Comhairle Contae Chorcaí
Cork County Council

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

Environmental Protection Agency,
PO Box 3000,
Johnstown Castle Estate,
Co. Wexford.

22nd September 2008,

Re: Waste Water Discharge Licence Application for the Agglomeration of Youghal, Co. Cork

Dear Sir / Madam,

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

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,
- 2 Nr. CD-ROM with GIS Data, Table D.2, Table E.3 and Table F.2

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

Also enclosed is a paying order for the application fee of €25,000.

Yours sincerely,

Patricia Power
Director of Services.

Cork County Council

Wastewater Discharge Licence Application
under S.I. 684 of 2007 Regulations

Agglomeration Name: Youghal

CONTENTS

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 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 Nº A.1**

Youghal is located on the main Cork City (51km) to Waterford (72km) road (i.e. the N25) and is a port of considerable antiquity. Youghal Harbour lies approximately 30 km east of Cork Harbour and forms part of the lower estuary of the Blackwater River. The harbour and outer bay are popular tourist destinations, particularly during the summer months, and have a high level of recreational fishing, sailing and bathing activity.

The Blackwater Estuary was designated as 'sensitive' in 2001 under the Urban Waste Water Treatment Regulations, and is an area of significant recreational activity and is used for bathing. The Front Strand and Claycastle Beach are popular tourist attractions comprising 5km of sandy beach with Blue Flag status. The sea off these beaches is also a designated bathing water under the Bathing Water Regulations. Balleyvergan Marsh, to the rear of Claycastle Beach, is an important wetland area and a designated Special Area for Conservation (SAC).

The sewer network serving Youghal and environs has grown and expanded as the town developed through the mid and late 20th century. The foul/combined network drains to three main outfalls and for the purpose of this assessment is considered as three discrete sub-catchments, Knockaverry to the North, Strand to the South and Foxhole to the extreme North West. An overview of the catchments and outfalls is presented in Chapter 6, Figure 6.1.

Waste water from the town is currently discharged to the Blackwater Estuary and the sea via three main outfalls at Paxes Lane near Green Park, Dunnes Park and Foxhole near the Youghal Landfill site. Parts of these flows are comminuted before being discharged.

Discharge	Function	Townland	Receptor	Grid Reference
Primary	Major Outfall	Dunnes Park	Lower Blackwater Estuary	E210513 N078480
Secondary	Minor Outfall	Paxes Lane	Lower Blackwater Estuary	E210996 N077419
Secondary	Minor Outfall	Foxhole	Lower Blackwater Estuary	E210128 N080410
Secondary	Emergency	Summerfield (Cross)	Youghal Bay	E209253 N076191
Secondary	Emergency	Front Strand	Youghal Bay	E210517 N076042
Secondary	Emergency	Green Park	Lower Blackwater Estuary	E210956 N077117
Secondary	Emergency	Dunnes Park	Lower Blackwater Estuary	E210262 N078412
Secondary	Emergency	Foxhole	Lower Blackwater Estuary	E209723 N079912

The sewer networks within each of the three sub-catchments are mainly combined systems with some of the newer housing estates having been constructed with separate foul and surface water systems. Roof and road drainage generally discharges to the combined system, especially towards the historical centre of the town

Currently, there is no waste water treatment other than a holding tank and comminutors on the Dunnes Park and Paxe's Lane outfalls.

Knockaverry

The Knockaverry catchment contains the older parts of the sewer system and includes the historical centre of the town. The catchment drains to an outfall adjacent to Dunnes Park pumping station. Approximately half of the flow from this catchment discharges by gravity through this outfall (approximately a quarter of the flow discharging through this outfall is comminuted) and half is pumped. The existing flow arrangement is indicated schematically in Volume 3, Figure 7.

One combined sewer overflow (CSO) exists within the Knockaverry catchment at Dunnes Park pumping station. This discharges to a drainage channel across the mudlands.

Strand

Flows draining to the Summerfield Cross pumping station on the R633, west of Youghal, are pumped into the system draining to a holding tank and onward to the Strand pumping station.

Flows in the Strand catchment discharge to the Strand pumping station via a holding tank on Front Strand. These flows are pumped to Lighthouse Road and drain by gravity to the Green Park comminutor station and discharge into the estuary via the Paxes Lane outfall.

Five combined sewer overflows (CSO's) exist in the Strand Catchment which discharge untreated waste water to the wetlands at Balleyvergan Marsh or to the

Blackwater Estuary. In addition, a number of outfalls have been identified which discharge domestic waste water directly to the estuary.

The surface water drainage system is generally restricted to localised pipe networks in the vicinity of newer housing estates. Roof and road drainage discharges to nearby streams and watercourses although a significant proportion of the surface water system currently discharges into the foul/combined system.

The combined system contains a number of loops and bifurcations. In places, up to four combined sewers run along the R633, the main road into Youghal.

Foxhole

The Foxhole catchment to the north west of Youghal drains to a small pumping station on Old Bridge Road which discharges untreated waste water directly to the Blackwater Estuary. The overflow from the pumping station discharges to an existing surface water drainage channel serving the mudlands.

CSO's

Seven Combined Sewer Overflows (CSO's) exist in the foul/combined sewer system that discharge into the Blackwater Estuary or other local watercourses. Five of these operate as Emergency Overflows in the event of a power failure at the associated pumping stations.

The operation of the CSO's has been assessed with reference to acceptable levels of service criteria based on guidelines issued by the Department of Environment and Local Government and it has been determined that the operation of three of the CSO's is currently unacceptable.

As detailed in Section F of this application, the receiving waters for the Youghal agglomeration require steps to be taken to improve the current status in order to comply with the requirements of the EU Water Framework Directive.

The Lower Blackwater Estuary has been designated as eutrophic, while the Upper Blackwater Estuary is designated as potentially eutrophic. Under the Article V Characterisation Report (2005), carried out by South Western River Basin District, both of these water bodies were classified as being "At risk of not achieving good status" (Risk Score 1a).

These designations are commonly attributed to a combination of the untreated discharges currently entering the estuary combined with the high loadings the estuary receives from the Blackwater River. The environmental impacts can also be seen in the loss of the blug flag beach at Youghal in 2007.

An upgrade and extension of the existing collection system is proposed along with the transfer of all foul/combined waste water to the new WWTW site immediately north of the town. The new WWTW would discharge treated effluent to Youghal Harbour. This upgrade work is being carried out under the Youghal Main Drainage Scheme and detailed further in Section B.10 of this application.

An upgrade and extension of the existing collection system is proposed, along with the transfer of all foul/combined wastewater to a new wastewater treatment works at a site immediately north of the town.

The recommended upgrading to the existing system is summarised below. These upgrades are necessary to transfer flows to the new WWTW; resolve existing hydraulic and structural problems (including flooding), and to meet current guidelines for the operation of combined storm overflows.

- *Upsize the existing 225mm rising main from Strand pumping station;*
- *Construct new pumping stations at Green Park & Greencloyne to give 107m3 and 56m3 storage respectively;*
- *Upgrade the existing pumping stations at Strand, Dunnes Park and Foxhole;*
- *Provide a gravity and pumped overflow arrangement at Dunnes Park pumping station with additional storage;*
- *Upsize the existing Dunnes Park outfall to 1,200mm diameter;*
- *Upgrade the mechanical, electrical and control equipment in the existing Strand pumping station and Dunnes Park pumping station;*
- *Provide 1,360m of new 350mm rising main from Green Park to Dunnes Park pumping stations;*
- *Provide 1,140m of new 400mm rising main from Dunnes Park pumping station to the new WWTW;*
- *Provide surface water separation at Lower Cork Hill, Raheen Road, Windmill Hill and Knockaverry Strand.*

The project requires the provision of a modern wastewater treatment facility at a selected site at Mudlands, Youghal, County Cork, which is within the Town Council boundary. The facility will incorporate secondary treatment and nutrient reduction, and a discharge to the deep trench in the estuary near Ferry Point.

The EIS for the Youghal Main Drainage Scheme is provided as Attachment B.6 to this application.

SECTION B: GENERAL

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

B.1 Agglomeration Details

Name of Agglomeration:	Youghal

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

Name*:	Cork County Council Southern Division
Address:	County Hall
	Cork
Tel:	021 4276891
Fax:	021 4276321
e-mail:	

*This should be the name of the water services authority in whose ownership or control the waste water works is vested.
*Where an application is being submitted on behalf of more than one water services authority the details provided in Section B.1 shall be that of the lead water services authority.

Name*:	Patricia Power
Address:	Director of Services
	Floor 5
	County Hall
	Cork
Tel:	021 4285285
Fax:	021 4276321
e-mail:	patricia.power@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 – Not applicable

Name*:	
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 (authorisation) licence application.

Design, Build & Operate Contractor Details – Not applicable

Name*:	
Address:	
Tel:	
Fax:	
e-mail:	

*Where a design, build & operate contract is in place for the waste water works, or any part thereof, the details of the contractor should be provided.

Attachment B.1 should contain appropriately scaled drawings / maps (≤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.

The proposed Waste Water Treatment Plant to serve the Youghal agglomeration is currently at the detailed design stage, under the Youghal Main Drainage Scheme (as detailed in Section B.10 and Section G of this application) scope of works.

Name:	Not applicable
Address:	Youghal Mudlands
	Youghal
	Co. Cork
Grid ref (6E, 6N)	209857, 079153
Level of Treatment	Secondary
Primary Telephone:	Not applicable
Fax:	Not applicable
e-mail:	Not applicable

Attachment B.2 should contain appropriately scaled drawings / maps (≤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.

Type of Discharge	Domestic Effluent Major Outfall
Unique Point Code	SW01Yghl
Location	Dunnes Park
Grid ref (6E, 6N)	210513, 078480

Attachment B.3 should contain appropriately scaled drawings / maps (≤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.

Type of Discharge	Domestic Effluent Minor Outfall
Unique Point Code	SW02Yghl
Location	Paxes Lane
Grid ref (6E, 6N)	210996, 077419

Type of Discharge	Domestic Effluent Minor Outfall
Unique Point Code	SW03Yghl
Location	Foxhole
Grid ref (6E, 6N)	210128, 080410

Type of Discharge	Emergency Overflow
Unique Point Code	SW04Yghl
Location	Summerfield Cross
Grid ref (6E, 6N)	209253, 076191

Type of Discharge	Emergency Overflow
Unique Point Code	SW05Yghl
Location	Front Strand
Grid ref (6E, 6N)	210517, 076042

Type of Discharge	Emergency Overflow
Unique Point Code	SW06Yghl
Location	Green Park
Grid ref (6E, 6N)	210956, 077117

Type of Discharge	Emergency Overflow
Unique Point Code	SW07Yghl
Location	Dunnes Park
Grid ref (6E, 6N)	210262, 078412

Type of Discharge	Emergency Overflow
Unique Point Code	SW08Yghl
Location	Foxhole
Grid ref (6E, 6N)	209723, 079912

Attachment B.4 should contain appropriately scaled drawings / maps (≤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	Storm Water Overflow
Unique Point Code	SW09Yghl
Location	Kilcoran
Grid ref (6E, 6N)	209244, 076218

Type of Discharge	Storm Water Overflow
Unique Point Code	SW10Yghl
Location	Summerfield B
Grid ref (6E, 6N)	209405, 076152

Attachment B.5 should contain appropriately scaled drawings / maps (≤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:	Youghal Town Council	Cork County Council
Address:	Mall House	County Hall
	Youghal	Cork
	County Cork	
Tel:	024 92926	021 2476891
Fax:	024 92690	021 4276321
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 Nº:	**Not applicable**

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:	HSE Southern Division
Address:	Áras Slainte
	Cork Farm Centre, Wilton,
	Cork
Tel:	021 4545011
Fax:	021 4545748
e-mail:	Not available

B.7 (iii) Other Relevant Water Services Authorities

Regulation 13 of the Waste Water Discharge (Authorisation) Regulations, 2007 requires all applicants, not being the water services authority in whose functional area the relevant waste water discharge or discharges, to which the relevant application relates, takes place or is to take place, to notify the relevant water services authority of the said application.

Name:	Waterford County Council
Address:	Civic Offices
	Dungarvan
	Co. Waterford
Tel:	058 220000
Fax:	058 4873742
e-mail:	

Relevant Authority Notified	**Yes**	**No**
	√	

Attachment B.7(iii) should contain a copy of the notice issued to the relevant local authority.

Attachment included	Yes	No
	√	

B.8 Notices and Advertisements

Regulations 10 and 11 of the Waste Water Discharge (Authorisation) Regulations, 2007 require all applicants to advertise the application in a newspaper and by way of a site notice. See *Guidance Note.*

Attachment B.8 should contain a copy of the site notice and an appropriately scaled drawing (≤A3) showing its location. **The original application must include the original page of the newspaper in which the advertisement was placed**. The relevant page of the newspaper containing the advertisement should be included with the original and two copies of the application.

Attachment included	Yes	No
	√	

B.9 (i) Population Equivalent of Agglomeration

TABLE B.9.1 POPULATION EQUIVALENT OF AGGLOMERATION

The population equivalent (p.e.) of the agglomeration to be, or being, served by the waste water works should be provided and the period in which the population equivalent data was compiled should be indicated.

Population Equivalent	**9,600 (est)**
Data Compiled (Year)	**2008**
Method	**Estimate based on Hydraulic and Biological Loading**

Under the scope of the Youghal Main Drainage Scheme (detailed in Section B.10 G of this application) a further detailed assessment of the current and future population equivalents to be served is currently being undertaken.

B.9 (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 water habitat.

