ATTACHMENT No: B1

Drawing/Map – Agglomeration Served by Wastewater Treatment Works
ATTACHMENT No: B3

Drawing/Map – Wastewater Treatment Works
Primary discharge Point
ATTACHMENT No: B5

Drawing/Map – Wastewater Treatment Works
Stormwater Overflow Points
ATTACHMENT No: B8

Site Notice

(Newspaper Advertisement and Site Photographs)
Site Notice

Monaghan County Council

“APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTE WATER DISCHARGE LICENCE”

In accordance with the requirements of the Waste Water Discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007), Monaghan County Council, The Glen, Monaghan, intends to apply to the EPA for a Waste Water Discharge Licence for the Ballybay Wastewater Treatment Plant and associated sewer network.

Ballybay Wastewater Treatment Plant is a biological treatment plant used for the treatment of municipal wastewater conveyed in the foul sewer network serving the agglomerations of Ballybay and its environs.

Ballybay Wastewater Treatment Plant is located at Meeting House Lane, Ballybay, Co. Monaghan, National Grid Reference: E271583, N320338

Primary Discharge
PSW1 The associated Primary Discharge location from the wastewater treatment plant is located at Meeting House Lane, Ballybay, Co. Monaghan, National Grid Reference: E271553, N320412

Storm Water Discharge
SW2 The associated discharge location from the stormwater overflow is located at Castleblayney Road, Ballybay, Co. Monaghan, National Grid Reference: E272255, N320504
SW3 The associated discharge location from the stormwater overflow is located at Corrybrannan Bridge, Ballybay, Co. Monaghan, National Grid Reference: E271947, N320148
SW4 The associated discharge location from the stormwater overflow is located at Inlet pumping station, Ballybay WWTW, Meeting House Lane, Ballybay, Co. Monaghan, National Grid Reference: E271618, N320369

A copy of the application for a waste water discharge licence, and any such further information relating to the application as may be furnished to the Agency in the course of the Agency’s consideration of the application, shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the headquarters of the Agency and at: Monaghan County Council, The Glen, Monaghan.

Submissions in relation to this application may be made to the Agency at its headquarters. In this regard any person or body who wishes to make a written submission can do so after the 22nd September 2008 to the EPA Headquarters, PO Box 3000, Johnstown Castle Estate, Co. Wexford in relation to:

- the application
- such plans, maps, reports, documents and other information and particulars, as are submitted by the applicant in accordance with SI 684 of 2007
Location of Site Notice;
Public Notices • Announcements • Situations Vacant

Contact our Advertising Office Monday to Friday tel: 047 82188 fax: 047 84070 email: ads@northern-standard.ie

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTE WATER DISCHARGE LICENCE FOR CASTLEBLAYNEY WASTEWATER TREATMENT WORKS

In accordance with the requirements of the Waste Water Discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007), Monaghan County Council, The Glen, Monaghan intends to apply to the EPA for a Waste Water Discharge Licence for Castleblayney Wastewater Treatment Works.

Castleblayney Wastewater Treatment Works is a biological treatment plant, used for the treatment of municipal wastewater conveyed in the foul sewer network serving the agglomeration of Castleblayney and its environs. Castleblayney Wastewater Treatment Works is located at Mullinacoon Street, Castleblayney, Co.Monaghan, National Grid Reference: E229133, N319933. It has a number of associated discharge points on the sewer network collection system as will be indicated on the documents submitted as part of this application.

As soon as is practicable after receipt by the Agency, the application and such further information relating to the application, as may be furnished to the Agency in the course of the Agency’s consideration of the application, will be made available for inspection or purchase from the EPA Headquarters and at the Water Section, Monaghan County Council, The Glen, Monaghan.

Any person or body who wishes to make a written submission can do so on or after 22nd September 2008 to the EPA Headquarters; PO Box 3000, Johnstown Castle Estate, Co. Wexford in relation to:

• The application
• Such plans, maps, reports, documents and other information and particulars, including an environmental impact statement, as are submitted by the applicant in accordance with Regulations 14(7), 16, 17, 18(3)(b) and 20.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTE WATER DISCHARGE LICENCE FOR BALLYBAY WASTEWATER TREATMENT WORKS

In accordance with the requirements of the Waste Water Discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007), Monaghan County Council, The Glen, Monaghan intends to apply to the EPA for a Waste Water Discharge Licence for Ballybay Wastewater Treatment Works.

Ballybay Wastewater Treatment Works is a biological treatment plant, used for the treatment of municipal wastewater conveyed in the foul sewer network serving the agglomeration of Ballybay and its environs. Ballybay Wastewater Treatment Works is located at Market Road, Ballybay, Co.Monaghan, National Grid Reference: E216613, N325539. It has a number of associated discharge points on the sewer network collection system as will be indicated on the documents submitted as part of this application.

As soon as is practicable after receipt by the Agency, the application and such further information relating to the application, as may be furnished to the Agency in the course of the Agency’s consideration of the application, will be made available for inspection or purchase from the EPA Headquarters and at the Water Section, Monaghan County Council, The Glen, Monaghan.

Any person or body who wishes to make a written submission can do so on or after 22nd September 2008 to the EPA Headquarters; PO Box 3000, Johnstown Castle Estate, Co. Wexford in relation to:

• The application
• Such plans, maps, reports, documents and other information and particulars, including an environmental impact statement, as are submitted by the applicant in accordance with Regulations 14(7), 16, 17, 18(3)(b) and 20.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTE WATER DISCHARGE LICENCE FOR CLONES WASTEWATER TREATMENT WORKS

In accordance with the requirements of the Waste Water Discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007), Monaghan County Council, The Glen, Monaghan intends to apply to the EPA for a Waste Water Discharge Licence for Clones Wastewater Treatment Works.

Clones Wastewater Treatment Works is a biological treatment plant, used for the treatment of municipal wastewater conveyed in the foul sewer network serving the agglomeration of Clones and its environs. Clones Wastewater Treatment Works is located at Scobothouse Road, Clones, Co.Monaghan, National Grid Reference: E210603, N325539. It has a number of associated discharge points on the sewer network collection system as will be indicated on the documents submitted as part of this application.

As soon as is practicable after receipt by the Agency, the application and such further information relating to the application, as may be furnished to the Agency in the course of the Agency’s consideration of the application, will be made available for inspection or purchase from the EPA Headquarters and at the Water Section, Monaghan County Council, The Glen, Monaghan.

