Monaghan
COUNTY COUNCIL
COMHAIRLE CONTAE
MHUINEACHÁIN

Arts
047 71114

Community &
Enterprise
047 30500

County Library
047 51143

County Museum
047 82928

Environment
047 30593

Finance
047 30589

Fire/Building Control
047 30521

Higher Education
Grants
047 30550

Housing Estate
Management
047 30529

Housing Loans/Grants
047 30527

Human Resource
Management
047 30586

Motor Tax
047 81175

Planning
047 30532

Register of Electors
047 30547

Roads
047 30597

Water Services
047 30504

Administration, Environmental Licensing Programme,
Office of Climate, Licence and Resource Use,
Environmental Protection Agency,
Headquarters,
P.O. Box 3000,
Johnstown Castle Estate,
Co. Wexford.

27th September 2011

Re: DO494-01 & DO435-01 – Response to letter dated 6th May 2011 re: Notice in accordance with Regulation 18(3) (b) of the Waste Water Discharge (Authorisation) Regulations 2007.

Dear Sir/Madam,

I refer to the above referenced applications for Waste Water Discharge Licences for Scotstown and Ballinode agglomerations.
Enclosed is the response to the additional information requested by the Agency under article 18(3) (b) of the Waste Water Discharge (Authorisation) Regulations 2007.

As per your requirements the following are enclosed:

- 1 No original hard copy of the submission
- 1 No copy of the submission
- 1 No Electronic copy on CD-ROM.

If you require any further information or clarification of the documentation submitted, please do not hesitate to contact us.

Monaghan County Council, Council Offices, The Glen, Monaghan, Ireland.
Comhairle Contae Mhuineacháin, Oifigí an Chontae, Bóthar an Ghleanna, Muineachán.
Tel.: 00353 47 30500 | Fax: 00353 47 82739 | Email: info@monaghancoco.ie

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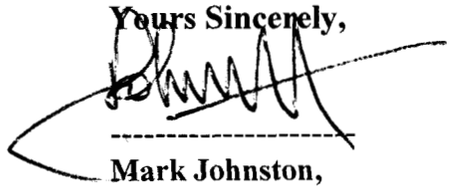
Yours Sincerely,



Mark Johnston,
Senior Executive Engineer,
Water Services Section,
Monaghan County Council.
047 30513

Monaghan County Council, Council Offices, The Glen, Monaghan, Ireland.
Comhairle Contae Mhuineacháin, Oifigí an Chontae, Bóthar an Ghleanna, Muineachán.
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Ballinode Waste Water Treatment Works

EPA Waste Water Discharge Licence Application

Regulation 16 Compliance Requirements

Response – Monaghan County Council

EPA Document Ref: D0435-01

REGULATION 16 COMPLIANCE REQUIREMENTS

Section A: Non-technical Summary

- **Update the non-technical summary to reflect the information provided in response to this notice.**

  An updated non-technical summary is attached in appendix 1.

Section B: General

- **Provide details of how much of the current load to the waste water treatment plant (WWTP) is from a domestic source and how much is from a non-domestic source.**

  90% of the current load is from a domestic source and 10% is from a non-domestic source to the waste water treatment plant.

Section C: Infrastructure and Operation

- **Provide details, if available, on the design discharge concentration for total phosphorous and ammonia (as N) for the existing WWTP (1,000 p.e.).**

The Ballinode WwTP was designed as per the Urban Waste Water Treatment (UWWT) Regulations –Second Schedule Part 1, to achieve effluent discharges concentration values for the following parameters:

BOD 25mg/l
COD 125mg/l
SS 35mg/l

As per the regulations, the plant is designed to treat 1,000 Population Equivalent (<10,000 P.E.) and does not discharge into a sensitive water, therefore total Phosphorous and ammonia design details were not considered.

However, the most recent results for total phosphorus in the effluent at the primary discharge point have all complied with emission limit values and

average 1.91mg/l (n=12), and the ammonia (as NH3) results average 3.39mg/l (n=12). (*refer to results in appendix 2*).

- **Clarify whether the emergency overflow from the storm tank and the pump sump at the WwTP have been known to activate in the last 12 months. If so provide the reason for the activation, and give details of the frequency, duration and discharge volumes, where available:**

  The initial discharge licence application and drawings indicated and 'emergency overflow' discharging to the river Blackwater downstream from the primary discharge point, this is incorrect, the WwTP was upgraded in 2007/2008 and this emergency overflow is no longer in use. There is one storm water overflow (SWO), grid references are 263000E 335849N located at the WwTP, this SWO is connected to a storm holding tank. In storm conditions excess flow is directed into the storm holding tank until storm conditions subside and effluent is then pumped back into the treatment system. In extreme storm conditions whereby the storm tank fills to capacity and the treatment works is still operating at full capacity, the storm overflow from the storm tank will then discharge to the river via the storm overflow. All of the drawings and documents in the discharge licence have been revised detailing the correct location of this SWO and are included in appendix 1.
  This storm overflow would activate rarely, only after heavy prolonged periods of rainfall once/twice per year. The duration and discharge volume is unknown.

- **Clarify the location of the storm water overflow discharge point to the river and update any drawings accordingly:**

  The initial discharge licence application and drawings indicated and 'emergency overflow' discharging to the river Blackwater downstream from the primary discharge point, this is incorrect, the WwTP was upgraded in 2007/2008 and this emergency overflow is no longer in use. There is one storm water overflow (SWO), grid references are 263000E 335849N located at the WwTP, this SWO is connected to a storm holding tank. In storm conditions excess flow is directed into the storm holding tank until storm conditions subside and effluent is then pumped back into the treatment system. In extreme storm conditions whereby the storm tank fills to capacity and the treatment works is still operating at full capacity, the storm overflow from the storm tank will then discharge to the river via the storm overflow. All of the drawings and documents in the discharge licence have been revised detailing the correct location of this SWO and are included in appendix 1.

- **Assess the design criteria of the storm water overflows. Demonstrate (providing available evidence) whether all storm water overflows meet the design criteria established in '*Procedures and criteria in relation to Storm Water Overflows'*, published by the Dept. of the Environment 1995.**

Clarify whether there are screens on all of the overflows and identify any SWOs that may be impacting on surface water quality. Where a storm water overflow does not comply with these guidelines, give details of any plans for improvement.

There is one storm water overflow (SWO) located at the WwTP, this SWO is connected to a storm holding tank. The location of this SWO is wrong in the discharge licence initial application documents and drawings as it is referred to as an 'emergency overflow' and shown (dwg 6) as discharging to a stream before the storm holding tank. The effluent passes through the inlet screen (Haigh ACE 290) where solids/particles >6mm in diameter are removed, before it enters the storm tanks, therefore it is screened before any overflow would occur.
This is incorrect, in storm conditions excess flow is directed into the storm holding tank until storm conditions subside and effluent is then pumped back into the treatment system. In extreme storm conditions whereby the storm tank fills to capacity and the treatment works is still operating at full capacity, the storm overflow from the storm tank will then discharge to the river via the storm overflow. All of the drawings and documents in the discharge licence have been revised detailing the correct location of this SWO and are included in appendix 1.
This SWO complies with the '*Procedures and criteria in relation to Storm Water Overflows'*, 1995 as follows:

Part 4. 'Assessment Criteria for Existing SWO's':
(1) It does not cause visual/aesthetic impact or public complaints.
(2) It does not cause deterioration in water quality in the receiving water.
(3) It does not give rise to failure in meeting the requirements of national Regulations on foot of EU Directives.
(4) It does not operate in dry weather.

Part 5. Options following Assessment:
The 'use of storage' option is used at the Ballinode treatment works as there is a storm water storage tank with associated pumps integrated into the treatment works.

Part 7. Use of Storage:
The use of an on-line storm storage tank for reducing or eliminating storm water overflows is employed at the Ballinode WwTP. The existing storm holding tank was a primary settlement tank until it was converted and commissioned as a storm holding tank in 2008, as part of upgrading works at the WwTP. Prior to this, the storm overflow discharged directly to the river Blackwater. New Primary settlement tanks were installed at the WwTP in 2007 and the existing primary tank was fitted with two duty/standby pumps and a mixer and converted to a storm holding tank, which was commissioned in 2008. It operates on the principal that flows in excess of the downstream capacity of the treatment works can be contained until the storm has subsided and the stored storm water can be pumped back into the primary settlement tanks. There is a storm water overflow to the river Blackwater from the storm tank which operates in

the event of prolonged storm conditions, whereby the storm tank fills up and overflow will then be discharged to the river Blackwater. The capacity of the storm tank is 38M^3. The WwTP treats an average of 92M^3 of effluent every day, with a Dry Weather Flow (DFW) of 36M^3. The capacity of the storm tank is therefore 1 times the DWF of the plant.

The SWO grid references are 263000E 335849N and it is located as detailed in drawing 6 (ref. appendix 2) out from the storm holding tank discharging to the river Blackwater. This storm overflow would activate rarely, only after heavy prolonged periods of rainfall, once/twice per year.

- Confirm the capacity of the storm tank (in terms of the number of dry weather flows as well as volumetric capacity).

  The capacity of the storm tank is 84M^3 or 0.8DWF of the plant.

- Clarify how wastewater is collected in the agglomeration, e.g. combined or separate foul sewerage drainage network.

  Ballinode collection system is a combined foul sewerage drainage network.

Section D: Discharges to the Aquatic Environment

- Provide date(s), when all the monitoring reported in Table D1(i)(b) and Table D.1(i)(c) was carried out.

The monitoring reported in the above tables was carried out on 9/04/'09.

Section E: Monitoring

- Provide effluent, influent, upstream and downstream monitoring data from May 2009 to date.

All monitoring carried out from May 2009 to date is tabulated and attached in Appendix 2.

- Confirm the hardness (as CaCO3) of the receiving water upstream and downstream of the primary discharge point to determine compliance with the European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009.

Upstream - 160mg/l (CaCO3) - 26/06/11
Downstream - 158mg/l (CaCO3) - 26/06/11

Section F: Existing Environment and Impact of the discharge(s)

- Demonstrate that the effluent discharge, via the primary discharge point, to the receiving water does not cause an exceedance of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 for parameters including BOD, total ammonia and molybdate reactive Phosphorous (MRP). If there is a breach of the relevant water

quality standards, then review the need for a programme of improvements and submit the details accordingly.