A detailed assessment of the hydraulic and biological loads relating to the Youghal Agglomeration is currently underway as part of the Youghal Main Drainage Scheme (detailed in Section B.10).

This assessment is an essential element in determining the scale and capacity of the proposed works, together with the phasing of treatment capacity provision to meet development growth demand. Effluent loadings are being determined for the various sectors contributing to the sewage of the town including domestic, industrial, commercial, institutional and tourism. Each of these sectors is being examined for the current loadings and projections made for the future growth of the town.

The Preliminary Report produced for the proposed works carried out a detailed review of the existing collection system and the population being served in 2003. It also assessed the existing network against the design horizon of 2025 and identified areas where the network required upgrade to handle the estimated increases in hydraulic loading. The preliminary report estimated an increase in population equivalent during the design horizon from approximately 8,000 to 16,000, with the potential for 24,000.

A total of 19 areas were identified as being at risk of flooding when the future loadings were modelled on the existing collection network for the agglomeration.

The detailed design for the scheme is currently being undertaken. The design horizon for the scheme has now been extended to 2035 and the estimated loadings are being reviewed accordingly.

The scoping of the proposed works following the detailed design of the Youghal Main Drainage Scheme will ensure that the waste water works has the ability to accommodate the extra hydraulic and organic loading from pending developments without posing an environmental risk to the receiving water habitat.

B.9 (iii) FEES

State the relevant Class of waste water discharge as per Column 1 of the Second Schedule, 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 €)
> 10,000 PE	€25,000

Appropriate Fee Included	Yes	No
	√	

B.10 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), 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.

The Youghal Main Drainage Scheme will cater for the Wastewater from Youghal Town and its environs in County Cork. A Preliminary Report prepared in 2003, and supporting Supplementary Reports (2005/2006) were prepared relating to the wastewater collection, treatment & disposal systems.

The Preliminary Report assessed the flows and loads and was accompanied by the preparation of an Environmental Impact Statement for the preferred wastewater treatment plant site. An Bord Pleanala certified the E.I.S., with minor modifications, in December 2001.

The sewer network serving Youghal largely comprises combined sewer systems, with some of the newer housing estates constructed with separate foul and surface water systems. Wastewater from the town is currently discharged with Preliminary Treatment (comminution) to the Blackwater Estuary and the sea via three main outfalls, and several overflows. The Blackwater Estuary was designated as "sensitive" in 2001 under the Urban Waste Water Treatment Regulations, and is an area used for bathing and recreational activity.

The Preliminary Report has recommended the construction of new pumping stations and upgrades to existing installations. It has also recommended the construction of surface water separation in certain areas and the construction of new 350mm and 400mm rising mains. A site for a new treatment plant has been selected at the Mudlands (adjacent to the municipal landfill site) with an outfall for discharge to the estuary at Ferry Point (210852, 078125).

The project will be funded in part by the Department of Environment, Heritage & Local Government. Cork County Council will be required to raise funding for the non-domestic sector and future residential development.

The principle objectives of the project are to procure a comprehensive solution to the collection, treatment and disposal of wastewater for the town of Youghal and its environs, with regard to environmental, legislative and technical considerations.

An upgrade and extension of the existing collection system is proposed, along with the transfer of all foul/combined wastewater to a new wastewater treatment works at a site immediately north of the town.

The recommended upgrading to the existing system is summarised below. These upgrades are necessary to transfer flows to the new WWTW; resolve existing hydraulic and structural problems (including flooding), and to meet current guidelines for the operation of combined storm overflows.

- *Upsize the existing 225mm rising main from Strand pumping station;*
- *Construct new pumping stations at Green Park & Greencloyne to give 107m3 and 56m3 storage respectively;*
- *Upgrade the existing pumping stations at Strand, Dunnes Park and Foxhole;*
- *Provide a gravity and pumped overflow arrangement at Dunnes Park pumping station with additional storage;*
- *Upsize the existing Dunnes Park outfall to 1,200mm diameter;*
- *Upgrade the mechanical, electrical and control equipment in the existing Strand pumping station and Dunnes Park pumping station;*
- *Provide 1,360m of new 350mm rising main from Green Park to Dunnes Park pumping stations;*

• Provide 1,140m of new 400mm rising main from Dunnes Park pumping station to the new WWTW;
• Provide surface water separation at Lower Cork Hill, Raheen Road, Windmill Hill and Knockaverry Strand.

The project requires the provision of a modern wastewater treatment facility at a selected site at Mudlands, Youghal, County Cork, which is within the Town Council boundary. The facility will incorporate secondary treatment and nutrient reduction, and a discharge to the deep trench in the estuary near Ferry Point.

The preliminary design has been based upon the load assessment undertaken for the Preliminary Report and associated Supplementary Reports. A first phase of 16,000 p.e. (in two streams of 8,000 p.e. each) is recommended, with provision for later addition of a third stream. The EIS has been obtained on the basis of the preliminary design.

In addition to the general upgrading works, the proposed works are providing a new flow management strategy whereby flows will no longer be discharged (relatively untreated) to the sea at Strand, Green Park and Dunnes Park but will be transferred to the new WWTW at the mudlands and discharge via the newly constructed outfall at Ferry Point. Further information on the future scenario, due for completion in Q4 2011, is provided in the EIS.

Discharge	Function	Townland	Receptor	Grid Reference
(Proposed) Primary	Major Outfall	Ferry Point	Lower Blackwater Estuary	E210852 N078125

The scheme has been allocated €14.42 million under the "Water Services Investment Programme 2007 – 2009". The scheme is currently underway and has an estimated completion date of Q4 2011, as detailed in the outline programme provided in Attachment B.10.

Attachment B.10 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.11 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.11 should contain a summary of any relevant correspondence issued in relation to a Section 63 notice.

Attachment included	Yes	No
	√	

B.12 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.

There is an existing Foreshore Licence (MS51/8/656) in place for the laying, maintaining and using an effluent outfall pipe (dated 19/10/1981) in the Youghal area.

A copy of this licence was unable to be obtained for inclusion in this submission.

Attachment B.12 should contain the most recent licence issued under the Forsehore Act 1933, including a copy of ***all*** conditions attached to the licence and any monitoring returns for the previous 12-month period, if applicable.

Attachment included	**Yes**	**No**
		√

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.1.1 Storm Water Overflows

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), was carried out using a hydraulic model of the network. The results of the assessment are detailed below.

Assessment of Storm Water Overflows

Overflow	Current Max Forward Flow	Spill Frequency (Per Bathing Season)	Approx. Annual Spill Volume ('000 m^3)	Operates at DWF	Service Level
Summerfield PStn Overflow	25	0 (max 3 allowable)	-	No	Satisfactory
Kilcoran Overflow	15	0 (max 3 allowable)	-	No	Satisfactory
Summerfield B Overflow	6	10 (max 3 allowable)	-	No	Unsatisfactory
Foxhole	9	0 (max 7 allowable)	-	No	Satisfactory
Dunnes Park	69	9 (max 7 allowable)	13	No	Unsatisfactory
Strand Holding Tank	100	<1 (max 3 allowable)	-	No	Satisfactory
Green Park Overflow	61	10 (max 7 allowable)	14	Yes – due to partially blocked weir plate	Unsatisfactory

Of the seven Combined Sewer Overflows (CSO's) that exist in the foul/combined sewer system that discharge into the Blackwater Estuary or other local watercourses, it has been determined that the operation of three of the CSO's is currently unacceptable.

The overflow at Green Park is seen to spill significant volumes during all 200 bathing season events used in the hydraulic model, representing 20 years of historical rainfall data. This indicates that the frequency of spill is more than 10 times per bathing season, compared with the allowable seven at this location. This overflow is therefore considered unsatisfactory. In addition, this overflow operates in dry weather due to a partially blocked weir plate.

The Summerfield B overflow is a small overflow adjacent to the Summerfield Pumping Station and is also predicted to operate for all 200 bathing season events modelled. This indicates an average frequency of spill of more than 10 times per bathing season. This is in excess of the allowable three times and the overflow is therefore considered unsatisfactory.

The overflow at Dunnes Park Pumping Station discharges to a channel draining the mudlands. This overflow operates on average nine times per bathing season, which is more than the allowable seven times and is therefore considered unsatisfactory.

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.

C.1.2 Pumping Stations

Summerfield Cross Pumping Station
At Summerfield Cross, the pumping capacity is currently 25 l/s. Flows which are in excess of the pump capacity are discharged into a small stream via the Summerfield Cross overflow. This stream discharges to the sea, adjacent to the beach at Claycastle. The sea off Claycastle beach is a designated bathing water.

The area of the pumping station wet well is estimated to be 6.2m^2 and the storage volume is estimated at 1.2m^3. The station contains two pumps which operate in a duty/standby arrangement.

Front Strand Pumping Station
The current pump capacity at the Front Strand Pumping Station is 35 l/s for the foul flow pumps and 100 l/s for the combined operation of the low flow and high flow pumps. There is no overflow at this pumping station. However, flows in excess of the pump capacity back up into Strand Holding Tank and when the storage capacity of the tank is exceeded they are discharged untreated through a short outfall off the beach at Front Strand. The sea off Front Strand beach is a designated bathing water.

The area of the wet well at the Front Strand Pumping Station is estimated at 9.8m^2 and the storage volume is estimated at 6.4m^3. The pumping station contains four pumps, of which there are two low flow pumps and two high flow pumps. Only one low flow and one high flow pump can operate at any one time and these operate in a duty/assist arrangement. The pumps are manually changed over at regular intervals.

Dunnes Park Pumping Station
The current pump capacity at Dunnes Park Pumping Station is 69 l/s from a single pump. Flows in excess of pump capacity are discharged untreated into a drainage ditch within the mudlands. This in turn discharges into the estuary opposite Ferry Point which is within a designated 'Sensitive' area.

The area of the wet well at Dunnes Park Pumping Station is estimated at approximately 9.2m^2, and the storage volume is estimated at 7.4m^3. The pumping station contains two pumps, which normally operate in a duty/standby arrangement and are manually changed over at regular intervals.

Foxhole Pumping Station
The existing pump capacity at Foxhole Pumping Station is 9 l/s. Flows in excess of pump capacity are discharged untreated into the adjacent Ballinvarrig contour drain. This channel discharges into the estuary, adjacent to the Youghal Landfill site. This area of the estuary is a designated 'Sensitive' area.

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**
		√

C.2 Outfall Design and Construction

Provide details on the primary discharge point & secondary discharge points and storm overflows to include reference, location, design criteria and construction detail.

Type of Discharge	750mm diameter
Unique Point Code	SW01Yghl
Location	Dunnes Park
Grid ref (6E, 6N)	210513, 078480

Type of Discharge	450mm diameter
Unique Point Code	SW02Yghl
Location	Paxes Lane
Grid ref (6E, 6N)	210996, 077419

Type of Discharge	Not available
Unique Point Code	SW03Yghl
Location	Foxhole
Grid ref (6E, 6N)	210128, 080410

Type of Discharge	Emergency Overflow
Unique Point Code	SW04Yghl
Location	Summerfield Cross
Grid ref (6E, 6N)	209253, 076191

Type of Discharge	750mm diameter
Unique Point Code	SW05Yghl
Location	Front Strand
Grid ref (6E, 6N)	210517, 076042

Type of Discharge	450mm diameter
Unique Point Code	SW06Yghl
Location	Green Park
Grid ref (6E, 6N)	210956, 077117

Type of Discharge	750mm diameter
Unique Point Code	SW07Yghl
Location	Dunnes Park
Grid ref (6E, 6N)	210262, 078412

Type of Discharge	Not available
Unique Point Code	SW08Yghl
Location	Foxhole
Grid ref (6E, 6N)	209723, 079912

Type of Discharge	Not available
Unique Point Code	SW09Yghl
Location	Kilcoran
Grid ref (6E, 6N)	209244, 076218

Type of Discharge	Not available
Unique Point Code	SW10Yghl
Location	Summerfield B
Grid ref (6E, 6N)	209405, 076152

Attachment C.2 should contain any supporting documentation on the design and construction of any and all discharge outfalls, including stormwater overflows, from the waste water works.

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 emissions 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 D.1(i), (b) & (c) and D.1(ii), (b) & (c) of Annex 1 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 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 D.1(i)(a), (b) & (c), should be completed for the primary discharge point from the agglomeration and Tables D.1(ii)(a), (b) & (c) should be completed for **each** secondary discharge point, where relevant. Table D.1(iii)(a) 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 plant this data should also be provided in response to Section D.1.