Any person or body who wishes to make a written submission can do so on or after 22nd September 2008 to the EPA Headquarters; PO Box 3000, Johnstown Castle Estate, Co. Wexford in relation to:

• The application
• Such plans, maps, reports, documents and other information and particulars, including an environmental impact statement, as are submitted by the applicant in accordance with Regulations 14(7), 16, 17, 18(3)(b) and 20.

Roads Act 1993

Temporary Closing of Roads

Notice is hereby given pursuant to the Roads Act, 1993 (Section 75) of the Councils intention to close the following road from Monday 10th November 2008 for a period of two weeks

To facilitate Monaghan County Council in the carrying out of road works at Celbridge on the N54/A9 Concession Road.

Not Change in Status

MONAGHAN COUNTY COUNCIL

The Draft Register of Electors 2009/2010 has been published and is available for inspection at the following locations:

County Offices, The Glen, Monaghan
County Library, Clones
Branch Library, Monaghan
Branch Library, Castleblayney
Branch Library, Curraghmacross
Branch Library, Ballybay
Executive Engineer’s Office, Enniskillen
Executive Engineer’s Office, Clones

Page 13 of 56
ATTACHMENT No: B9 (iii)

EPA Letter of Payment

Mary Parle,
Accounts Section,
Environmental Protection Agency,
PO Box 3000,
Jobstown Castle Estate,
Co Wexford.


Dear Sirs,

I wish to inform you that Monaghan County Council intends to formally make an application to your offices - as per our correspondence of the 17th September - in respect of three treatment plants below with discharges from agglomerations with a population equivalent of 2,001 to 10,000 per the Waste Water Discharge (Authorisation) Regulations 2007, SI No 684 of 2007:

- Clones Waste Water Treatment Plant, Legarhill, Clones.
- Castleblayney Waste Water Treatment Plant, Drumillard Little, Castleblayney.
- Ballybay Waste Water Treatment Plant, Commucklassglass, Ballybay.

Monaghan County Council is currently preparing an application in respect of all three treatment plants and hopes to have same issued to you within a matter of weeks. However, I understand that a payment for €75,000 - €25,000 per application - in respect of these applications was issued to your offices prematurely by Electronic Fund Transfer – see attached remittance advice.

I regret the inconvenience this may cause but would be grateful if you could allocate these monies to these applications when they are eventually received by your office. For further information regarding the above feel free to contact me.

Best Regards

Dominick Mahon
A/SEO
Water Services
ATTACHMENT No: B10

Capital Investment Programme
### Schemes to start 2007

<table>
<thead>
<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrickmacross Sewerage Scheme</td>
<td>S</td>
<td>22,000,000</td>
</tr>
<tr>
<td>Carrickmacross Sewerage Scheme</td>
<td>S</td>
<td>22,000,000</td>
</tr>
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</table>

### Schemes to start 2008

<table>
<thead>
<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castleblaney/Ballybay/Clones Wastewater Treatment Plant</td>
<td>S</td>
<td>12,000,000</td>
</tr>
<tr>
<td>Castleblaney/Ballybay/Clones Wastewater Treatment Plant</td>
<td>S</td>
<td>12,000,000</td>
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</table>

### Schemes to start 2009

<table>
<thead>
<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monaghan Sludge Management (H)</td>
<td>S</td>
<td>2,570,000</td>
</tr>
<tr>
<td>Monaghan Town Sewerage Scheme (H)</td>
<td>S</td>
<td>27,500,000</td>
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<tr>
<td>Monaghan Town Sewerage Scheme (H)</td>
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<td>30,070,000</td>
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### Serviced Land Initiative

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<tr>
<td>Monaghan Town Sewerage Scheme (North Eastern Collection Area)(H)</td>
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<td>2,700,000</td>
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<tr>
<td>Monaghan Town Sewerage Scheme (North Eastern Collection Area)(H)</td>
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<td>2,700,000</td>
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### Rural Towns and Villages Initiative

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<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
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<td>Carrickmacross Water Supply Scheme</td>
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<tr>
<td>Carrickmacross Water Supply Scheme</td>
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<tr>
<td>Castleblaney Water Supply Scheme Stage 2</td>
<td>W</td>
<td>1,100,000</td>
</tr>
<tr>
<td>Castleblaney Water Supply Scheme Stage 2</td>
<td>W</td>
<td>1,100,000</td>
</tr>
<tr>
<td>Castleblaney Water Supply Scheme Stage 2</td>
<td>W</td>
<td>5,600,000</td>
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<tr>
<td>Castleblaney Water Supply Scheme Stage 2</td>
<td>W</td>
<td>5,600,000</td>
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</table>

### Water Conservation Allocation

<table>
<thead>
<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Conservation Allocation</td>
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<td>3,185,000</td>
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<tr>
<td>Water Conservation Allocation</td>
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<td>3,185,000</td>
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</table>

### Asset Management Study

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<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Management Study</td>
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<td>50,000</td>
</tr>
<tr>
<td>Asset Management Study</td>
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<td>50,000</td>
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</table>

### Programme Total

<table>
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<tr>
<th>Scheme</th>
<th>W/S</th>
<th>Est. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme Total</td>
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<tr>
<td>Programme Total</td>
<td></td>
<td>75,605,000</td>
</tr>
</tbody>
</table>

*(H) Refers to a Hub as designated in the National Spatial Strategy*
ATTACHMENT No: C.1

OPERATIONAL INFORMATION REQUIREMENTS
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.

Wastewater Treatment Plant

Introduction

The WWTP is located to the south west of the town, at Meetinghouse Lane. The WWTP currently occupies an area of approximately 0.4 hectares and designed to cater for 7,238P.E. Ballybay WWTP was built and commissioned in 1983 to provide preliminary and secondary treatment for waste water prior to discharge to the River Dromore. The WWTP operates as an extended aeration plant, preceded by screening and grit removal. Sludge treatment at the WWTP comprises thickening and dewatering. The dewatered sludge is stored on site prior to disposal at Scotch Corner landfill. Treated effluent from Ballybay Waste Water Treatment Plant (WWTP) discharges to the River Dromore via a single outfall. The river flows into a lake and marshy area approximately 0.5 km downstream of the WWTP outfall.

