This document has been cleared for submission to the Director by the Senior Inspector, Patrick Byrne
Signed: P Bolger Date: 12/08/13

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

OFFICE OF CLIMATE, LICENSING & RESOURCE USE.

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	Dara Lynott, Director
From:	Loretta Joyce Environmental Licensing Programme
Date:	12th August 2013
RE:	Application for a Waste Water Discharge Licence from Monaghan County Council for the **Knockaconny** agglomeration, **Reg. No. D0463-01.**

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 500 to 1000
Licence application received:	22/06/2009
Notice under Regulation 18(3)(b) issued:	06/05/2011
Information under Regulation 18(3)(b) received:	29/05/2013
Site notice check:	16/07/2009
Site visit:	18/04/2011 (J.Cope), 16/04/2013 (L.Joyce)
Submissions Received:	One, 21/10/2010 (Inland Fisheries)

1. Agglomeration

This application relates to the Knockaconny agglomeration in County Monaghan. The agglomeration had a population equivalent (p.e.) of 420 in 2013. The applicant has confirmed that the p.e. is not projected to exceed 600 p.e. by 2016. There are mainly commercial sources of p.e., in terms of town office developments and a few houses are served by the WWTP. The projected 600 p.e. includes the addition of a new Vocational Education Committee school into the agglomeration. There are no identified sources of industrial waste water in the agglomeration.

The waste water treatment plant (WWTP), with a design capacity of 1,000 p.e., is designed to provide effluent treatment to 25mg/l:35mg/l BOD:SS standard.

The plant consists of inlet works, aeration tank, clarifier and sludge drying beds. There is no chemical dosing for phosphorus removal. The sludge drying beds are not in use at present as sludge is transported to Monaghan WWTP (application Reg. No. D0061-01), for dewatering and treatment.

2. Discharges to waters

Primary Discharge

The primary discharge (SW-1) is the gravity outfall from the WWTP to the River Blackwater (Monaghan), adjacent to the WWTP. At 95%ile flow in the river (0.21 m^3/sec), there are approximately 170 dilutions available for the projected normal waste water discharge (0.0012 m^3/sec). The 95%ile river flow was provided by the Office of Environmental Assessment. The applicant's 2011 treated effluent monitoring results are shown in Table 1, along with the WWTP design standards.

Table 1. WWTP monitoring results 2012 (average based on 6 samples)

Parameter	BOD (mg/l)	COD (mg/l)	Suspended solids (mg/l)	Ammonia (mg/l)	Orthophosphate (mg/l)
Average effluent	2.4	30.3	10.7	6.4	2.6
WWTP Design standards	25	-	35	-	-

Secondary Discharges

There are no secondary waste water discharges from the agglomeration.

Storm water overflows

There is one screened storm water overflow (SWO) at the inlet to the WWTP. The overflow combined with treated effluent discharge to the River Blackwater (Monaghan) via the primary discharge point.

Emergency overflows

There are no pumping stations or emergency overflows in the agglomeration.

3. Receiving waters and impact

The River Blackwater (Monaghan) forms part of the Neagh Bann International River Basin District. The following table summarises the main considerations in relation to the receiving waters.

Table 2. Receiving waters

Characteristic	Description	Comment
Receiving water name and type	River Blackwater (Monaghan) GBNI1NB030307099 NB_03_479	
Relevant designations within 10km	Nutrient Sensitive Water	River Blackwater (Monaghan)
Drinking water abstraction within 10 km d/s	Knockaconny borehole (Groundwater) 2404PUB1024	200m SE of primary discharge
EPA monitoring stations & Biological quality rating (Q value)	U/s station RS03B010510 Located on River Blackwater (Monaghan), 3.2km u/s (tributaries converge d/s of this station) D/s station RS03B010650 Located on River	U/s Q3-4 in 2010 D/s Q3 in 2010

	Blackwater (Monaghan), 1.8km d/s (tributaries converge u/s of this station)	
WFD status	Poor	2011
WFD Risk Category	1a	2008
WFD Objective	Restore Good Status	Exemption until 2021
WFD protected areas	Nutrient Sensitive Water RPA drinking water groundwater	

Ambient water quality monitoring data for the River Blackwater (Monaghan) provided by the applicant is summarised in Table 3 below. The results show that BOD, orthophosphate and ammonia levels deteriorate downstream of the primary discharge and do not comply with the good status water quality standards specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended.