Supporting information should form **Attachment D.1**

Attachment included	Yes	No
		√

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

Discharge Point Code: SW01Yghl

Source of Emission:	Domestic Effluent Major Outfall
Location:	Dunnes Park
Grid Ref. (12 digit, 6E, 6N):	210513, 078480
Name of receiving waters:	Lower Blackwater Estuary
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Nutrient Sensitive, SPA (Site Code 004028)
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow (Tidal currents varying from 0.02 – 0.89 $m.sec^{-1}$)

Emission Details:

(i) Volume emitted			
Normal/day	3960 m^3	Maximum/day	7920 m^3
Maximum rate/hour	330 m^3	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.0153 m^3/sec		

TABLE D.1(i)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (Primary Discharge Point)

Discharge Point Code: SW01Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	7.1	
2	Temperature	Not available	
3	Electrical Conductivity(@25°C)	8.02	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	371	1469
5	Ammonia (as N)	23.7	93.72
6	Biochemical Oxygen Demand	422.7	1674
7	Chemical Oxygen Demand	1043.5	4132
8	Total Nitrogen (as N)	49.5	196
9	Nitrite (as N)	0.0071	0.028116
10	Nitrate (as N)	<0.4	Below LOD
11	Total Phosphorus (as P)	7.99	32
12	Orthophosphate (as P)[Note 1]	3.68	15
13	Sulphate (SO_4)	202.6	802
14	Phenols (sum) [Note 2] (ug/l)	<0.1	Below LOD

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Result below level of detection for given parameter

TABLE D.1(i)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Primary Discharge Point - Characteristics of the emission

Discharge Point Code: SW01Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	<0.01	Below LOD (0.01µg/l)	Below LOD (0.01µg/l)
2	Dichloromethane	<1.0	Below LOD (1.0µg/l)	Below LOD (1.0µg/l)
3	Simazine	<0.01	Below LOD (0.01µg/l)	Below LOD (0.01µg/l)
4	Toluene	<1.0	Below LOD (1.0µg/l)	Below LOD (1.0µg/l)
5	Tributyltin	<0.02	Below LOD (0.02µg/l)	Below LOD (0.02µg/l)
6	Xylenes	<1.0	Below LOD (1.0µg/l)	Below LOD (1.0µg/l)
7	Arsenic	9	0.0356	13.02
8	Chromium	91	0.36	131.6215
9	Copper	41	0.16236	59.30199
10	Cyanide	<5	Below LOD (5µg/l)	Below LOD (5µg/l)
11	Fluoride	560	2.2176	809.978
12	Lead	54	0.21384	78.10506
13	Nickel	100	0.0396	14.4639
14	Zinc	109	0.43164	157.6565
15	Boron	766	3.0334	1107.935
16	Cadmium	100	0.0396	14.4639
17	Mercury	<0.2	Below LOD (0.2µg/l)	Below LOD (0.2µg/l)
18	Selenium	34	0.135	49.18
19	Barium	21.5	0.08514	31.1

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW02Yghl

Source of Emission:	Domestic Effluent Minor Outfall
Location:	Paxes Lane
Grid Ref. (12 digit, 6E, 6N):	210996, 077420
Name of receiving waters:	Lower Blackwater Estuary
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Nutrient Sensitive
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow (Tidal currents varying from 0.02 – 0.89 $m.sec^{-1}$)

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW02Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	7.5	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	1052	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	146	Not available
5	Ammonia (as N)	27	Not available
6	Biochemical Oxygen Demand	213	Not available
7	Chemical Oxygen Demand	339	Not available
8	Total Nitrogen (as N)	38	Not available
9	Nitrite (as N)	0.007	Not available
10	Nitrate (as N)	1.35	Not available
11	Total Phosphorus (as P) Note 1	5.4	Not available
12	Orthophosphate (as P)	3.53	Not available
13	Sulphate (SO_4)	51.6	Not available
14	Phenols (sum) Note 2 (ug/l)	<0.1	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW02Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	<0.01	Not available	Not available
2	Dichloromethane	<1	Not available	Not available
3	Simazine	<0.01	Not available	Not available
4	Toluene	<1.0	Not available	Not available
5	Tributyltin	<0.02	Not available	Not available
6	Xylenes	<1.0	Not available	Not available
7	Arsenic	2	Not available	Not available
8	Chromium	11.85	Not available	Not available
9	Copper	47.15	Not available	Not available
10	Cyanide	<5	Not available	Not available
11	Fluoride	380	Not available	Not available
12	Lead	5.75	Not available	Not available
13	Nickel	6.25	Not available	Not available
14	Zinc	43.15	Not available	Not available
15	Boron	92	Not available	Not available
16	Cadmium	5.25	Not available	Not available
17	Mercury	0.5	Not available	Not available
18	Selenium	5	Not available	Not available
19	Barium	34	Not available	Not available

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW03Yghl

Source of Emission:	Domestic Effluent Minor Outfall
Location:	Foxhole
Grid Ref. (12 digit, 6E, 6N):	210128, 080410
Name of receiving waters:	Lower Blackwater Estuary
River Basin District:	South Western River Basin District
Designation of receiving waters:	Nutrient Sensitive, SPA (Site Code 004028)
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow (Tidal currents varying from 0.02 – 0.89 $m.sec^{-1}$)

Emission Details:

(i) Volume emitted			
Normal/day	134 m^3	Maximum/day	268 m^3
Maximum rate/hour	11 m^3	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.0052 m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW03Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	6.1	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	2701	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	16	2.1
5	Ammonia (as N)	27	3.667
6	Biochemical Oxygen Demand	1.0	0.134
7	Chemical Oxygen Demand	460	61.68
8	Total Nitrogen (as N)	41.5	5.56
9	Nitrite (as N)	0.025	0.00335
10	Nitrate (as N)	4.17	0.559
11	Total Phosphorus (as P) Note 1	0.21	0.028
12	Orthophosphate (as P)	0.315	0.042
13	Sulphate (SO_4)	606.8	81.31
14	Phenols (sum) Note 2 (ug/l)	<0.1	Below LOD

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW03Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	<0.01	Below LOD	Below LOD
2	Dichloromethane	<1.0	Below LOD	Below LOD
3	Simazine	<0.01	Below LOD	Below LOD
4	Toluene	<1.0	Below LOD	Below LOD
5	Tributyltin	<0.02	Below LOD	Below LOD
6	Xylenes	<1.0	Below LOD	Below LOD
7	Arsenic	<0.96	Below LOD	Below LOD
8	Chromium	0.01	0.00134	0.489
9	Copper	0.01	0.00134	0.489
10	Cyanide	5	0.00067	0.245
11	Fluoride	130	0.01742	6.36
12	Lead	0.01	0.00134	0.489
13	Nickel	0.01	0.00134	0.489
14	Zinc	0.106	0.01425	5.2
15	Boron	0.074	0.0099	3.62
16	Cadmium	0.01	0.00134	0.489
17	Mercury	0.6	0.00008	0.029
18	Selenium	1	0.000134	0.049
19	Barium	10	0.00134	0.489

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW04Yghl

Source of Emission:	Emergency Overflow / Storm Water Overflow
Location:	Summerfield Cross
Grid Ref. (12 digit, 6E, 6N):	209253, 076191
Name of receiving waters:	Youghal Bay
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Bathing Water
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	_____min/hr _____hr/day _____day/yr
Dry Weather Flow	m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW04Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) Note 1	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO_4)	Not available	Not available
14	Phenols (sum) Note 2 (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW04Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW05Yghl

Source of Emission:	Emergency Overflow / Storm Water Overflow
Location:	Front Strand
Grid Ref. (12 digit, 6E, 6N):	210517, 76042
Name of receiving waters:	Youghal Bay
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Bathing Water
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	_____min/hr _____hr/day _____day/yr
Dry Weather Flow	m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW05Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	7.3	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	384	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	60	Not available
5	Ammonia (as N)	22.1	Not available
6	Biochemical Oxygen Demand	104	Not available
7	Chemical Oxygen Demand	450	Not available
8	Total Nitrogen (as N)	31	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) Note 1	8.23	Not available
12	Orthophosphate (as P)	2.4	Not available
13	Sulphate (SO_4)	328	Not available
14	Phenols (sum) Note 2 (ug/l)	<0.1	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW05Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	<0.01	Not available	Not available
2	Dichloromethane	<1	Not available	Not available
3	Simazine	<0.01	Not available	Not available
4	Toluene	<1	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	<1	Not available	Not available
7	Arsenic	1	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	<5	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	0.3	Not available	Not available
18	Selenium	2	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW06Yghl

Source of Emission:	Emergency Overflow / Storm Water Overflow
Location:	Green Park
Grid Ref. (12 digit, 6E, 6N):	210517, 76042
Name of receiving waters:	Lower Blackwater Estuary
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Nutrient Sensitive
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow (Tidal currents varying from 0.02 – 0.89 $m.sec^{-1}$)

Emission Details:

(i) Volume emitted			
Normal/day	1598 m^3	Maximum/day	3197 m^3
Maximum rate/hour	133 m^3	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.006 m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW06Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) Note 1	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO_4)	Not available	Not available
14	Phenols (sum) Note 2 (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW06Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW07Yghl

Source of Emission:	Emergency Overflow / Storm Water Overflow
Location:	Dunnes Park
Grid Ref. (12 digit, 6E, 6N):	210262, 078412
Name of receiving waters:	Lower Blackwater Estuary
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Nutrient Sensitive, SPA (Site Code 004028)
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow (Tidal currents varying from 0.02 – 0.89 $m.sec^{-1}$)

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	_____min/hr _____hr/day _____day/yr
Dry Weather Flow	m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW07Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) Note 1	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO_4)	Not available	Not available
14	Phenols (sum) Note 2 (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW07Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

Below LOD: Concentration result below level of detection for given parameter, unable to calculate loading.

TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Secondary Discharge Point) (1 table per discharge point)

Discharge Point Code: SW08Yghl

Source of Emission:	Emergency Overflow / Storm Water Overflow
Location:	Foxhole
Grid Ref. (12 digit, 6E, 6N):	209723, 079912
Name of receiving waters:	Lower Blackwater Estuary
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Nutrient Sensitive, SPA (Site Code 004028)
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow (Tidal currents varying from 0.02 – 0.89 $m.sec^{-1}$)

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	_____min/hr _____hr/day _____day/yr
Dry Weather Flow	m^3/sec		

TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)
(Secondary Discharge Point)

Discharge Point Code: SW08Yghl

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	**kg/day**
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) Note 1	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO_4)	Not available	Not available
14	Phenols (sum) Note 2 (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.
Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS

Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)

Discharge Point Code: SW08Yghl

Number	Substance	As discharged		
		Max. daily average (µg/l)	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Storm Water Overflow) (1 table per discharge point)

Discharge Point Code: SW09Yghl

Source of Emission:	Storm Water Overflow
Location:	Kilcoran
Grid Ref. (12 digit, 6E, 6N):	209244, 076218
Name of receiving waters:	Youghal Bay
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Bathing Water
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Storm Water Overflow) (1 table per discharge point)

Discharge Point Code: SW10Yghl

Source of Emission:	Storm Water Overflow
Location:	Summerfield (B)
Grid Ref. (12 digit, 6E, 6N):	209405, 076152
Name of receiving waters:	Youghal Bay
River Basin District:	South Western River Basin District (SWRBD)
Designation of receiving waters:	Bathing Water
Flow rate in receiving waters:	Not applicable $m^3.sec^{-1}$ Dry Weather Flow Not applicable $m^3.sec^{-1}$ 95%ile flow

Emission Details:

(i) Volume emitted – **Not available**			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3	Period of emission (avg)	_____min/hr _____hr/day _____day/yr

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

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.

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING	VERIFIED
SW01Yghl	Primary	Cork County Council	Transitional	Lower Blackwater Estuary	Nutrient Sensitive; SPA	210513	78480	No
SW02Yghl	Secondary	Cork County Council	Transitional	Lower Blackwater Estuary	Nutrient Sensitive	210996	77419	No
SW03Yghl	Secondary	Cork County Council	Transitional	Lower Blackwater Estuary	Nutrient Sensitive, SPA	210128	80410	No
SW04Yghl	Secondary (Emergency Overflow)	Cork County Council	Coastal	Youghal Bay	Bathing Water	209253	76191	No
SW05Yghl	Secondary (Emergency Overflow)	Cork County Council	Coastal	Youghal Bay	Bathing Water	210517	76042	No
SW06Yghl	Secondary (Emergency Overflow)	Cork County Council	Transitional	Lower Blackwater Estuary	Nutrient Sensitive	210956	77177	No
SW07Yghl	Secondary (Emergency Overflow)	Cork County Council	Transitional	Lower Blackwater Estuary	Nutrient Sensitive, SPA	210262	78412	No
SW08Yghl	Secondary (Emergency Overflow)	Cork County Council	Transitional	Lower Blackwater Estuary	Nutrient Sensitive, SPA	209723	79912	No
SW09Yghl	Storm Water Overflow	Cork County Council	Coastal	Youghal Bay	Bathing Water	209244	76218	No
SW10Yghl	Storm Water Overflow	Cork County Council	Coastal	Youghal Bay	Bathing Water	209405	76152	No

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 E.1(i) 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 E.1(ii) 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 meters.

Under the Youghal Main Drainage Scheme (detailed in Section B.10 of this application) a continuous flow meter will be provided for the primary discharge.

TABLE E.1(i): WASTE WATER FREQUENY 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)
SW01Yghl	365	1446390 (estimated)
SW02Yghl	365	Not available
SW03Yghl	365	48944 (estimated)
SW04Yghl	Not available	Not available
SW05Yghl	Not available	Not available
SW06Yghl	Not available	583670 (estimated)
SW07Yghl	Not available	Not available
SW08Yghl	Not available	Not available

TABLE E.1(ii): WASTE WATER FREQUENY 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
SW09Yghl	Not available	Not available	Yes
SW10Yghl	Not available	Not available	Yes

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 emission 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

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.

PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
SW01Yghl	Primary	S	210844	77378	No
SW02Yghl	Secondary	S	210272	78357	No
SW03Yghl	Secondary	S	209690	79881	No
SW05Yghl	Secondary (Emergency Overflow)	S	210419	76336	No

E.4 Sampling Data

Regulation 16(1)(h) of the Waste Water Discharge (Authorisation) Regulations 2007 requires all applicants in the case of an existing waste water treatment plant 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 16(1)(l) of the regulations requires applicants to give details of compliance with any applicable monitoring requirements and treatment standards.

