs may prevent significant deoxygenation of water. In addition shade levels will also affect plant and algal growth. Orthophosphate values may show considerable fluctuation over time and the use of a limited number of samples can therefore provide a misleading picture of water quality at a given location.

16.6 Because of the points noted above Q values are often better indicators of long-term water quality in a watercourse. Q values also provide a better indication of the real impact of water quality on the ecology of the watercourse. Invertebrates are valuable as indicator species and information on the diversity and density of invertebrates can provide an accurate indication of the suitability of the monitoring location for species such as fish.

16.7 The Phosphorous Regulations are directly applicable to the proposed discharge; however information on orthophosphate levels in the watercourse is limited and may not provide accurate information on long-term trends within the watercourse. Given the consistency of the Q values over a longer time period, these values are considered more relevant as a basis for determining background orthophosphate levels.

17. NITRATES DIRECTIVE

17.1 Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources obliges member states to identify Nitrate Vulnerable Zones within which restricted agricultural practices will apply. Zone designation is undertaken by reference to a number of criteria listed in Annex I of the Directive including excessive nitrate concentrations in surface or ground waters and high trophic status. With respect to surface waters, the Directive notes that sensitive waters shall be identified where nitrate levels exceed the maximum concentration specified in the Surface Water Directive i.e. 11.3 mg/l N.

17.2 Under Ireland's implementation of the Nitrate Directive the whole country has been designated a Nitrate Vulnerable Zone and limited to 170 kg/ha/year of animal manure or fertiliser. Samples taken by Cork County Council indicate that nitrate concentrations are currently satisfactory in the Owenagappul River.

18. ROYAL COMMISSION STANDARDS

18.1 The standards noted in the Eight Reports of the Royal Commission on Sewage Disposal (1912) have played an important part in water quality management since their publication. The standards are summarised in table 12.

Table 12. Royal Commission standards, 1912.

DILUTION	STANDARD (mg/l)		TREATMENT REQUIRED
	BOD	SUSPENDED SOLIDS	
8-150	20	30	Primary & secondary
150-300	-	60	Chemical precipitation
300-500	-	150	Plain sedimentation
>500	-	-	No treatment

18.2 The normal standard fixed was 20 mg/l BOD and 30 mg/l suspended solids. The Commission did not include a quality standard for receiving waters in their recommendations, but noted that river waters with a BOD of 4 mg/l will be ordinarily free from signs of pollution. In accordance with the Commission's report, most river authorities have traditionally sought a minimum dilution of 1:8 in the discharge of treated wastewater to a watercourse, regardless of treatment efficiency. It is noted however that the Royal Commission Report dates to 1912 when a

treatment standard of less than 20/30 was difficult to obtain. In recent times however it has become feasible to reduce treatment standards below this level and therefore a 1:8 dilution is of limited value.

18.3 The Commission standards formed the basis for Memorandum No. 1 (1978) issued by the Irish Department of the Environment Technical Committee on Effluent and Water Quality Standards. The majority of quality standards specified in the memorandum have since been superseded by more recent legislation and standards such as those described above.

19. NOISE AND ODOUR

19.1 There are no national noise limits in place in Ireland. Most developments are usually restricted by way of noise conditions in relevant planning permissions or Environmental Protection Agency licences. In the granting of permission to developments, the authorities will often refer to the EPA document *Integrated Pollution Control Licensing – Guidance note for noise in relation to scheduled activities* (1995) which notes that the noise level at a sensitive location should be kept below an L_{Ar} value of 55 dB during the hours 0800-2200, and below 45 dB outside of these hours, the L_{Ar} being equal to the L_{Aeq} (the average noise level) plus a penalty applied where the noise is tonal or impulsive. The guidance note states in particular that audible tones and impulsive noise at sensitive locations should be avoided at night, irrespective of the noise level.

19.2 The EPA guidance note defines a noise sensitive location as

Any dwelling house, hotel or hostel, health building, educational establishment, places of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

It follows that the any local residence or establishment, internally and externally, in the vicinity of the WWTP site is a noise sensitive location within the terms of the guidance note.

19.3 While the EPA document was prepared as a guidance note for activities specified only in the First Schedule to the EPA Act (1992) and subsequently in follow-up Orders, the absence of other Irish guides or standards lends the document some significance and consequently the document now carries some weight outside of the industrial sectors regulated by the EPA.

19.4 There are no odour limits specified in Irish legislation, and only the Air Pollution Act, 1987 makes any reference to odour nuisance. In the absence of any limits, the EPA in their document *Wastewater Treatment Manuals: Treatment Systems for Small Communities, Business, Leisure Centres and Hotels* (1999) have

recommended minimum buffer zones to be applied around WWTPs over certain threshold p.e. values. The zones have been selected to reduce both odour and noise impacts. The document notes that for systems designed to treat greater than 161 p.e. a buffer zone of 50m should be allowed i.e. the WWTP should not be located nearer than 50 m to existing development. It is further noted that at least 30 m of this distance should be in the possession of the WWTP operator.

20. INTERPRETATION: LEGISLATION & STANDARDS

20.1 The Surface Water, Bathing and Nitrate Directives do not directly apply to the proposed discharge. However the bay is used for recreational purposes and thus these needs to be taken into account.

20.2 The 1912 Royal Commission report notes that a wastewater discharge to a watercourse should comply with a 20mg/l BOD and 30mg/l suspended solids standard, and a minimum dilution of 8. This standard is generally the minimum allowed in the disposal of treated wastewater and although modern treatment plants can produce better quality effluent these limits are still relevant.

20.3 The Owenagappul River has not been designated as sensitive areas in the context of the Urban Wastewater Treatment Directive. With reference to the proposal under consideration, the Directive notes that the proposed discharge shall be subject to appropriate treatment prior to discharge, where appropriate treatment is described as that which will allow compliance with other relevant Directives. The most pertinent of these is the Freshwater Fish Directive and Quality of Salmonid Waters Regulations. The Urban Wastewater Directive specifies that the point of discharge of the treated wastewater shall be chosen so as to minimize the effects on receiving waters.

20.4 The Phosphorus Regulations oblige local authorities to maintain or improve the water quality at any part of a river by 2007 by reference to the biotic index (Q-value) at EPA monitoring sites. The proposed development will be assessed in respect of the limits specified under these regulations.

20.5 Ardroom Harbour has been issued with an A classification under bivalve mollusc legislation, allowing sale for direct human consumption i.e. no purification or relaying required. There are licensed shellfish growing areas within the harbour.

20.6 In summary, the articles of legislation of greatest significance with respect to the proposed discharge are the Freshwater Fish Directive and Phosphorus Regulations. The classification of shellfish production areas under Directive 91/492/EEC is also directly relevant. Compliance with limits specified in these articles will generally ensure compliance with provisions of other relevant legislation. The limits of relevance will be discussed in Part 4.

 21. CURRENT & PROPOSED TREATMENT

21.1 There are 33 existing connections to the septic tank (population equivalent 132 p.e.). Applications for planning if granted would increase this figure to 272 p.e. To provide spare capacity for future development it is proposed that a total population of 400 p.e. be catered for. It appears that storm water is discharged to the river at a separate location downstream of the discharge point and therefore infiltration of stormwater into the wastewater system is not likely to be significant.

