This report has been cleared for submission to the Director by Senior Inspector Dr Karen Creed.
Signed: Date: 5/12/12

Environmental Protection Agency

FFICE OF CLIMATE, ICENSING & RESOURCE USE.

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	Director	
From:	Aoife Loughnane	Environmental Licensing Programme
Date:	4th December 2012	
RE:	Application for a Waste Water Discharge Licence from Donegal County Council for the **Kilmacrennan** agglomeration, **Reg. No. D0513-01.**	

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 500 to 1,000.
Licence application received:	18/12/2009
Site notice check:	28/01/2010 (Martin Kerr, OEA)
Site visit:	20/07/2012
Submissions Received:	One: Inland Fisheries Ireland, 9/8/2010

1. Agglomeration

This application relates to the Kilmacrennan agglomeration, located approximately 13km north west of Letterkenny, Co. Donegal. The River Lurgy flows through the village and enters the River Leannan approximately 1.5 km downstream of the village. Both rivers are designated salmonid rivers, and the River Leannan is a designated special area of conservation (SAC) and freshwater pearl mussel habitat.

The population equivalent of the Kilmacrennan agglomeration is identified as 938 p.e. with a projection of growth to 962 p.e. based on planning permissions granted for developments yet to commence. The breakdown in contribution is approximately 82% domestic and 18% commercial. There are no identified sources of industrial waste water in the Kilmacrennan agglomeration.

The waste water collection network is predominantly a combined (foul and storm water) system. Since the late 1970s, the agglomeration has been served by a waste water treatment plant (WWTP) which discharges treated effluent into the River Lurgy. The WWTP was upgraded to provide secondary treatment around 1988. The WWTP consists of the following elements:

- **Intake works:** inlet flume with screening facility and storm water overflow weir;
- **Primary settlement:** twin chamber Imhoff tank;
- **Secondary treatment:** Two Rotating Biological Contactors followed by secondary sedimentation tank;
- **Final discharge**: a combination of treated effluent and storm water overflow discharges into the River Lurgy adjacent to the WWTP.

The WWTP design capacity is 500 p.e. At the current level of loading (938 p.e.), the plant is significantly overloaded.

As a discharge to freshwater from an agglomeration of <2,000 p.e., 'appropriate treatment'[1] of Kilmacrennan's waste water was required under the UWWT Regulations by 31st December 2005. Appropriate treatment in this case is considered to be tertiary treatment (advanced nutrient removal), given the assimilative capacity of the receiving water and the designated freshwater pearl mussel habitat downstream. In the *Freshwater Pearl Mussel Leannan Sub-Basin Management Plan (March 2010),* Kilmacrennan WWTP is identified as a point source risk. The Plan states "*Immediate upgrade of Kilmacrennan WWTP is required as it is considered a significant cause of mussel decline in the lower reaches of the Leannan".* Therefore, the existing secondary WWTP requires expansion and upgrade.

The River Lurgy is classified as 'Poor' status under the Water Framework Directive and risk category *'1a – at risk of failing to meet good status'.* The objective, as set out in the *Leannan/Clady/Owencarrow/Glaskeelan Water Management Unit (WMU) Action Plan 2010,* is to restore good water quality status by 2021.

In the WMU Action Plan, Kilmacrennan WWTP is identified as a plant which requires capital works. The risks associated with this WWTP include insufficient treatment capacity, insufficient assimilative capacity in the receiving waters, and historical deterioration in water quality (Q value) within 3km of outfall. The measures (capital works) set out in the plan are;

- increase capacity of the WWTP,
- provide tertiary treatment or relocate outfall.

Kilmacrennan is included in the Water Services Investment Programme 2010-2012 as part of the Towns and Villages Sewerage Scheme Bundle 1[2]. The scheme is listed as a scheme at planning stage. The preliminary report (PR) on the upgrade needs was commissioned in September 2012.

I have consulted with the DoECLG inspector for waste water services in Donegal regarding a timeframe for the upgrade of Kilmacrennan Sewerage Scheme. His initial advice was that March 2017 would be a realistic timeframe. However, following further discussions with DoECLG and due to the presence of the freshwater pearl mussel downstream, the DoECLG will expedite this scheme. The Recommended Licence (RL) requires tertiary waste water treatment to be provided in Kilmacrennan by 31st December 2015.