	Dunnes Park (SW01)				Front Strand (SW05)		
Sample Date	03/04/2008	10/07/2008	17/07/2008		03/04/2008	17/07/2008	
Sample	Outfall	Outfall	Outfall	**Average**			**Average**
Flow M^3/Day	*	*	*	*	*	*	
pH	*	*	7.1	**7.1**	*	7.3	**7.3**
Temperature ℃	*	*	*	*	*	*	
Cond 20℃	4160	1640	3500	**3100**	2850	765	**1807.5**
SS mg/L	*	299	443	**371**	9	111	**60**
NH_3 mg/L	22.1	23	25.9	**23.66667**	13.5	30.7	**22.1**
BOD mg/L	636	154	478	**422.6667**	1.5	206	**103.75**
COD mg/L	1091	*	996	**1043.5**	441	460	**450.5**
TN mg/L	*	47	52	**49.5**	31	33	**32**
Nitrite mg/L	*	*	0.0071	**0.0071**	*	0.0364	*
Nitrate mg/L	*	*	<0.4	**<0.4**	*	0.357	*
TP mg/L	8.48	6.63	8.85	**7.986667**	*	8.23	**8.23**
O-PO4-P mg/L	3.78	3.72	3.55	**3.683333**	0.58	4.23	**2.405**
SO4 mg/L	221.4	*	183.8	**202.6**	606.8	49.6	**328.2**
Phenols µg/L	*	*	<1.0	**<1.0**	*	<0.1	**<0.1**
Atrazine µg/L	*	*	<0.01	**<0.01**	*	<0.01	**<0.01**
Dichloromethane µg/L	*	*	<1.0	**<1.0**	*	<1	**<1**
Simazine µg/L	*	*	<0.01	**<0.01**	*	<0.01	**<0.01**
Toluene µg/L	*	*	<1.0	**<1.0**	*	<1	**<1**
Tributyltin µg/L	*	*	<0.02	**<0.02**	*	<0.02 *	**<0.02**
Xylenes µg/L	*	*	<1.0	**<1.0**	*	<1	**<1**
Arsenic µg/L	*	*	9	**9**	*	1	**1**
Chromium mg/L	*	0.139	0.043	**0.091**	*	<0.02	*
Copper mg/L	*	0.032	0.05	**0.041**	*	0.025	*
Cyanide µg/L	*	*	<5.0	**<5.0**	*	<5	**<5**
Fluoride µg/L	*	*	560	**560**	*	0.4	*
Lead mg/L	*	0.062	0.046	**0.054**	*	<0.02	*
Nickel mg/L	*	<0.02	<0.02	**<0.02**	*	<0.02	*
Zinc mg/L	*	0.084	0.134	**0.109**	*	0.059	*
Boron mg/L	*	1.164	0.368	**0.766**	*	0.107	*
Cadmium mg/L	*	<0.02	<0.02	**<0.02**	*	<0.02	*
Mercury µg/L	*	*	<0.2	**<0.2**	*	0.3	**0.3**
Selenium µg/L	*	*	34	**34**	*	2	**2**
Barium mg/L	*	<0.02	0.033	**0.033**	*	0.034	**0.034***

Foxehole (SW03)				
Sample Date	03/04/2008	10/07/2008	17/07/2008	
Sample	Outfall	Outfall	Outfall	Average
Flow M^3/Day	*	*	*	*
pH	*	*	6.1	6.1
Temperature ℃	*	*	*	*
Cond 20℃	2850	3280	1974	2701.333
SS mg/L	9	12	26	15.66667
NH_3 mg/L	13.5	23.8	44.8	27.36667
BOD mg/L	1.5	*	<1.0	1.5
COD mg/L	441	448	492	460.3333
TN mg/L	31	*	52	41.5
Nitrite mg/L	*	*	0.025	0.025
Nitrate mg/L	*	*	4.17	4.17
TP mg/L	*	0.32	<0.2	0.32
O-PO4-P mg/L	0.58	<0.05	0.05	0.315
SO4 mg/L	606.8	*	*	606.8
Phenols µg/L	*	*	<0.1	<0.1
Atrazine µg/L	*	*	<0.01	<0.01
Dichloromethane µg/L	*	*	<1.0	<1.0
Simazine µg/L	*	*	<0.01	<0.01
Toluene µg/L	*	*	<1.0	<1.0
Tributyltin µg/L	*	*	<0.02*	<0.02
Xylenes µg/L	*	*	<1.0	<1.0
Arsenic µg/L	*	*	<0.96	<0.96
Chromium mg/L	<0.02	<0.02	<0.02	<0.02
Copper mg/L	<0.02	<0.02	<0.02	<0.02
Cyanide µg/L	*	*	5	5
Fluoride µg/L	*	*	130	130
Lead mg/L	<0.02	<0.02	<0.02	<0.02
Nickel mg/L	<0.02	<0.02	<0.02	<0.02
Zinc mg/L	0.055	0.166	0.098	0.106333
Boron mg/L	<0.02	0.09	0.058	0.074
Cadmium mg/L	<0.02	<0.02	<0.02	<0.02
Mercury µg/L	*	*	0.6	0.6
Selenium µg/L	*	*	1	1
Barium mg/L	<0.02	<0.02	<0.02	<0.02

	Paxes Lane (SW02)			
Sample Date	04/03/2008	10/07/2008	17/07/2008	
Sample	Outfall	Outfall	Outfall	**Average**
Flow M^3/Day	*	*	*	*
pH	*	*	7.5	**7.5**
Temperature ℃	*	*	*	*
Cond 20℃	781	1389	985	**1051.667**
SS mg/L	174	122	142	**146**
NH_3 mg/L	17.3	29.8	34	**27.03333**
BOD mg/L	132	360	146	**212.6667**
COD mg/L	326	312	380	**339.3333**
TN mg/L	*	31	45	**38**
Nitrite mg/L	*	*	0.007	**0.007**
Nitrate mg/L	*	*	1.35	**1.35**
TP mg/L	*	5.45	5.35	**5.4**
O-PO4-P mg/L	2.18	3.88	4.54	**3.533333**
SO4 mg/L	50	*	53.2	**51.6**
Phenols µg/L	*	*	<0.1	**<0.1**
Atrazine µg/L	*	*	<0.01	**<0.01**
Dichloromethane µg/L	*	*	<1.0	**<1.0**
Simazine µg/L	*	*	<0.01	**<0.01**
Toluene µg/L	*	*	<1.0	**<1.0**
Tributyltin µg/L	*	*	<0.02*	**<0.02**
Xylenes µg/L	*	*	<1.0	**<1.0**
Arsenic µg/L	*	*	2	**2**
Chromium mg/L	*	<0.02	0.0137	**0.0137**
Copper mg/L	*	0.043	0.0513	**0.04715**
Cyanide µg/L	*	*	<5.0	**<5.0**
Fluoride µg/L	*	*	380	**380**
Lead mg/L	*	<0.02	<0.03	**<0.0115**
Nickel mg/L	*	<0.02	<0.005	**<0.0125**
Zinc mg/L	*	0.049	0.0373	**0.04315**
Boron mg/L	*	0.084	<0..2	**0.084**
Cadmium mg/L	*	<0.02	<0.001	**<0.021**
Mercury µg/L	*	*	0.5	**0.5**
Selenium µg/L	*	*	5	**5**
Barium mg/L	*	0.027	0.041	**0.034**

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.

Detailed 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).

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. Assessment of Impact on Receiving Surface or Ground Water

- Give summary details and an assessment of the impacts of any existing or proposed emissions on the environment, including environmental media other than those into which the emissions are to be made.

- Details of all monitoring of the receiving water should be supplied via the following web based link: http://78.137.160.73/epa_wwd_licensing/. Tables F.1(i)(a) & (b) 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 F.1(i)(a) & (b). Monitoring of surface water shall be carried out at not less than two points, one upstream from the discharge location and one downstream.

- For discharges from secondary discharge points Tables F.1(ii)(a) & (b) should be completed. Furthermore, provide summary details and an assessment of the impacts of any existing or proposed emissions on the surface water or ground (aquifers, soils, sub-soils and rock environment), including any impact on environmental media other than those into which the emissions are to be made.

- Provide details of the extent and type of ground emissions at the works. For larger discharges to groundwaters, e.g., from Integrated Constructed Wetlands, large scale percolation areas, etc., a comprehensive report must be completed which should include, inter alia, topography, meteorological data, water quality, geology, hydrology, and hydrogeology. The latter must in particular present the aquifer classification and vulnerability. The Geological Survey of Ireland Groundwater Protection Scheme Dept of the Environment and Local Government, Geological Survey of Ireland, EPA (1999) methodology should be used for any such classification. This report should also identify all surface water bodies and water wells that may be at risk as a result of the ground discharge.

- 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 water.

- Provide a statement as to whether or not emissions of main polluting substances (as defined in the *Dangerous Substances Regulations S.I. No. 12 of 2001*) to water are likely to impair the environment.

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

- Indicate whether or not emissions from the agglomeration or any plant, methods, processes, operating procedures or other factors which affect such emissions are likely to have a significant effect on –

  (a) a site (until the adoption, in respect of the site, of a decision by the European Commission under Article 21 of Council Directive 92/43/EEC for the purposes of the third paragraph of Article 4(2) of that Directive) —

    (i) notified for the purposes of Regulation 4 of the Natural Habitats Regulations, subject to any amendments made to it by virtue of Regulation 5 of those Regulations,

    (ii) details of which have been transmitted to the Commission in accordance with Regulation 5(4) of the Natural Habitats Regulations, or

    (iii) added by virtue of Regulation 6 of the Natural Habitats Regulations to the list transmitted to the Commission in accordance with Regulation 5(4) of those Regulations,

  (b) a site adopted by the European Commission as a site of Community importance for the purposes of Article 4(2) of Council Directive 92/43/EEC[1] 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/EEC[2];

  [1]Council 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)

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

Please find below ambient water quality monitoring details for the areas surrounding the Youghal agglomeration. Summary details are provided for all points where available, with further details provided for the locations in the Lower Blackwater Estuary and Youghal Bay where the discharges occur.

R Blackwater	BR000
Tributaries	BR010 - BR040
Upper Blackwater M Estuary	BR110 - BR150
Lower Blackwater M Estuary	BR160 - BR230
Youghal Bay	BR240 - BR250

Waterbody	RBD	Typology	Monitoring	Location	Site	Latitude	Longitude	Decimal_lat	Decimal_long
Upper Blackwater Estuary	SWRBD	TW2	OP	R Blackwater at Lismore Br.	BR000	52° 8' 28.997" N	7° 55' 51.472" W	52.141388	-7.930964
Upper Blackwater Estuary	SWRBD	TW2	OP	R Finisk at Dromana Br.	BR010	52° 7' 25.708" N	7° 50' 39.247" W	52.123808	-7.844235
Lower Blackwater Estuary	SWRBD	TW2	OP	Bride R at Tallowbridge	BR020	52° 6' 24.415" N	8° 0' 8.699" W	52.106782	-8.002416
Lower Blackwater Estuary	SWRBD	TW2	OP	R Licky at Licky Bridge	BR030	51° 59' 48.896" N	7° 48' 35.198" W	51.996916	-7.809777
Lower Blackwater Estuary	SWRBD	TW2	OP	Tourig R nr Bridgequarter	BR040	51° 58' 28.339" N	7° 54' 27.214" W	51.974538	-7.907559
Upper Blackwater Estuary	SWRBD	TW2	OP	R Blackwater at Avonmore Br., Cappoquin	BR110	52° 8' 49.067" N	7° 51' 19.713" W	52.146963	-7.855476
Lower Blackwater Estuary	SWRBD	TW2	OP	Tourin Castle	BR120	52° 7' 11.587" N	7° 51' 17.663" W	52.119885	-7.854906
Lower Blackwater Estuary	SWRBD	TW2	OP	Dromana House	BR130	52° 6' 34.367" N	7° 52' 0.871" W	52.109547	-7.866909
Lower Blackwater Estuary	SWRBD	TW2	OP	Dromana Quay, Villierstown	BR140	52° 5' 14.599" N	7° 51' 44.669" W	52.087389	-7.862408
Lower Blackwater Estuary	SWRBD	TW2	OP	Bride Estuary, Camphire Bridge	BR150	52° 4' 57.501" N	7° 52' 59.869" W	52.082639	-7.883297
Lower Blackwater Estuary	SWRBD	TW2	OP	Kilmanicholas / Strancally Castle	BR160	52° 3' 54.372" N	7° 52' 20.664" W	52.065103	-7.872407
Lower Blackwater Estuary	SWRBD	TW2	OP	Glenassy Quay	BR170	52° 2' 56.038" N	7° 50' 56.871" W	52.048899	-7.849131
Lower Blackwater Estuary	SWRBD	TW2	OP	Strancally House	BR180	52° 1' 50.604" N	7° 51' 9.890" W	52.030723	-7.852747
Lower Blackwater Estuary	SWRBD	TW2	OP	Lickey River Mouth	BR190	52° 0' 48.821" N	7° 51' 18.901" W	52.013561	-7.855250
Lower Blackwater Estuary	SWRBD	TW2	OP	Molana Abbey	BR200	51° 59' 45.291" N	7° 52' 56.645" W	51.995914	-7.882401
Lower Blackwater Estuary	SWRBD	TW2	OP	Ardsallagh House / Youghal Bridge	BR210	51° 59' 1.450" N	7° 51' 54.249" W	51.983736	-7.865069
Lower Blackwater Estuary	SWRBD	TW2	OP	d/s Old Bridge / Youghal Landfill	BR220	51° 57' 58.376" N	7° 50' 47.395" W	51.966216	-7.846499
Lower Blackwater Estuary	SWRBD	TW2	OP	Coastguard	BR230	51° 56' 53.646" N	7° 50' 30.286" W	51.948235	-7.841746
Youghal Bay	SWRBD	CW5	OP	Youghal Bay / Redbarn	BR240	51° 55' 37.454" N	7° 50' 6.900" W	51.927070	-7.835250
Youghal Bay	SWRBD	CW5	OP	Youghal Bay / Clonard	BR250	51° 54' 44.542" N	7° 50' 20.329" W	51.912373	-7.838980