Summary of Plant

- The plant consists of the following main components (refer to drawing B2 02):

<table>
<thead>
<tr>
<th>Treatment Stage</th>
<th>Element</th>
<th>Description (dimensions, capacities etc)</th>
<th>No of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet Pumping Station</td>
<td>2No submersible duty pumps (each rated 30L/s)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2No storm pumps in separate well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preliminary</td>
<td>Screen</td>
<td>Mechanical course screen (20mm aperture)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grit removal</td>
<td>Vortex Grit Trap</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Flow monitor</td>
<td>Venturi flume at the plant inlet and outlet</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Storm water Treatment</td>
<td>Grass plots</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Secondary</td>
<td>Extended Aeration</td>
<td>Rectangular Aeration Tanks (total capacity = 2,460m3)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Settlement Tank</td>
<td>Rectangular Settlement Tanks (Surface area = 215m2)</td>
<td>2</td>
</tr>
<tr>
<td>Tertiary</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Ancillary</td>
<td>Phosphorus Removal</td>
<td>Chemical dosing for phosphorous removal</td>
<td>1</td>
</tr>
<tr>
<td>Thickenning</td>
<td>Picket Fence Thickener, achieves 2.5% dry solids (capacity = 306m3)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sludge Treatment/Disposal</td>
<td>Dewatering</td>
<td>Single belt press estimated @ 90kg ds/hr</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outfall</td>
<td>Pipe</td>
<td>10m long open ended outfall to Dromore River</td>
</tr>
<tr>
<td></td>
<td>Power Generation</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Summary of Design Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Population equivalent</td>
<td>7283</td>
</tr>
<tr>
<td>Flow per person per day</td>
<td>225.0</td>
</tr>
<tr>
<td>Daily flow (m³/day)</td>
<td>1638.68</td>
</tr>
<tr>
<td>Daily flow (m³/s)</td>
<td>0.01897</td>
</tr>
<tr>
<td>Dry weather flow (l/s)</td>
<td>18.97</td>
</tr>
<tr>
<td>Daily BOD (kg/day)</td>
<td>436.98</td>
</tr>
<tr>
<td>Population equivalent</td>
<td>7283</td>
</tr>
<tr>
<td>Flow per person per day</td>
<td>225.0</td>
</tr>
</tbody>
</table>

Description of Waste water treatment process

Preliminary Treatment
At the WWTP inlet, incoming waste water flows of up to 60 l/s (i.e. 12.8 x current DWF) are pumped by duty/standby pumps to the preliminary treatment system. Preliminary treatment comprises screening using a mechanically raked coarse screen (20 mm aperture), followed by grit removal in a vortex grit trap. Screenings are macerated and returned to the flow, while grit is stored in a skip prior to disposal at Scotch Corner landfill.
The inlet pumping station also has an overflow weir, which passes excess flows to the storm sump from where they are pumped (without screening) on to grass plots on site. The total flow pumped forward for treatment is measured in venturi flume located at the plant inlet. The inlet flow is sampled automatically by a Contronic Flow Proportional Inlet Sampler. Grab samples of the influent are taken routinely.

Primary Treatment
Primary treatment is not provided at the site.

Secondary Treatment
Following preliminary treatment waste water gravitates to the secondary treatment system. Secondary treatment is provided by an activated sludge treatment system comprising of:
- Two rectangular aeration tanks designed for BOD removal and nitrification, followed by
- Two rectangular secondary settlement tanks and a sludge circulation system.

Aeration Tanks
The function of the aeration tanks is to provide the right conditions for microbial growth and there by convert the nutrients, organic and inorganic matter available on the sewage into microbial cells.
Oxygen is supplied by two vertical shaft surface aerators rated at 14.4 kW each in each tank, which supplies sufficient oxygen for energy and cell production by aerobic microbial cells. Dissolved oxygen is maintained between 1-3mg/L. D.O. (dissolved oxygen) probes are provided in each tank. These probes control the outlet weir which maintains the level in the aeration tank and consequently the depth submergence of the aerators to increase or decrease the oxygen input.

The aeration tanks have a total capacity of approximately 2,460 m3, which corresponds to a residence time of approximately 6 days at current DWF or 2.3 days at current average flows.

Secondary Settlement Tanks
Flow from the aeration tanks gravitates to two rectangular horizontal flow settlement tanks fitted with continuous chain driven scraper mechanisms. Settled sludge gravitates to the nearby pumping station, while scum is removed automatically from the tank surface. A common set of submersible pumps (duty/standby) is used to alternately pump the activated sludge to the aeration tanks or to the picket fence thickener.

Treated effluent which overflows from the secondary settlement tanks gravitates to an on site chamber from where it discharges to the River Dromore, via an open ended outfall.

The secondary settlement tanks have a total capacity of approximately 2,460 m3, which corresponds to a residence time of approximately 6 days at current DWF or 2.3 days at current average flows.

Treated effluent which overflows from the secondary settlement tanks, gravitates to an on site chamber from where it discharges to the River Dromore, via an open ended outfall.

The extended aeration system currently operates at a F/M ratio of less than 0.07 kg BOD/kg MLSS.day with a sludge age in excess of 25 days. MLSS is maintained between 2,000 to 4,000 mg/l, and the hydraulic residence time is approximately 3 days at current DWF.

Tertiary Treatment
Tertiary treatment is not provided.

Sludge Treatment and Disposal
Excess sludge is continually being produced and is removed at regular intervals by pumping to a picket fence thickening tank. Sludge from Ballybay water treatment plant (WTP) is also imported and mixed with the sludge. Polyelectrolyte is dosed into this line to improve its dewatering ability. The sludge is allowed to settle in the thickener and supernatant is drawn off which returns to the sludge return sump for further treatment.
Settled sludge is periodically drawn off from the PFT and pumped by one of the two positive displacement pumps with variable speed drives into the flocculation chamber. The polyelectrolyte is dosed into the line prior to the chamber.

The flocculated sludge overflows the chamber onto a model 1250 single belt press and is pressed to a solid cake concentration of greater than 12% w/w. The sludge cake is discharged to a screw conveyor and is delivered to a solid cake collection trailer for disposal at the Scotch Corner landfill.

Supernatant liquor from the gravity sludge thickening tank and filtrate from the dewatering press gravitate to the sludge pump station from where the liquor combines with return activated sludge. Flows are subsequently pumped to the aeration tanks to receive full biological treatment with the main process stream.