Note: Refer to Appendix 2 for sampling results for WwTP:
The outfall from the Ballinode Waste Water Plant discharges to the Blackwater River at National Grid Reference 263057E, 335886N in the Townland of Quiglough, Ballinode, Co. Monaghan.

The treated effluent (based on previous 12 samples) has an average BOD concentration of 4.23mg/l, average suspended solids concentration of 6.83mg/l. Average concentrations of nutrients are as follows; Total Phosphorus 1.91mg/l (P) and Total Nitrogen 16.24mg/l (N), (*refer to Appendix 2, Sheet 2, Table 1*).

The Blackwater (Monaghan) River has been identified by the Eastern Regional Fisheries Board as an important trout fishery. However, the river is not designated as salmonid water under EC (Quality of Salmonid Water) Regulations, 1988 and as such the river water quality is not required to meet the quality standards laid down in these regulations. The objective for the river is to attain "good status" by 2015 under the Water Framework Directive.

The nearest flow monitoring data available on the Blackwater River is at the Cappog Bridge Station (NGR 262970E, 335707N)) (OPW Station 03058). The 95-percentile flow is given as the 0.09m^3/s, 50-percentile flow of 0.65m^3/s and the mean flow as 1.34m^3/s.

A Q value of 4 was recorded downstream of the discharge point (1st Br d/s Ballinode) in 2004, 2001, 1998 and 1996 (see **Table 2** below). EPA physiochemical water quality monitoring data is available at this site for 2001 to 2003. This data gave a median BOD value of 2mg/l, median ortho-phosphate of 0.03mg/l, median total ammonia of 0.06mg/l and median oxidised nitrogen of 0.7mg/l.

A Q value of 3 was recorded upstream of the discharge point (Station No. 0130 1.5km d/s Scotstown Br) in 2004 (see **Table 2** below). A previous Q value of 3 was recorded in 2001; A Q value of 4 was recorded at this location in 1998 and 1996. No EPA physiochemical water quality monitoring data is available at this site for 2001 to 2003. However, Monaghan Co Co. monitoring data would indicate relatively good water quality in the river as outlined below.

Table 2 Biological Quality Ratings (Q Values) (Source EPA)

Location	Station Number	Station	1996	1998	2004
Downstream	**0130**	1st Br d/s Ballinode	4	4	4
Upstream	**0300**	1.5km d/s of Scotstown Br	3	4	4

(Q3 = moderately Polluted**; Q4-5, Q4 =** Unpolluted)

Monaghan Co. Co. monitors the river both upstream and downstream of the discharge from the Waste Water Works. These locations are shown on **Drawing 4** of **Attachment B3**. Monitoring data collected for the year 2008 and 2009 is presented in **Tables F.1(i)a aSW1(P)u** and **aSW1(P)d of the initial discharge licence application**. Monitoring results for dangerous substances relate to a once-off samples collected in April 2009 and are presented in **Tables F.1(i)b aSW(P)u** and **aSW(P)d of the discharge licence application**.

Monaghan County Councils upstream monitoring results (2008-2009) indicate relatively good water quality in the river, with the median orthophosphate level recorded at 0.055 mg/l P, median MRP of 0.04 mg P/l, average ammonia levels of 0.08 mg/l NH_3-N, average BOD of <2 mg/l, median TP of 0.11mg/l, median TN of 0.13mg/l N and average suspended solids of 5mg/l Dangerous substances concentrations were below detection level for 9 of the 19 parameters tested in April 2009. However, no levels exceeded the standards as outlined in the Water Quality (Dangerous Substances) Regulations 2001.

Results from the downstream monitoring site (aSW1(P)d) indicates generally good water quality with median orthophosphate levels of 0.02 mg/l P recorded for 2008 and 2009, average ammonia 0.03 mg/l NH_3-N, average BOD of <2 mg/l, median TP of 0.11 mg/l, average TN of 0.13mg/l N and average suspended solids of 3 mg/l. Dangerous substances concentrations were below detection level for 5 of the 19 parameters tested in April 2009. However, no levels exceeded the standards as outlined in the Water Quality (Dangerous Substances) Regulations 2001.

The impact of the primary discharge point on the Blackwater River is evaluated in the Assimilative Capacity calculations below.

Assimilative Capacity of Receiving Water

The Assimilative Capacity of the receiving waters is a measure of its ability or suitability to absorb waste water discharges whilst complying with relevant legislation and water quality objectives.

The impact of the primary discharge point on the Blackwater River is evaluated in the Assimilative Capacity calculations below.

The nearest flow monitoring data available on the Blackwater River is at the Cappog Bridge Station (NGR 262970E, 335707N)) (OPW Station 03058). The OPW 95-percentile flow (m^3/s) of 0.09 and the mean annual flow of 1.34 (m^3/s) from the Cappog Bridge Station were used in these calculations.

Using the Blackwater River flow rates outlined above and the Blackwater River background water quality (Monaghan Co Co and EPA Data), an assimilative capacity assessment of the River has been carried out using the mean annual flow and 95-percentile flow conditions for BOD, Total Ammonia and MRP.

The assessment has been undertaken on the basis of an average discharge flow to the receiving water from the Wastewater Treatment Plant.

BOD Assimilative Capacity

Mean Flow Conditions
The BOD assimilative capacity of the river under mean flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{mean}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible BOD concentration in the watercourse (in this case taken as a maximum of 1.5 mg/l) (SW Regs 2009 – good status)
C_{back} = Average background BOD level upstream (2mg/l) **(Use Adjusted Background Concentration ~=(1.5-(1.5-1.3)/2) =1.4mg/l**
86.4 = factor to convert WAC to a daily load (kg/day) (M3/hr to kg/day)
($1m^3/s$ = 86,400,000 l/d)

Q_{mean} = mean flow in m^3/s (1.34 m^3/s)

Therefore,

AC = (1.5-1.4) x 86.4 x 1.34

AC = 11.58 kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of BOD ~(average conc. In discharge) discharged to the Blackwater River shall be:

92,000/day x 4.23mg/l = **0.39kg/day**

This constitutes 3.37% of the assimilative capacity (AC) of the Blackwater River as outlined above.

The **resulting BOD concentration in the river** can be estimated from the formula:

The resulting BOD concentration in the river resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (4.23mg/l)
C_{back} = concentration in river u/s of discharge (2mg/l) **(Use Adjusted Background Concentration ~=(1.5-(1.5-1.3)/2) =1.4mg/l**
Q_{back} = flow of river (l/d) (1.34 m^3/s) = 115,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

$1m^3/s$ = 86,400,000 l/d

CR = [(1.4 x 115,776,000) + (4.23 x 92,000)] / [115,776,000+ 92,000]

CR = 1.4 mg/l

95-percentile Flow Conditions

The BOD assimilative capacity of the river under 95-percentile flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{95}$ [National Urban Waste Water Study 2005]

where,

AC = waste assimilative capacity
C_{max} = maximum permissible BOD concentration in the watercourse (in this case taken as a maximum of 2.6 mg/l) (SW Regs 2009 – good status)
C_{back} = Average background BOD level upstream (2mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{95} = 95-percentile flow in m^3/s (0.09 m^3/s or 7,776,000/d)

Therefore,

AC = (2.6-2.0) x 86.4 x 0.09

AC = 4.67kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of BOD discharged to the Blackwater River shall be:

92,000l/day x 4.23mg/l = **0.39kg/day**

This constitutes **8.35%** of the assimilative capacity of the Blackwater River as outlined above.

The **resulting BOD concentration in the river** resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;
CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (4.23mg/l)
C_{back} = concentration in river u/s of discharge (2mg/l)
Q_{back} = flow of river (l/d) (95% flow of 0.09m^3/s = 7,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

1m^3/s = 86,400,000 l/d
Therefore:

CR = [(2.0 x 7,776,000) + (4.23 x 92,000)] / [7,776,000 + 92,000]

CR = 2.03mg/l

Summary Result - BOD

BOD	Mean Annual Flow	95-Percentile Flow
Assimilative Capacity of River	11.58kg/day	4.67kg/day
Total Amount Discharged	0.39kg/day	0.39kg/day
% of Assimilative Capacity Absorbed	3.37%	8.35%
Existing Average Background Upstream	2mg/l (Use Adjusted Background Conc. Method = **1.4mg/l**)	2mg/l
Resultants Conc in River	**1.4mg/l**	**2.03mg/l**
Standard EQS – S.W. Regs 2009	**1.5mg/l**	**2.6mg/l**

The above calculations indicate the discharge, in terms of BOD concentration, is not impacting on the water quality of the river and the resultant concentration is within the EQS of <1.5mg/l for mean flow conditions and <2.6mg/l for 95%ile flow conditions (Surface water regs 2009).

Phosphorous Assimilative Capacity

Monaghan Co Co samples taken upstream and downstream of the discharge point in (2009 2011) indicate average Total Phosphorus upstream and downstream of 0.1mg/l and 0.07mg/l respectively. There are no test results for ortho phosphorous, therefore total phosphorous is being used for these calculations.

The current Q value downstream of the discharge point (1st Br d/s Ballinode) is Q4 with a Minimum Target Biological Quality (Q) Rating/Q Index of 4 or Molybdate-Reactive Phosphate Median Concentration(ugP/L) of 30 (Phosphorus Regulations, 1998).

Phosphorus Mean Flow Conditions

The Phosphorous assimilative capacity of the river under mean flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{mean}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible MRP concentration in the watercourse (in this case taken as a maximum of 0.035 mg/l) (SW Regs 2009 – good status)
C_{back} = Average background Phosphorous level upstream (0.1mg/l) **(Use Adjusted Background Concentration ~=(0.035-(0.035-0.025)/2) =0.03mg/l**
86.4 = factor to convert WAC to a daily load (kg/day) (M3/hr to kg/day)
($1m^3/s$ = 86,400,000 l/d)

Q_{mean} = mean flow in m^3/s (1.34 m^3/s)

Therefore,

AC = (0.035-0.03) x 86.4 x 1.34

AC = 0.58kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of Phosphorus ~(average conc. In discharge) discharged to the Blackwater River shall be:

92,000/day x 1.91mg/l = **0.175kg/day**

This constitutes 3.02% of the assimilative capacity (AC) of the Blackwater River as outlined above.