21.2 At present wastewater from Ardgroom is treated via a septic tank. The main function of a septic tank is to act as a primary settlement tank removing some of the BOD and the majority of the suspended solids. The EPA publication *Primary, secondary and tertiary treatment* (1997) estimates that typically primary settlement tanks reduce the bacterial count by 25-75%. One of the most important criteria is the retention time available in the tank. For the existing septic tank at Ardgroom the retention time at peak flow is likely to be limited due to build up of sludge.

21.3 The EPA estimates that typically 50-70% of suspended solids are removed in primary settlement tanks; BOD is reduced by 20-50%. Assuming that the septic tank at Ardgroom is currently working at average efficiency the approximate reductions are estimated as 60% for suspended solids and 35% for BOD. The levels of BOD and suspended solids being discharged from the existing system are shown below in table 13, based on an existing population served of 132 p.e.

Table 13. Tank treatment efficiency.

PARAMETER	LOAD kg/day
BOD	2.59
SS	1.55

21.4 Cork County Council proposes to install a new WWTP to cater for a maximum load of 400 p.e. The existing system may be decommissioned or linked to the new WWTP. The EPA document *Wastewater Treatment Manuals: Treatment Systems for Small Communities, Business, Leisure Centres and Hotels* (1999) notes that recent research suggests that per capita wastewater flow averages 180 l/day. Using this flow rate, the average daily volume of wastewater arising from a design population of 400 will be 72 m³/day.

21.5 As there is minimal industrial discharge to the existing sewage network, the wastewater arising in Ardgroom is assumed to be domestic in nature. The characteristics of such wastewater streams have been documented by the EPA (1999) and are summarised in table 14.

Table 14. Domestic inflow wastewater characteristics.

PARAMETER	MEAN
SS	163 mg/l
BOD	168 mg/l
COD	389 mg/l
o-PO4-P	7.1 mg/l
Total N	40.6 mg/l
NH ₃ -N	31.5 mg/l
NO ₃ -N	0.25 mg/l
NO ₂ -N	0.04 mg/l
pH	7.5
Total coliforms	1x10 ⁸ CFU per 100ml
Faecal coliforms	4x10 ⁷ CFU per 100ml

Source: EPA

21.6 The quality and characteristics of the current discharge have not been taken into account in this report as it is proposed that this discharge will be eliminated. It is important that the collection system is upgraded so that all discharges are rerouted to the new proposed WWTP.

21.7 It is recommended that surface water arising in Ardgroom be discharged directly to the river. It is advisable that an assessment be carried out of all dwellings and pubs etc. in the village area to ensure that grey water entry to the surface water system is limited.

22. DISPOSAL OPTIONS

22.1 During the preparation of this report the possibility of discharging the treated wastewater stream arising from the upgraded plant to the Owenagappul River at the existing discharge point was assessed. This option is initially preferable due to the availability of the existing site infrastructure for this purpose. Site surveys indicate, however, that the distribution of the pearl mussel extends downstream as far as the existing discharge. While the discharge does not appear to be significantly affecting the population, the mussel's protected status requires that every provision be made to encourage its growth and survival. Accordingly the possibility of discharging below the mussel's distribution area was assessed.

22.2 Dr. Eugene Ross of Freshwater Bivalve Investigations was consulted with respect to the mussel's distribution in the Owenagappul River. Following his inspection of the river, Dr. Ross noted that the extreme downstream limit of pearl mussel distribution is unlikely to extend significantly below the river's confluence with the Barrees Stream. It was noted that a small number of individuals observed at this point (grid reference V 68622 55582) were most likely washed downstream during torrential floods and would probably not survive due to the unsuitable habitat.

22.3 Following this assessment, it is now proposed to discharge the upgraded wastewater stream to the Owenagappul River close to, and above, the high tide mark upstream of Cappul Bridge at grid reference V 68930 55640. The proposed outfall location lies approximately 300 m downstream of the scattered mussel individuals noted above. Dr. Ross has noted that the proposed discharge will therefore have no negative impact on the population of *Margaritifera margaritifera* in the Ownagappul River. He has also noted that the relocation of the effluent discharge point from its current location in Ardgroom is a very welcome development and will have long term major beneficial effects on the habitat and population of *Margaritifera* present in the Ownagappul river.

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 23. PHOSPHORUS

23.1 Within the aquatic environment phosphorus will be present in a number of forms, both organic and inorganic, and within solution or bound in solids. All forms present are referred to as total phosphorus. A significant fraction of total phosphorus is available for biological metabolism and is termed orthophosphate. The analytical procedure used in the determination of orthophosphate is the molybdate-reactive method, which is used to derive the concentration of molybdate-reactive phosphate (MRP) in a sample. Although the MRP may slightly overestimate the level of orthophosphate present, the two expressions have become synonymous.

23.2 The target values specified in the Salmonid Regulations were adopted on the basis of the empirical relationship between the biotic indices and orthophosphate concentrations in Irish waters as monitored extensively by the EPA. In practical terms Q values of 4 or more are taken to represent satisfactory water quality, where eutrophication is unlikely to be a problem. Because annual median phosphate (P) values in such waters rarely exceed 30 µg/l P, this concentration can be taken to represent satisfactory water quality and is used as the target downstream phosphate level below.

23.3 An orthophosphate concentration of 0.006 mg/l P was detected in a sample taken by Cork County Council at Slieve Bridge. However the site was assigned a Q value of 4-5 by the EPA in 2003, corresponding to an annual median phosphate level of 0.02 mg/l as noted in the Phosphorous Regulations. For the purpose of assessing impacts on river phosphorous levels as a result of the proposed discharge, it is considered appropriate to use an averaged background orthophosphate concentration of 0.013 mg/l.

23.3. In assessing phosphorous impacts downstream of the proposed discharge point near Cappul Bridge, it may be assumed that 80% of total phosphorous in the effluent will be present as orthophosphate. The downstream orthophosphate concentrations arising from various total phosphorous loadings and flows may be calculated using mass balance theory. Downstream concentrations related to two possible scenarios are presented in table 15.

Table 15. Downstream orthophosphate levels.

TREATED P LEVEL	2 mg/l total P (= 1.6 mg/l orthoP)	1 mg/l total P (= 0.8 mg/l orthoP)
Downstream concentration (mg/l ortho P)	0.193	0.102

23.4 The table indicates that by applying a treatment standard of 1 mg/l total phosphorous, which is generally considered to be achievable only with great expense and difficulty, the downstream concentration will be elevated above the target level. A number of factors additionally apply however:

(i) The above calculations are based on highly conservative DWF estimates in the main channel of the Owenagappul River. Flows within the river are likely to be significantly higher at all times.

(ii) It was noted in 4.4 that the DWF was applied with respect to the main channel rather than the more normally applied 95% due to the presence of the rare pearl mussel. From 22.2 the mussel is not found downstream of the proposed outfall location, and thus no impacts on the local pearl mussel population are expected.