Summary Sheet Summer								
Location	Salinity average	Salinity median	95% DO S % SAT	5% DO S % SAT	B.O.D. mg/l O2 Median	DIN mg/l N Median	PO4 µg/l P Median	Chlorophyll a mg/m 90%
BR150	0.40	0.20	71.82	161.65	1.90	3.24	21	2.14
BR040	2.90	0.10	89.65	117.23	1.10	4.14	17	0.68
BR000	0.10	0.10	81.19	125.43	1.40	3.00	38	2.08
BR020	0.10	0.10	80.78	121.88	1.10	4.56	30	1.92
BR110	0.10	0.10	38.66	165.43	1.30	2.60	41	2.09
BR010	0.10	0.10	9.22	141.41	1.40	3.14	22	1.36
BR030	0.00	0.00	86.49	102.97	1.00	2.64	10	0.50
BR250	34.00	33.70	89.10	98.10	7.90	0.58	18	2.72
BR240	31.20	34.40	84.64	113.94	1.00	0.20	10	1.62
BR230	31.90	33.70	86.00	121.33	1.20	0.15	10	1.66
BR220	29.10	32.60	82.86	115.13	2.90	0.24	10	1.78
BR210	26.50	29.70	83.36	118.44	1.20	0.53	10	2.60
BR200	19.70	21.60	85.10	124.18	1.70	1.33	16	2.64
BR190	11.50	11.70	79.63	137.02	1.50	1.79	14	5.22
BR180	10.50	9.60	63.75	112.53	4.00	2.03	20	1.08
BR170	4.80	4.10	75.86	139.19	1.30	2.25	30	7.80
BR160	1.60	0.90	75.22	138.99	3.20	2.57	29	2.95
BR140	0.30	0.20	72.00	134.60	1.30	2.70	27	1.90
BR130	0.20	0.20	71.00	137.66	2.70	3.01	30	5.40
BR120	0.20	0.10	75.00	146.12	1.70	2.87	33	0.96

Summary Sheet Winter								
Location	Salinity average	Salinity median	95% DO S % SAT	5% DO S % SAT	B.O.D. mg/l O2 Median	DIN mg/l N Median	PO4 µg/l P Median	Chlorophyll a mg/m 90%
BR150	0.13	0.13	159.11	159.20	1.20	2.20	30.5	4.87
BR040	0.04	0.04				2.42	22	0.99
BR000	0.08	0.08				1.58	35	1.00
BR020	0.13	0.13				2.63	29	0.50
BR110	0.13	0.13				1.71	35	0.99
BR010	0.07	0.07	92.03	151.88	1.10	2.66	20	0.58
BR030	0.09	0.09				1.59	12	1.00
BR230	32.68	32.68	84.27	85.44		0.19	24	0.50
BR220	25.15	27.40	87.50	92.42		0.71	28.5	0.59
BR210	20.88	21.31	85.40	89.64		1.02	30	0.79
BR200	15.68	15.68	85.54	86.26		1.26	33	5.56
BR190	3.24	3.14	87.32	88.61		1.90	36.5	0.56
BR180	0.13	0.13	86.69	88.13		1.94	37	2.70
BR170	0.11	0.11	88.10	95.21		1.90	37	1.30
BR160	0.11	0.11	86.44	89.62	1.00	2.44	346	3.70
BR140	0.11	0.11	89.72	90.08	1.50	1.99	35	7.80
BR130	0.11	0.11	82.10	90.38	1.05	2.00	36	0.50

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR160	24-Jun-03	17.2	8.0	87.0	1.0	3.790	0.034	0.0013	3.824	29	111.5	291.5	3.2	3580	231239
BR160	24-Jun-03	17.2	8.0	88.0	1.5	3.770	0.046	0.0018	3.816	27	82.0	312.5	5.8	3580	231240
BR160	06-Aug-03	18.5	8.6	106.1		2.290	0.010	0.0016	2.29999	24	229.2	211.9	114.0	1430	231738
BR160	06-Aug-03	18.2	8.5	102.1		2.190	0.012	0.0015	2.202	33	182.5	147.5	126.0	1430	231739
BR160	28-Jun-04	16.3	8.12	73	3.2	2.43	0.095	0.004417	2.525	28	550.14	0.090179	35.37554	3100	240775
BR160	28-Jun-04	16.3	8.03	75	4.4	2.23	0.101	0.003845	2.331	27	580.0299	0.086333	48.51216	2880	240776
BR160	13-Jul-05	21.06	8.61	150.8	4.8	2.7	0.028	0.005059	2.728	9.99	533.6698	0.273073	108	122	250704
BR160	13-Jul-05	20.78	8.56	141.6	4.8	2.75	0.025	0.004021	2.775	9.99	683.9584	0.277778	93.1	36	250705
BR160	30-May-05	13.36	7.65	77.2		1.59	0.16	0.002075	1.75	55	766.1638	0.031818	16	2570	
BR160	30-May-05					1.59	0.16	0.002075	1.75	55	766.1638	0.031818	16	2570	
BR160	25-May-06	11.15	7.82	88.8	1	2.75	0.068	0.001097	2.818	41	2506.427	0.068732	6.8	4830	260580
BR160	25-May-06	11.16		88.8			0.068	0.001097	2.818	41	2506.427	0.068732	6.8	4830	
BR160	20-Jun-06	17.86	8.06	88.8		3.57	0.033	0.001503	3.603	13	2375.995	0.277154	9.9	2070	260749
BR160	20-Jun-06	17.83	8.07	89.5		2.55	0.054	0.002308	2.604	27	1016.592	0.096444	20.2	2110	260750
BR160	18-Jul-06	20.07	8.47	115.5		2.54	0.00199	0.000255	2.54199	16	9971.757	0.158874	24.8	< 30	260967
BR160	18-Jul-06	19.5	8.36	109.8		2.37	0.057	0.005582	2.427	25	424.5565	0.09708	21.7	74	260968
BR160	13-Jun-07	18.93	8.52	109.7	4.2	3.37	0.0199	0.00262	3.3899	9.9	1286.338	0.342414	52.6	3180	270875
BR160	13-Jun-07	19.06	8.52	114.1	4.2	3.37	0.0199	0.002642	3.3899	9.9	1275.414	0.342414	52.6	3180	270875
BR160	11-Jul-07	14.55	7.77	92		2.77	0.053	0.000988	2.823	53	2804.809	0.053264		4560	271157
BR160	11-Jul-07	14.39	7.77	96.7		2.77	0.053	0.000976	2.823	53	2838.579	0.053264		4560	271157
BR160	23-Aug-07	15.42	7.67	86.9	1.5	2.41	0.049	0.000776	2.459	58	3103.926	0.042397	2.0	4790	271515
BR160	23-Aug-07	15.4	7.67	86.5	1.5	2.41	0.049	0.000775	2.459	58	3108.554	0.042397	2.0	4790	271515
BR160	23-Aug-07	16.38	7.73	87.6		2.36	0.043	0.000838	2.403	52	2815.155	0.046212	0.499	4120	271526
BR160	23-Aug-07	15.46	7.77	87.3		2.22	0.065	0.001296	2.285	54	1712.797	0.042315	0.7	4390	271527
BR160	26-Feb-07	8.32	7.69	87.2		2.13	0.63	0.006067	2.76	659	351.0985	0.004188	4.7	4120	270301
BR160	26-Feb-07	8.3	7.69	88		2.13	0.63	0.006057	2.76	659	351.6515	0.004188	4.7	4120	270301
BR160	26-Feb-07	8.38	7.75	86.3	0.999	2.09	0.034	0.000377	2.124	33	5540.128	0.064364	3.7	4010	270314
BR160	26-Feb-07	8.44	7.75	89.9	0.999	2.09	0.034	0.000379	2.124	33	5514.084	0.064364	3.7	4010	270314

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR170	24-Jun-03	17.0	8.1	85.0		3.430	0.054	0.0027	3.484	32	63.5	240.7	4.1	3580	231237
BR170	24-Jun-03	17.0	8.0	87.0		2.920	0.058	0.0019	2.978	28	50.3	235.1	7.0	3530	231238
BR170	06-Aug-03	18.7	8.6	137.8		1.870	0.010	0.0016	1.87999	22	187.2	188.9	86.7	655	231740
BR170	06-Aug-03	17.7	8.4	117.3		1.500	0.010	0.0009	1.50999	19	150.2	175.7	76.6	447	231741
BR170	28-Jun-04	16	8.03	79		3.12	0.093	0.003464	3.213	22	900.7767	0.146045	33.94134	2510	240773
BR170	28-Jun-04	15.9	7.91	77		1.96	0.099	0.002797	2.059	20	700.6925	0.10295	37.13162	2130	240774
BR170	13-Jul-05	20.73	8.56	152.7		2.32	0.035	0.005611	2.355	9.99	413.4545	0.235736	83.9	< 30	250706
BR170	13-Jul-05	19.92	8.34	138.9		2.22	0.046	0.004442	2.266	9.99	499.7603	0.226827	52.9	< 30	250707
BR170	30-May-05	13.57	7.79	75.8	4	1.63	0.18	0.003261	1.81	53	499.8592	0.034151	13	2850	
BR170	30-May-05	13.44		74		1.63	0.18	0.003261	1.81	53	499.8592	0.034151	13	2850	
BR170	25-May-06	11.39	7.82	88.3		0.274	0.076	0.001249	0.35	44	219.3716	0.007955	7.8	4750	260579
BR170	25-May-06	11.23		89.2			0.076	0.001249	0.35	44	219.3716	0.007955	7.8	4750	
BR170	25-May-06	11.58	7.84	93.3			0.095	0.001658		55			21	4560	260582
BR170	25-May-06	11.59		88.1			0.095	0.001658		56			21	4560	
BR170	20-Jun-06	17.05	8.05	91.5		2.47	0.047	0.001975	2.517	32	1250.724	0.078656		1450	260751
BR170	20-Jun-06	16.79	8.06	92.3		1.79	0.048	0.002024	1.838	35	884.4255	0.052514	13.3	1110	260752
BR170	18-Jul-06	19.91	8.41	111.7		2.24	0.00199	0.000223	2.24199	18	10065.82	0.124555	25.7	58	260969
BR170	18-Jul-06	18.93	8.27	108.4		1.53	0.036	0.002798	1.566	20	546.8335	0.0783	13.6	140	260970
BR170	13-Jun-07	19.34	8.79	118.3		3.44	0.024	0.005514	3.464	9.9	623.8522	0.349899	84.2	1660	270876
BR170	13-Jun-07	19.44	8.79	139.2		3.44	0.024	0.005547	3.464	9.9	620.1519	0.349899	84.2	1660	270876
BR170	11-Jul-07	14.83	7.85	89.6	1.3	2.73	0.046	0.001049	2.776	52	2602.549	0.053385	130	4100	271158
BR170	11-Jul-07	14.63	7.85	91.9	1.3	2.73	0.046	0.001033	2.776	52	2641.569	0.053385	130	4100	271158
BR170	26-Feb-07	8.38	7.69	87.7		1.84	0.057	0.000551	1.897	37	3336.438	0.05127	1.3	3970	270302
BR170	26-Feb-07	8.38	7.69	95.6		1.84	0.057	0.000551	1.897	37	3336.438	0.05127	1.3	3970	270302

Station No	Survey Date	Temp S ℃	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR180	24-Jun-03	16.7	8.0	85.0		2.720	0.034	0.0012	2.754	22	80.0	276.8	4.3	2930	231235
BR180	24-Jun-03	16.3	8.0	88.0		2.640	0.088	0.0028	2.728	38	30.0	158.7	5.6	2750	231236
BR180	28-Jun-04	15.7	8.02	81	3.5	1.94	0.086	0.003064	2.026	17	633.0775	0.119176	22.88627	2050	240771
BR180	28-Jun-04	15.6	8	82	4	1.8	0.083	0.002807	1.883	17	641.1424	0.110765	24.10587	1960	240772
BR180	20-Jun-06	16.17	8.08	93.8		1.51	0.021	0.000885	1.531	9.9	1705.969	0.154646	15.5	1470	260753
BR180	20-Jun-06	15.97	8.08	95		1.27	0.022	0.000914	1.292	9.9	1389.615	0.130505	6.3	1390	260754
BR180	18-Jul-06	19.88	8.35	111.7		1.91	0.041	0.004033	1.951	18	473.5741	0.108389	16.6	99	260971
BR180	18-Jul-06	18.49	8.27	105.9		1.24	0.048	0.003619	1.288	17	342.6528	0.075765	14.5	154	260972
BR180	13-Jun-07	19.62	8.72	12	3.9	3.1	0.0199	0.004073	3.1199	9.9	761.0327	0.315141	67	1030	270878
BR180	13-Jun-07	19.62	8.65	115	4.3	3.25	0.039	0.00697	3.289	9.9	466.3116	0.332222	81.2	1030	270879
BR180	11-Jul-07	14.9	7.83	87.7		2.7	0.052	0.001139	2.752	52	2369.878	0.052923		4520	271159
BR180	11-Jul-07	14.88	7.83	90.8		2.7	0.052	0.001138	2.752	52	2373.405	0.052923		4520	271159
BR180	23-Aug-07	15.42	7.73	88.9		2.2	0.078	0.001416	2.278	48	1553.307	0.047458	0.8	4220	271516
BR180	23-Aug-07	14.7	7.86	89.1		1.49	0.061	0.001409	1.551	42	1057.398	0.036929	1.7	2730	271517
BR180	23-Aug-07	15.94	7.81	88.8		2	0.038	0.000859	2.038	47	2326.953	0.043362	0.9	4040	271528
BR180	23-Aug-07	14.8	7.99	90.7		0.962	0.066	0.002058	1.028	27	467.389	0.038074	1.5	1960	271529
BR180	26-Feb-07	8.45	7.72	86.6		1.88	0.062	0.000646	1.942	37	2910.481	0.052486	2.7	3780	270303
BR180	26-Feb-07	8.44	7.72	88.3		1.88	0.062	0.000645	1.942	37	2912.768	0.052486	2.7	3780	270303