Final River Phosphorus Concentration using Mean Flow Rate:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (Total P =1.91mg/l)
C_{back} = concentration in river u/s of discharge (0.1mg/l) **(Use Adjusted Background Concentration ~=(0.035-(0.035-0.025)/2) =0.03mg/l**
Q_{back} = flow of river (l/d) (1.34 m^3/s) = 115,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

1m^3/s = 86,400,000 l/d

CR = [(0.03 x 115,776,000) + (1.91 x 92,000)] / [115,776,000+ 92,000]

Final River Concentration = 0.031 mg/l (Total P) = **0.02mg/l MRP**

The MRP (as Total P) concentration of the river as result of the discharge is calculated below using the 95%ile flow rate (Station 03058).

95-percentile Flow Conditions

AC = (C_{max} – C_{back}) x 86.4 x Q_{mean}

where,

AC = waste assimilative capacity
C_{max} = maximum permissible MRP concentration in the watercourse (in this case taken as a maximum of 0.075 mg/l) (SW Regs 2009 – good status)

C_{back} = Average background Phosphorous level upstream (0.1mg/l) **(Use Adjusted Background Concentration ~=(0.075-(0.075-0.045)/2) =0.06mg/l**
86.4 = factor to convert WAC to a daily load (kg/day) (M3/hr to kg/day)
($1m^3/s$ = 86,400,000 l/d)

Q_{95} = 95-percentile flow in m^3/s (0.09 m^3/s or 7,776,000/d)

Therefore,

AC = (0.075-0.06) x 86.4 x 0.09

AC = 0.12kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of $92m^3$/day, the total amount of Phosphorous ~(average conc. In discharge) discharged to the Blackwater River shall be:

92,000/day x 1.91mg/l = **0.18kg/day**

This constitutes 66.67% of the assimilative capacity (AC) of the Blackwater River as outlined above.

Final River Phosphorus Concentration using 95 percentile Flow Rate

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (Total P = 1.91)
C_{back} = concentration in river u/s of discharge (0.1) **(Use Adjusted Background Concentration ~=(0.075-(0.075-0.045)/2) =0.06mg/l**
Q_{back} = flow of river (l/d) 95% flow of $0.09m^3/s$ = 7,776,000/d
Q_d = discharge volume (l/d) 92,000l/d

Therefore:

CR = [(0.06 x 7,776,000) + (1.91 x 92,000)] / [7,776,000 + 92,000]

Final River Concentration = 0.077 mg/l (Total P) = 0.051mg/l MRP

Total Phosphorous & MRP	Mean Flow conditions	95-percentile Flow
Existing Average Background Upstream	0.1mg/l **(Use Adjusted Background Concentration ~=(0.035-(0.035-0.025)/2) =0.03mg/l**	0.1mg/l **(Use Adjusted Background Concentration ~=(0.075-(0.075-0.045)/2) =0.06mg/l**
Resultants Conc in River (Total P)	0.031mg/l	0.077 mg/l
Resultants Conc in River (MRP)*	0.02mg/l	0.051mg/l
Standard EQS – S.W. Regs 2009	**< 0.035mg/l**	**<0.075mg/l**

* The Molybdate Reactive Phosphate (MRP) concentration was calculated from Total Phosphorous as a multiple of 0.3 (Total P usually 0.3 times higher than MRP).

Summary Results – Total Phosphorus & Molybdate Reactive Phosphate Concentration

The calculations above show that the Blackwater River has the capacity to assimilative the discharge in terms of Total Phosphorous and MRP. The resultant MRP concentrations are below the MRP target concentration of 0.035mg/l for mean conditions and 0.075mg/l for 95%ile flow conditions.

Ammonia Assimilative Capacity

Monaghan Co Co samples taken upstream and downstream of the discharge point in (2009 2011) indicate average Total Ammonia upstream and downstream of 0.05mg/l and 0.08mg/l respectively.

Mean Flow Conditions

The Ammonia assimilative capacity of the river under mean flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{mean}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible Total Ammonia concentration in the watercourse (in this case taken as a maximum of 0.065 mg/l) (SW Regs 2009 – good status)
C_{back} = Average background Total Ammonia level upstream (0.05mg/l)
86.4 = factor to convert WAC to a daily load (kg/day) (M3/hr to kg/day)
($1m^3/s$ = 86,400,000 l/d)

Q_{mean} = mean flow in m^3/s (1.34 m^3/s)

Therefore,

AC = (0.065-0.05) x 86.4 x 1.34

AC = 1.74kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m³/day, the total amount of Ammonia ~(average conc. In discharge) discharged to the Blackwater River shall be:

92,000/day x 3.39mg/l = **0.31kg/day**

This constitutes 17.92% of the assimilative capacity (AC) of the Blackwater River as outlined above.

Final River Ammonia Concentration using Mean Flow Rate:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (Total NH3 =3.39mg/l)
C_{back} = concentration in river u/s of discharge (0.05mg/l)
Q_{back} = flow of river (l/d) (1.34 m³/s) = 115,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

$1m^3/s$ = 86,400,000 l/d

CR = [(0.05 x 115,776,000) + (3.39 x 92,000)] / [115,776,000+ 92,000]

Final River Concentration = 0.05mg/l (Total NH3)

The Total Ammonia concentration of the river as result of the discharge is calculated below using the 95%ile flow rate (Station 03058).

95-percentile Flow Conditions

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{mean}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible Total Ammonia concentration in the watercourse (in this case taken as a maximum of 0.14 mg/l) (SW Regs 2009 – good status)
C_{back} = Average background Total Ammonia level upstream (0.05mg/l)
86.4 = factor to convert WAC to a daily load (kg/day) (M3/hr to kg/day)
($1m^3/s$ = 86,400,000 l/d)

Q_{95} = 95-percentile flow in m^3/s (0.09 m^3/s or 7,776,000/d)

Therefore,

AC = (0.14-0.05) x 86.4 x 0.09

AC = 0.7kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of Ammonia ~(average conc. In discharge) discharged to the Blackwater River shall be:

92,000/day x 3.39mg/l = **0.31kg/day**

This constitutes 44.55% of the assimilative capacity (AC) of the Blackwater River as outlined above.

Final River Ammonia Concentration using 95-percentile Flow Rate

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (Total NH3 = 3.39mg/l)
C_{back} = concentration in river u/s of discharge (0.05mg/l)
Q_{back} = flow of river (l/d) 95% flow of $0.09m^3/s$ = 7,776,000/d
Q_d = discharge volume (l/d) 92,000l/d

Therefore:

CR = [(0.05 x 7,776,000) + (3.39 x 92,000)] / [7,776,000 + 92,000]

Final River Concentration = 0.089mg/l (Total Ammonia)

Total Ammonia	Mean Flow conditions	95-percentile Flow
Existing Average Background Upstream	0.05mg/l	0.05mg/l
Resultants Conc in River (Total P)	0.05mg/l	0.089mg/l
Standard EQS – S.W. Regs 2009	**< 0.065mg/l**	**<0.140mg/l**

Summary Results – Total Ammonia

The calculations above show that the Blackwater River has the capacity to assimilate the discharge in terms of Total Ammonia, the resultant Total Ammonia concentrations are below the target concentration of 0.065mg/l for mean conditions and 0.14mg/l for 95%ile flow conditions.

Conclusion

The assimilative capacity calculations above indicate that there is significant dilution capacity within the receiving water, even at low flows, to assimilate discharges from the Waste Water Works in terms of BOD, Total Phosphorous and Total Ammonia and that the EQS are met downstream of the discharge point for the mean and 95-percentile flow conditions .

The results of the assimilative capacity are consistent with the physiochemical water quality monitoring results (EPA and Monaghan Co Co Data) and indicate that the discharges from the works are not having a significant detrimental impact on the receiving environment.

- **Determine if there is likely to be a significant impact from the waste water discharges from the Scotstown agglomeration on the relevant *European Sites* (using EPA guidance note: Waste Water Discharge Licencing – Appropriate Assessment and referring to Circular L8/08).**

A detailed response to this question is provided including Appropriate Assessment in Appendix 3 attached.

APPENDIX 1

Revision 1: Ballinode WwTP Discharge licence documents. Non-technical summary, tables & Drawings.

	Ballinode Waste Water Discharge Licence Application	
	Revision 1.	
Amendment list to documents in licence - in red text.		
Application Form:		
	Section A	**Non Technical Summary**
		Emergency storm overflow changed to Storm water overflow
Page 9		**Grid co-ords changed 263000E 335849N**
Page 25	**Section C.1iii**	**Final discharge locations**
		Emergency storm overflow changed to Storm water overflow
		Grid co-ords changed 263000E 335849N
Page 26	**Section C.2**	**Outfall design & Construction**
	Paragraph 2:	Emergency storm overflow changed to Storm water overflow
		Grid co-ords changed 263000E 335849N
Page 29	**Section E.2**	**Environmental monitoring & sampling:**
		Information amended and updated to detail current
		sampling and monitoring procedures.
Annex I	**No amendments required**	
Annex II:	**No amendments required**	
Attachments:		
B1	**Drawing 1:**	**No revision required**
B2	**Drawing 2:**	**No revision required**
B3	**Drawing 3:**	**Revised name of 'emergency overflow' to 'storm water overflow', corrected its location and grid co-ordinates.**
	Drawing 4:	**Corrected aSW1P(u) IGC - N point to 335758**
B6	**Part 8 Document: No revision required**	
B8	**Drawing 5:**	**No revision required**
	Site and Newspaper Notice: Can't change as published already.	
C1	**Drawing 6:**	**Revised name of 'emergency overflow' to 'storm water overflow', corrected its location and grid co-ordinates.**
	Drawing 7:	**Revised pipeline layout of storm tank overflow**
C2	**Discharge Point Details:**	**No amendments required**
D1	**No amendments required**	
D2	**No amendments required**	
E1	**No amendments required**	
E2	**No amendments required**	
E3	**No amendments required**	
E4	**No amendments required**	
F1	**No amendments required**	

BALLINODE WASTE WATER TREATMENT WORKS

NON TECHNICAL SUMMARY –Rev. 1.

Monaghan County Council
County Offices,
The Glen,
Co. Monaghan.