(iii) By applying the 95% flow to the main channel, which is likely to be 3-4 times the DWF, the calculated downstream orthophosphate concentration decreases towards 0.06 mg/l where a treated discharge target of 1 mg/l total P is applied.

(iv) The Owenagappul River becomes tidal shortly below the proposed discharge point. Studies indicate that tidal waters are less vulnerable to elevations in phosphorous concentrations. It follows that phosphorous levels attributable to the proposed discharge are of less importance here.

(v) There are no EPA monitoring points downstream of the proposed discharge location, and indeed the river remains freshwater for a limited stretch before becoming tidal. The provisions of the Phosphorous Regulations are therefore less critical here.

23.5 From the foregoing the expected increase in phosphate levels downstream of the proposed outfall will not be expected to have a significant impact on river water quality. Nonetheless, it is recommended that the gradual increase from the current population of 272 p.e. to the design maximum of 400 p.e. be accompanied by long term assessment of 95th percentile flows in the Owenagappul River. This assessment should be used to determine if additional dilution or alternative management of the phosphorous discharge is required as the population increases.

24. DILUTION & WASTE ASSIMILATIVE CAPACITY

24.1 A 1:8 dilution standard was specified by the Royal Commission (1912) and is normally sought by river authorities (Section 18). It is proposed that a maximum of 400 p.e. will discharge to the river resulting in a discharge volume of 0.00083 m³/s. Based on the minimum catchment flow determined in 4.13 the Owenagappul River will provide a dilution of 1:7.8 at the proposed discharge point. This dilution almost meets the standard, and

it follows that treatment to a higher standard than the 20/30 mg/l BOD/SS specified in the Royal Commission report will be required.

24.2 The waste assimilative capacity (WAC) of a watercourse is the mass of BOD which the watercourse can healthily absorb in one day. The WAC is a function of the existing BOD in the watercourse, the maximum permissible BOD and the minimum flow rate. Under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988) the maximum BOD concentration in salmonid freshwaters should not exceed 5mg/l, and this concentration may be considered the maximum allowable.

24.3 The mean background BOD in the Owenagappul River upstream of the proposed outfall location was calculated at 2 mg/l. This mean figure was calculated from samples taken at Slieve Bridge by Cork County Council and by Dixon.Brosnan immediately upstream of the existing discharge point. Based on this figure, the WAC available is estimated at 1.7 kg BOD/day.

24.5 Memorandum No. 1 (1978) notes that a discharge to a watercourse should not increase the BOD within the watercourse by more than 1 mg/l. With the proposed design capacity of the upgraded plant at 400 p.e., a BOD concentration of 20 mg/l as recommended in the Royal Commission report in the treated discharge will increase the downstream level to 4.0 mg/l. This increase is higher than specified in Memorandum No. 1, and will exceed the WAC of the river as noted in 24.1

24.6 Treatment of the wastewater stream to a 10 mg/l BOD standard will result in a downstream increase of 0.9 mg/l to 2.9 mg/l. This increase is in keeping with Memorandum No. 1. The BOD load discharged will also be within the WAC available where a 10 mg/l standard is applied. Accordingly a 10 mg/l BOD treatment standard is recommended.

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25. SUSPENDED SOLIDS

25.1 Of the various standards and articles of legislation discussed in Part 2, the strictest suspended solids limits are specified in the Freshwater Fish Directive which notes that a guide limit of 25 mg/l of suspended solids is desirable in fresh waters. A similar maximum concentration is specified by the Salmonid Waters Regulations. The application of this limit will ensure compliance with those specified in the Urban Waste Water Directive and in Memorandum No. 1.

25.2 The mean suspended solids concentration with respect to the Owenagappul River was estimated to be 10.7 mg/l (table 9). Based on the proposed design p.e. of 400, treatment of the suspended solids level in the discharge to a 15 mg/l standard will increase the downstream concentration by 0.5 mg/l to 11.2 mg/l. This increase will not

be significant, particularly in the context of a 25 mg/l limit as noted in 25.1. Accordingly a suspended solids treatment standard of 15 mg/l is recommended.

26. NITROGEN

26.1 Elemental nitrogen may be present in a number of forms in a wastewater discharge. Ammonia and nitrates are of most significance, with the relative proportions of their take-up by plants and algae varying with their ratio, the local conditions and the species involved. The nitrite form is an intermediate stage in the conversion of these two parameters.

26.2 It is important that the proposed discharge does not elevate nitrate levels in the receiving watercourse significantly and does not affect the status of the aquatic environment with respect to the 11.3 mg/l limit specified in the Nitrates Directive (section 17). Nitrogen is often the limiting factor in seawater and therefore it is important that the discharge does not significantly increase nitrate levels.

26.3 Nitrogen present as nitrate will rarely impact directly on fish life and thus there are no limits specified in the Freshwater Fish Directive or Salmonid Regulations. Nitrite limits are specified under Quality of Salmonid Waters Regulations. Of more significance are levels of ammonia, particularly the un-ionised form. The European Inland Fisheries Advisory Commission (1970) have reported that an un-ionised concentration of 0.02 mg/l NH_3 will present a long-term sub-lethal dose for salmonid and cyprinid fish. This level of 0.02 mg/l is specified under the Salmonid Regulations and the same regulations have specified maximum 'total ammonium' concentrations of 1 mg/l N.

26.4 Most modern packaged treatment units produce a nitrified effluent, with the major portion of nitrogen converted from ammonia to nitrates as a result of nitrification processes incorporated in the design. Due to the conversion dynamics within secondary stage treatment units, it is difficult to specify separate concentrations of ammonia and nitrates to be met in the treated effluent. The application of a total nitrogen limit – consisting of ammonia, nitrates and intermediate stages – provides a more common sense approach.

26.5 Without the installation of a specific nitrogen-removal process, secondary stage treatment units will not significantly reduce nitrogen levels but merely convert the various forms present to oxidised nitrate, with consequent reductions in ammonia concentrations. The modular design of packaged systems allows further nitrification to be introduced following commissioning. It is not expected that the chosen method of treatment will result in problematic levels of ammonia. Nonetheless, it is recommended that the 1 mg/l limit be applied as a guide quality standard downstream of the mixing zone.

26.6 A mean background nitrate level of 1.07 mg/l NO₃ was calculated upstream of the discharge point. The discharge of wastewater without any removal of nitrogen, ie. a discharge concentration of 40.6 mg/l N as noted in table 14,) will result in a downstream concentration significantly below the 11.3 mg/l limit specified in the Nitrates Directive.

26.7 As noted above, the majority of effluent nitrogen will be present as nitrate. Assuming that not more than 10 mg/l will be present as total ammonium NH₄, equivalent to 7.8 mg/l of N, the downstream concentration in the Owenagappul River will increase to 1.00 mg/l N. As this level meets the 1 mg/l guide quality standard noted in 26.5, it is not recommended that nitrogen removal is applied at the proposed WWTP initially. It is recommended that a monitoring programme is implemented immediately on commissioning of the plant to assess its nitrification performance and any impacts on downstream nitrogen concentrations in the river.