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR190	24-Jun-03	16.5	8.0	87.0	1.4	2.560	0.025	0.0009	2.585	19	102.4	300.8	4.1	2740	231233
BR190	24-Jun-03	15.9	8.0	90.0	1.5	2.300	0.023	0.0008	2.323	17	100.0	302.1	3.5	2430	231234
BR190	06-Aug-03	18.1	8.4	136.4		1.330	0.010	0.0009	1.33999	10	133.1	296.6	52.6	357	231742
BR190	06-Aug-03	16.9	8.1	111.5		0.654	0.010	0.0005	0.66399	10	65.5	146.9	18.6	338	231743
BR190	28-Jun-04	15.4	8.14	84		1.54	0.075	0.003415	1.615	12	450.9209	0.134583	15.1824	1560	240769
BR190	28-Jun-04	15.3	8.06	86		1.53	0.087	0.003292	1.617	13	464.7728	0.124385	17.9721	1620	240770
BR190	13-Jul-05	20.15	8.37	139.2		1.98	0.047	0.004911	2.027	9.99	403.1982	0.202903	25.9	32	250708
BR190	13-Jul-05	19.91	8.29	136.9		1.74	0.055	0.004772	1.795	9.99	364.6498	0.17968	29.6	< 30	250709
BR190	30-May-05	14.11	7.78	78.2		1.61	0.18	0.00332	1.79	45	484.9676	0.039778	9.9	1940	
BR190	30-May-05	13.63	7.83	79.7		1.45	0.16	0.003188	1.61	41	454.8273	0.039268	n/a	1420	
BR190	25-May-06	11.7	7.82	87.5		2.78	0.084	0.001414	2.864	52	1966.592	0.055077	12.5	4560	260578
BR190	25-May-06	11.68		86.5			0.084	0.001414	2.864	52	1966.592	0.055077	12.5	4560	
BR190	20-Jun-06	15.11	8.08	95.9	2	1.19	0.039	0.001522	1.229	9.9	782.0279	0.124141	9	656	260755
BR190	20-Jun-06	14.82	8.09	96.5	2	1.22	0.019	0.000742	1.239	9.9	1643.974	0.125152	5.5	687	260756
BR190	18-Jul-06	19.55	8.33	109.8	2.1	1.52	0.02	0.001844	1.54	14	824.2504	0.11	17.2	144	260973
BR190	18-Jul-06	17.8	8.23	104.9	1.5	0.74	0.039	0.002569	0.779	11	288.0181	0.070818	10.3	143	260974
BR190	13-Jun-07	19.57	8.37	107.5		2.89	0.063	0.006332	2.953	11	456.4451	0.268455	49.8	1490	270880
BR190	13-Jun-07	19.49	8.25	104		2.83	0.023	0.001779	2.853	14	1590.413	0.203786	51.5	1650	270881
BR190	11-Jul-07	15.01	7.85	90.2	1.4	2.41	0.053	0.001225	2.463	47	1967.559	0.052404	12.9	4590	271160
BR190	11-Jul-07	14.81	7.85	93.4	1.4	2.41	0.053	0.001207	2.463	47	1997.014	0.052404	12.9	4590	271160
BR190	26-Feb-07	8.61	7.73	87.3		1.77	0.052	0.000561	1.822	35	3153.558	0.052057	0.7	3950	270304
BR190	26-Feb-07	8.51	7.83	88.8		1.8	0.069	0.000928	1.869	37	1939.337	0.050514	3.9	3470	270305
BR190	26-Feb-07	8.55	7.75	87.5		2.02	0.064	0.00072	2.084	37	2806.907	0.056324	0.499	3820	270315
BR190	26-Feb-07	8.5	7.86	87.4		1.87	0.065	0.000935	1.935	36	1999.134	0.05375	2.2	3150	270316

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR200	24-Jun-03	16.0	8.0	92.0		2.430	0.010	0.0004	2.43999	16	243.2	337.2	6.5	2560	231231
BR200	24-Jun-03	13.9	8.0	94.0		1.650	0.023	0.0007	1.673	13	71.7	284.5	6.1	1800	231232
BR200	06-Aug-03	17.9	8.1	124.1		0.822	0.010	0.0005	0.83199	10	82.3	184.1	12.6	314	231744
BR200	06-Aug-03	16.6	8.1	113.1		0.305	0.015	0.0006	0.32	10	20.3	70.8	7.9	170	231745
BR200	28-Jun-04	15.1	8	85	3.2	1.51	0.071	0.002315	1.581	10	652.265	0.1581	13.81974	1590	240767
BR200	28-Jun-04	14.3	7.99	85	3.7	0.836	0.066	0.001983	0.902	9.99	421.4821	0.09029	16.0676	836	240768
BR200	13-Jul-05	19.95	8.25	129.3		1.43	0.04	0.003194	1.47	9.99	447.7537	0.147147	11.1	39	250710
BR200	13-Jul-05	19.49	8.23	124.2		1.15	0.046	0.003408	1.196	9.99	337.3993	0.11972	11	< 30	250711
BR200	30-May-05	13.91	7.85	88.2		1.37	0.13	0.002768	1.5	30	494.9834	0.05	7.1	1320	
BR200	30-May-05	11.86	7.92	93.3		0.651	0.08	0.00171	0.731	20	380.8126	0.03655	4.4	439	
BR200	25-May-06	11.49	7.9	85.8	0.999	2.61	0.064	0.001271	2.674	55	2053.888	0.048618	10.9		260576
BR200	25-May-06	11.19	7.84	85.4	2.4	2.64	0.108	0.001829	2.748	51	1443.284	0.053882	16.4	4210	260577
BR200	25-May-06	10.79	7.92	85.8		0.31	0.066	0.0013	0.376	9.9	238.5122	0.03798	5.1	1120	260583
BR200	25-May-06	10.38	7.94	85.9		0.17	0.066	0.001318	0.236	38	129.0018	0.006211	5.8	528	260584
BR200	20-Jun-06	13.68	8.09	99.7		0.751	0.0099	0.000356	0.7609	21	2112.496	0.036233	4.8	796	260757
BR200	20-Jun-06	12.72	8.12	100.9		0.091	0.013	0.000465	0.104	9.9	195.7862	0.010505	4	215	260758
BR200	18-Jul-06	18.74	8.26	109		0.912	0.022	0.001652	0.934	13	552.2154	0.071846	15.6	141	260975
BR200	18-Jul-06	17.65	8.24	106.9			0.00199	0.000133	0.00199	9.9	0	0.000201	11.8	114	260976
BR200	13-Jun-07	19.19	8.26	106.1	2.7	2.5	0.14	0.010841	2.64	14	230.6006	0.188571	35.6	1280	270882
BR200	13-Jun-07	18.84	8.2	107.8	2.6	2.05	0.029	0.001925	2.079	15	1065.09	0.1386	30	901	270883
BR200	11-Jul-07	16.69	7.89	92.5		2	0.052	0.001488	2.052	39	1343.799	0.052615		3100	271161
BR200	11-Jul-07	13.67	7.94	94.2		0.99	0.044	0.001127	1.034	32	878.0742	0.032313		2870	271162
BR200	23-Aug-07	15.36	7.85	92.3	0.999	1.81	0.038	0.000901	1.848	44	2008.234	0.042	2.0	3440	271518
BR200	23-Aug-07	14.66	8.01	98.5	0.999	2.07	0.033	0.001065	2.103	20	1943.193	0.10515	2.3	859	271519
BR200	23-Aug-07	16.1	7.93	95.6	1	1.59	0.031	0.00093	1.621	34	1710.212	0.047676	1.4	3150	271530
BR200	23-Aug-07	14.72	8	96.6	0.999	1.03	0.072	0.002283	1.102	26	451.2078	0.042385	1.2	2170	271531
BR200	26-Feb-07	8.55	7.82	85.5		1.77	0.066	0.000871	1.836	34	2033.24	0.054	5.1	3630	270306
BR200	26-Feb-07	8.73	8.03	86.3		0.64	0.052	0.00112	0.692	32	571.1924	0.021625	9.7	1560	270307

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR210	24-Jun-03	16.0	8.1	93.0		2.060	0.010	0.0004	2.06999	12	206.2	381.4	1.5	2130	231229
BR210	24-Jun-03	13.9	8.0	94.0		0.801	0.013	0.0004	0.814	13	61.6	138.4		1000	231230
BR210	28-Jun-04	14.9	8.04	82		1.47	0.064	0.002249	1.534	9.99	653.6545	0.153554	11.55579	1230	240765
BR210	28-Jun-04	13.6	8.03	85		0.376	0.053	0.001654	0.429	9.99	227.3153	0.042943	17.39628	452	240766
BR210	13-Jul-05	19.67	8.23	124.2	2.1	1.06	0.046	0.003451	1.106	9.99	307.165	0.110711	4.1	60	250712
BR210	13-Jul-05	18.26	8.17	117	1.2	0.511	0.056	0.003343	0.567	9.99	152.8779	0.056757	3.6	89	250713
BR210	25-May-06	11.48	7.81	84.6		3.92	0.095	0.001537	4.015	9.9	2550.82	0.405556	8	3720	260574
BR210	25-May-06	10.24	7.9	83.6		0.365	0.111	0.002003	0.476	55	182.2702	0.008655	4.3	706	260575
BR210	20-Jun-06	13.02	8.12	101.2		0.186	0.026	0.000951	0.212	9.9	195.6654	0.021414	4.5	46	260759
BR210	20-Jun-06	12.44	8.12	101.1		0.064	0.012	0.00042	0.076	9.9	152.3244	0.007677	11.8	152	260760
BR210	18-Jul-06	17.56	8.23	104.4		0.166	0.00199	0.000129	0.16799	9.9	1287.759	0.016969	7	86	260977
BR210	18-Jul-06	17.49	8.22	106.6		0.129	0.027	0.001703	0.156	9.9	75.75669	0.015758	6.1	95	260978
BR210	13-Jun-07	18.73	8.24	109.5		1.73	0.02	0.001437	1.75	11	1204.048	0.159091	25.7	784	270884
BR210	13-Jun-07	18.13	8.2	107.6		1.14	0.024	0.001516	1.164	14	752.1262	0.083143	19.6	660	270885
BR210	11-Jul-07	13.32	7.97	97.5	0.999	1.07	0.0199	0.000531	1.0899	28	2013.26	0.038925	3.9	1190	271163
BR210	11-Jul-07	12.86	7.99	99.3	1.2	0.474	0.0199	0.000537	0.4939	22	882.5091	0.02245	5.2	773	271164
BR210	23-Aug-07	15.13	8.09	105.2		0.174	0.0199	0.000795	0.1939	14	218.8396	0.01385	2.6	322	271520
BR210	23-Aug-07	14.75	8.1	102.6		0.033	0.0199	0.000791	0.0529	10	41.73528	0.00529	2.6	74	271521
BR210	26-Feb-07	8.99	7.83	85.2		1.74	0.06	0.000838	1.8	40	2076.493	0.045	0.99	3040	270308
BR210	26-Feb-07	8.85	8.09	86.5		0.183	0.068	0.001694	0.251	23	108.0569	0.010913	6	619	270309
BR210	26-Feb-07	8.83	7.89	88.7		1.74	0.051	0.000806	1.791	34	2158.078	0.052676	0.7	3570	270317
BR210	26-Feb-07	8.85	8.08	89.8		0.191	0.047	0.001144	0.238	26	166.8949	0.009154	7.5	813	270318