The legislation under which the discharges from the waste water works are to be licensed does not provide any regulatory powers with regard to odour, noise or management of the waste water works infrastructure. Therefore, the RL does not specifically refer to, or set operating conditions, in relation to these areas.

2. Discharges to waters

Primary Discharge

The primary discharge (SW001) is the outfall from the WWTP to the River Lurgy. There are 20 dilutions available in the river for the normal WWTP discharge (220 m^3/day) at 95%ile river flow (0.05 m^3/sec).

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[1] 'Appropriate Treatment' is defined in the UWWT Regulations as *'any process and/or disposal system which, after discharge, allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the Urban Waste Water Directive and of other Community Directives'.*

[2] Buncrana, Carrigart, Kilmacrennan, Milford, Mountcharles, Rathmullan and Ramelton.

In the EPA report '*Urban Waste Water Discharges in Ireland for Population Equivalents Greater than 500 Persons – A Report for the Years 2006 & 2007*', Kilmacrennan WWTP was deemed to have treatment that is not appropriate based on the effluent results. In 2007, 5 out of 6 samples breached the UWWT standards for BOD (25mg/l) and COD (125 mg/l), and 4 out of 6 samples breached the UWWT standard for Suspended Solids (35mg/l). As shown in Table 1, the applicant's 2008 WWTP monitoring results also indicate that the average treated effluent quality failed to meet the UWWT standards. However, the primary discharge, being a discharge to freshwaters from <2,000 p.e., is required to undergo 'appropriate treatment' and therefore the UWWT standards are not strictly applicable. Nonetheless, using the UWWT standards for comparison purposes gives a good indication of how the secondary WWTP is performing.

Table 1. WWTP monitoring results 2008 (grab sampling)

Parameter	BOD (mg/l)	COD (mg/l)	Suspended solids (mg/l)	Ammonia (mg/l)	Orthophosphate (mg/l)
Average effluent	80	281	59	17.6	2.27
UWWT standards (for comparison only)	25	125	35	--	--

Schedule A.1 of the RL sets emission limits for the primary discharge. As an interim measure, ELVs of 25 mg/l BOD, 125 mg/l COD, 25 mg/l suspended solids[3] apply from the date of grant of licence. However, the WWTP requires a major upgrade and the RL specifies strict limits of 10 mg/l BOD, 10 mg/l suspended solids, 1 mg/l ammonia and 0.5 mg/l orthophosphate, which apply from 31st December 2015 (see *Impact of Discharges* section of this report). The future ELVs apply at the existing primary discharge point. Any proposal to relocate the discharge as part of the upgrade scheme would require a review of the waste water discharge licence.

All monitoring results reported by the applicant are based on grab samples. Condition 4.19 of the RL requires the licensee to provide a composite sampler on the primary discharge by 31st March 2013. Thereafter all samples shall be collected on a 24-hour flow proportional or time based composite sampling basis. As the monitoring frequency for the primary discharge is six samples per year, a mobile composite sampler can be used to fulfil this requirement.

Secondary Discharges

There are no secondary waste water discharges from the agglomeration.

Storm water overflows

There is one screened storm water overflow (SW002) at the intake works to the WWTP. This SWO is combined with the treated effluent for discharge to the River Lurgy via the primary discharge point. The SWO is in a poor state of repair and does not comply with DoECLG criteria. The upgrade works plan to direct this SWO to a storm water holding tank which will return the wastewater to the intake works once the storm abates. Schedule C.1 of the RL requires the cessation or upgrade of the SWO to comply with DoECLG criteria by 31st December 2015.

Emergency overflows

There are three pumping stations in the agglomeration; two are privately owned and therefore outside the scope of the RL, and the one under the control of Donegal County Council's housing department is no longer operational. There are no identified emergency overflows from pumping stations in the agglomeration.

[3] A lower limit of 25 mg/l suspended solids is recommended compared to the UWWT standard of 35 mg/l, having regard to the designation of the River Lurgy as a salmonid river.