Table 3. Water Quality in River Blackwater (Monaghan) in 2012-2013 (average based on 5-6 samples)

Parameter	10m u/s of SW001	90m d/s of SW001	Water Quality Standards Note 1
BOD	**1.67**	**2.25**	≤ 1.5 mg/l (mean)
Orthophosphate (as P)	**0.054**	**0.06**	≤ 0.035 mg/l (mean)
Ammonia (as N)	**0.075**	**0.11**	≤ 0.065 mg/l (mean)

Note 1: Good status under European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended;

Table 4 below summarises the mass balance calculations which show the contribution from the primary discharge on the receiving water at a projected loading of 600p.e. The calculations use the 'notionally clean river' approach (a hypothetically clean stretch of river) provided by the Office of Environmental Assessment.

Table 4. Mass Balance Calculations

Parameter (mg/l)	Proposed ELVs for Primary discharge	Contribution from Primary discharge	Contribution from notionally clean background Note 1	Predicted Downstream concentration	Water Quality Standards Note 2
BOD	20	0.12	0.26	0.38	≤ 2.6
Orthophosphate (as P)	3	0.018	0.005	0.023	≤ 0.075
Ammonia (as N)	5	0.029	0.008	0.037	≤ 0.14

Note 1: The notionally clean background concentrations are 0.26 mg/l BOD, 0.005 mg/l ortho-phosphate (as P) and 0.008 mg/l ammonia (as N).
Note 2: Good status under the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.

The calculations show that the predicted downstream concentrations of BOD, Orthophosphate as P and Ammonia as N, based on the ELVs included in the RL, would comply with the good status standards in the Environmental Objectives Regulations 2009, as amended. The RL proposes that all ELVs apply from date of grant of licence.

The RL proposes an ELV of 20mg/l BOD. The average BOD in the effluent was 2.4mg/l in 2012 indicating that this ELV is achievable. The WWTP is designed to achieve 25mg/l BOD. Conventional activated sludge plants can achieve 15 to 25 mg/l BOD.

The RL proposes an ELV of 3mg/l Orthophosphate. Orthophosphate as P in the effluent was 2.6mg/l in 2012 indicating that this ELV is achievable. Plants with chemical dosing for phosphorus removal, which is not currently available at this WWTP, can achieve 1 to 3mg/l Orthophosphate as P.

The RL proposes an ELV of 5mg/l Ammonia as N. Ammonia in the effluent was 6.4 mg/l in 2012 indicating that plant operational improvement or upgrade will be required to meet this ELV. There is no anoxic tank/zone in the WWTP, however, conventional activated sludge plants can achieve 2 to 5 mg/l Ammonia.

Knockaconny WWTP is listed as a point pressure in the Blackwater Water Management Unit Action Plan. However, the plan states that EPA licence application information suggests that Knockaconny is not having an impact on the receiving waters as there is adequate dilution in the river.

4. Site Visit

I visited Knockaconny agglomeration on 16/04/2013 and met with a representative of Monaghan County Council. I visited the WWTP and observed the primary discharge point and receiving waters.

5. Ambient Monitoring

Schedule B.2 Receiving Water Monitoring of the RL specifies quarterly monitoring of the River Blackwater (Monaghan) for a number of specified parameters.

- Upstream: The location identified by Monaghan County Council is aSW-1u (grid ref.268906E 335795N) is approximately 10m upstream of SW001. It has been included as a National Monitoring Station, Station Code: RS03B010640 in *Schedule B.2* of the RL.
- Downstream: The location provided by Monaghan County Council aSW-1d, (grid ref.269003E 335758N) is approximately 90m downstream of SW001. It has been included as a National Monitoring Station, Station Code: RS03B010641 in *Schedule B.2* of the RL.

6. Programme of Improvements

There are no planned improvements proposed by the applicant for Knockaconny WWTP. Plant upgrade and/or improvement will be required to achieve an ELV of 5mg/l Ammonia as N from date of grant of licence.