27. WATER QUALITY & ARDGROOM HARBOUR

27.1 The determination of the trophic status of estuaries and bays can be complex. The classification scheme used in Ireland requires that, in order to be categorised as eutrophic, areas of water should exhibit all of the following:

- (a) Enrichment by the stated nutrients.
- (b) Accelerated growth of algae and higher forms of plants.
- (c) Undesirable disturbance to the balance of organisms present and to the quality of the water concerned.

27.2 A waterbody is classified as eutrophic when criteria for each of these three categories are breached. No specific information on any these three categories of criteria is available, and no particular problems have been reported from Ardgroom Harbour (K. Flannery, Department of Communications, Marine and Natural resources; D. Milliard, Bord Iascaigh Mhara).

27.3 Notwithstanding the lack of detailed data on water quality in Ardgroom Harbour, the criteria for nutrient enrichment are of some relevance and are detailed in table 16. Orthophosphate is generally of less significance in marine systems and the criteria detailed in table 16 are higher than the expected levels downstream of the wastewater discharge.

Table 16. Criteria for eutrophication in Irish estuaries, bays and nearshore coastal waters.

Category A: Nutrient Enrichment.

PARAMETER & WATERBODY TYPE	NUMERIC CRITERION	STATISTIC	PERIOD TO WHICH CRITERION APPLIES
DISSOLVED INORGANIC NITROGEN (mg/l DIN as N ¹)			
Tidal fresh waters	>2.6	Median	Winter or summer
Intermediate waters	>1.4	Median	Winter or summer
Full-salinity waters	>0.25	Median	Winter or summer
ORTHOPHOSPHATE (µg/l MRP as P)			
Tidal fresh waters	>60	Median	Winter or summer
Intermediate waters	>60	Median	Winter or summer
Full-salinity waters	>40	Median	Winter or summer

¹Dissolved Inorganic Nitrogen (DIN) is quantified as the sum of oxidised nitrogen (nitrate and nitrite) and ammonium, considered to represent the readily available nitrogen for uptake by plants.

27.4 Nitrogen is often the limiting factor in the marine environment and is therefore of more significance. From Table 14 the maximum potential concentration of dissolved inorganic nitrogen (DIN) in the proposed discharge will be 40.6 mg/l. The background DIN level in the Owenagappul River upstream of the existing wastewater discharge point has been calculated at 0.389 mg/l (from table 9). The discharge of 31.8 mg/l DIN as N (from table 14) will result in a downstream DIN concentration greater than the numeric criteria indicated in table 16.

27.5 This mass balance determination however does not take into account the dilution provided by tidal waters in the bay. There is no evidence to suggest that any of the criteria for eutrophication have been breached in the bay to date. Moreover there is limited intensive agricultural activity in the area surrounding the harbour and, with the exception of possible discharges from individual septic tanks, Ardroom is the only source of nutrients from domestic wastewater. Given these circumstances it is considered unlikely that nitrogen will be a significant factor. Therefore, as is the case with freshwater nitrogen dynamics (section 26), nitrogen removal is not considered necessary initially, and rather it is recommended that a monitoring programme is implemented following commissioning of the plant to assess the DIN output and consequent impacts.

28. PATHOGENS

28.1 Table 14 indicates that domestic wastewater will contain on average 100 million and 40 million colony-forming units of total and faecal coliforms respectively per 100 ml. These organisms, while not overtly pathogenic in themselves, are used as indicators of pathogenic activity. Due to growth and decay dynamics within bacterial

populations normal mass balance calculations cannot be applied in the assessment of bacteriological impacts. Significant variations in local environmental conditions and wastewater microbiological characteristics do not facilitate the generation of discharge-specific models.

28.2 All treatment processes applied to wastewater will provide some degree of coliform reduction, usually via the filtration of suspended solids in the wastewater stream. In *Water Technology* (1999) Gray reports that conventional treatment will remove up to 90% of bacterial pathogens, with tertiary treatment increasing this to 98%. Further reduction to 99.99% may be achieved using disinfection. He also notes that dilution and the effects of natural biotic and abiotic factors in surface waters will reduce the density of pathogens further.

28.3 The presence of large scale mussel farming in Ardroom Harbour makes it particularly sensitive to bacterial contamination. At present Ardroom has an A classification and it is considered important both from a commercial and public health viewpoint to maintain this classification. Due to its isolated position on the Beara peninsula this large harbour is not significantly affected by large human settlements, and the existing discharge from Ardroom is most likely the only significant discharge of wastewater affecting the bay. In addition, while there is likely to be some runoff from land in the area, intensive agriculture is largely absent from the area surrounding the bay. Given that the single payment system for farmers is now coming into force it is possible that farming activity will further decrease in the area. In summary, Ardroom Harbour represents a bay where maintenance of an A classification should be readily possible. In these circumstances, and given the relative significance of the discharge at Ardroom, it is recommended that a UV disinfection system be installed at the proposed WWTP.

29. CONCLUSIONS & RECOMMENDED TREATMENT

29.1 As noted in Section 4 the estimated dry weather flow may be inaccurate. Therefore the assimilative capacity of the river cannot be accurately calculated from estimated flow values. It is also noted that the estimated DWF represents extreme drought conditions. In real terms the flow will only rarely drop to that level.

29.2 At present the abstraction rate from Glenbeg Lake is higher than the estimated DWF, and this rate may be increased in the future. It is possible therefore that at some time in the future there may be a conflict between the amount of water abstracted and the requirement for assimilative capacity in the river itself. An increase in the abstraction rate, combined with a possible increase in outflow to recharge the Owenagappul River, might conceivably have an ecological impact on the lake by lowering water levels. The site synopsis notes that a number of aquatic plants occur within the lake including quillwort, shoreweed, water lobelia, floating bur-reed, six-stamened waterwort, stonewort, pondweed species and common reed. It is noted however that Glenbeg is a large deep lake which holds an extremely large volume of water. In addition emergent vegetation is generally well

adapted to fluctuating water levels and it is considered improbable that a small drop in water level will significantly impact on the ecology of the lake. It is recommended however that a water level gauge be put in place at Glenbeg.

29.3 It is noted that this report has adopted a worst case scenario approach and that flows may well be significantly higher than those estimated in this report. In addition current planning applications (if granted) would give rise to a population equivalent of 272 p.e. in the short term which is significantly lower than the maximum of 400 p.e. considered for the purposes of this report. It is also noted that the DWF represents extreme low flows and will occur very infrequently. Supplementation of flows in the river can be seen as a safety mechanism, which may only be employed (if ever) under extreme circumstances.

29.4 Due to the presence of the protected freshwater pearl mussel in the Owenagappul, it is proposed to direct the upgraded discharge to a new outfall location immediately upstream of Cappul Bridge. The recommended treatment criteria with respect to this discharge point are summarised in table 17.

Table 17. Recommended treatment standard.