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR220	24-Jun-03	14.3	8.1	101.0	3.6	0.458	0.010	0.0004	0.46799	10	45.8	103.6	3.6	658	231227
BR220	24-Jun-03	13.6	8.1	104.0	4.3	0.370	0.010	0.0004	0.37999	13	37.0	64.6	5.4	615	231228
BR220	06-Aug-03	17.1	8.1	117.6		0.446	0.010	0.0005	0.45599	10	44.6	100.9	4.4	238	231746
BR220	06-Aug-03	16.3	8.1	110.1		0.037	0.010	0.0004	0.04699	10	3.7	10.4	3.5	60	231747
BR220	28-Jun-04	13.3	8.05	87	2.8	0.202	0.035	0.001117	0.237	9.99	180.8123	0.023724	3.412017	321	240763
BR220	28-Jun-04	13.3	8.04	88	3	0.195	0.042	0.001311	0.237	9.99	148.7544	0.023724	6.537911	354	240764
BR220	30-May-05	13.29	7.9	90.1		1.17	0.13	0.002958	1.3	29	395.5182	0.044828	5.4	941	
BR220	30-May-05	11.66	7.94	92		0.678	0.14	0.003083	0.818	30	219.9292	0.027267	5	556	
BR220	25-May-06	11.49	7.8	82		2.37	0.11	0.001741	2.48	63	1361.472	0.039365	14.8	3170	260572
BR220	25-May-06	11.07	7.8	82.9		1.96	0.124	0.0019	2.084	47	1031.51	0.04434	11.3	2720	260573
BR220	20-Jun-06	12.46	8.13	101	2.3	0.039	0.0099	0.000355	0.0489	9.9	109.8607	0.004939	15.6	43	260761
BR220	20-Jun-06	12.47	8.13	100.7	2	0.054	0.0099	0.000355	0.0639	9.9	152.0011	0.006455	0.499	115	260762
BR220	18-Jul-06	17.55	8.22	103.2		0.059	0.00199	0.000126	0.06099	9.9	468.1196	0.006161	21.5	67	260979
BR220	18-Jul-06	17.51	8.22	104.8		0.059	0.00199	0.000126	0.06099	9.9	469.4415	0.006161	8.7	40	260980
BR220	13-Jun-07	17.02	8.23	111.1		0.206	0.0199	0.001241	0.2259	9.9	166.0156	0.022818	9	135	270887
BR220	13-Jun-07	16.54	8.24	115		0.189	0.0199	0.001226	0.2089	9.9	154.1848	0.021101	3.0	131	270888
BR220	11-Jul-07	12.13	8	102.9		0.089	0.0199	0.00052	0.1089	27	171.1714	0.004033		73	271165
BR220	11-Jul-07	11.82	8	105.2		0.09	0.0199	0.000508	0.1099	9.9	177.202	0.011101		70	271166
BR220	23-Aug-07	15.26	8.1	102.8		0.531	0.037	0.001526	0.568	16	347.9625	0.0355	1.6	1050	271532
BR220	23-Aug-07	14.81	8.1	108.8		0.428	0.0199	0.000794	0.4479	11	538.9183	0.040718	1.9	780	271533
BR220	26-Feb-07	9.02	7.93	87.2		1.44	0.066	0.00116	1.506	33	1241.735	0.045636	0.8	2810	270310
BR220	26-Feb-07	8.86	8.09	92.7		0.1	0.026	0.000648	0.126	24	154.3125	0.00525	3.6	505	270311
BR220	26-Feb-07	9.04	7.97	89.2		1.22	0.078	0.001503	1.298	38	811.7211	0.034158	0.499	2350	270319
BR220	26-Feb-07	8.87	8.09	90.8		0.105	0.021	0.000524	0.126	23	200.451	0.005478	1.8	482	270320

Station No	Survey Date	Temp S °C	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR230	24-Jun-03	14.1	8.1	98.0		0.354	0.010	0.0004	0.36399	10	35.4	80.6	3.3	476	231225
BR230	24-Jun-03	13.4	8.1	105.0		0.052	0.010	0.0004	0.06199	10	5.2	13.7	2.7	146	231226
BR230	24-Jun-03	14.3	7.7	109.0		0.225	0.010	0.0001	0.23499	10	22.5	52.0	2.0	337	231247
BR230	24-Jun-03	13.5	8.1	103.0		0.021	0.010	0.0003	0.03099	10	2.1	6.9	1.7	93	231248
BR230	06-Aug-03	17.5	8.1	122.3		0.152	0.010	0.0005	0.16199	10	15.2	35.9	3.0	111	231748
BR230	06-Aug-03	16.9	8.1	115.0		0.059	0.010	0.0004	0.06899	10	5.9	15.3	1.6	60	231749
BR230	28-Jun-04	13.4	8.06	86		0.232	0.035	0.001151	0.267	9.99	201.5558	0.026727	4.458155	376	240761
BR230	28-Jun-04	13	8.04	86		0.076	0.04	0.001221	0.116	9.99	62.25472	0.011612	4.98927	235	240762
BR230	28-Jun-04	13.7		90									2.496423		
BR230	28-Jun-04	13.7	8.04	91		0.099	0.052	0.001672	0.151	9.99	59.20771	0.015115	4.905579	275	240781
BR230	13-Jul-05	19.34	8.19	116.3	1.3	0.609	0.043	0.002891	0.652	9.99	210.6353	0.065265	n/a	112	250714
BR230	13-Jul-05	18.83	8.17	118.4	1.2	0.247	0.053	0.003293	0.3	22	75.01843	0.013636	2.2	141	250715
BR230	30-May-05	13.61	7.94	97.3	0.999	0.905	0.09	0.002296	0.995	19	394.1882	0.052368	4.3	629	
BR230	30-May-05	12.32	7.96	102.6		0.327	0.06	0.001453	0.387	12	225.0231	0.03225	3.4	264	
BR230	25-May-06	11.34	7.79	93.1	1.1	1.8	0.108	0.001652	1.908	20	1089.843	0.0954	8	2320	260570
BR230	25-May-06	10.03	7.85	85.1	1.1	1.05	0.086	0.001363	1.136	9.9	770.5157	0.114747	2	1910	260571
BR230	25-May-06		7.94			0.274	0.05	0.000434	0.324	9.9	631.1646	0.032727	11.5	1080	260585
BR230	25-May-06		7.94			0.077	0.07	0.000608	0.147	9.9	126.6936	0.014848	6.8	264	260586
BR230	20-Jun-06	12.42	8.13	101.5	2.2	0.048	0.0099	0.000354	0.0579	9.9	135.6181	0.005848	4.1	118	260763
BR230	20-Jun-06	12.42	8.12	101.2	2.3	0.054	0.021	0.000734	0.075	9.9	73.55209	0.007576	0.499	128	260764
BR230	18-Jul-06	17.91	8.24	106.5	1.2	0.054	0.00199	0.000135	0.05599	9.9	399.9395	0.005656	9.6	75	260981
BR230	18-Jul-06	17.55		108.7		0.054	0.00199	0.000135	0.05599	9.9	399.9395	0.005656	9.6	75	
BR230	13-Jun-07	16.11	8.24	115.7	1.4	0.181	0.0199	0.001189	0.2009	9.9	152.2519	0.020293	4.9	116	270889
BR230	13-Jun-07	15.64	8.22	140.3	0.999	0.194	0.0199	0.0011	0.2139	9.9	176.3463	0.021606	2.4	82	270890
BR230	11-Jul-07	11.87	8.02	102.3	1.6	0.127	0.0199	0.000533	0.1469	9.9	238.1315	0.014838	3.6	152	271167
BR230	11-Jul-07	11.7	8.02	101.2		0.076	0.0199	0.000526	0.0959	9.9	144.3496	0.009687	2.9	71	271168
BR230	23-Aug-07	14.85	8.07	106.1	1	0.115	0.0199	0.000745	0.1349	15	154.3645	0.008993	2.3	315	271522
BR230	23-Aug-07	14.77	8.07	107.8	0.999	0.011	0.0199	0.000741	0.0309	9.9	14.85232	0.003121	1.5	29.99	271523
BR230	26-Feb-07	9.28	8.09	84.2		0.144	0.046	0.001184	0.19	24	121.5875	0.007917	0.499	580	270312
BR230	26-Feb-07	8.9	8.09	85.5		0.144	0.046	0.00115	0.19	24	125.2088	0.007917	0.499	580	270312

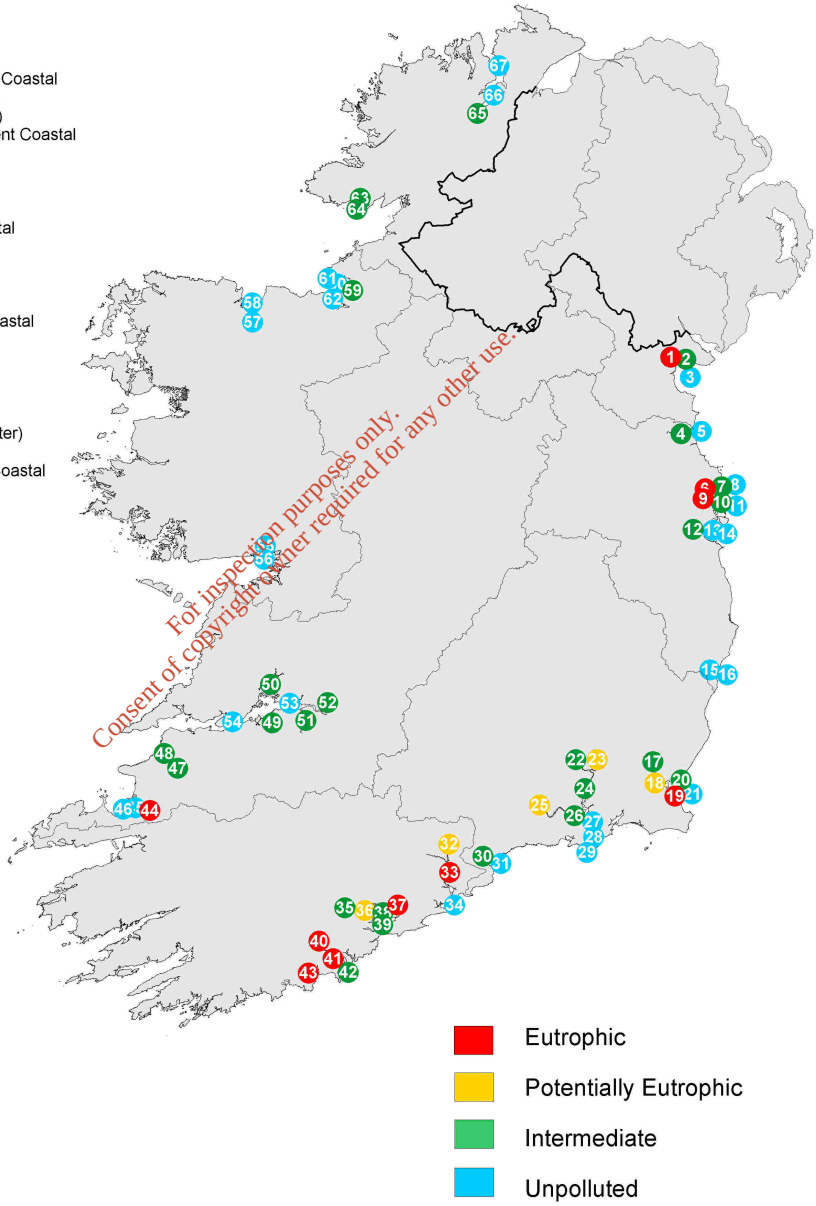
Station No	Survey Date	Temp S ℃	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR240	24-Jun-03	13.5	8.1	100.0		0.413	0.022	0.0007	0.435	10	18.8	96.2	1.2	584	231223
BR240	24-Jun-03	12.7	8.0	91.0		0.010	0.010	0.0003	0.01998	10	1.0	4.4		150	231224
BR240	06-Aug-03	16.9	8.1	116.1		0.055	0.010	0.0004	0.06499	10	5.5	14.4	1.8	60	231750
BR240	06-Aug-03	16.3	8.1	110.7		0.010	0.010	0.0004	0.01998	10	1.0	4.4	1.9	60	231751
BR240	28-Jun-04	12.6	8.03	85		0.029	0.032	0.000927	0.061	9.99	31.29283	0.006106	2.886266	204	240760
BR240	25-May-06	10.87	7.88	87.1		0.515	0.0099	0.000179	0.5249	9.9	2874.603	0.05302	5.3	1060	260569
BR240	25-May-06	10.04		84.4		0.515	0.0099	0.000179	0.5249	9.9	2874.603	0.05302	5.3	1060	
BR240	18-Jul-06	17.54	8.2	106.8	0.999	0.029	0.175	0.010602	0.204	9.9	2.735294	0.020606	8.9	64	260982
BR240	18-Jul-06	17.5		107.2		0.029	0.175	0.010602	0.204	9.9	2.735294	0.020606	8.9	64	

Station No	Survey Date	Temp S ℃	pH	DO S % Sat	B.O.D. mg/l O2	TON mg/l N	NH3 mg/l N	Free NH3 mg/l N	DIN mg/l N	PO4 µg/l P	TON:NH3	DIN:PO4 µMol	Chlorophyll a mg/m	Si_est µg/l Si	Lab. Number
BR250	24-Jun-03	13.7	8.0	99.0	1.1	0.568	0.013	0.0004	0.581		43.7			741	231221
BR250	24-Jun-03	12.5	8.0	90.0		0.013	0.010	0.0003	0.02299	10	1.3	5.1		173	231222
BR250	28-Jun-04	13.4	8.05	89		0.152	0.04	0.001286	0.192	9.99	118.1656	0.019219	1.795422	287	240758
BR250	25-May-06		7.61		7.9	0.218	26.6	0.108437	26.818	27	2.010393	0.993259	6.4	561	260568
BR250	25-May-06				7.9	0.218	26.6	0.108437	26.818	27	2.010393	0.993259	6.4	561	