7. Compliance with EU Directives

In considering the application, regard was had to the requirements of Regulation 6(2) of the Waste Water (Discharge) Authorisation, Regulations 2007 as amended, notably:

Table 5. Compliance with EU Directives/Regulations

Compliance with Directives/Regulations	Description and Conditions in RL
Urban Waste Water Treatment Directive [91/271/EEC]	Appropriate treatment was required by 31st December 2005. Nutrient sensitive water, Conditions 5.1.4 and 5.1.5 require total Phosphorus loadings and total Nitrogen loadings, respectively, in the discharge to be reduced to the maximum practicable extent.
Water Framework Directive [2000/60/EC]	Exemption from achievement of good status until 2021.
EC Environmental Objectives (Surface Water) Regulations 2009, S.I. No. 272 of 2009, as amended	Schedule A of RL sets ELVs to contribute towards good status water quality standards.
Drinking Water Abstraction Regulations	Knockaconny borehole 2404PUB1024 200m SE of primary discharge Condition 4 requires a risk assessment for protection of drinking water abstraction points to be carried out.
EC Freshwater Fish Directive [2006/44/EC]	Not a designated salmonid river
Bathing Water Directive [2006/7/EC]	No bathing waters present
Shellfish Waters Directive [2006/113/EC]	No shellfish waters present
Dangerous Substances Directive [2006/11/EC]	Condition 4 requires screening for priority substances.
Birds Directive [79/409/EEC] & Habitats Directive [92/43/EEC]	Screening for Appropriate Assessment (AA) demonstrates that the discharges, individually or in combination with other plans or projects, are not likely to have significant effects on a European site, due to the lack of hydrological connectivity with a European site. AA was not required.
Environmental Impact Assessment Directive [85/337/EEC]	An EIS was not required for Knockaconny WWTP.
Environmental Liability Directive [2004/35/CE]	Condition 7.2 of RL satisfies the requirements of the Directive.

8. Submissions

One valid submission was received in relation to this application from William Walsh, Director, Inland Fisheries, 21/10/2010.

The submission identifies concerns regarding river flow monitoring data (lack of OPW hydro stations) and use of most recent biological monitoring data. The submission also notes that Orthophosphate as P was only monitored on one occasion upstream and downstream of the primary discharge point. Ammonia levels in the effluent are noted to be variable and the parameter is particularly pertinent from a fisheries perspective, given it's toxicity to aquatic life. The submission suggest that the lower limit of detection for BOD analysis should be lower than 2mg/l given the standards set in the European Communities Environmental Objectives (Surface Waters) Regulations 2009.

The submission notes that the River Blackwater (Monaghan) holds stocks of brown trout, eels, lamprey, gudgeon, steonloach, minnow and three-spined stickleback and that it is vital that appropriate discharge limits are set in the licence to ensure that there is, at the very least, no deterioration in of existing conditions, in accordance with Article 5 of the European Communities Environmental Objectives (Surface Waters) Regulations 2009.

Response: The points raised in this submission have been taken into consideration. There is a hydrometric station, 03051 Faulkland Bridge, downstream of the primary discharge location and another hydrometric station 03058 Cappog Bridge upstream of the primary discharge location. Both stations have long-term continuous flow data. The 95%ile river flow (0.21 m3/sec), was provided by the Office of Environmental Assessment. The most recent biological monitoring has been included in this report; the downstream station, RS03B010650, was Q3 in 2010.

Regarding ambient receiving water monitoring, additional data was provided by the applicant (5-6 samples taken in 2012 – 2013) and are presented in the report above. Mass balance calculations shown above used the 'notionally clean river' approach (a hypothetically clean stretch of river) provided by the Office of Environmental Assessment and do not use ambient monitoring data in the calculation.

The RL requires quarterly monitoring of the receiving water, upstream and downstream of the primary discharge and the lower limit of detection for BOD should be less than 1.5mg/l.

The mass balance calculation provided above, has regard to the good status water quality standards specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended. Schedule A of the RL sets ELVs to contribute towards achieving good status water quality standards. In particular, plant upgrade and/or improvement will be required to achieve an ELV of 5mg/l Ammonia as N from date of grant of licence.

9. Charges

The RL sets an annual charge for the agglomeration at €2,962.77 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

10. Recommendation

I recommend that a Final Licence be issued subject to the conditions and for the reasons as set out in the attached Recommended Licence.

Signed

Loretta Joyce
Inspector
Environmental Licensing Programme

Knockaconny Agglomeration D0463-01