PARAMETER	OWENAGAPPUL RIVER
BOD	10 mg/l
SS	15 mg/l
Nitrogen	Not initially recommended. Provision for subsequent installation of N removal technology recommended.
Phosphorous	1.0 mg/l total P
Pathogens	UV system required

29.5 As this report has been prepared on the basis of a worst case scenario the figures noted above should be considered as target values rather than absolute limits. In addition it is noted that the river at the proposed discharge point is characterised by turbulent flows which provide good oxygenation potential.

29.6 The Owenagappul system is considered particularly sensitive due to the presence of freshwater pearl mussel. Nonetheless the mussel population has persisted downstream of the existing discharge, despite the low level of treatment evident. Table 18 indicates the improvement in the quality of the discharge expected as a result of the proposed upgrade with respect to a maximum design capacity of 400 p.e. and a treatment standard of 10/15 mg/l BOD/SS.

Table 18. BOD & SS removal.

PARAMETER	EXISTING DISCHARGE (from table 13)	PROPOSED DISCHARGE	% REDUCTION
BOD kg/day	2.59	0.72	72%
SS kg/day	1.55	1.08	30%

29.7 As nitrification processes may interfere with the wastewater pH, it is recommended that the effluent discharge be monitored to ensure the pH does not fall outside the range 6-9 where such processes are employed.

29.8 It is recommended that the existing discharges be removed following commissioning of the upgraded plant. It is advisable that an assessment be carried out of all premises in the village to ensure that grey water entry to the surface water system is limited.

29.9 It is recommended that a suitable grease trap/interceptor be stipulated in planning permissions granted to any developments proposed at Ardroom which will include commercial cooking facilities.

29.10 In the final selection of a treatment unit, it is recommended that the following criteria be applied by the supplier at the design stage:

(a) The plant should be designed, constructed, operated and maintained to ensure sufficient performance under all normal local climatic conditions.

(b) Seasonal variations of the load should be taken into account.

(c) Sampling points should be provided on the influent and effluent lines to the selected WWTP unit.

29.11 The EPA's noise guidance note states that the noise level at a sensitive location should not exceed 55 dB during daytime hours and 45 dB at night-time. As the proposed WWTP will be operative during both periods, it is recommended that the 45 dB limit be applied. It is also recommended that a buffer zone of 50 m is put in place for the new WWTP. Modern treatment plants if correctly maintained should not cause excessive odours and similarly noise pollution is unlikely to be a significant issue. However it is important that both noise and odour are assessed on an ongoing basis. The treatment plant to be used for Ardroom should allow retrospective fitting of noise and odour control systems should odour become a problem in the future.

29.12 Secure fences will be necessary for the perimeter of the site to prevent unauthorised access.

29.13 The construction phase of the WWTP development should be carried out in a manner which does not interfere with adjacent watercourses in any way. Untreated discharges to the river both during the construction phase and during commissioning should not be permitted.

29.14 It is advisable that a maintenance contract is agreed with the supplier of the treatment unit selected.

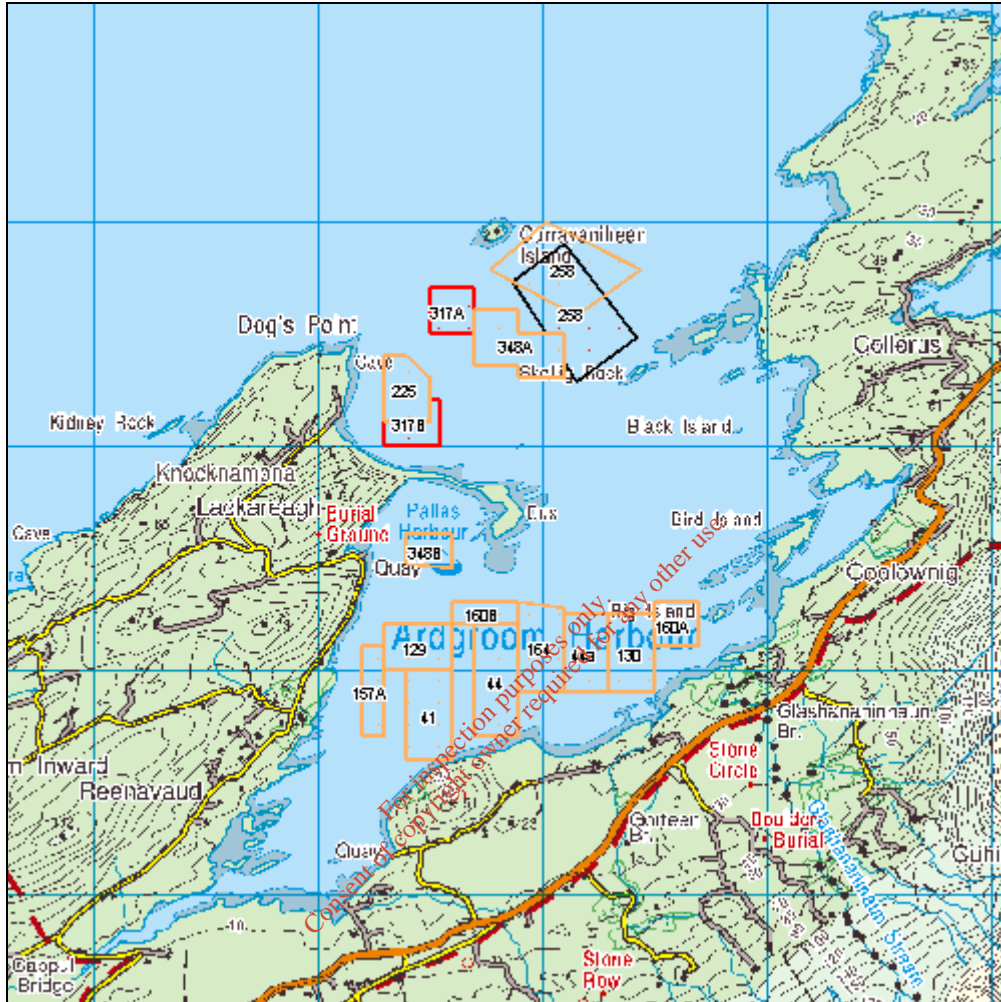
29.15 It is recommended that any proposed upgrade to the new WWTP or any increase in loadings to the plant is accompanied by a reassessment of waste assimilative capacities in the local catchment.

29.16 It is recommended that a monitoring programme be implemented following the commissioning of the treatment system selected. The programme should include monthly monitoring of the final effluent during the first six months of operation. Samples should also be taken downstream of the outfall outside of the mixing zone. The

following parameters are recommended for analysis: pH, BOD, SS, NH₃, NO₃, o-PO₄, t-PO₄ and total and faecal coliforms, Results of analysis should be used in any retrospective fine-tuning of the treatment plant installed.

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APPENDIX I: LICENSED AQUACULTURE SITES, ARDGROOM HARBOUR



SITE SYNOPSIS

SITE NAME: KENMARE RIVER

SITE CODE: 002158

Kenmare River, Co. Kerry, is a long and narrow, south-west facing bay. It is a deep, drowned glacial valley and the bedrock is mainly Old Red Sandstone which forms reefs along the middle of the bay throughout its length. Exposure to prevailing winds and swells at the mouth diminishes towards the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur.

