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Signed: [Signature] Date: 21/1/2010



OFFICE OF CLIMATE,
LICENSING & RESOURCE USE.

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	DIRECTORS		
From:	PATRICK BYRNE	Environmental Programme	Licensing
Date:	13 th January 2010		
RE:	Application for a Waste Water Discharge Licence from Monaghan County Council for the agglomeration named Inniskeen, Reg. No. D00348-01.		

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 1,001 to 2,000.
Licence application received:	15 th April 2009
Notices under Regulation 18(3)(b) issued:	None issued.
Site notice check:	23 rd April 2009
Site visit:	30 th November 2009
Submission(s) Received:	30 th November 2009

1. Agglomeration

The agglomeration of Inniskeen is located in the southeastern corner of Co. Monaghan near the Co. Louth border. Inniskeen is approximately 10.5km from the nearest large town of Carrickmacross and is 16km west of Dundalk in Co. Louth. The agglomeration is a rural town with a population equivalent (p.e.) of c.1,014 based on the 2006 census data and an appropriate allowance for an increase in population since then. The population of the agglomeration is not expected to increase significantly due to planning permissions granted over the last 2-3 years. The Applicant predicts a possible increase of c. 155 p.e., over that time-frame. The waste water collected in the agglomeration is predominantly domestic effluent.

The waste water works comprise of a network of combined gravity sewers, a pumping station, rising mains and a waste water treatment plant (WWTP). The WWTP has a design capacity of 1,750 p.e. and was commissioned in 2007. The WWTP provides secondary treatment and nutrient removal (phosphorus reduction). The previous WWTP was undersized for the

agglomeration, provided inadequate treatment and was at risk of flooding when the River Fane was in flood.

The WWTP process involves the following stages:

- Influent flows initially through an inlet chamber with a hand raked coarse screen;
- The influent then flows into a pump sump (capacity of 9m³) from where the effluent is pumped to the WWTP or to the storm tank (previously the old WWTP oxidation ditch). If influent flow exceeds the pump's capacity and the storm tank is full the excess effluent discharges to the River Fane;
- The influent passes through a screen (screw conveyor compactor unit) prior to the effluent entering the aeration basin. The aeration basin and clarifier are within one circular steel tank, the aeration basin forms an outer ring around the clarifier.
- Bubble aeration diffusers, controlled by a dissolved oxygen probe, provide aeration;
- Clarified effluent is pumped through a sand filter (elevated sand filter in a circular tank);
- The effluent discharge then flows through a weir where flow is recorded and composite samples of the final effluent are collected.

There is a facility on site for dosing the influent with ferric sulphate, as it enters the aeration basin, however, its use has not been deemed necessary to date as the WWTP is not operating at design capacity and effluent emission results are considered by the Applicant to be satisfactory. The WWTP has achieved an average P reduction of 77% between influent and effluent during a twelve month period in 2008, without specific nutrient removal facilities.

The WWTP is achieving an average BOD concentration of 4.7mg/l, average suspended solids concentration of 7mg/l, average total phosphorus of 0.9mg/l and average total nitrogen of 7.4mg/l. The maximum daily average achieved over a twelve month period (2008) has been BOD 6.5mg/l, suspended solids 13mg/l, total phosphorus 3.3mg/l, ortho phosphate 1.4mg/l and ammonia 3.2mg/l. At the design capacity it is predicted that the discharge would achieve 10mg/l for both BOD and suspended solids.

The receiving water is the River Fane, which flows adjacent to the WWTP. The EPA biological Q-rating for the River Fane upstream of the WWTP discharge is Q3-4/3-4/4 (2003/2006 and 2009 respectively) and c.5km downstream is Q4/3-4 (2003 and 2006 respectively). The River Fane discharges to Dundalk Bay (c.17.5 km downstream of the primary discharge), Dundalk Bay is designated as a Natural Heritage Area, Special Protection Area and a Special Area of Conservation.

2. Discharges to waters

There is one primary discharge (SW-1) to the River Fane following treatment in the WWTP. Effluent flow rates in excess of the capacity of the inlet sump pumps (duty and assist pumps, supported by a full power generator on-site) and storage in the inlet sump (9m³) are directed to a storm water tank (renovated and extended oxidation ditch associated with the old treatment works) which provides c.151m³ storage. In the event of a prolonged storm event the storm water tank may be inundated with waste water and effluent will be discharged to the River Fane, alternatively the storm water stored in the storm tank will be returned to the WWTP after the storm event.