At present, approximately 1.70 tds/week (or 88.3 tds/year) of indigenous sludge is cothickened with 1.16 tds/week of imported sludge from the Ballybay water treatment plant (Lough Egish Water Supply Scheme). The thickened sludge is dewatered to produce 2.85 tds/week of cake with an estimated dry solids concentration of approximately 9.5%. The sludge is disposed of at Scotch Corner landfill.

**C.1.1 Storm Water Overflows**

There have been 2 No. storm overflows identified. The frequency of overflows has been estimated based on the information available on site. It is considered that the overflows are within the number which would be recommended by “Procedures and Criteria in relation to Storm Water Overflows”. A hydraulic model is currently being prepared for the catchment. The model is at draft stage. Please refer to drawing Attachment B5, drawing 05.

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.

**Description**
There are two overflows from the foul/combined system, two of which discharge either directly or via the separate surface water collection networks, to Lough Major. The locations of the two overflows within the Ballybay catchment are shown in Figure 1 and they are summarised individually below.

**Figure 1 – Overflow Locations within Ballybay**

**Castleblayney Road CSO**
- **Ref:** SW02
- **Location:** Lough Major
- **National Grid Reference:** E272255, N320504

**Description:** This overflow is located on a 375mm diameter concrete combined sewer on the Castleblayney Road. Excess flow discharges to a nearby separate storm water pipe via a screened low level weir and 600 mm diameter overflow pipe. These excess flows are ultimately discharged to Lough Major via the surface water network.

Refer to Drawing 11, Attachment C2.

In the general findings from the draft Modelling report it states that; *'the volume of spill from this overflows during the critical 1 year event is Blayney Rd CSO 79 m³. It overflows eventually discharge via a storm sewer into Lough Major which is of high amenity value.'*

**Compliance with the Urban Waste Water Directive 91/271/EEC:**
Formula A, as detailed in the Urban Wastewater Treatment Directive 91/271/EEC, relates to storm overflows within the sewerage network. There is one storm overflow within the sewerage network as detailed above.

\[ P = \text{design domestic population} - 507 \text{ PE} \]
\[ E = \text{design industrial effluent flow} - 269 \text{ PE} \]
\[ DWF = \text{Design dry weather flow} - 174.55\text{m}^3/\text{day} \]
\[ \text{Formula A} = DWF + 1.36P + 2E \]
\[ = (174.55\text{m}^3/\text{day}) + (1.36 \times 507) + (2 \times 269) \]
\[ = 1,402.07 \text{m}^3/\text{day} \]

**Corrybrannan Bridge CSO; Ref: SW03**

Location: Dromore River
National Grid Reference: E271947, N320148
Description: This overflow is located on a 375mm diameter concrete combined sewer at the Corrybrannon Bridge to the south of Ballybay. Excess flow discharges to the adjacent Dromore River via a low level screened weir and a 375mm diameter overflow pipe. Refer to Drawing 12, Attachment C2.

Compliance with the Urban Waste Water Directive 91/271/EEC:
Formula A, as detailed in the Urban Wastewater Treatment Directive 91/271/EEC, relates to storm overflows within the sewerage network. There is one storm overflow within the sewerage network as detailed above.

\[ P = \text{design domestic population} - 735 \text{ PE} \]
\[ E = \text{design industrial effluent flow} - 541 \text{ PE} \]
\[ DWF = \text{Design dry weather flow} - 287.20 \text{m}^3/\text{day} \]
\[ \text{Formula A} = DWF + 1.36P + 2E \]
\[ = (287.20\text{m}^3/\text{day}) + (1.36 \times 735) + (2 \times 541) \]
\[ = 2,369.68 \text{m}^3/\text{day} \]

**C.1.2 Pumping Stations**

The locations of the 9 foul/combined pumping stations within Ballybay are shown below in Figure 2 and drawing 01, attachment B1. The pumping stations in the catchment elevate sewage from low lying areas into the main gravity network.

<table>
<thead>
<tr>
<th>Pumping Station</th>
<th>No. of Pumps</th>
<th>Wet Well (m³)</th>
<th>Pump Rate (l/s)</th>
<th>Diameter (mm)</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrickmacross PS</td>
<td>2</td>
<td>11.4</td>
<td>36</td>
<td>250</td>
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Ballybay Waste Water Discharge Licence Application

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### Figure 2 – Locations of Pumping Stations in Ballybay

**WWTP Inlet PS**

This pumping station is located at the wastewater treatment plant on Meeting House Lane in Ballybay. The pumping station collects flows from the main inlet sewer and serves the entire Ballybay catchment. The incoming flows are lifted approximately 6.0 meters from a wet well, below the inlet building, to an inlet channel leading to the preliminary treatment units. There are two submersible pumps in the storm pumping station with a maximum discharge rating of 108 litres/second for each pump.

- Number of duty and standby pumps at each pump station; *There are four submersible pumps in operation on a duty/standby duty/standby arrangement. The maximum pumping is 33 litres/sec for each pump.*
- The measures taken in the event of power failure; *There is no backup power supply in the case of a power failure.*
- Details of storage capacity at each pump station; *Pump sump volume is not applicable.*
- Frequency and duration of activation of emergency overflow to receiving waters. (Clarify the location where such discharges enter the receiving waters); *There is an overflow pipe from the wet well to a storm pumping station which lifts flows to a gravity overflow pipeline. The overflow pipeline discharges to an adjacent water*
course. Please note that the emergency overflow will normally only be activated in the event that the both pumps fail or there is a power failure. In the general findings from the draft Modelling report it states that; ‘There was also a large discharge from the overflow at the main lift pumping station at the WWTW. From the 1 year winter analysis, this was estimated to be 1,100m³. This is caused by the low pumping rate from the foul pumps in relation to the incoming storm flow.’

Carrickmacross Road PS

This pumping station is located on the grounds of the Action Adhesives factory on the Carrickmacross Road to the south of Ballybay. The pumping station collects flows from the industrial properties and a number of nearby residential properties. A 225mm diameter sewer transfers flows to the pumping station that are then lifted approximately 5.0 meters to a 150mm diameter collector sewer on Carrickmacross Road. The rising main is 250mm in diameter and spans approximately 210 meters to the discharge manhole. The pumping station is relatively new and in good service and structural condition.