3. Receiving waters and impact

Table 2 summarises the main considerations in relation to the receiving waters.

Table 2. Receiving waters

Characteristic	Classification	Comment
Receiving water name and type	River Lurgy	Enters the River Leannan 1.6km d/s of SW001.
Resource use	None reported	No drinking water abstraction d/s of SW001.
Amenity value	None reported	
Applicable Regulations	UWWT Regulations [Note 1]	Appropriate treatment required as <2,000 p.e. discharging to freshwater.
	EO (Surface Waters) Regs [Note 2]	Non-compliant water quality.
	Salmonid Regulations [Note 3]	Non-compliant water quality.
	Freshwater Pearl Mussel Regulations [Note 4]	River Leannan
Designations	Salmonid Rivers	River Lurgy and River Leannon
	Leannan River SAC (code 002176)	SW001 is directly into the SAC
	Freshwater Pearl Mussel population	River Leannan
EPA monitoring stations	Upstream Station 0100: Goldrum Bridge	Approx. 4.4km u/s of SW001
	Downstream Station 0300: Bridge u/s Leannan River	Approx. 1.3km d/s of SW001. Two tributaries enter the Lurgy between SW001 and this station.
	Further downstream Station 0500: Ballydone Bridge (u/s Lough Fern)	On River Leannan, approx. 1.8km d/s of Lurgy confluence
Biological quality rating (Q value)	Station 0100: Q4	Q4 unpolluted
	Station 0300: Q3-4	Q3-4 slightly polluted
	Station 0500: Q4	Q4 unpolluted
WFD status	Poor	Assigned in 2009
WFD Risk Category	1a – At risk	
WFD Objective	Restore good status by 2021	
WFD protected areas	Leannan River - *Margaritifera margaritifera* habitat	River Lurgy is located within the Leannan Margaritifera catchment boundary.
	RPA drinking water lake (Lough Fern, 5km d/s of SW001)	No drinking water abstraction points d/s of SW001
	RPA drinking water groundwater	

Note 1: Urban Waste Water Treatment Regulations 2001, as amended.
Note 2: European Communities Environmental Objectives (Surface Water) Regulations 2009, S.I. No. 272 of 2009.
Note 3: European Union (Quality of Salmonid Waters) Regulations, 1988.
Note 4: European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009, S.I. No. 296 of 2009.

Upstream of Kilmacrennan, the River Lurgy is unpolluted (Q4 biological quality rating) at station 0100 (Goldrum Bridge). Approximately 1.3km downstream of the WWTP, the river is slightly polluted (Q3-4) at station 0300 (Bridge u/s Leannan River). It is noted that two un-named and un-monitored tributaries enter the Lurgy between the WWTP and station 0300, and could potentially be impacting on water quality. However, the WWTP discharge is having a negative impact on water quality. The EPA's 2010 biological river survey reports:

"The upper reach of the Lurgy at Goldrum Br (0100) was once again in satisfactory ecological condition in July 2010. The lower site (0300), upstream of its confluence with the Leannan, despite slight improvement, was again moderately polluted due primarily to sewage discharges".

The River Lurgy is classified as poor status under the WFD and risk category *'1a – at risk of failing to meet good status by 2015'*. The objective, as set out in the *Leannan/Clady/Owencarrow/Glaskeelan Water Management Unit Action Plan 2010*, is to restore good status by 2021.

The Lurgy is a designated salmonid river under the European Communities (Quality of Salmonid Waters) Regulations, 1988. The EPA's *Water Quality in Ireland Report 2004-2006* reports several exceedances of the salmonid limits in the Lurgy downstream of Kilmacrennan WWTP.