SEPTEMBER 2011

This is a draft document and is subject to revision.

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Waste Water Discharge Licence Application Form

EPA Ref. Nº: *(Office use only)*	

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

Tracking Amendments to Draft Application Form

Version No.	Date	Amendment since previous version	Reason
V. 1.	11/10/07	N/A	
V. 2.	18/10/07	Inclusion of a Note 1 superscript for Orthophosphate in Tables D.1(i)(b) & D.1(ii)(b).	To highlight the requirement for filtered samples in measurement of O-Phosphate for waste water discharges.
V.3.	13/11/07	Amend wording of Section F.2 to include 'abstraction'.	To accurately reflect the information required
		Amend wording of Checklist in Annex to reflect wording of Regulation 16(5) of S.I. No. 684 of 2007.	To accurately reflect the Regulations and to obtain the application documentation in appropriate format.
		Inclusion of unique point code for each point of discharge and storm water overflow.	To aid in cross-referencing of application documentation.
V.4	18/04/08	Inclusion of requirement to provide name of agglomeration to which the application relates.	To accurately determine the agglomeration to be licensed.
		Amend wording of Section B.7. (iii) to reflect the title of Water Services Authority.	To accurately reflect the Water Services Act, 2007.
		Addition of new Section B.9 (ii) in order to obtain information on developments yet to contribute to the waste water works.	To obtain accurate population equivalent figures for the agglomeration.
		Addition of sub-sections C.1.1 & C.1.2 in order to clarify information required for Storm water overflow and pumping stations within the works.	To obtain accurate information on design and spill frequency from these structures.
		Amend Section D.1 to include a requirement for monitoring data for influent to waste water treatment	To acquire information on the population loading onto the plant and to provide information on performance rates within the plant.

		plants, where available. Amend wording of Section E.1 to request information on composite sampling/flow monitoring provisions.	To acquire accurate information on the sampling and monitoring provisions for discharges from the works.
V.5	07/07/2008	Amend wording of B.7 (iii) to include reference to Water Services Authorities. Amend Section G.1 to include Shellfish Waters Directive.	To accurately reflect the Water Services Act, 2007 requirements.
V.6	26/08/2007	Amendments to Section D to reflect new web based reporting. Amended requirements for reporting on discharges under E.1 Waste Water Discharge Frequency and Quantities. Amendment to Section F.1 to specify the type of monitoring and reporting required for the background environment. Removal of Annexes to application form.	To clarify the reporting requirements. To streamline reporting requirements. To clarify the reporting requirements for ambient monitoring. To reflect the new web based reporting requirements.

Environmental Protection Agency
Application for a Waste Water Discharge Licence
Waste Water Discharge (Authorisation) Regulations 2007.

CONTENTS

ABOUT THIS APPLICATION FORM

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

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

A valid application for a Waste Water Discharge Licence must contain the information prescribed in the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007). Regulation 16 of the Regulations sets out the statutory requirements for information to accompany a licence application. The application form is designed in such a way as to set out these questions in a structured manner and not necessarily in the order presented in the Regulations. In order to ensure a legally valid application in respect of Regulation 16 requirements, please complete the Regulation 16 Checklist provided in Annex 2.

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

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

PROCEDURES

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

Prior to submitting an application the applicant must publish in a newspaper circulating in the area, and erect at the point nearest to the waste water treatment plant concerned or, if no such plant exists, at a location nearest the primary discharge point, a notice of intention to apply. An applicant, not being the local 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, must also notify the relevant Local Authority, in writing, of their intention to apply.

An application for a licence must be submitted on the appropriate form (available from the Agency) with the correct fee, and should contain relevant supporting documentation as attachments. The application should be based on responses to the form and include supporting written text and the appropriate use of tables and drawings. Where point source emissions occur, a system of unique reference numbers should be used to denote each discharge point. These should be simple, logical, and traceable throughout the application.

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

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

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

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

Applicants should be aware that a contravention of the conditions of a waste water discharge licence is an offence under the Waste Water Discharge (Authorisation) Regulations, 2007.
The provision of information in an application for a waste water discharge licence which is false or misleading is an offence under

Regulation 35 of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007).

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

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

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

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**

Non Technical Summary

Monaghan County Council is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for the existing Waste Water Works at Ballinode. The Waste Water Works comprises a network of gravity sewers, associated rising mains and the wastewater treatment plant at Ballinode. There is one storm water overflow located at the treatment plant site which discharges to the Blackwater River (NGR 263000E, 335849N). The plant is supervised/manned for 2 hours Monday to Friday and for 0.5 hours Saturday and Sunday, giving a total of 11 hours a week.

The Waste Water Treatment Works design capacity is 1000 PE. The Works currently collects and treats domestic and trade effluent from a population equivalent of approximately 462. The Waste Water Treatment Plant treats in the region of 92 cubic metres of effluent every day and provides secondary treatment with nutrient removal (phosphorus reduction) for the effluent. The treated effluent has an average BOD concentration of 9mg/l and average suspended solids concentration of 32.5 mg/l. Average concentrations of nutrients are as follows; orthophosphate 11.6 mg/l (P), Total Phosphorus 4.2 mg/l (P) and Total Nitrogen 11 mg/l (N).

The primary discharge of the Waste Water Works is to the Blackwater Monaghan River (at National Grid Reference 263057E, 335886N) in the townland of Quiglough, Ballinode, Co Monaghan. The associated Waste Water Treatment Plant is located at 263024E 335856N also in the townland of Quiglough, Ballinode Co. Monaghan.

The Blackwater (Monaghan) River has been identified by the Eastern Regional Fisheries Board as an important trout fishery. However, the river is not designated as salmonid water under EC (Quality of Salmonid Water) Regulations, 1988 and as such the river water quality is not

required to meet the quality standards laid down in these regulations. The objective for the river is to attain "good status" by 2015 under the Water Framework Directive.

The nearest flow monitoring data available on the Blackwater River is at the Cappog Bridge Station (NGR 262970E, 335707N)) (OPW Station 03058). The 95-percentile flow is given as the 0.09m^3/s, 50-percentile flow of 0.65m^3/s and the mean flow as 1.34m^3/s.

A Q value of 3 was recorded upstream of the discharge point (Station No. 0130 1.5km d/s Scotstown Br) in 2004 A previous Q value of 3 was recorded in 2001; A Q value of 4 was recorded at this location in 1998 and 1996. No EPA physiochemical water quality monitoring data is available at this site for 2001 to 2003

A Q value of 4 was recorded downstream of the discharge point (1st Br d/s Ballinode) in 2004 2001, 1998 and 1996. EPA physiochemical water quality monitoring data is available at this site for 2001 to 2003. This data gave a median BOD value of 2mg/l, median ortho-phosphate of 0.03mg/l, median total ammonia of 0.06mg/l and median oxidised nitrogen of 0.7mg/l.

The overall River Water Framework Directive status for the Blackwater River is 1a, hence it is at risk of failing to meet good status in 2015.

Monaghan County Councils upstream monitoring results (2008-2009) indicate relatively good water quality in the river, with the median orthophosphate level recorded at 0.055 mg/l P, median MRP of 0.04 mg P/l, average ammonia levels of 0.08 mg/l NH_3-N, average BOD of <2 mg/l, median TP of 0.11mg/l, median TN of 0.13mg/l N and average suspended solids of 5mg/l Dangerous substances concentrations were below detection level for 9 of the 19 parameters tested in April 2009. However, no levels exceeded the standards as outlined in the Water Quality (Dangerous Substances) Regulations 2001.

Results from the downstream monitoring site (aSW1(P)d) indicates generally good water quality with median orthophosphate levels of 0.02 mg/l P recorded for 2008 and 2009, average ammonia 0.03 mg/l NH_3-N, average BOD of <2 mg/l, median TP of 0.11 mg/l, average TN of 0.13mg/l N and average suspended solids of 3 mg/l. Dangerous substances concentrations were below detection level for 5 of the 19 parameters tested in April 2009. However, no levels exceeded the standards as outlined in the Water Quality (Dangerous Substances) Regulations 2001.

The assimilative capacity calculations indicate that there is significant dilution capacity within the receiving water, even at low flows, to assimilate discharges from the Waste Water Works in terms of suspended solids and BOD and that the EQS are met downstream of the discharge point for the mean, 50-percentile and 95-percentile flow conditions . Predicted MRP concentrations were slightly elevated from the target level of 0.03mg/l (Phosphorus regulations, 1998).

Overall the results of the assimilative capacity are consistent with the physiochemical water quality monitoring results (EPA and Monaghan Co Co Data) and indicate that the discharges from the works are not having a significant detrimental impact on the receiving environment.

SECTION B: GENERAL

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

B.1 Agglomeration Details

Name of Agglomeration:	Ballinode

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*:	Monaghan County Council
Address:	Water Services
	County Offices
	The Glen
	Monaghan
Tel:	047 30500
Fax:	047 82739
e-mail:	info@monaghancoco.ie

*This should be the name of the water services authority in whose ownership or control the waste water works is vested.

*Where an application is being submitted on behalf of more than one water services authority the details provided in Section B.1 shall be that of the lead water services authority.

Name*:	Mr Mark Johnston
Address:	Water Services
	County Offices
	The Glen
	Monaghan
Tel:	047 30500
Fax:	047 82739
e-mail:	mjohnston@monaghancoco.ie

*This should be the name of person nominated by the water services authority for the purposes of the application.

Co-Applicant's Details

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

*This should be the name of a water services authority, other than the lead authority, where multiple authorities are the subject of a waste water discharge (authorisation) licence application.

Design, Build & Operate Contractor Details

Name*:	Not Applicable
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.