Kenmare River has a very wide range of marine communities from exposed coast to ultra-sheltered areas. The site contains three marine habitats listed on Annex I of the EU Habitats Directive, namely reefs, large shallow bay and caves. There is also an extremely high number of rare and notable marine species present (24) and some uncommon communities. Kenmare River is the only known site in Ireland for the northern sea-fan, *Swiftia pallida* and is the only known area where this species and the southern sea-fan *Eunicella verrucosa* co-occur. Midway along the south coast of Kenmare River, a series of sea caves stretch back into the cliff. They typically support encrusting sponges, ascidians and bryozoans.

In the more exposed areas within Kenmare River the sublittoral sediment is composed mainly of coarse shelly sand and gravel forming small dunes frequently with sparse bivalves including *Lutraria*. In sheltered areas the muddy sand has communities characterised by burrowing megafauna. Some areas have the Norwegian Prawn *Nephrops norvegicus* and others the burrowing sea cucumber *Neopentadactyla mixta*. Kenmare River is one of only four known locations in Ireland for the burrowing anemone *Pachycerianthus multiplicatus*. Communities characterised by burrowing brittlestars including the uncommon *Ophiopsila annulosa* also occur. Red calcareous free living algae generally termed 'maerl' (also known as 'coral') occur in the sheltered bays and at one site the rare burrowing brittlestar *Amphiura securigera* occurs.

The Annex I habitat 'perennial vegetation of stony banks' is well represented at two locations within Kenmare River – Pallas Harbour and Rossdohan Island. Characteristic species recorded here include Thrift (*Armeria maritima*), Common Scurvygrass (*Cochlearia officinalis*), Rock Samphire (*Crithmum maritimum*) and Sea Campion (*Silene vulgaris* subsp. *maritima*). Beaches in outer Kenmare River are composed of coarse, mobile sand and have sand hoppers in the high shore and polychaete worms in the low shore. More sheltered coves, sometimes backed by sand dunes, have sandhoppers in the upper shore, lugworm (*Arenicola marina*) in the mid-shore and the razor shell *Ensis arcuatus* and the burrowing sea-urchin *Echinocardium cordatum* in the lower shore.

Within the Derrynane Bay area on the south side of the Iveragh Peninsula there are good examples of a number of habitats listed on Annex I of the EU Habitats Directive including dry heath, fixed dunes, marram dunes, sea cliffs and salt meadows (both Atlantic and Mediterranean types). Of particular note within the dry heath habitat here is the occurrence of the rare Kerry Lily (*Simethis planifolia*) which, except for one recently discovered site in Co. Cork, is unknown in Ireland outside of the Derrynane area. Kerry Lily is protected under the Flora (Protection) Order 1999. Several other locally uncommon plant species add to the importance of this area: Chaffweed (*Anagallis minima*), Crowberry (*Empetrum nigrum*), Madder (*Rubia peregrina*) and Roseroot (*Rhodiola rosea*).

Fixed dunes, a priority habitat on the Habitats Directive, occur at Derrynane. In damp slacks amongst the sand dunes, the rare snail *Vertigo angustior* has been found. This species is listed on Annex II of the EU Habitats Directive. The nationally endangered and protected Red Data Book species, Natterjack Toad, has also been recorded from this area and, following a re-introduction programme, has re-established itself at the site.

Kenmare River holds an important population of Common Seal (maximum annual count of 121, including pups, since 1989). Some 40 of these frequent the Greenane Islands and Brennel Island groups. Otters are also known to occur within the site. Both the Common Seal and the Otter are listed on Annex II of the EU Habitats Directive. Two internationally important roosts of the Lesser Horseshoe Bat, another species listed on Annex II of the EU Habitats Directive, are included in the site: approximately 100 bats were recorded hibernating in a souterrain near Dunkerron in 2001, while over 100 bats have been counted in recent summers in a two-storey cottage near Killaha.

An Common/Arctic Tern (20+ pairs) have been recorded breeding on rocky islands in Derrynane Bay and on other islands within the site including Eyeries Island, Spanish Island and Brennel Island. In 1995 two pairs of the scarce Little Tern bred.

Recreational activities pose the greatest potential threat to many parts of Kenmare River. Within this large coastal site there are several resorts for water sports and a number of popular beaches. Bait digging is also a potential threat in some areas. Housing developments within the areas of dry heath present another possible threat to the integrity of the site. The seals and bats may be vulnerable to disturbance. Grazing at Derrynane is managed for the conservation of the dune habitats and the rare species they contain.

Kenmare River contains an exceptional complement of marine and terrestrial habitats, many of which are listed on Annex I of the EU Habitats Directive. The presence of a number of rare species, including two species listed on Annex II of the Directive and a protected plant, together with the ornithological interest of the area, adds further to the importance of the site.

20.8.2004

SITE SYNOPSIS

SITE NAME: GLANMORE BOG

SITE CODE: 001879

Glanmore Bog is situated 3 km north-west of Hungry Hill, Co. Cork and 8 km south-west of the village of Lauragh, Co. Kerry. The site is underlain by Old Red Sandstone and rises in altitude from sea level near Cappul Bridge to 602 m at Eskatarriff at the north of the site.

The site is of conservation interest for its active blanket bog, an EU Habitats Directive Annex I priority habitat. One of the most important areas is a small hanging valley bog situated between the meanders of a mountain stream. Its vegetation is relatively uniform in character, dominated by Bog Cotton (*Eriophorum angustifolium*), with Heather (*Calluna vulgaris*), Black Bog-rush (*Schoenus nigricans*) and an abundance of the moss *Racomitrium lanuginosum*. The bog is somewhat flushed and there are small, localized quaking areas which support Bogbean (*Menyanthes trifoliata*), Greater Tussock-sedge (*Carex paniculata*) and Star Sedge (*Carex echinata*). *Campylopus* moss species are also abundant and the rare *C. shawii*, an endemic species to Britain and Ireland, has been recorded from the site. Other areas of blanket bog occur along the ridge near Eskatarriff and in mosaic with heath and exposed rocks on the southern side of the Glanmore River. These bogs tend to be more Heather dominated.

Wet heath is the dominant habitat at the site and often occurs in association with upland grassland, exposed rock, bog and dry heath. The heath is dominated by Purple Moor-grass (*Molinia caerulea*), with ericoid species, such as Heather and Cross-leaved Heath (*Erica tetralix*), being relatively scarce. Other heath species present include Heath Bedstraw (*Galium saxatile*), Tormentil (*Potentilla erecta*), Mat-grass (*Nardus stricta*), Heath Rush (*Juncus squarrosus*) and Sharp-flowered Rush (*Juncus acutiflorus*).