The Applicant estimates that the frequency of discharge from the storm water storage tank is five times per annum. This is the only storm water overflow from the agglomeration (SW-2). During the site visit it was identified by the Applicant that due to recent flooding within the agglomeration (November 2009), flood waters entered the sewer network and caused very significant increases in influent flow rate to the pump sump resulting in a storm water overflow. The Recommended Licence (RL) requires the Licensee to investigate the integrity of the waste water works having regard to infiltration during periods of flooding of the River

Fane within the agglomeration. The findings of the investigation shall be included in the Programme of Infrastructural Improvements required under condition 5 of the RI..

The agglomeration is less than 2,000 p.e. and therefore is not subject to the emission limit values specified in the Urban Waste Water Treatment Regulations 2001 (and amendments 2004). The effluent discharge from the WWTP achieves an average emission of 4.7mg/l BOD and 7mg/l Suspended Solids. It is predicted that the WWTP would achieve 10mg/l BOD and 10mg/l suspended solids at the design (load) capacity.

Based on the design capacity of the WWTP the daily effluent emission would be 350m³, therefore the BOD and suspended solids loading to the river would each be 3.5kg. The current average effluent discharge is 173m³/day.

3. Receiving waters and impact

The following table summarises the main considerations in relation to the River Fane downstream of the primary discharge.

Table 1.0 Receiving waters

Characteristic	Classification	Comment
Receiving water name and type	River Fane	Flows into Dundalk Bay.
Resource use	Drinking water abstraction point c.10km downstream.	
Amenity value	Recreational Fishing	Productive Salmonid System (as per the Eastern Regional Fisheries Board).
Applicable Regulations	Surface Water Regulations ^{Note 1} Drinking Water Regulations ^{Note 2}	
Designations	None	
EPA monitoring stations	Bridge in Inniskeen (No. 0650) Castlring Bridge (No. 0700)	Upstream of WWTP discharges. c.5km downstream of discharges.
Biological quality rating (Q value)	No. 0650: 2003 Q3-4 2006 Q3-4 2009 Q4 No. 0700: 2003 Q4 2006 Q3-4	Station no. 0650 and 0700 have failed to achieve an improvement in Q-rating under the Phosphorus Regulations, station no. 0650 was Q4 in 1997 and station no. 0700 was 4-5 in 1997.
WFD status	Poor	
WFD Risk Category	1a At Risk of not Achieving Good Status	Point sources (including WWTP) are not considered a risk of not achieving good status. Diffuse sources (including unsewered areas and diffuse pollution) are considered a risk of not achieving good status.

Note 1: European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. 272 of 2009.

Note 2: European Communities (Quality of Surface Water intended for the Abstraction of Drinking Water) Regulations, 1989, S.I. No. 294/1989.

The Eastern Regional Fisheries Board, in its submission on the licence application, identifies the River Fane as a particularly productive salmonid system. They identify that the river holds good stocks of Brown Trout, Salmon and Sea Trout and note that this is the only river on the east coast which is open for angling i.e., there is sufficient numbers of Salmon and Sea Trout returning to the river to allow for recreational fishing. The River Fane is not a designated water body under the Urban Waste Water Treatment Regulations 2001 and 2004 or the European Communities (Quality of Salmonid Waters) Regulations 1988. The River Fane is not designated as a NHA, SAC or SPA. The River Fane discharges to Dundalk Bay which is designated as a NHA, SAC and SPA, Dundalk Bay is c.17.5km downstream of the discharges.

EPA biological monitoring of the River Fane upstream and downstream of the discharge have been recorded as having a Q-rating of 3-4 or 4. Limited chemical monitoring presented by the Applicant indicates similar chemical conditions for points upstream and downstream of the discharge. The EPA has undertaken chemical monitoring of the River Fane upstream of the discharges, at the Bridge in Inniskeen. Results of monitoring during 2009 indicate generally good quality. When the results for 2009 are compared to the European Communities Environmental Objectives (Surface Waters) Regulations 2009, the mean results indicate 'good' status in relation to ortho-phosphate (2009 mean of 0.027) and 'high' status in relation to ammonia (2009 mean of <0.03).