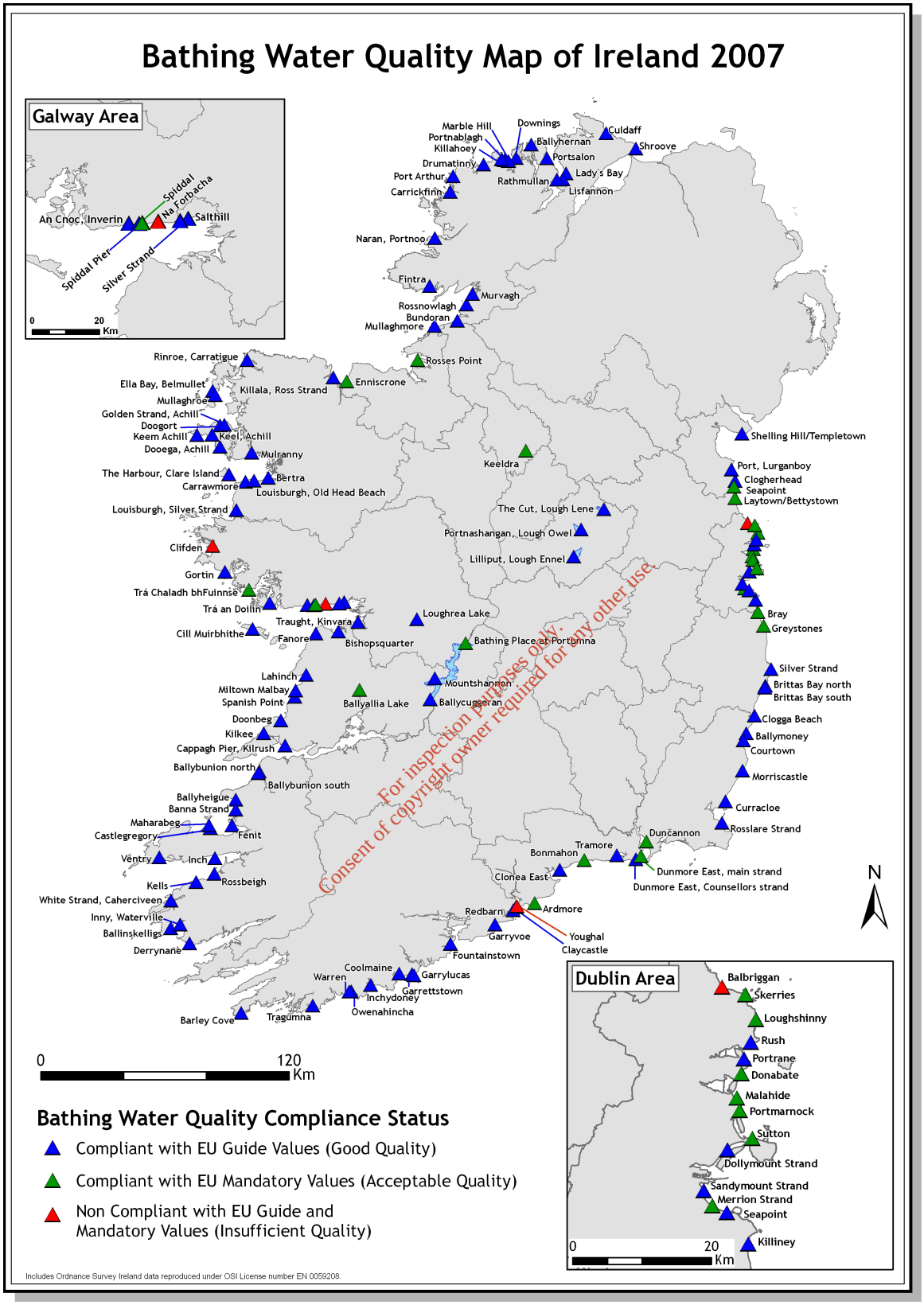
Estuarine and Coastal Water Quality

2001 - 2005

1	Castletown Estuary
2	Inner Dundalk Bay
3	Outer Dundalk Bay
4	Boyne Estuary
5	Boyne Estuary Plume Zone
6	Rogerstown Estuary (Inner)
7	Rogerstown Estuary (Outer)
8	Rogerstown Estuary Adjacent Coastal
9	Broadmeadow Estuary (Inner)
10	Broadmeadow Estuary (Outer)
11	Broadmeadow Estuary Adjacent Coastal
12	Liffey Estuary
13	Dublin Bay
14	Dublin Bay Adjacent Coastal
15	Avoca Estuary
16	Avoca Estuary Adjacent Coastal
17	Upper Slaney Estuary
18	Lower Slaney Estuary
19	South Wexford Harbour
20	Wexford Harbour
21	Wexford Harbour Adjacent Coastal
22	Nore Estuary
23	Barrow Estuary
24	Barrow Nore Estuary
25	Upper Suir Estuary
26	Lower Suir Estuary
27	Barrow Nore Suir Estuary (Outer)
28	Outer Waterford Harbour
29	Waterford Harbour Adjacent Coastal
30	Colligan Estuary
31	Dungarvan Harbour
32	Upper Blackwater Estuary
33	Lower Blackwater Estuary
34	Youghal Harbour
35	Lee Estuary
36	Lough Mahon
37	Owenacurra Estuary
38	North Channel Great Island
39	Cork Harbour
40	Upper Bandon Estuary
41	Lower Bandon Estuary
42	Kinsale Harbour
43	Argideen Estuary
44	Upper Lee (Tralee) Estuary
45	Lower Lee (Tralee) Estuary
46	Tralee Bay
47	Upper Feale Estuary
48	Cashen Feale Estuary
49	Deel Estuary
50	Fergus Estuary
51	Maigue Estuary
52	Tidal Shannon River
53	Upper Shannon Estuary
54	Lower Shannon Estuary
55	Corrib Estuary
56	Inner Galway Bay North
57	Moy Estuary
58	Killala Bay
59	Garavoge Estuary
60	Sligo Harbour
61	Sligo Bay
62	Ballysadare Bay
63	Killybegs Harbour
64	McSwyne's Bay
65	Upper Swilly Estuary
66	Lower Swilly Estuary
67	Lower Lough Swilly



The Lower Blackwater Estuary, where the majority of discharges from the Youghal agglomeration are located, has been designated as eutrophic in the most recent of the EPA reports on Estuarine and Coastal Water Quality. The Upper Blackwater Estuary, which flows into the lower estuary, is designated as potentially eutrophic and Youghal Harbour, which the lower estuary flows into, is designated as unpolluted.



There are two designated bathing waters in the Youghal area. Claycastle, which is currently compliant with EU guide values (Good Quality) and Youghal (Front Strand) which was non complinat with EU guide mandatory values in 2007 and lost its Blue Flag status.

Youghal is located on the main Cork City (51km) to Waterford (72km) road (i.e. the N25) and is a port of considerable antiquity. Youghal Harbour lies approximately 30 km east of Cork Harbour and forms part of the lower estuary of the Blackwater River. The harbour and outer bay are popular tourist destinations, particularly during the summer months, and have a high level of recreational fishing, sailing and bathing activity.

There has been a significant amount of development within this area over the last decade with an emphasis on new apartments which were incentivised by the Government through the tax relief mechanism of the development for Sea Resorts.

In preparation for the EIS (provided in Section B.6 of this application) for the Youghal Main Drainage Scheme (2001), a littoral survey was carried out in Youghal Harbour where twenty biotopes (habitats and species assemblages) were recorded. 62% of the biotopes consisted of LMU (Littoral mud), while 21% consisted of LGS (Littoral gravel and sands) biotopes with approximately 17% consisting of rocky biotopes. However, this figure is a rough estimate and does not take into account biotopes mapped on vertical surfaces such as walls.

Seaweed species in the area included Fucus vesiculosus, Ascophyllum nodosum, Pelvitia canaliculata and Enteromorpha spp. while a large number of bivalve molluscs and polychaetes were found in sedimentary biotopes. Patches of mussels (Mytilus edulis) were also present at various locations. The seaweed recorded is commonly found along the Irish coast and no species or habitats of conservation importance were recorded.

Youghal Harbour used to be a shellfish production area, although harvesting has not been undertaken for a number of years. It has not been a designated shellfish production area in the regulations. Bacteriological levels in mussels collected in the estuary were assessed. The DCMNR reports shellfish beds in Youghal Harbour, however dredging surveys carried out for the EIS study found few mussels in the estuary. Faecal coliform levels were low in the samples collected in the mussels.

Marine Sediment in Youghal harbour consists predominantly of sand with a large proportion of this sand being muddy sand. Sediment represents fine sand and silt portions. This is normal for estuaries which are low energy environments and fine sediment is deposited from rivers. Metal concentrations were found to be low in all samples taken in preparation of the Environmental Impact Statement.

A CORMIX model was undertaken for bacteriological water quality assessment as part of the Preliminary Report for the Youghal Main Drainage Scheme. This model predicted dispersion and dilution of faecal coliform bacteria concentrations discharged in an effluent plume from the three main outfalls. The EIS provides further details on the results of the modelling carried out.

The area of Youghal harbour is a popular area for fishing including drift net salmon fishing and shellfishing has declined over the last number of years but may well be taken up again.

The estuary of the Munster Blackwater extends from the limits of tidal influence at Lismore to the mouth at Youghal Harbour (at East Point), a distance of approximately 38 km. The River Blackwater is a relatively large river with a long-term mean flow rate of 80 m^3/s. There are also a number of significant tributaries, which discharge into the estuary e.g. the rivers Bride, Finisk and Likky. The estuary has a distinctive narrowing due to a shingle spit extending from the east side of the estuary known as Ferry Point. The predicted tidal range is approximately 3.5m and currents in the estuary can be strong with tidal currents at the Ferry Point varying from 0.02 – 0.89m s^{-1}. Data from an EPA cruise in October 1992 (Marine Institute, 1999) indicate that the estuary is well mixed.

Just outside the harbour along the western shoreline there is a large beach, known as Youghal Main Beach and Claycastle Beach, which are designated bathing areas under the Bathing Water Regulations (76/160/EEC).

The River Blackwater and surrounding area contain a number of important environmental designations. There are a number of "EU Habitats Directive" Annex 1 habitats (92/43/EEC) including estuaries, mudflats and sandflats, perennial vegetation of stony banks, Atlantic and Mediterranean salt meadows, floating river vegetation and old Oak woodlands (Duchas, unpublished data). There are two Special Protection Areas, designated under the EU "Birds Directive" (79/409/EEC); these are the (1) Blackwater Callows and (2) Blackwater Estuary (S.I. No. 349/1994). There are internationally important numbers of Black-tailed Godwits in the estuary and large numbers and varieties of other birds also use it. The River Blackwater also supports several "Red Data Book" plant species and "Habitats Directive" Annex II animal species such as the different Lamprey species, freshwater pearl-mussel, otter and salmon. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers (78/659/EEC). Irish Red Data Book fauna found in the Blackwater River area include Pine Martin, Badger, various bat species, common frog and rare bush cricket.

There are a number of mussel-beds present in Youghal Harbour. The Harbour has not been designated under the Shellfish Waters Directive (79/923/EEC). The bay area outside the estuary from Knockadoon Head to Knockavery was designated as a Class B production area under the EU Directive "laying down the health conditions for the production and the placing on the market of live bivalve molluscs" (91/492/EEC) up until 2000, but the area was not designated in the 2001 Regulations.

A dye trace and drogue tracking study was conducted in the Blackwater estuary, which provided more detailed and up to date information on water current directions and velocity. Dispersion and dilution characteristics appeared to be good, with low concentrations of dye recorded before the dye reached the estuary mouth on the ebb releases and Youghal Bridge on the flood releases. Recorded currents were south-south-east for the ebb tide and north-north-east for the flood tide. However, there appears to be an east to west flowing current at high and low water slack periods, causing the dye to migrate towards the west shore at this time. At the high water, spring dye release, strong dye concentrations were observed within the harbour where a clockwise circulation pattern appeared to have prevented this dye from re-entering the channel.

The drogue study indicated a current favouring the Youghal side of the channel flowing south. The directions moved towards the centre of the channel by mid-tide. On the flood tide, drogues travelled north-north-west.

Details on the Blackwater Callows SPA, Blackwater Estuary SPA and the Blackwater River SAC are provided in Attachment F.1. A detailed assessment of the impacts from the existing works and the proposed upgrade works is provided in the EIS for the Youghal Main Drainage Scheme (provided in Section B.6).

- Describe, where appropriate, measures for minimising pollution over long distances or in the territory of other states.

- This section should also contain full details of any modelling of discharges from the agglomeration. Full details of the assessment and 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.

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.

There are no drinking water abstraction points downstream of the discharges from the Youghal agglomeration..

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 (79/923/EEC).

The Urban Waste Water Treatment Regulations require that wastewater from Youghal be collected and receive full secondary treatment. In addition, as the receiving waters are designated as sensitive receiving waters under the regulations, nutrient removal will be required.

The ongoing works (detailed in Section B.10 of this application) under the Youghal Main Drainage Scheme, currently at the detailed design stage, are required to bring the Youghal agglomeration into compliance with the Urban Waste Water Treatment Regulations.

The EIS for the scheme (provided in Section B.6 of this application) provides further details on the scoping of the works to ensure compliance with the relevant directives.

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.

Information on the proposed programme of improvements, the approved funding and the timeframe for the completion of the works is provided in Section B.10 of this application.

Attachment included	Yes	No
		√

G.2 Compliance with Water Quality Standards for Phosphorus Regulations (S.I. No. 258 of 1998).

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 Water Quality Standards for Phosphorous Regulations (S.I. No. 258 of 1998) 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 identified as the principal sources of pollution under the P regulations.

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
	Not applicable	

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.

Refer to Section G.1 and Section B.10.

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 Overflow

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.

Refer to Section G.1 and Section B.10.

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

Attachment included	Yes	No
		√

SECTION H: DECLARATION

Declaration

I hereby make application for a waste water discharge licence/revised licence, 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 :** 18th Sept 08
(on behalf of the organisation)

Print signature name: Patricia Power

Position in organisation: Director of Services