- Number of duty and standby pumps at each pump station; There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping rate is 36 litres/sec.
- The measures taken in the event of power failure; There is no backup power supply in the case of a power failure.
- Details of storage capacity at each pump station; Pump sump volume is 11.4 m³
- Frequency and duration of activation of emergency overflow to receiving waters. (Clarify the location where such discharges enter the receiving waters); There is no emergency storm overflow tanks or pipes at this pumping station.

Lakeview Heights PS

The pumping station collects flows from nearby housing estates including Lakeview Heights and Knocknamaddy Avenue. A 225mm diameter and a 150mm diameter sewer transfers flows to the pumping station which are then lifted approximately 5.5 meters to the Loch Mor pumping station. The rising main is 80mm in diameter and spans approximately 250 meters to the discharge manhole.

- Number of duty and standby pumps at each pump station; There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping rate is 4 litres/sec.
- The measures taken in the event of power failure; There is no backup power supply in the case of a power failure.
- Details of storage capacity at each pump station; Pump sump volume is 11.4 m³
- Frequency and duration of activation of emergency overflow to receiving waters. (Clarify the location where such discharges enter the receiving waters); There is no emergency storm overflow tanks or pipes at this pumping station.

Culbrannan PS

This pumping station is located within a residential development, Culbrannon Park, to the south of Ballybay. The pumping station collects flows from a number of nearby residential units which are then lifted approximately 4.5 meters to a 150mm diameter collector sewer. The rising main is 80mm in diameter and spans approximately 65 metres to the discharge manhole.
• Number of duty and standby pumps at each pump station;  *There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping rate is 3 litres/sec.*

• The measures taken in the event of power failure; *There is no backup power supply in the case of a power failure.*

• Details of storage capacity at each pump station; *Pump sump volume is 15.5m³*

• Frequency and duration of activation of emergency overflow to receiving waters; *There is an emergency overflow pipe from the wet well located at depths of 1.6m from the cover level. Please note that the emergency overflow will normally only be activated in the event that both pumps fail or there is a power failure. Frequencies are not known.*

**Loch Mor PS**

This pumping station is located at the southern side of Lough Major to the south of Ballybay. The pumping station collects flows from residential developments in Lough Mor Avenue. A 150mm diameter gravity sewer and an 80mm diameter rising main, from Lakeview pumping station, transfers flows to the pumping station which are then lifted approximately 1.5 meters to a 225mm diameter collector sewer. The rising main is 80mm in diameter and spans some 160 meters to the discharge manhole.

• Number of duty and standby pumps at each pump station;  *There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping is 9 litres/sec.*

• The measures taken in the event of power failure; *There is no backup power supply in the case of a power failure.*

• Details of storage capacity at each pump station; *Pump sump volume is 6.8m³*

• Frequency and duration of activation of emergency overflow to receiving waters. (Clarify the location where such discharges enter the receiving waters); *There is an emergency overflow from the wet well located at a depth of 1.6m from the cover level. This overflow pipe discharges to the adjacent Lough Major. Please note that the emergency overflow will normally only be activated in the event that both pumps fail or there is a power failure.*

*In the general findings from the draft Modelling report it states that; ‘From the 1 year winter analysis, there was a small discharge (< 10m³) from the overflow on the Loch Mor Avenue pumping station. The overflow discharges into Lough Major, which is designated as high amenity.’*

**Meadowview PS**

This pumping station is located within a residential development on the Clones Road to the west of Ballybay. The pumping station collects flows via a 150mm diameter sewer from the housing estate. The flows are then lifted approximately 11 meters to a 225mm diameter collector sewer on Clones Road. The rising main is 100mm in diameter and spans approximately 220 meters to the discharge manhole.

• Number of duty and standby pumps at each pump station;  *There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping is 5.2 litres/sec per pump.*

• The measures taken in the event of power failure; *There is no backup power supply in the case of a power failure.*

• Details of storage capacity at each pump station; *Pump sump volume is 19.4m³*

• Frequency and duration of activation of emergency overflow to receiving waters; *There is an emergency overflow pipe from the wet well located at a depth of 3.1m from the cover level. The pumping station was assessed as being relatively new and in good
condition. Please note that the emergency overflow will normally only be activated in the event that the both pumps fail or there is a power failure. Frequencies are not known.

The Alders PS

This pumping station is located within a residential development on Clones Road to the west of Ballybay. The pumping station collects flows via a 150mm diameter sewer from the housing estate. The flows are then lifted approximately 9 meters to a 225mm diameter collector sewer on Clones Road. The rising main is 150mm diameter and spans some 110 meters to the discharge manhole. The pumping station is relatively new and in good condition.

- Number of duty and standby pumps at each pump station; There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping is 6 litres/sec.
- The measures taken in the event of power failure; There is no backup power supply in the case of a power failure.
- Details of storage capacity at each pump station; Pump sump volume is 19.4m³
- Frequency and duration of activation of emergency overflow to receiving waters. (Clarify the location where such discharges enter the receiving waters); There is no emergency storm overflow tanks or pipes at this pumping station.

Whyleys Hill PS

This pumping station is located in a residential development on the Castleblayney Road to the east of Ballybay. The pumping station collects flows via a 150 mm diameter sewer from the housing estate. The flows are then lifted approximately 4.2 meters to a 225mm diameter collector sewer on Castleblayney Road. The rising main is 80mm in diameter and spans approximately 170 meters to the discharge manhole.

- Number of duty and standby pumps at each pump station; There are two submersible pumps in operation on a duty/standby arrangement. The maximum pumping is 4 litres/sec.
- The measures taken in the event of power failure; There is no backup power supply in the case of a power failure.
- Details of storage capacity at each pump station; Pump sump volume is 23.7m³
- Frequency and duration of activation of emergency overflow to receiving waters; There are two emergency overflow pipes from the wet well located at depth of 2.7 from the cover level. These pipes discharge to an oval shaped precast concrete chamber. The pumping station was assessed as being relatively new and in good condition. Please note that the emergency overflow will normally only be activated in the event that the both pumps fail or there is a power failure. Frequencies are not known.
ATTACHMENT No: C.2

OUTFALL DESIGN AND CONSTRUCTION
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.