The River Fane, at the Bridge in Inniskeen (upstream of the WWTP discharge) failed to achieve the target set under the Phosphorus Regulations. The Monaghan County Council Phosphorus Implementation Report 2006 identifies that the principle reason for the failure is due to agriculture and diffuse rural sources and lake discharges (Lough Muchno which is Hypertrophic).

The Water Framework Directive status for the River Fane catchment is 'Poor' and it is 'At Risk of not Achieving Good Status', however the most significant risks are identified as 'diffuse risk sources', including unsewered areas and diffuse pollution.

Table 2.0 Assimilative Capacity, below summarises the impact of the primary discharge, maximum discharge volume as per design capacity (350m³/day), based on information in the application, EPA surface water quality sample results and calculations completed as part of my assessment of the application.

Table 2.0 Assimilative Capacity

Parameter	Background Concentration (mg/l)	Proposed ELVs for discharge from SW-1 (mg/l)	Contribution from primary discharge (mg/l)	Predicted downstream concentration (mg/l)	Relevant standard (mg/l)
BOD	2.3	10	0.14	2.44	2.6 ^{Note 1}
Orto-Phosphate	0.04	1.5	0.026	0.0665	0.075 ^{Note 1}
Total Ammonia - N	<0.03	2	0.035	0.065	0.065 ^{Note 1}

Note 1: Good status mean value (as per European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No.272 of 2009).

The applicant presented calculations of the assimilative capacity available in the River Fane based on the average discharge concentrations, worst case discharge concentrations and predicted emission concentrations if the WWTP was operating at design capacity. The figures presented above are based on the WWTP operating at design capacity achieving emission limit values of 10mg/l for BOD, 2mg/l for Total phosphorus, and 2mg/l for Total Ammonia.

At the design capacity of the facility the discharge would be 350m³/day, whereas the current discharge is c.173m³/day. The River Fane at 95%ile flow provides 55 dilutions at design discharge and 112 dilutions at the current discharge rate. It should be noted that the agglomeration of Inniskeen is not predicted to increase significantly above the current p.e.

Based on the above calculations it is predicted that the primary discharge would result in an increase in BOD of 0.14mg/l, an increase in ortho-phosphate of 0.026mg/l and an increase in total ammonia of 0.035mg/l. These additional loadings when added to the background water quality upstream of the discharge are not predicted to result in the water quality exceeding the environmental objectives for 'good' status in the European Communities Environmental Objectives (Surface Waters) Regulations 2009.

The emission limit values, included in the above table, have generally been achieved by the existing WWTP. There is infrastructure available on-site to add ferric sulphate to improve phosphorus removal, if found necessary based on future results. The RL requires the licensee to optimise phosphorus removal.

4. Ambient Monitoring

The Applicant proposed one monitoring location both upstream and downstream of the discharge points SW-1 and SW-2. The upstream and downstream monitoring points proposed are within 5-10 meters of the discharge points. The existing sampling station at the Bridge in Inniskeen (station no. 0650) is considered an appropriate upstream monitoring point. The RL requires the licensee to propose a downstream ambient monitoring point, at an appropriate distance from the discharge points, within three months of the date of grant of the licence. In addition to the proposed ambient monitoring points there are EPA water quality monitoring stations on the River Fane, upstream at the 'Bridge in Inniskeen' (station no. 0650, c. 500m upstream of the primary discharge) and 'Castlering Bridge' (station no. 0700, c.5km downstream of the primary discharge).

5. Combined Approach

The Waste Water Discharge Authorisation Regulations, 2007 (S.I. No. 684 of 2007) specify that a 'combined approach' in relation to licensing of waste water works must be taken, whereby the emission limits for the discharge are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Treatment Regulations (S.I. No. 254 of 2001) and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater or protected areas for the water body into which the discharge is made. The RL as drafted gives effect to the principle of the Combined Approach as defined in S.I. No. 684 of 2007.