The Lurgy is a tributary of the River Leannan, which is a designated freshwater pearl mussel (FPM) habitat under the EC Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009. The Lurgy is located within the Leannan *Margaritifera* catchment boundary. The Leannan is currently ranked as 16th out of the 27 FPM populations in the country on the basis of population status, habitat condition and current pressures. In the *Freshwater Pearl Mussel Leannan Sub-Basin Management Plan (March 2010)*, Kilmacrennan WWTP is identified as a point source risk. The Plan states *"Immediate upgrade of Kilmacrennan WWTP is required as it is considered a significant cause of mussel decline in the lower reaches of the Leannan".*

Regulation 12 of the FPM Regulations requires a public authority considering an application for authorisation of a discharge to waters draining to a FPM surface water body, to set down in the authorisation, emission limit values that aim to achieve the ecological quality objectives set out in the Fourth Schedule to the FPM Regulations, i.e., high status. However, the Fourth Schedule does not apply to an entire catchment, but rather only to those areas outlined in the First Schedule of the Regulations, i.e., the Leannan River. Water quality in the Leannan River is rated as unpolluted (Q4) downstream of the River Lurgy confluence. However, it has been identified that Kilmacrennan WWTP is a point source which is negatively impacting on the FPM in the Leannan. On this basis, the mass balance calculations for Kilmacrennan WWTP presented in Table 4 below have been determined with the aim of achieving high status in the River Lurgy, to ensure that it will no longer impact on the FPM downstream.

Chemical monitoring data for the Lurgy supplied by the applicant is summarised in Table 3 below. The results show that water quality downstream of the primary discharge exceeded both the good and high status water quality standards (mean and 95%ile) in the EO Regulations 2009. This indicates that the WWTP discharge is having a negative impact on water quality, although the downstream monitoring location is likely to be within the mixing zone of the primary discharge.

Table 3. River Lurgy monitoring results, November 2007-September 2009 (11 samples)

Parameter (mg/l)	50m u/s of SW001	30m d/s of SW001	Water Quality Standards [Note 1]	
			Good Status	High Status
BOD	1.07 1.54	**3.77** **12.26**	≤ 1.5 mg/l (mean) ≤ 2.6 mg/l (95%ile)	≤ 1.3 mg/l (mean) ≤ 2.2 mg/l (95%ile)
Orthophosphate (as P)	**0.06** **0.31**	**0.10** **0.34**	≤ 0.035 mg/l (mean) ≤ 0.075 mg/l (95%ile)	≤ 0.025 mg/l (mean) ≤ 0.045 mg/l (95%ile)
Ammonia (as N)	0.03 0.09	**0.46** **1.47**	≤ 0.065 mg/l (mean) ≤ 0.14 mg/l (95%ile)	≤ 0.04 mg/l (mean) ≤ 0.09 mg/l (95%ile)

Note 1: European Communities Environmental Objectives (Surface Waters) Regulations 2009.

It is noted that the orthophosphate levels upstream of the primary discharge already exceed the good status standards, therefore other upstream sources of pollution are also negatively impacting on river water quality. Pollution from other unrelated sources in the upstream catchment must be dealt with separately under the programme of measures in the WMU Action Plan[4], e.g. for diffuse sources, the Good Agricultural Practice regulations inspections/enforcement will apply and the 1477 identified 'at risk' septic tanks are to be prioritised for inspections, etc.,.

Impact of Discharges

Table 4 summarises the mass balance calculations which are based on the estimated future loading of 962 p.e., 95%ile river flow, the high status water quality standards in the EO (Surface Waters) Regulations 2009, and the upgraded WWTP emission limit values (ELVs) as specified in the RL. The mass balance calculations for BOD and Ammonia use actual background concentrations, while for orthophosphate both the actual background concentration and the 'notionally clean river' approach (a hypothetically clean stretch of river) is used, as provided by the Office of Environmental Assessment.

Table 4. Mass Balance calculations for Kilmacrennan WWTP (following upgrade)

Parameter	Background (mg/l)		Proposed ELVs for Primary Discharge Note 1 (mg/l)	Contribution from primary discharge (mg/l)	Predicted downstream quality (mg/l)	EQOs (mg/l) Note 2
BOD	Actual Background	1.07 Note 3	10	0.5	1.57	≤2.2
Ortho-P (as P)	Actual Background	0.06 Note 3	0.5	0.025	**0.085**	≤0.045
	Notionally Clean	0.005			0.03	
Ammonia (as N)	Actual Background	0.03 Note 3	1	0.05	0.08	≤0.09

Note 1: The proposed ELVs will come into force from 1st January 2016.
Note 2: EC Environmental Objectives (Surface Waters) Regulations 2009 (95%ile High Status standards presented).
Note 3: Background mean water quality data for November 2007-September 2009 (11 samples).