Primary Discharge – Effluent Outfall – PSW1 (E271553, N320412)
Treated effluent is discharged from the wastewater treatment plant to the Dromore River via a single outfall. The river flows into a lake and marshy area approximately 0.5 km downstream of the WWTP outfall. The discharge pipe is an open discharge 530mm diameter pipe.
Refer to Drawing 10, Attachment C2.

Secondary discharge points
There are no secondary discharge points.

Storm Overflow Point, Ref: SW02 (E272255, N320504)
The Castleblayney Rd combined sewer overflow is located outside No 14 Castleblayney Rd. The catchment upstream of the overflow consists of the Castleblayney Rd (including the Whyleys Hill and Folly Court pumping stations), and further properties behind Main St, including Church Place and the livestock mart.
The overflow consists of a single broad-crested concrete wall weir set at an approximate height of 300 mm above the invert of the incoming 300mm sewer. Excess storm flows go over the weir and through a coarse screen into a 600mm storm sewer, which eventually discharges into Lough Major.
Refer to Drawing 11, Attachment C2.

Storm Overflow Point, Ref: SW03 (E271947, N320148)
The Corrybrannan Bridge combined sewer overflow on the north bank of the Dromore River where it crosses under Corrybrannan Bridge. The catchment upstream of the overflow consists of the Carrickmacross Rd and Loch Mor estate.
The overflow consists of a single sided weir set at a height of 200 mm above the invert of the incoming 375mm sewer. Excess storm flows go over the weir and directly into the Dromore River.
Refer to Drawing 12, Attachment C2.
ATTACHMENT No: D1

Discharge(s) to Surface Waters

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<td></td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------------</td>
<td>------------------</td>
<td>----------------</td>
<td>---------------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>USW 24/01/2007</td>
<td>G</td>
<td>&lt;1.5</td>
<td>25</td>
<td></td>
<td>0.10</td>
<td>0.30</td>
<td>0.13</td>
<td>2.15</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>USW 24/07/2007</td>
<td>G</td>
<td>&lt;2</td>
<td>35</td>
<td>3</td>
<td>0.14</td>
<td>0.43</td>
<td>1.61</td>
<td>0.61</td>
<td>1.00</td>
<td></td>
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<tr>
<td>USW 22/08/2007</td>
<td>G</td>
<td>&lt;2</td>
<td>35</td>
<td>3</td>
<td>1.42</td>
<td>4.35</td>
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<td>0.90</td>
<td>4.00</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>USW 22/11/2007</td>
<td>G</td>
<td>&lt;2</td>
<td>35</td>
<td>&lt;3</td>
<td>0.32</td>
<td>0.97</td>
<td>3.56</td>
<td>1.88</td>
<td>1.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USW 20/02/2008</td>
<td>G</td>
<td>&lt;2</td>
<td>17</td>
<td>3</td>
<td>0.09</td>
<td>0.27</td>
<td>2.57</td>
<td>1.45</td>
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</tr>
<tr>
<td>USW 28/05/2008</td>
<td>G</td>
<td>2</td>
<td>24</td>
<td>5.2</td>
<td>0.35</td>
<td>1.07</td>
<td>1.10</td>
<td>0.09</td>
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</tr>
<tr>
<td>USW 15/07/2008</td>
<td>G</td>
<td>2</td>
<td>32.6</td>
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<td>0.15</td>
<td>0.46</td>
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<tr>
<td>DSW 24/01/2007</td>
<td>G</td>
<td>&lt;1.5</td>
<td>16</td>
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<td>0.43</td>
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<td>2.23</td>
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<td>0.39</td>
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<td>&lt;2</td>
<td>35</td>
<td>6</td>
<td>0.86</td>
<td>2.02</td>
<td>4.90</td>
<td>0.90</td>
<td>4.00</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>DSW 22/11/2007</td>
<td>G</td>
<td>&lt;2</td>
<td>33</td>
<td>4</td>
<td>0.17</td>
<td>0.52</td>
<td>&lt;2.80</td>
<td>1.80</td>
<td>&lt;1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSW 20/02/2008</td>
<td>G</td>
<td>&lt;2</td>
<td>20</td>
<td>5</td>
<td>0.09</td>
<td>0.29</td>
<td>3.28</td>
<td>1.60</td>
<td>1.68</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>DSW 28/05/2008</td>
<td>G</td>
<td>3</td>
<td>27</td>
<td>6.8</td>
<td>0.16</td>
<td>0.49</td>
<td>1.50</td>
<td>1.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSW 15/07/2008</td>
<td>G</td>
<td>2</td>
<td>32.5</td>
<td>6.4</td>
<td>0.16</td>
<td>0.49</td>
<td>1.50</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ATTACHMENT No: F1

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.

The existing Ballybay Wastewater Treatment Plant discharges treated effluent to the Dromore River in the Erne Catchment. The Dromore River is a tributary of the Annalee River which in turn is a tributary of Lough Oughter. Lough Oughter is a cSAC.

The EPA Ecological Assessment of Rivers 2003 states that the water quality of the Dromore River had shown some improvement but generally remained below a satisfactory standard, largely due to the effects of sewage and agriculture on the lakes along the rivers course. The latest biological quality rating, from 2004, at Station No. 0200, Bridge d/s Lough Major, upstream of the existing Ballybay outfall is Q3 and downstream of the existing outfall, at Station No. 0300, Balladian Bridge, the rating is Q3. The upstream rating has improved from Q3 in 2000 and the downstream rating is unchanged.

The 1997 biological quality rating, at Station No. 0200, was Q3 and downstream of the existing outfall, at Station No. 0300, the rating was Q3.

Monitoring data for the effluent from the primary discharge point is included in Table D1 and monitoring data from monitoring points up and downstream of the treatment works is included in Table F1.

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.

Table F.1(i)(a) and (b) are complete for the primary discharge point.

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.