6. Programme of Improvements

There is no proposed programme of improvements for the Inniskeen agglomeration. The RL requires the Licensee to investigate the integrity of the waste water works having regard to infiltration during periods of flooding of the River Fane within the agglomeration. The

findings of the investigation shall be included in the Programme of Infrastructural Improvements required under Condition 5 of the RL.

The RL does not specify that the Licensee shall use ferric sulphate dosing, however such infrastructure shall be operated if monitoring results indicate that the emission limits specified for Total Phosphorus or ortho-phosphate are not being achieved.

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 (S.I. No. 684 of 2007) notably:

Drinking Water Abstraction Regulations

There is a drinking water abstraction point at Stephenstown (upstream of Stephenstown Bridge), approximately 10km downstream of the primary discharge. The abstraction rate, provided by the Applicant, is 18,454m³/day. The Applicant states that the discharge from the waste water works will not have significant effects on faecal coliforms, salmonella and protozoan pathogens numbers in the environment.

Condition 4.17 of the RL requires the licensee to prepare a risk assessment for the protection of the downstream drinking water abstraction point at Stephenstown. The risk assessment shall address as a minimum; the identification and minimisation of risks to the quality of water abstracted at the downstream drinking water abstraction point from the discharge(s) listed in *Schedule A: Discharges*. Condition 6.3 of the RL requires the licensee to notify the Water Service Authority and/or other groups responsible for the downstream abstraction of drinking water, of any exceedance of an ELV associated with the discharge, any storm water overflows, any emergency overflows or any other relevant incident as defined by the licence.

Sensitive Waters

The River Fane is not designated as a sensitive water.

Water Framework Directive [2000/60/EC]

The RL, as drafted, transposes the requirements of the Water Framework Directive. In particular, *Condition 3 Discharges* provides conditions regulating discharges to waters while *Schedule A: Discharges* specifies emission limit values for those substances contained within the waste water discharge. Those limits specified in the RL are determined with the aim of achieving good water quality status by 2015. However, as noted above unsewered areas and diffuse pollution are considered the most significant risks to achieving 'good status'

Urban Waste Water Treatment Directive [91/271/EEC]

The Inniskeen agglomeration is not required to comply with the requirements of the Urban Waste Water Treatment Directive, as the agglomeration is less than 2000p.e. The Inniskeen agglomeration does however meet the requirement of the Directive in terms of the level of treatment provided. The RL, as drafted, has regard to the requirements of the Urban Waste Water Treatment Directive.

Bathing Water Directive [2006/7/EC]

There are no bathing waters identified in the vicinity of the discharges.

EC Freshwater Fish Directive [2006/44/EC]

The River Fane is not a designated salmonid water, the Eastern Regional Fisheries Board identify in their submission that the River Fane is a particularly productive salmonid system, and therefore that it is imperative that the discharge has no negative effect on this natural resource. The Applicant acknowledges that the River Fane is a valuable salmonid river.

The RL requires the Licensee to maximise phosphorus reduction.

Shellfish Waters Directive [2006/113/EC]

There are no designated shellfish waters located within the vicinity of the discharges.

Dangerous Substances Directive [2006/11/EC]

The applicant has provided sampling results for 19 dangerous substances in the primary discharge for the purposes of the licence application. The measured concentrations are not considered significant. Monitoring of receiving waters has shown compliance with the Dangerous Substances Regulations (S.I. No. 12 of 2001). However, the limit of detection used for tributyltin was not sufficiently low to confirm compliance with the Regulations, further monitoring will need to be carried out in a laboratory capable of achieving the required limit of detection.

Condition 4.11 requires screening of the waste water discharges for the presence of organic compounds and metals as required by the Agency.

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

There are no discharges from the Inniskeen agglomeration directly into any site designated under the E.U. Habitats or Birds Directives. There is not likely to be a significant impact on the nearest designated site is Dundalk Bay which is c. 17.5km downstream of the primary discharge

Environmental Liabilities Directive (2004/35/EC)

Condition 7.2 of the RL, as drafted, satisfies all the requirements of the Environmental Liabilities Directive in particular those requirements outlined in Article 3(1) and Annex III of 2004/35/EC.