Name*:	Eugene Farmer (Technician)
Address:	Ballinode WWTW, Quiglough, Ballinode, Co Monaghan
	Co. Monaghan
Grid ref (6E, 6N)	263024E 335856N
Level of Treatment	Secondary
Primary Telephone:	047 30500
Fax:	047 82739
e-mail:	Eugene.Farmer@monaghantc.ie

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

Attachment B.2 should contain appropriately scaled drawings / maps (≤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	Open Pipe Discharge
Unique Point Code	SW1(P)
Location	Quiglough, Ballinode Co. Monaghan
Grid ref (6E, 6N)	263057E 335886N

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	Not Applicable
Unique Point Code	Not Applicable
Location	Not Applicable
Grid ref (6E, 6N)	Not Applicable

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	Not Applicable
Unique Point Code	Not Applicable
Location	Not Applicable
Grid ref (6E, 6N)	Not Applicable

Attachment B.5 should contain appropriately scaled drawings / maps (≤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:	Monaghan County Council
Address:	County Offices,
	The Glen
	Monaghan
	Co. Monaghan
Tel:	047 30500
Fax:	047 82739
e-mail:	planning@monaghancoco.ie

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

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

A Part 8 planning Application was submitted on 02/09/2005 and planning permission was granted on 25/10/05 (Planning Ref: 05/8013)

Local Authority Planning File Reference Nº:	05/8013

Attachment B.6 should contain ***the most recent*** planning permission, including a copy of ***all*** conditions, and where an EIS was required, copies of any such EIS and any certification associated with the EIS, should also be enclosed. Where planning permission is not required for the development, provide reasons, relevant correspondence, *etc.*

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

B.7 Other Authorities

B.7 (i) Shannon Free Airport Development Company (SFADCo.) area

The applicant should tick the appropriate box below to identify whether the discharge or discharges are located within the Shannon Free Airport Development Company (SFADCo.) area.

Attachment B.7(i) should contain details of any or all discharges located within the SFADCo. area.

Within the SFADCo Area	**Yes**	**No**
		√

B.7 (ii) Health Services Executive Region

The applicant should indicate the **Health Services Executive Region** where the discharge or discharges are or will be located.

Name:	Health Service Executive
Address:	Regional Health Office
	HSE Dublin & North East
	Dublin Road
	Kells,
	Co. Meath
Tel:	046 9280621
Fax:	046 9241784
e-mail:	rhodublinnortheast@mailq.hse.ie

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:	Not Applicable
Address:	
Tel:	
Fax:	
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	464 – Current PE 1000 – Design PE
Data Compiled (Year)	2009
Method	based on 0.06 kg BOD per head for PE

Ballinode is a village located approximately 5.6 km from Monaghan town. The village has grown up along a main tributary of the Blackwater River that runs through the village. Ballinode is conveniently located to Monaghan town and close to the village settlements of Scotstown to the north west and Tydavnet to the north.

The population equivalent of village was last estimated at approximately 464 persons (based on 0.06 kg BOD per head for PE).

Date	Inlet Flow (Average Flow)	BOD (From Inlet)	BOD Load (From Inlet)	PE Equivalent (From Inlet) (based on 0.06 kg BOD per head for PE)
	m^3/day	mg/l	kg/day	mg/person/day
27.03.2008	106.00	305	32.3	538.8
28.05.2008	99.00	510	50.5	841.5
27.08.2008	92.60	210	19.4	324.1
26.11.2008	68.50	215	14.7	245.5
09.04.2009	92.00	240	22.1	368.0
Average				**464**

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.

As stated in the Ballinode Village Plan 2007-2013 and in Chapter 3 Settlement Strategy of the Monaghan County Development Plan 2007-2013, there is 107 hectare of land within the development envelope of which approximately 44 ha are available for development. From **Table 1** below 31 hectares of land is available for residential development (70% of lands available).

Village	Lands within Dev. Envelope ha	Lands Available for Dev. ha	Lands Residential Dev. ha (70% of lands available)	Hsg. Capacity @ 15 houses per hectare
Ballinode	107	44	31	456

At low density (15 houses per hectare) it is anticipated that approximately 456 housing units could be built during the Development Plan period if all land within the development limit was used for residential development. This could be a maximum population increase of 1443 based on an average household occupancy of 3.1. This would give a PE of 1907 (worst case scenario) which would leave the treatment plant well over capacity and in need of expansion.

Monaghan County Councils ePlan was consulted with regard to planning permission granted/conditional planning permission from 2008-present. No applications currently within the agglomeration have the potential to be contributing to the Council network.

However, based on the above table approximately 44 ha are available for development within the timeframe of the licence.

Based on census 2006 data, an approximate estimate for the plant loading in 2015 (life span of licence) is approximately 611PE. As the plant is currently designed to cater for a PE of 1000, it will be able to accommodate the extra hydraulic and organic load without posing an environmental risk to the receiving water habitat. However, should all lands be developed, the plant would be operating well over capacity. However, granting of developments would have to reflect the capacity of the WWTW.

It should be noted that in the current economic climate it is probable that not all the housing permissions applied for within the timeframe of the licence for will be realised.

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 €)
Discharges from agglomerations with a population equivalent of more than 10,000	€10,000

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.

No Capital Investment Programme has been prioritised for the development.

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.

There have been no Section 63 notices issued by the Agency in relation to the Ballinode 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.

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:

There is one storm water overflow (SWO) from a storm holding tank located at NGR 263000E 335849N in the event of continuous storm conditions, whereby the storm tank fills up and the treatment works is at full capacity, discharge is into the river Blackwater (see **Drawing 3**).

- An assessment to determine compliance with the criteria for storm water overflows, as set out in the DoEHLG '*Procedures and Criteria in Relation to Storm Water Overflows*', 1995 and any other guidance as may be specified by the Agency, and
- Identify whether any of the storm water overflows are to be decommissioned, and identify a date by which these overflows will cease, if applicable.

C.1.2 Pumping Stations

There are no pumping stations on the networks

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 (i) Ballinode Waste Water Works

The Waste Water Works serving the town of Ballinode and the immediate environs comprises a network of gravity sewers, and associated rising main and a Waste Water Treatment Works with a design capacity of 1000 P.E.

The primary discharge of the Waste Water Works is to the Blackwater Monaghan River (at National Grid Reference 263057E, 335886N) in the townland of Quiglough, Ballinode, Co Monaghan. The associated Waste Water Treatment Plant is located at 263024E 335856N also in the townland of Quiglough, Ballinode Co. Monaghan.

The plant is supervised/manned for 2 hours Monday to Friday and for 0.5 hours Saturday and Sunday, giving a total of 11 hours a week.

1.1 Waste Water Treatment Plant

1.1.1 General

The Waste Water Treatment Plant (WWTP) which provides treatment for a design load of 1000 population equivalent comprises biological treatment in rotating biological contactors and percolating filters followed by settlement and clarification. Sludge from the Ballinode Waste Water Treatment plant is tankered to Monaghan Town WWTP for treatment. The site plan and general arrangement of the Waste Water Treatment Plant is shown on **Drawing 2** of **Attachment B2** and **Drawing 6** of **Attachment C1** respectively and a schematic flow diagram of the plant is shown on **Drawing 7** in **Attachment C1.**

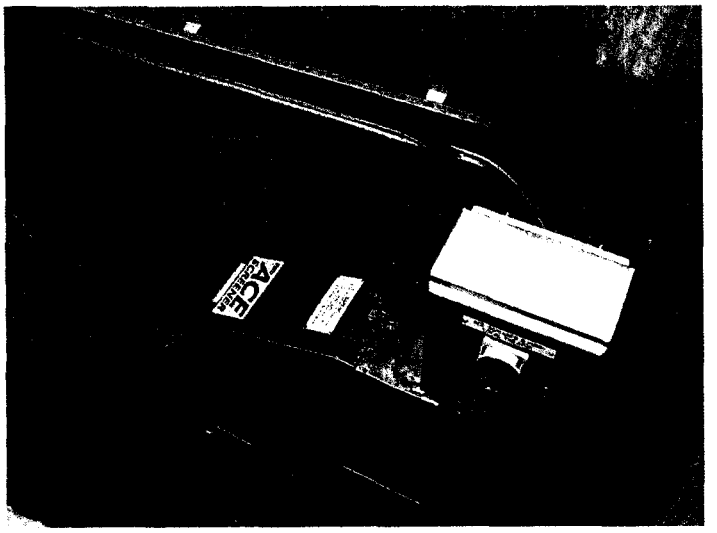
1.1.2 Waste Water Treatment Plant Design Criteria

Parameter	Value
Population Equivalent	1000
DWF (m^3/day)	180
6 DWF (m^3/day)	1080
Daily BOD_5 (kg/day)	60
Daily SS (kg/day)	75

1.2 Treatment

Inlet Screen

The sewage enters the treatment works via the inlet sewer manhole. From here it passes through the Haigh ACE 290 inlet screen. This unit is capable of a maximum through flow of 15l/s. Flows in excess of 3 DWF are diverted to the storm holding tank via a preset overflow weir. As the sewage passes through it is screened and solids and particles greater than 6mm in diameter are removed, separated compacted to a minimum of 40% dry solids content. This is place in a wheelie bin for further disposal.



Inlet Flow Measurement

The screened sewage enters an open channel rectangular fume.

Inlet Sampler

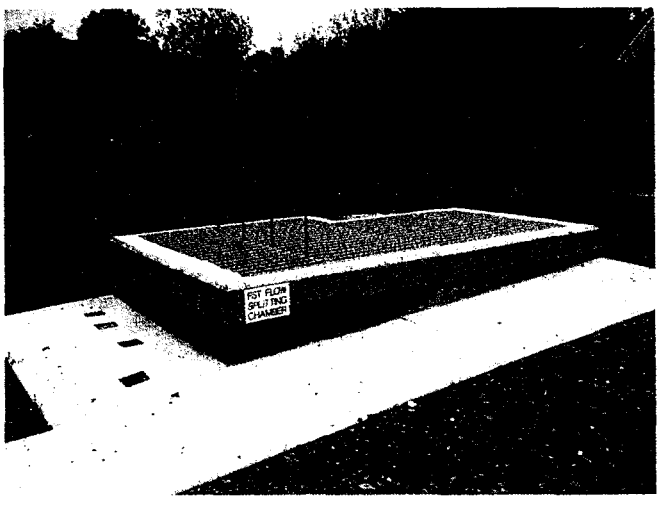
The open channel is also used a sample point. A sample is drawn via a plastic suction hose to a contronic sampler.

Ferric Dosing Plant

Ferrric Sulphate is dosed into the open channel to facilitate the treatment process. This is controlled with a pulse signal from the flow measurement devise. A pulse is sent on every m^3 of effluent which passes through the flume. A measured batched amount is dosed by the duty pump on each pump. The system has a bunded bulk storage tank with an integrated pump/panel compartment. The capacity of the bulk tank is $6m^3$.