Glenbeg Lough, an oligotrophic (nutrient-poor) lake, represents another EU Habitats Directive Annex I habitat. The vegetation of this lake includes Quillwort (*Isoetes lacustris*), Shoreweed (*Littorella uniflora*), Water Lobelia (*Lobelia dortmanna*), Floating Bur-reed (*Sparganium angustifolium*) and Six-stamened Waterwort (*Elatine hexandra*). Other species recorded include the stonewort *Nitella flexilis*, the pondweeds *Potamogeton natans* and *P. perfoliatus* and Common Reed (*Phragmites australis*). The steep slopes surrounding the lough support a mosaic of heath, upland grassland, siliceous rocks and gully streams. Gorse (*Ulex* sp.) occurs at the base near the lake edge, while St. Patrick's Cabbage (*Saxifraga spathularis*), Hard Fern (*Blechnum spicant*) and a range of relatively rare mosses, including such species as *Radula holtii*, *R. carringtonii*, *R. voluta*, *Acrobolus wilsonii*, *Daltonia splachnoides*, *Lejeunea hibernica*, *Antitrichia curtispindula*, *Dumorteria hirsuta* and *Leptodontium recurvifolium*, occur on the slopes.

The two main rivers within the site, the Ownagappul and the Glanmore, have examples of floating river vegetation, a habitat that is listed on Annex I of the EU habitats Directive. The Ownagappul River runs from Glenbeg Lough to the sea at Cappul Bridge. This fast-flowing, acidic river has a stone/gravel bottom and supports plant

species typical of such oligotrophic waters, such as Bulbous Rush (*Juncus bulbosus*), Alternate Water-milfoil (*Myriophyllum alterniflorum*), Lesser Spearwort (*Ranunculus flammula*) and the moss *Fontinalis antipyretica*. The headwater streams of the Glanmore River occur in the eastern sector of the site and this river system has Pondweeds (*Potamogeton* spp.) and *Ranunculus* species.

Killarney Fern (*Trichomanes speciosum*), an Annex II species under the EU Habitats Directive and a legally protected species under the Flora (Protection) Order, 1999, occurs within the site.

Chough, a species listed under Annex I of the EU Birds Directive is regularly found within the site and two pairs probably breed. Other birds noted are Dipper, Stonechat, Snipe and Raven.

The site includes a population of Freshwater Pearl-mussel (*Margaritifera margaritifera*), a species listed on Annex II of the EU Habitats Directive.

Landuse is confined to sheep grazing on the uplands and steeper slopes. Cattle graze some of the lower slopes at Glenbeg Lough and around Ardroom. Fishing is carried out on the lake. Outside the site some afforestation has taken place, but little occurs within the catchment of Glenbeg Lough or the Ownagappul River.

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22.9.2000

Agglomeration details

Leading Local Authority	Cork County Council
Co-Applicants	
Agglomeration	Ardgroom
Population Equivalent	400
Level of Treatment	Primary & Tertiary
Treatment plant address	Ardgroom Outward, Ardgroom, Castletownbere, Co. Cork
Grid Ref (12 digits, 6E, 6N)	068945 / 055545 (Verified using GPS)
EPA Reference No:	

Contact details

Contact Name:	Naill O'Mahony
Contact Address:	Water Services West Cork County Council Courthouse Skibbereen Co. Cork
Contact Number:	028-21299
Contact Fax:	028-21995
Contact Email:	Niall.omahony@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 ARDG	
Source of Emission:	Primary Discharge	
Location:	Ardgroom Outward	
Grid Ref (12 digits, 6E, 6N)	068941 / 055626 (Verified using GPS)	
Name of Receiving waters:	Owenagappul River	
Water Body:	River Water Body	
River Basin District	South Western RBD	
Designation of Receiving Waters:	SAC, pNHA	
Flow Rate in Receiving Waters:	0	m ³ .sec ⁻¹ Dry Weather Flow
	0.0765	m ³ .sec ⁻¹ 95% Weather Flow
Additional Comments (e.g. commentary on zero flow or other information deemed of value)	Zero value for DWF as information not available	
	This Current Primary Discharge will be decommissioned shortly, therefore for the purpose of calculating the volume to be emitted a PE of 220 is used.	

Emission Details:

(i) Volume emitted			
Normal/day	48.4 m ³	Maximum/day	145.2 m ³
Maximum rate/hour	6.05 m ³	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.002 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	= 0	
Electrical Conductivity (@ 25°C)	µS/cm	Grab	= 0	
Suspended Solids	mg/l	Grab	= 250	12.1
Ammonia (as N)	mg/l	Grab	= 25	1.21
Biochemical Oxygen Demand	mg/l	Grab	= 210	10.16
Chemical Oxygen Demand	mg/l	Grab	= 460	22.26
Total Nitrogen (as N)	mg/l	Grab	= 25	1.21
Nitrite (as N)	mg/l	Grab	= 0.317	0.015
Nitrate (as N)	mg/l	Grab	< 0.5	0
Total Phosphorous (as P)	mg/l	Grab	= 8	0.39
OrthoPhosphate (as P)	mg/l	Grab	= 6	0.29
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 D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS (Secondary Discharge Point)

Discharge Point Code: SW-2

Local Authority Ref No:	SW-02 ARDG	
Source of Emission:	Secondary	
Location:	Ardgroom Outward	
Grid Ref (12 digits, 6E, 6N)	068941 / 055626 (Verified using GPS)	
Name of Receiving waters:	Owenagappul River	
Water Body:	River Water Body	
River Basin District	South Western RBD	
Designation of Receiving Waters:	SAC, pNHA	
Flow Rate in Receiving Waters:	0	m ³ .sec ⁻¹ Dry Weather Flow
	0.0765	m ³ .sec ⁻¹ 95% Weather Flow
Additional Comments (e.g. commentary on zero flow or other information deemed of value)	Zero value for DWF as information not available.	
	This secondary discharge point will become the primary and only discharge from the agglomeration shortly. Therefore for the purpose of calculating the volume to be emitted a PE of 400 is used.	

Emission Details:

(i) Volume emitted			
Normal/day	88 m ³	Maximum/day	264 m ³
Maximum rate/hour	11 m ³	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.003 m ³ /sec		

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

Discharge Point Code: SW-2

Substance	As discharged			
	Unit of Measurement	Sampling Method	Max Daily Avg.	kg/day
pH	pH	Grab	= 9	
Temperature	°C	Grab	= 0	
Electrical Conductivity (@ 25°C)	µS/cm	Grab	= 0	
Suspended Solids	mg/l	Grab	= 35	3.08
Ammonia (as N)	mg/l	Grab	= 0.2	0.018
Biochemical Oxygen Demand	mg/l	Grab	= 25	2.2
Chemical Oxygen Demand	mg/l	Grab	= 125	11
Total Nitrogen (as N)	mg/l	Grab	= 25	2.2
Nitrite (as N)	mg/l	Grab	= 0.531	0.047
Nitrate (as N)	mg/l	Grab	= 10.37	0.913
Total Phosphorous (as P)	mg/l	Grab	= 8	0.704
OrthoPhosphate (as P)	mg/l	Grab	= 6	0.528
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(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of The Emission (Secondary Discharge Point)

Discharge Point Code: SW-2

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	17666
SW-2	365	32120

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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)	069010 / 055721