Site Visit

A site visit was conducted to the WWTP on the 30th November 2009, the River Fane had been in flood the previous week and continued to flow quite high. Due to the flooding of the River Fane the previous week flood waters had entered the sewer network resulting in storm overflows due to flows in excess of the waste water treatment works capacity. The operators had protected the WWTP from excessive flows by directing storm water to the storm tanks and then to the River Fane. The WWTP was operating satisfactory at the time of the site visit.

Submissions

One submission was received from the Eastern Regional Fisheries Board (ERFB) in relation to this licence application. The main issues raised in the submission are discussed below, however, the original submission should be referred to at all times for greater detail and expansion of particular points.

The ERFB make the following observations in relation to the licence application. They acknowledge that from monitoring data supplied it is clear the WWTP has had little or no effect on the receiving water body during the sampling episodes. However, they identify that detailed and accurate assimilative capacity calculations should be necessary in order to examine the potential effect of the discharge in present and future scenarios. The ERFB note that the calculations presented in the application show extremely high ortho-phosphate concentrations and as presented would signify a very highly polluted waterbody.

The ERFB identify that the application also examines the potential effect of the discharge when the WWTP is operating at design capacity however it neglects to examine the potential future nutrient conditions of the Fane due to the discharge. The ERFB note that the Fane has been classed as at risk of not achieving at least good status by 2015, and is currently 'moderate status'. The nutrient conditions of a waterbody are central to it achieving good status and so these factors should be included in any assimilative capacity calculations.

The ERFB identify that the Fane is a particularly productive salmonid system. Therefore it is imperative that this discharge has no negative effect on this valuable natural resource.

Response:

In assessing this licence application the ambient monitoring undertaken by the EPA (biological and chemical) as well as the Applicant's monitoring results are considered. The WWTP installed at Inniskeen represents a significant improvement compared to the previous WWTP. The Applicant provided assimilative capacity calculations based on the existing average effluent concentrations, existing worst case effluent concentrations and projected emissions of BOD and suspended solids at the WWTP design capacity. The Applicants assimilative capacity calculations for ortho-phosphate inappropriately compare the calculated 'maximum resultant concentration in the river' with the environmental quality standard, which is a median value. Above under *Section 3 Receiving Waters and Impacts* I have amended the Applicants calculations to reflect the emission limit values proposed in the RL. These calculations indicate that the discharge from the WWTP, even at the design capacity, would not significantly contribute to the pollutant load in the river. It should be noted that Inniskeen agglomeration is currently at a p.e. of just over 1,000 whereas the design capacity of the WWTP is 1,750 p.e. It is unlikely that the agglomeration p.e. will increase to the design capacity in the near future. At the design capacity of the facility the discharge would be 350m³/day, whereas the current discharge is c.173m³/day. The River Fane at 95%ile flow provides 55 dilutions at design discharge and 112 at the current discharge rate.

The Water Framework Directive classification of the River Fane is acknowledged, however the effluent discharge from the Inniskeen agglomeration is not the only contributing factor to the classification; unsewered areas and diffuse pollution are identified in the Water Framework classification. The emission limit values and controls included in the RL are considered reasonable for the agglomeration and discharge, additional measures within the River Fane catchment are necessary for the River Fane to achieve 'good status'. The Monaghan County Council Phosphorus Implementation Report 2006 identifies that the River Fane at the monitoring station at the Bridge in Inniskeen failed to achieve the target under the Phosphorus Regulations due principally to agriculture, diffuse rural sources and lake discharges (Lough Muchno which is Hypertrophic).

While the River Fane is not designated as a salmonid river consideration of its current status as a particularly production salmonid system is noted in drafting the RL.

Cross-office liaison

The EPA's Office of Environmental Assessment (Monaghan Regional Laboratory) provided up to date monitoring data for the River Fane which was used in the above assessment.

Advice and guidance issued by the Technical Working Group (TWG) was followed in my assessment of this application. Advice and guidance issued by the TWG is prepared though a

detailed cross-office co-operative process, with the concerns of all sides taken into account. The Board of the Agency has endorsed the advice and guidance issued by the TWG for use by licensing Inspectors in the assessment of wastewater discharge licence applications.

Charges

The RL sets an annual charge for the agglomeration at € 2,752 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

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



Patrick Byrne

Office of Climate, Licensing and Resource Use

Inniskeen Waste Water Treatment Plant