Flow Splitting Chamber

The flow continues to the Primary Settlement Tank (PST) Splitting Chamber where it is mixed with the return activated sludge and spilt equally before entering the four primary settlement tanks.



Primary Settlement Tanks

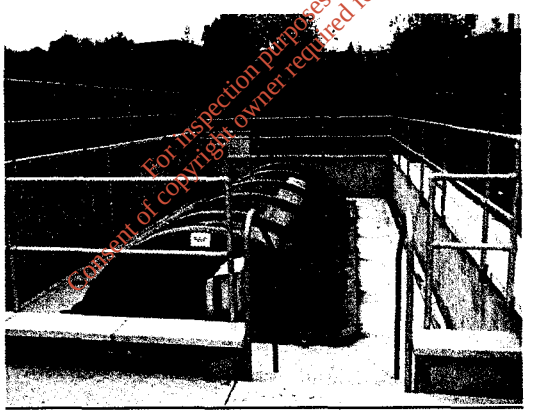
The flow enters the PST's via a Tee down pipe located in each of the tanks. The tanks have been sized on the basis of a 48hr retention time, hence settling most of the gross solids from the effluent.

Manual desludging pipe work has been provided to enable periodic desludging of each of the four tanks. As the flow is displaced it exits the PST's via a stainless steel scum baffle and over a concrete weir wall. The outlets of the PST's are separated in sets of two tanks i.e. one outlet per tanks giving two outlets in total.

Rotating Biological Contractor (RBC)

The flow from each of the PST outlet enters an RBC. There is one RBC in the WWTW. This is an attached growth treatment unit. The biomass grows on plastic discs which are attached to a continuously rotating shaft. The media is partially submerged and is oxygenated as it rotates, encouraging a biomass film of growth on the media.

The RBS has a two stage media disc treatment. The effluent is forwarded to the second stage via a managed flow system. This consists of shaped buckets attached to the rotating shaft, filling and discharging to a collection hopper as the shaft rotates. The RBC is driven by a 1.5kw 3 phase electric motor through a reduction gearbox. The unit runs on a continuous basis.



RBC Sump Pump

A small drainage pump has been provided at the motor/gearbox end of the RBC to facilitate the removal of surface and seepage water.

This is a simple 230VAC plug in pump fitted with an integral float control switch.

Settled Effluent Pumps

The outlets of the RBC's flows to the settled effluent pumping station. Here the effluent is collected and pumped to the biological filter bed splitter box (normal operation) or directly to the FST splitter box (filter bed bypass option). These pumps are controlled with a Siemens Milltronics ultrasonic level measurement device. The pumps are configured Duty/ Assist and each pump (in single operation) will deliver 3DWF or slightly more. The

ultrasonic is programmed with a common stop, duty start and assist start level. These levels are detailed in the Forward Feed Pump Station parameter setting sheets. Should the unit develop a fault; a fault alarm light will be illuminated in the control building. The system will then default to float control. Two floats are present at this plant. The lower float controls the on off of the pump whilst in float control. This is done by initiating a run timer when the float is activated. After the time has elapsed its time settling the pump will stop until the float is re=-activated to initiate the cycle again.

Filter Bed Splitter Box

This is the existing splitter box which accepts the pumped flow from the Forward Feed Pumping Station and divides it for distribution to the filter beds.

Filter Beds

There are two plastic media filled filter beds. The effluent is distributed over the media by the use of Adams Hydraulics Distributor arms. The effluent trickles through the filter before discharging to the existing humus tanks.

Final Settlement Tank

The three settlement tanks are made up of an existing Human tank and two new GPR settlement tanks. All the tanks are hopper bottomed with baffle outlet weirs. As the remaining fines settle out the final effluent is displace over the outlet weir and eventually to the final effluent chamber.

Final Effluent Chamber

The final effluent form the Humus tank flows to the final effluent chamber.

A sampler takes a sample of the final effluent on receipt of 10 pulses (1 pulse per m^3) from a flow measurement device. Hence, for every $10m^3$ a 200ml sample is taken.

Return Activated Sludge Pumping Station

The outlet of the sludge line from the humus tank flows to the sludge return pumping station. Here the sludge is collected and pumped to the PST flow splitting chamber. It joins the incoming effluent entering the primary settlement tanks. These pumps are configured Duty Standby level. The ultrasonic level control is programmed with a common stop level, duty start and standby start.

Storm Return Pumping Station

Effluent enters the storm holding tanks from the inlet screen during storm conditions or when flows in exceed of 3DWF. Excess flow enters the storm taken via a preset overflow weir, located at the inlet screen. As the storm effluent enters the storm tank it is stored whilst the storm conditions or excess flow is still detected at the inflow flow measurement flume.

When the storm conditions subside and the flow measured at the inlet flume is at 1 DWF or less for a set period of time (currently 5 minutes) the storm return is enabled (15 minutes).

During this time the storm return sequence is initiated and the pumps are able to pump back to the inlet manhole at the head of the works. After the set period of storm return enable, the pumps will stop and if the inlet flow is still 1DWF or less for a further period of

time the storm return is again enabled. The idea of this sequence is to avoid the pump hunting on and off with minor flow variations.

When the storm return is enabled the mixing and pumping station is controlled with a Siemens Milltronics ultrasonic level measurement device. Depending on the level within the storm tank, the mixer is started prior to pumping. The mixer will run for a set period of time before allowing the pumps to run (currently set a 3 minutes). The pumps then start to pump and return storm effluent back to the inlet manhole. The speed of the storm pumps is controlled by a variable speed drive which has a fixed set point allowing the pumps to deliver a flow rate of approximately 1.5DWF. The mixer continues to run with the pumps until the storm tank has reached the stop level (currently 0.35m). This is provided the storm enable time has not elapsed. The pump start is set at 0.45m above floor level to ensure that the storm tank is always emptied, even after a brief inflow, this maximises the storm holding tank capacity. The pumps are configured Duty Standby.

C.1(iii) Information on the Location Final Discharge Locations

The primary discharge point SW1(P) discharges to the Blackwater River via a 225mm pipe. The location of the discharge is shown on **Drawing 3** of **Attachment B3**.

There is one storm water overflow (SWO) at the treatment plant, from a storm holding tank located at NGR 263000E 335849N, this only operates in the event of continuous storm conditions, whereby the storm tank fills up and the treatment works is at full capacity. This SWO discharges to the river Blackwater (see **Drawing 3**).

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.

Primary Discharge Point - SW1(P)

The primary discharge of the waste water works is to the Blackwater River at 263057E, 335886N in the townland of Quiglough, Ballinode, Co. Monaghan (see **Drawing 3** of **Attachment B.3**).

The final effluent from the Treatment Works is conveyed from the treatment works to the River Blackwater through a 225mm diameter concrete pipe.

There is one storm water overflow (SWO) at the treatment plant, from a storm holding tank located at NGR 263000E 335849N, this only operates in the event of continuous storm conditions, whereby the storm tank fills up and the treatment works is at full capacity. This SWO discharges to the river Blackwater (see **Drawing 3**).

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.

Monitoring data for the influent for 2008 to 2009 is contained in **Table D.1(iv) Attachment D.1.**

Tables D.1(i)(a), (b) & **(c)** have been completed for the primary discharge are contained in **Attachment D.1**

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

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

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
SW1(P)	Primary	Monaghan Co. Co.	River	Blackwater River	Not Designated	263057	335886

Note: The Blackwater (Monaghan) River is only designated as nutrient sensitive from the confluence of the River Shambles to Newmills Bridge.

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

SECTION E: MONITORING

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

E.1 Waste Water Discharge Frequency and Quantities – Existing & Proposed

Provide an estimation of the quantity of waste water likely to be emitted in relation to all primary and secondary discharge points applied for. This information should be included in Table 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.

An estimation of the quantity of waste water likely to be emitted in relation to the primary discharge is contained in **Table E.1(i) of Attachment E1.**

Composite sampling is in place on the primary discharge.

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.

Environmental Monitoring & Sampling

Monaghan Co. Co. carried out both the sampling and analyses before 2009, since then, Monaghan County Council staff carries out the collection of the samples from the discharges from the Ballinode Waste Water Treatment Plant including the samples of the water upstream and downstream of the primary discharge in the river Blackwater. The samples are then delivered by courier to Euro Environmental Services, Drogheda, Co. Louth for analyses. Details of their accreditation of analysis are included in **Attachment E.2**. of the initial licence application. Sampling of the primary discharge from the Ballinode Waste Water Treatment Works are undertaken every 6-8 weeks, the monitoring of the upstream

and downstream locations is carried out approximately once per annum. At present composite samples are taken of the influent and effluent and grab samples are taken for upstream and downstream monitoring points.

Monitoring, Sampling & Analytical Procedures

Careful collection is carried out during all sampling to ensure that the relative proportions or concentrations of all pertinent components are the same in the samples as in the materials being sampled. The samples are also handled carefully to ensure that no significant change in the composition occurs before the tests are made.

During the waste water and water sampling all personnel wear safety boots and latex gloves at all times. Due care and attention is taken at all times.

All of the sampling points are located in places that have safe means of access.

Further details on the annual sampling programme schedule for Ballinode are detailed below.

Plant Name	Design	Min No of Samples	Raw Influent	Final Effluent	River Up Stream	River Down stream	Total
Ballinode	PE 1000	6	6	6	1	1	14

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
SW1(P)s	Primary	S	263036	335867	N
aSW1(P)u	Primary	M	262979	335758	N
aSW1(P)d	Primary	M	263809	335772	N

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

E.4 Sampling Data

Regulation 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.

Sampling Data

Sampling Data pertaining to the discharge are tabled in **Attachment E.4.**

Monitoring Requirements & Treatment Standards

Ballinode Waste Water Works complies with the monitoring and treatment standards specified in the Urban Waste Water Treatment Regulations S.I 254 of 2001.

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.

General

The outfall from the Ballinode Waste Water Plant discharges to the Blackwater Monaghan River at National Grid Reference 263057E, 335886N in the Townland of Quiglough, Ballinode Co Monaghan.