There are no secondary discharge points. Table F1 (ii)(a) and (b) are therefore not complete.
There are no impacts on ground water or other environmental media. The impact of the primary discharge point on the Dromore River is evaluated in the Was assimilative capacity calculations below.
**Ballybay Wastewater Treatment Works**

The design flow and loads, based on the projected population estimate for 2015 (life span of the EPA Waste Water Discharge Licence) design population estimate of 3,955, are detailed in below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population equivalent</td>
<td>3955 PE</td>
</tr>
<tr>
<td>Flow per person per day (l)</td>
<td>225.0 l</td>
</tr>
<tr>
<td>Daily flow (m³/day):</td>
<td>889.88 m³/day</td>
</tr>
<tr>
<td>Daily flow (m³/s):</td>
<td>0.01030 m³/s</td>
</tr>
<tr>
<td>Dry weather flow (l/s)</td>
<td>10.30 l/s</td>
</tr>
<tr>
<td>Daily BOD (kg/day)</td>
<td>237.30 kg/day</td>
</tr>
</tbody>
</table>

The existing Ballybay Wastewater Treatment Plant discharges treated effluent to the Dromore River. Oughter, which is within the river catchment, is designated as sensitive in the Urban Wastewater Treatment Regulations. The treatment standards required for discharging to the existing outfall location have been examined below.

**Receiving Waters – Dromore River**

**Water Quality**

The EPA Ecological Assessment of Rivers 2003 states that the water quality of the Dromore River had shown some improvement but generally remained below a satisfactory standard, largely due to the effects of sewage and agriculture on the lakes along the river's course. The latest biological quality rating, from 2004, at Station No. 0200, Bridge d/s Lough Major, upstream of the existing Ballybay outfall is Q3 and downstream of the existing outfall, at Station No. 0300, Balladian Bridge, the rating is Q3. The upstream rating has improved from Q3 in 2000 and the downstream rating is unchanged.

The 1997 biological quality rating, at Station No. 0200, was Q3 and downstream of the existing outfall, at Station No. 0300, the rating was Q3.

<table>
<thead>
<tr>
<th>Location</th>
<th>Station No.</th>
<th>Station Name</th>
<th>1997</th>
<th>2000</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downstream</td>
<td>0300</td>
<td>Balladian Bridge</td>
<td>Q3</td>
<td>Q3-4</td>
<td>Q3</td>
</tr>
<tr>
<td>Upstream</td>
<td>0200</td>
<td>Bridge d/s Lough Major</td>
<td>Q3</td>
<td>Q3</td>
<td>Q3</td>
</tr>
</tbody>
</table>
**Hydrometric Data**

There is flow monitoring data available for the Dromore River at Ashfield in County Cavan. The OPW has an average flow measurement and catchment area at Ashfield as follows:

- Average flow (m³/s): 4.022
- Catchment Area (km²): 233

There are no low flow readings. It is estimated that the average flow is 15 times the 95 percentile flow based on similar catchments in the area. The 95-percentile flow is estimated as follows:

- 95-percentile flow (m³/s): 0.2

The flow in the Dromore River at Ballybay is estimated based on the estimated catchment area as follows:

- 95 percentile flow per m²: 0.0012 m³/m²/sec
- Average flow per m²: 0.01726 m³/m²/sec
- Estimated Catchment Area: 60 km²
- 95 percentile flow (m³/s): 0.06905
- Average flow (m³/s): 1.0357

**Effluent Standards Required**

**Waste Assimilative Capacity - BOD**

The Waste Assimilative Capacity (WAC) for BOD is therefore calculated as follows:

\[
WAC = \left( C_{\text{max}} \times (F_{\text{river}} + F_{\text{eff}}) \right) - \left( C_{\text{back}} \times F_{\text{river}} \right) \times 86.4 \quad \text{kg Pollutant/day}
\]

- \( C_{\text{max}} \) = maximum permissible BOD concentration in river = 4 mg/L
- \( C_{\text{back}} \) = background (upstream) pollutant concentration = 2.1 mg/L
- \( F_{\text{river}} \) = \( F_{95} \) (for BOD calculations) = 0.06905 m³/s
- \( F_{\text{eff}} \) = effluent flow, i.e. \( \text{DWF}/(3600 \times 24) = 889.88/(3600 \times 24) = 0.0103 \text{ m}^3/\text{s} \)
The Dromore River is not designated as a salmonid water. However as Lough Oughter is used for fisheries it is considered appropriate that the salmonid water standards be adopted for the calculation of the assimilative capacity, i.e. a $C_{max}$ standard for the receiving waters of 4 mg/L BOD will be used. The background B.O.D. concentration, $C_{back}$, has been taken as 2.1 mg/L based on the 1998-200 EPA data. The resultant WAC is therefore calculated as follows:

$$WAC = [(4 \times (0.06905 + 0.0103)) - (2.1 \times 0.06905)] \times 86.4 = 14.89 \text{ kg BOD/day}$$

Taking a Design PE of 3,955 (PE for life time of the WWDL) the influent load to the treatment plant is calculated as 268 kg BOD/day. The minimum standard of effluent BOD required is 25 mg/L. This equates to an effluent load of 22.25kg BOD/day. This is greater than the WAC of the stream therefore a higher level of treatment would be required. With an effluent BOD of 16 mg/L, the effluent load will be 14.89 kgBOD/day. As shown in section E4 over 93% of the effluent results have achieved 12mg/L or less. This is less than the WAC and therefore acceptable.

For an effluent BOD of $\leq$16 mg/L, a minimum level of BOD removal of 94% is required. A similar level of reduction in suspended solids is required. With a 94% reduction, an effluent suspended solids standard of 20mg/L would be achieved. As shown in section D1 100% of the effluent results from January 2007 – August 2008 have achieved <20mg/L. This is less than the WAC and therefore acceptable.

**Phosphorus**

The phosphorus loads in the river are governed by the Phosphorus Regulations (S.I. 258 of 1998). The regulations state that the existing biological quality rating assigned between 1st January 1995 and 31st December 1997 is the rating upon which the improvements in Water Quality will be judged.

The Q-rating for the Dromore River at Station No. 0200, Bridge d/s of Lough Major, upstream of the existing Ballybay outfall, was 2-3 for the 1995-1997 Water Quality Data. The Q-rating was 3 at Station No. 0300, Balladian Bridge, downstream of Ballybay.
The minimum target ratings and concentrations for these stretches of water as defined in the Phosphorus regulations are given below.

**Phosphorus Regulations Target Ratings and Concentrations**

<table>
<thead>
<tr>
<th>Existing Biological Quality (Q) Rating/Q Index</th>
<th>Minimum Target Biological Quality (Q) Rating/Q Index</th>
<th>Molybdate Reactive Phosphate Median Conc. (mg P/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3-4</td>
<td>0.05</td>
</tr>
</tbody>
</table>

As the regulations determine the Q index using the median of 10 samples over 12 months the enforcement of the load determined from 95%ile flows is extremely onerous. A more realistic load is given by using the average flow in the river as this is more representative of the variable flows to be encountered during the 12-month sampling period.