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09					
pH		= 7.6			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 3.9			Grab	0.5	Electrochemical
Suspended Solids		< 2.5			Grab	0.5	Gravimetric
Ammonia (as N)		< 0.1			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		< 21			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	Electrochemical
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 0.537			Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.1	colorimetric
Nitrate (as N)		< 0.5			Grab	0.5	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO ₄)		= 174.2			Grab	30	Turbidimetric
Phenols (Sum)		< 0.1			Grab	0.1	GC-MS2

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
 For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	default of 01/01/09 and 0 where results are not available
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TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1d
Grid Ref (12 digits, 6E, 6N)	069010 / 055721

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09				
Atrazine		< 0.01		Grab	0.96	HPLC
Dichloromethane		< 1		Grab	1	GC-MS1
Simazine		< 0.01		Grab	0.01	HPLC
Toluene		< 0.28		Grab	0.02	GC-MS1
Tributyltin	= 0			Grab	0.02	GC-MS1
Xylenes		< 1		Grab	1	GC-MS1
Arsenic		< 0.96		Grab	0.96	ICP-MS
Chromium		< 20		Grab	20	ICP-OES
Copper		< 20		Grab	20	ICP-OES
Cyanide		< 5		Grab	5	Colorimetric
Flouride		= 83		Grab	100	ISE
Lead		< 20		Grab	20	ICP-OES
Nickel		< 20		Grab	20	ICP-OES
Zinc		< 20		Grab	20	ICP-OES
Boron		= 254.4		Grab	20	ICP-OES
Cadmium		< 20		Grab	20	ICP-OES
Mercury		= 0.036		Grab	0.2	ICP-MS
Selenium		< 0.74		Grab	0.74	ICP-MS
Barium		< 20		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn default of 01/01/09 and 0 where results are not available, 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)	069010 / 054997

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09					
pH		= 7.3			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 57			Grab	0.5	Electrochemical
Suspended Solids		< 2.5			Grab	0.5	Gravimetric
Ammonia (as N)		< 0.1			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		< 21			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	Electrochemical
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 0.388			Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.1	colorimetric
Nitrate (as N)		< 0.5			Grab	0.5	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO ₄)		< 30			Grab	30	Turbidimetric
Phenols (Sum)	= 0				Grab	0.1	GC-MS2

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
 For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	Default of 01/01/09 and 0 where results are not available default of 01/01/09 and 0 where results are not available
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TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	069010 / 054997

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09				
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		= 28		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		= 68.5		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn default of 01/01/09 and 0 where results are not available, TBT testing not required
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TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING

Secondary Discharge Point

Discharge Point Code:	SW-2
MONITORING POINT CODE:	aSW-2d
Grid Ref (12 digits, 6E, 6N)	069010 / 055721

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09					
pH		= 7.6			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 3.9			Grab	0.5	Electrochemical
Suspended Solids		< 2.5			Grab	0.5	Gravimetric
Ammonia (as N)		< 0.1			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		< 21			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	Electrochemical
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 0.537			Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.1	colorimetric
Nitrate (as N)		< 0.5			Grab	0.5	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO ₄)		= 174.2			Grab	30	Turbidimetric
Phenols (Sum)		< 0.1			Grab	0.1	GC-MS2

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
 For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	default of 01/01/09 and 0 where results are not available
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TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Secondary Discharge Point

Discharge Point Code:	SW-2
MONITORING POINT CODE:	aSW-2d
Grid Ref (12 digits, 6E, 6N)	069010 / 055721

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09				
Atrazine		< 0.01		Grab	0.96	HPLC
Dichloromethane		< 1		Grab	1	GC-MS1
Simazine		< 0.01		Grab	0.01	HPLC
Toluene		< 0.28		Grab	0.02	GC-MS1
Tributyltin	= 0			Grab	0.02	GC-MS1
Xylenes		< 1		Grab	1	GC-MS1
Arsenic		< 0.96		Grab	0.96	ICP-MS
Chromium		< 20		Grab	20	ICP-OES
Copper		< 20		Grab	20	ICP-OES
Cyanide		< 5		Grab	5	Colorimetric
Flouride		= 83		Grab	100	ISE
Lead		< 20		Grab	20	ICP-OES
Nickel		< 20		Grab	20	ICP-OES
Zinc		< 20		Grab	20	ICP-OES
Boron		= 254.4		Grab	20	ICP-OES
Cadmium		< 20		Grab	20	ICP-OES
Mercury		= 0.036		Grab	0.2	ICP-MS
Selenium		< 0.74		Grab	0.74	ICP-MS
Barium		< 20		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn default of 01/01/09 and 0 where results are not available, TBT testing not required
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TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING

Secondary Discharge Point

Discharge Point Code:	SW-2
MONITORING POINT CODE:	aSW-2u
Grid Ref (12 digits, 6E, 6N)	069010 / 054997

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09					
pH		= 7.3			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	Electrochemical
Electrical Conductivity (@ 25°C)		= 57			Grab	0.5	Electrochemical
Suspended Solids		< 2.5			Grab	0.5	Gravimetric
Ammonia (as N)		< 0.1			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		< 21			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0.2	Electrochemical
Hardness (as CaCO ₃)	= 0				Grab	1	Titrimetric
Total Nitrogen (as N)		= 0.388			Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.1	colorimetric
Nitrate (as N)		< 0.5			Grab	0.5	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO ₄)		< 30			Grab	30	Turbidimetric
Phenols (Sum)	= 0				Grab	0.1	GC-MS2

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
 For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	Default of 01/01/09 and 0 where results are not available default of 01/01/09 and 0 where results are not available
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TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Secondary Discharge Point

Discharge Point Code:	SW-2
MONITORING POINT CODE:	aSW-2u
Grid Ref (12 digits, 6E, 6N)	069010 / 054997

Parameter	Results (µg/l)			Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	16/09/09				
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		= 28		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		= 68.5		Grab	20	ICP-OES

Additional Comments:	TBT value is 0.02ug/l as Sn default of 01/01/09 and 0 where results are not available, 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,		
(b)	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,		
(c)	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -		
(c) (i)	the point or points, including storm water overflows, from which a discharge or discharges take place or are to take place, and		
(c) (ii)	the point or points at which monitoring and sampling are undertaken or are to be undertaken,		
(d)	such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		

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.1	Yes
(b)	give the name of the water services authority in whose functional area the relevant waste water discharge takes place or is to take place, if different from that of the applicant,	Not applicable	Yes
(c)	give the location or postal address (including where appropriate, the name of the townland or townlands) and the National Grid reference of the location of the discharge point or points to which the application relates,	B.2	Yes
(d)	state the population equivalent of the agglomeration to which the application relates,	B.8(l)	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,	Not applicable	Yes
(f)	specify the content and extent of the waste water discharge, the level of treatment provided and the flow and type of discharge,	C, D	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.1	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.2, E.3	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.4	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,		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,	Not applicable	Yes
(l)	give details of any designation under any Council Directive or Regulations that apply in relation to the receiving waters,	F.1	Yes
(m)	give details of compliance with any applicable monitoring requirements and treatment standards,	E.1, E.4	Yes
(n)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work,	G.1	Yes
(o)	give any other information as may be stipulated by the Agency, and	Not applicable	Yes
(p)	be accompanied by such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		Yes