The Blackwater (Monaghan) River has been identified by the Eastern Regional Fisheries Board as an important trout fishery. However, the river is not designated as salmonid water under EC (Quality of Salmonid Water) Regulations, 1988 and as such the river water quality is not required to meet the quality standards laid down in these regulations. The objective for the river is to attain "good status" by 2015 under the Water Framework Directive.

The treated effluent has an average BOD concentration of 9mg/l and average suspended solids concentration of 32.5 mg/l. Average concentrations of nutrients are as follows; orthophosphate 11.6 mg/l (P), Total Phosphorus 4.2 mg/l (P) and Total Nitrogen 11 mg/l (N).

The nearest flow monitoring data available on the Blackwater River is at the Cappog Bridge Station (NGR 262970E, 335707N)) (OPW Station 03058). The 95-percentile flow is given as the 0.09m^3/s, 50-percentile flow of 0.65m^3/s and the mean flow as 1.34m^3/s.

A Q value of 4 was recorded downstream of the discharge point (1st Br d/s Ballinode) in 2004 2001, 1998 and 1996(see **Table 2** below). EPA physiochemical water quality monitoring data is available at this site for 2001 to 2003. This data gave a median BOD value of 2mg/l, median ortho-phosphate of 0.03mg/l, median total ammonia of 0.06mg/l and median oxidised nitrogen of 0.7mg/l.

A Q value of 3 was recorded upstream of the discharge point (Station No. 0130 1.5km d/s Scotstown Br) in 2004 (see **Table 2** below). A previous Q value of 3 was recorded in 2001; A Q value of 4 was recorded at this location in 1998 and 1996. No EPA physiochemical water quality monitoring data is available at this site for 2001 to 2003.

However, Monaghan Co Co. monitoring data would indicate relatively good water quality in the river as outlined below.

Table 2 Biological Quality Ratings (Q Values) (Source EPA)

Location	Station Number	Station	1996	1998	2004
Downstream	**0130**	1st Br d/s Ballinode	4	4	4
Upstream	**0300**	1.5km d/s of Scotstown Br	3	4	4

(Q3 = moderately Polluted**; Q4-5, Q4** = Unpolluted)

Monaghan Co. Co. monitors the river both upstream and downstream of the discharge from the Waste Water Works. These locations are shown on **Drawing 4** of **Attachment B3**. Monitoring data collected for the year 2008 and 2009 is presented in **Tables F.1(i)a aSW1(P)u** and **aSW1(P)d**. Monitoring results for dangerous substances relate to a once-off samples collected in April 2009 and are presented in **Tables F.1(i)b aSW(P)u** and **aSW(P)d**.

Monaghan County Councils upstream monitoring results (2008-2009) indicate relatively good water quality in the river, with the median orthophosphate level recorded at 0.055 mg/l P, median MRP of 0.04 mg P/l, average ammonia levels of 0.08 mg/l NH_3-N, average BOD of <2 mg/l, median TP of 0.11mg/l, median TN of 0.13mg/l N and average suspended solids of 5mg/l Dangerous substances concentrations were below detection level for 9 of the 19 parameters tested in April 2009. However, no levels exceeded the standards as outlined in the Water Quality (Dangerous Substances) Regulations 2001.

Results from the downstream monitoring site (aSW1(P)d) indicates generally good water quality with median orthophosphate levels of 0.02 mg/l P recorded for 2008 and 2009, average ammonia 0.03 mg/l NH_3-N, average BOD of <2 mg/l, median TP of 0.11 mg/l, average TN of 0.13mg/l N and average suspended solids of 3 mg/l. Dangerous substances concentrations were below detection level for 5of the 19 parameters tested in April 2009. However, no levels exceeded the standards as outlined in the Water Quality (Dangerous Substances) Regulations 2001.

The impact of the primary discharge point on the Blackwater River is evaluated in the Assimilative Capacity calculations below.

Assimilative Capacity of Receiving Water

The Assimilative Capacity of the receiving waters is a measure of its ability or suitability to absorb waste water discharges whilst complying with relevant legislation and water quality objectives.

The impact of the primary discharge point on the Blackwater River is evaluated in the Assimilative Capacity calculations below.

The nearest flow monitoring data available on the Blackwater River is at the Cappog Bridge Station (NGR 262970E, 335707N)) (OPW Station 03058). The OPW 95-percentile flow (m^3/s) of 0.09, the mean annual flow of 1.34 (m^3/s) and 50-percentile flow of 0.65 from the Cappog Bridge Station were used in these calculations.

Using the Blackwater River flow rates outlined above and the Blackwater River background water quality (Monaghan Co Co and EPA Data), an assimilative capacity assessment of the

River has been carried out using the mean annual flow, 95-percentile flow conditions and 50-percentile flow conditions for BOD, SS and Total Phosphorous and MRP.

The assessment has been undertaken on the basis of an average discharge flow to the receiving water from the Wastewater Treatment Plant.

BOD Assimilative Capacity

Mean Flow Conditions

The BOD assimilative capacity of the river under mean flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{mean}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible BOD concentration in the watercourse (in this case taken as a maximum of 4mg/l)
C_{back} = Average background BOD level upstream (<2 mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{mean} = mean flow in m^3/s (1.34 m^3/s)

Therefore,

AC = (4 – 2) x 86.4 x 1.34

AC = 231.5 kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of $92m^3$/day, the total amount of BOD discharged to the Blackwater River shall be:

92,000/day x 9 mg/l = **0.83kg/day**

This constitutes 0.4% of the assimilative capacity (AC) of the Blackwater River as outlined above.

The **resulting BOD concentration in the river** can be estimated from the formula:

The resulting BOD concentration in the river resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (9mg/l)
C_{back} = concentration in river u/s of discharge (<2mg/l)
Q_{back} = flow of river (l/d) (1.34 m^3/s) = 115,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

$1m^3/s$ = 86,400,000 l/d

Therefore:

CR = [(2 x 115,776,000) + (9 x 92,000)] / [115,776,000+ 107,000]

CR = 2.008 mg/l

95-percentile Flow Conditions

The BOD assimilative capacity of the river under 95-percentile flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{95}$ [National Urban Waste Water Study 2005]

where,

AC = waste assimilative capacity
C_{max} = maximum permissible BOD concentration in the watercourse (in this case taken as a maximum of 4 mg/l)
C_{back} = Average background BOD level upstream (<2 mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{95} = 95-percentile flow in m^3/s (0.09 m^3/s or 7,776,000/d)

Therefore,

AC = (4 – 2) x 86.4 x 0.09

AC = 15.5 kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of BOD discharged to the Blackwater River shall be:

92,000l/day x 9 mg/l = **0.83kg /day**

This constitutes **5.4%** of the assimilative capacity of the Blackwater River as outlined above.

The **resulting BOD concentration in the river** resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (9mg/l)
C_{back} = concentration in river u/s of discharge (<2mg/l)
Q_{back} = flow of river (l/d) (95% flow of 0.09m^3/s = 7,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

$1m^3/s$ = 86,400,000 l/d
Therefore:

CR = [(2 x 7,776,000) + (9 x 92,000)] / [7,776,000 + 92,000]

CR = 2.08 mg/l

50-percentile Flow Conditions

The BOD assimilative capacity of the river under 50-percentile flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{50}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible BOD concentration in the watercourse (in this case taken as a maximum of 4 mg/l)
C_{back} = Average background BOD level upstream (<2 mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{50} = 50-percentile flow in m^3/s (0.65 m^3/s or 56,160,000/d)

Therefore,

AC = (4 – 2) x 86.4 x 0.65

AC = 112.32 kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of BOD discharged to the Blackwater River shall be:

92,000l/day x 9 mg/l = **0.83kg/day**

This constitutes **0.7%** of the assimilative capacity of the Blackwater River as outlined above.

The **resulting BOD concentration in the river** resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (9g/l)
C_{back} = concentration in river u/s of discharge (<2mg/l)
Q_{back} = flow of river (l/d) (50% flow of 0.09m^3/s = 56,160,000l/d
Q_d = discharge volume (l/d) 92,000l/d

$1m^3/s$ = 86,400,000 l/d

Therefore:

CR = [(2 x 56,160,000) + (9 x 92,000)] / [56,160,000 + 92,000]

CR = 2.011mg/l

Summary Result - BOD

BOD	Mean Annual Flow	95-Percentile Flow	50-Percentile Flow
Assimilative Capacity of River	231.5kg/day	15.5kg/day	112.32kg/day
Total Amount Discharged	0.83kg/day	0.83kg/day	0.83kg/d
% of Assimilative Capacity Absorbed	0.4%	5.4%	0.7%
Existing Average Background Upstream	<2mg/l	<2mg/l	<2mg/l
Resultants Conc in River	2.008mg/l	2.08mg/l	2.011mg/l

The above calculations indicate the discharge, in terms of BOD concentration, is not impacting on the water quality of the river and the resultant concentration downstream is within the EQS of <4mg/l for all flow conditions.

Phosphorous Assimilative Capacity

Monaghan Co Co and EPA samples taken upstream and downstream of the discharge point in 2009 indicate median orthophosphate concentrations of 0.055 mg/l and 0.03mg/l respectively. The median Total Phosphorus upstream and downstream is 0.12mg/l and 0.11mg/l respectively.

The current Q value downstream of the discharge point (1st Br d/s Ballinode) is Q4 with a Minimum Target Biological Quality (Q) Rating/Q Index of 4 or Molybdate-Reactive Phosphate Median Concentration(ugP/L) of 30 (Phosphorus Regulations, 1998).

The MRP (as Total P) concentration of the river as result of the discharge is calculated below using the 50%ile flow rate for the river and also the 95%ile flow rate (Station 03058).

50-percentile Flow Conditions

Final River Phosphorus Concentration using 50-percentile Flow Rate:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = concentration in discharge (Total P =4.2.)