The median background Ortho-Phosphate concentration, from the 1998-2000 EPA data, is 0.04 mg/L. The Ortho-Phosphate concentrations further upstream in the Dromore River are up to 0.10 mg/L. As other factors are currently contributing to the upstream phosphorus levels, it is assumed that measures will be taken to reduce the phosphorus to a target concentration upstream of 0.03 mg.P/l. Using the Waste Assimilation Capacity calculation the maximum allowable phosphorus load to the river is calculated as follows:

\[
WAC = \left( \frac{C_{\text{max}} \times (F_{\text{river}} + F_{\text{eff}})}{86.4} \right) - \left( \frac{C_{\text{back}} \times F_{\text{river}}}{86.4} \right) \text{ kg Pollutant/day}
\]

\[
C_{\text{max}} = \text{maximum permissible P concentration in river} = 0.05 \text{ mg/L}
\]

\[
C_{\text{back}} = \text{background (upstream) pollutant concentration} = 0.03 \text{ mg/L}
\]

\[
F_{\text{river}} = F_{\text{avg}} \text{ (for P calculations)} = 1.036/s
\]

\[
F_{\text{eff}} = \text{effluent flow, i.e. DWF/(3600 x 24)} = 889.88/(3600 x 24) = 0.0103 \text{ m}^3/\text{s}
\]

\[
\text{MRP WAC} = \left( \frac{(0.05 \times (1.036 + 0.01901)) - (0.03 \times 1.036)}{86.4} \right) \text{ [kg P/day]}
\]

\[
= 2.73 \text{ kg MRP/day}
\]

Based on the above, the proposed effluent treatment standard should ensure that the MRP load to the river should be no more than 2.73 kg MRP/day.
With an effluent phosphorus standard of 2.0 mg/L, the phosphorus load for this concentration is calculated as follows:

\[
\text{MRP (2.0 mg/L) = } F_{\text{eff}} (\text{m}^3/\text{day}) \times C_{\text{eff}} (\text{mg/L}) / 1000 = 889.88 \times 2 /1000
\]
\[
= 1.78 \text{ kg MRP/day} \quad (< 2.73 \text{ kg/day})
\]

The resulting MRP concentration is less than the available assimilative capacity and therefore an effluent phosphorus concentration of 2.0 mg/L is acceptable. As can be seen in section E4, all effluent results for Ballybay WWTW from the 24/01/07 – 28/08/08 have been <2mg/L.

**Ammonia**

As detailed above it is considered appropriate that the salmonid water standards be adopted for the calculation of the assimilative capacity. A guideline for the maximum allowable ammonia concentration in a Salmonid River, \(C_{\text{max}}\), is 0.5 mg/L. The stripping of ammonia from the effluent is easily achieved by ensuring that the D.O. level in the Aeration Process is maintained at or above 2 mg/L.

The background ammonia concentration, \(C_{\text{back}}\), has been taken as 0.05 mg/L based on the 1998-2000 EPA data. The resultant WAC is therefore calculated as follows:

The increase in ammonia levels without any nitrification in the wastewater plant is calculated as follows:

Maximum effluent ammonia concentration: 25 mg/L

WWTP Flowrate: 889.88 m³/day

Effluent Nitrogen = \(\frac{889.88 \times 25}{1000} = 22.25 \text{ kg/day}\)

The increase in river ammonia nitrogen concentration is calculated as follows:

\[
\text{Effluent NH}_3(N)(\text{kg/day}) \times 1000 \quad [\text{mg/L}] = \frac{(35.6 \times 1000)}{89,485}
\]

Flow m³/day

Increase in river ammonia nitrogen concentration: 0.246 mg/L

The target ammonia level in the river is taken as 0.5mg/l.
NH$_3$ WAC = $(C_{\text{max}} - C_{\text{back}}) \times F_{\text{avg}} \times 86.4$

Where:

$C_{\text{max}} = \text{maximum permissible Ammonia concentration in river} = 0.5 \text{ mg/L}$

$C_{\text{back}} = \text{background (upstream) pollutant concentration} = 0.05 \text{ mg/L}$

$F_{\text{avg}} = 1.036 = \text{average flow in m}^3/\text{sec}$

$86.4 = \text{conversion factor (to kg/day)}$

$NH_3 \text{ WAC} = (0.5 - 0.05) \times 1.036 \times 86.4 = 40.3 \text{ kg/day}$

At 25mg/L, the maximum effluent ammonia of 22.25 kg/day is less than the calculated waste assimilative capacity of 40.3 kg/day. As can be seen in attachment E4, 100% of the effluent results for Ballybay WWTW from the 24/01/07 – 28/08/08 have been <25mg/L and therefore acceptable.

The effluent loads to the river is summarised as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Max Allowable Effluent Load (kg/d)</th>
<th>Effluent Concentration Limits (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>22.25kg BOD/day</td>
<td>25</td>
</tr>
<tr>
<td>Suspended Solids</td>
<td>17.8 kg/day</td>
<td>35</td>
</tr>
<tr>
<td>Orthophosphate</td>
<td>1.78 kg MRP/day</td>
<td>2.0</td>
</tr>
<tr>
<td>Ammonia (kg.N/day)</td>
<td>22.25 kg/day</td>
<td>25</td>
</tr>
</tbody>
</table>

It should be noted that these effluent loads and increases in concentration are based on the 2015 PE design load to the plant. The current effluent loads are less than this.

- 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.

There are no ground water emissions at the works.
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.

A copy of the water quality management plan is attached.

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

The level of dangerous substances both in the effluent and in the Dromore River as detailed in Table D1 and F1 show a level below that in S.I. No.12 of 2001 and therefore the emissions are not considered 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.

There are no water abstraction points downstream of the discharge.

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 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;


The overall impact is considered to be acceptable.

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

  - The impact of the discharge from the waste water treatment works in Ballybay has been calculated in the Waste Assimilative Capacity calculations above. This shows that the impact of the discharge can be assimilated into the river and will not have a pollution effect over long distances.

  - 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.

    A modelling report is currently being drafted for Monaghan County Council. This will be submitted once complete and approved. Where abstracts have been quoted in this application, this is from the draft report.