C_{back} = concentration in river u/s of discharge (0.12)
Q_{back} = flow of river (l/d) (50% flow of 0.65m^3/s = 56,160,000l/d
Q_d = discharge volume (l/d) 92,000l/d

1m^3/s = 86,400,000 l/d

Therefore:

CR = [(0.12 x 56,160,000) + (4.2 x 92,000)] / [56,160,000 + 92,000]

Final River Concentration = 0.1266 mg/l (Total P) = **0.04 MPR as Total P = 40ugP/L**

95-percentile Flow Conditions

Final River Phosphorus Concentration using 95-percentile Flow Rate

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (Total P = 4.2)
C_{back} = concentration in river u/s of discharge (0.12)
Q_{back} = flow of river (l/d) 95% flow of 0.09m^3/s = 7,614,000/d
Q_d = discharge volume (l/d) 92,000l/d

Therefore:

CR = [(0.12 x 7,776,000) + (4.2 x 92,000)] / [7,776,000 + 92,000]

Final River Concentration = 0.167 mg/l (Total P) = **0.05 MPR as Total P = 50ugP/L**

Summary Results – Total Phosphorus & Molybdate Reactive Phosphate Concentration

The calculations above show that the Blackwater River has the capacity to assimilative the discharge in terms of Total Phosphorous and MRP. However the predicted results are resultant slightly elevated from the MRP target concentration of 0.03mg P/l.

Total Phosphorous & MRP	**50-percentile Flow**	**95-percentile Flow**
Existing Average Background Upstream	0.12mg/l	0.12mg/l
Resultants Conc in River (Total P)	0.1266 mg/l	0.167 mg/l
Resultants Conc in River (MRP)*	0.04mg P/l	0.05mg P/l

* The Molybdate Reactive Phosphate (MRP) concentration was derived using Total P = 3.07 * MRP

Suspended Solids (SS) Assimilative Capacity

Mean Flow Conditions

The suspended solids assimilative capacity of the river under the mean flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{mean}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible SS concentration in the watercourse (in this case taken as a maximum of 25mg/l)
C_{back} = Average background SS level upstream (7 mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{mean} = Mean Flow in m^3/s (1.34 m^3/s)

Therefore,

AC = (25 –7) x 86.4 x 1.34

AC = 2093.9kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of SS discharged to the Blackwater River shall be:

92,000l/day x 32.5mg/l = **2.99kg/day**

This constitutes 0.14% of the assimilative capacity of the Blackwater River as outlined above.

The resulting SS concentration in the river resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (32.5mg/l)
C_{back} = concentration in river u/s of discharge (7mg/l)
Q_{back} = flow of river (l/d) (1.34 m^3/s) = 115,776,000l/d
Q_d = discharge volume (l/d) 92,000l/d

1m^3/s = 86,400,000 l/d

Therefore:

CR = [(7 x 115,776,000) + (32.5 x 92,000)] / [115,776,000 + 92,000]

CR = 7.02 mg/l

95-percentile Flow Conditions

The SS assimilative capacity of the river under 95-percentile flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{95}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible SS concentration in the watercourse (in this case taken as a maximum of 25 mg/l)
Cback = Average background SS level upstream (7 mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{95} = 95-percentile flow in m^3/s ($0.09m^3/s$ = 7,776,000l/d

Therefore,

AC = (25 – 7) x 86.4 x 0.09

AC = 139.9 kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of $107m^3$/day, the total amount of SS discharged to the Magherarney River shall be:

92,000l/day x 32.5 mg/l = **2.99kg/day**

This constitutes 2.1% of the assimilative capacity of the Blackwater River as outlined above.

The **resulting SS Concentration in the River** can be estimated from the formula:

The resulting SS concentration in the river resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;

CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (32.5mg/l)
C_{back} = concentration in river u/s of discharge (7mg/l)
Q_{back} = flow of river (l/d) (95% flow of ($0.09m^3/s$ = 7,776,000l/d)
Q_d = discharge volume (l/d) 92,000l/d
$1m^3/s$ = 86,400,000 l/d
Therefore:

CR = [(7 x 7,776,000l) + (32.5 x 107,000)] / [7,776,000 + 92,000]

CR = 7.29 mg/l

50-percentile Flow Conditions

The SS assimilative capacity of the river under 50-percentile flow conditions can be calculated by:

AC = $(C_{max} - C_{back}) \times 86.4 \times Q_{50}$

where,

AC = waste assimilative capacity
C_{max} = maximum permissible SS concentration in the watercourse (in this case taken as a maximum of 25 mg/l)
C_{back} = Average background SS level upstream (7 mg/l)
86.4 = factor to convert WAC to a daily load (kg/day)
Q_{50} = 50-percentile flow in m^3/s (0.65 m^3/s or 56,160,000/d)

Therefore,

AC = (25-7) x 86.4 x 0.65

AC = 1010.8 kg/day

Total Amount Discharge to River:

With an average effluent discharge volume of 92m^3/day, the total amount of SS discharged to the Blackwater River shall be:

92,000l/day x 32.5 mg/l = **2.99kg/day**

This constitutes 0.064% of the assimilative capacity of the Blackwater River as outlined above.

The **resulting SS concentration in the river** resulting from the effluent input can be estimated using the following Formula:

$$CR = \frac{(C_{back} * Q_{back}) + (C_d * Q_d)}{(Q_{back} + Q_d)}$$

Where;
CR = resulting concentration in river (mg/l)
C_d = average concentration in discharge (32.5mg/l)
C_{back} = concentration in river u/s of discharge (7mg/l)
Q_{back} = flow of river (l/d) (50% flow of 0.09m^3/s = 56,160,000l/d
Q_d = discharge volume (l/d) 92,000l/d

1m^3/s = 86,400,000 l/d
Therefore:

CR = [(7 x 56,160,000) + (32.5 x 92,000)] / [56,160,000 + 92,000]

CR = 7.04mg/l

Summary Result – Suspended Solids

Suspended Solids	Mean Flow	95-percentile Flow	50-percentile Flow
Assimilative Capacity of River	2093.9kg/day	139.9kg/day	1010.8
Total Amount Discharged	2.99kg/day	2.99kg/day	2.99kg/day
% of Assimilative Capacity Absorbed	0.14%	2.1%	0.29%
Existing Average Background Upstream	7mg/l	7mg/l	7mg/l
Resultants Conc in River	7.02mg/l	7.29mg/l/l	7.04mg/l/l

The calculations above show that the Blackwater River has the capacity to assimilative the discharge in terms of Suspended Solids and indicate that the suspended solids EQS (25mg/l) is met downstream of the discharge point.

Summary

The assimilative capacity calculations above indicate that there is significant dilution capacity within the receiving water, even at low flows, to assimilate discharges from the Waste Water Works in terms of suspended solids and BOD and that the EQS are met downstream of the discharge point for the mean, 50-percentile and 95-percentile flow conditions . Predicted MRP concentrations were slightly elevated from the target level of 0.03mg/l (Phosphorus regulations, 1998).

Overall the results of the assimilative capacity are consistent with the physiochemical water quality monitoring results (EPA and Monaghan Co Co Data) and indicate that the discharges from the works are not having a significant detrimental impact on the receiving environment.

- 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.

Tables F.1 (i) (a) & **(b)** are completed 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. **Tables F.1 (ii) (a)** & **(b)** are therefore not completed.

- 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.

Not Applicable

- 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 summary leaflet of the Draft River Basin Management Plan for the Neagh Bann International River Basin District summary leaflet is contained in **Attachment G2.**

  The Blackwater River at Ballinode is not designated.

- 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 Blackwater Monaghan River upstream and downstream of the discharge point as detailed in **Tables D1** and **F1** show a level below those in the Water Quality (Dangerous Substances) Regulations 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.

  The assimilative capacity of the river would suggest that the discharges from the waste water works will not have significant effects on faecal coliform, salmonella and protozoan pathogen numbers in the 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)

There are no Natura 2000 sites within the vicinity of the discharge point.

Emissions from the Wastewater Treatment site therefore will not have a significant effect on any Natura 2000 site. Hence, there has been no correspondence with the National Parks and Wildlife Service in connection with the existing or proposed discharge.

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

The impact of the discharge from the Ballinode wastewater treatment works has been calculated in the Assimilative Capacity calculations above. These results show 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.**

There are no modelling details pertaining to the discharges from the agglomeration.

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.

There is no drinking water abstraction downstream of the WWTW. The waste water works will not have significant effects on faecal coliform, salmonella and protozoan pathogen numbers in the environment.

ABS_CD	AGG_SERVED	ABS_VOL	PT_CD	DIS_DS	EASTING	NORTHING	VERIFIED

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.

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).

No Programme of Improvements has been prioritised for the development. The treatment works has been designed to comply with the above 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.

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.

Water Quality Management Plans or Catchment Management Plans

The summary leaflet of the Draft River Basin Management Plan for the Neagh Bann International River Basin District summary leaflet is contained in **Attachment G2.**

Phosphorus Removal

The treatment works includes a facility for the removal of phosphorus. The phosphorus is removed by simultaneous precipitation by the addition of ferric sulphate which acts as a coagulant. The ferric sulphate is injected into the incoming sewage at the inlet to the aeration basin.

An automatic sampler is provided at the inlet to the works to monitor the phosphorous load to the plant. The plant operator sets the ferric sulphate dose by adjusting the stroke of the pump.

Monaghan Co Co and EPA samples taken upstream and downstream of the discharge point in 2009 indicate median orthophosphate concentrations of 0.055 mg/l and 0.03mg/l respectively. The median Total Phosphorus upstream and downstream is 0.12mg/l and 0.11mg/l respectively (MRP 0.039mg P/l upstream and MRP 0.35mg P/l downstream).

The current Q value downstream of the discharge point (1st Br d/s Ballinode) is Q4 with a Minimum Target Biological Quality (Q) Rating/Q Index of 4 or Molybdate-Reactive Phosphate Median Concentration(ugP/L) of 30 (Phosphorus Regulations, 1998).

The predicted MRP concentration from the assimilative capacity calculations is above the actual level recorded. With the actual levels (calculated from TP) being marginally above the target level (0.03mg/l). However, results from the 2006 Implementation Report indicated MRP downstream at station (0300) a current MRP value of 0.03mg/l.

The Council Phosphate Implementation Report 2006 is contained in **Attachment G2**.

Attachment G.2 should contain the most recent programme of improvements and any associated documentation requested under Section G.3 of the application.

Attachment included	Yes	No
	√	

G.3 Impact Mitigation

Provide details on a programme of improvements to ensure that discharges from the agglomeration will not result in significant environmental pollution.

No Programme of Improvements has been prioritised for the development.

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.

There is no programme of improvement for the storm water overflow at the plant.

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:**_____
(on behalf of the organisation)

Print signature name: _____

Position in organisation: _____