(i) Biochemical Oxygen Demand

At a discharge limit of 10mg/l BOD and the existing background concentration of 1.07 mg/l, the predicted downstream BOD concentration (1.57 mg/l) meets the water quality standard of ≤2.2mg/l for high status. Therefore, an ELV of 10 mg/l BOD is specified in the RL for the upgraded WWTP discharge. From the applicant's 2008 monitoring data, the average treated effluent BOD concentration was 80 mg/l. This indicates that the WWTP requires a significant upgrade to meet an ELV of 10 mg/l BOD.

(ii) Orthophosphate

The actual mean background Ortho-P concentration of 0.06 mg/l in the river breaches the high status standard of ≤0.045 mg/l. Other measures will need to be taken under the Water Management Unit Action Plan to improve water quality upstream. For a notionally clean river there would be assimilative capacity in the receiving water, based on an ELV of 0.5 mg/l Ortho-P. This would result in a

[4] Water Management Unit Action Plans set out the proposed objectives and measures for individual rivers, lakes, coastal and estuarine waters in a river basin district, to meet the objectives of the River Basin Management Plans prepared under the WFD.

predicted downstream concentration of 0.03 mg/l, i.e. 67% of the hypothetically available assimilative capacity for Ortho-P. From the applicant's 2008 monitoring results, the average Ortho-P effluent concentration was 2.27 mg/l. The WWTP upgrade works will need to provide tertiary treatment (advanced phosphorus removal) to meet an ELV of 0.5 mg/l Ortho-P.

(iii) Ammonia

At a discharge limit of 1 mg/l ammonia and the existing background concentration of 0.03mg/l, the predicted downstream concentration is 0.08 mg/l which meets the water quality standard of ≤0.09 mg/l ammonia for high status. Although this uses 89% of the river's assimilative capacity, there are no other identified point discharges or drinking water abstractions downstream which may be impacted as a result. From the applicant's 2008 monitoring results, the average ammonia effluent concentration was 17.6 mg/l. Tertiary treatment will be required to meet a discharge limit of 1 mg/l ammonia, e.g., nitrogen removal filters can typically achieve 0.5 – 2 mg/l ammonia (as N).

4. Site Visit

I visited the Kilmacrennan agglomeration on 20th July 2012 and met with a representative of Donegal County Council. I visited the WWTP, the primary discharge point and the ambient monitoring locations on the River Lurgy.

5. Ambient Monitoring

Schedule B.2 Receiving Water Monitoring of the RL specifies quarterly monitoring of the River Lurgy for a number of specified parameters.

- Upstream: The location identified by Donegal County Council is aSW-1u (grid ref. 214107E, 420471N) approximately 60m upstream of SW001. It has been included in *Schedule B.2* of the RL, and is assigned EDEN code RS39L020270.
- Downstream: The location provided by Donegal County Council (aSW-1d, grid ref. 214193E, 420499N) is 30m downstream of SW001 and is likely to be within the mixing zone of the primary discharge. There is an EPA Station No. 0300 (Bridge u/s Leannan River) located 1.3km downstream of SW001. However, two un-named and un-monitored tributaries enter the Lurgy between SW001 and that station, therefore it is not considered a suitable monitoring location. Condition 4.16 of the RL requires the licensee to submit a proposal for a suitable ambient downstream monitoring point to the Agency for agreement within one month of grant of licence.

Biological monitoring (Small Stream Risk Score) is required annually at the upstream and downstream ambient monitoring locations.

6. Combined Approach

The Waste Water Discharge Authorisation Regulations 2007 (S.I. No. 684 of 2007) as amended, 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) as amended 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.

7. Discharges from agglomerations where no treatment or insufficient treatment is in place

Kilmacrennan WWTP currently provides secondary treatment and is significantly overloaded. An upgrade of Kilmacrennan sewerage scheme is required in order to meet relevant statutory legislation. The programme of improvements specified in the RL is discussed under the next section of this report.

8. Programme of Improvements

The upgrade of Kilmacrennan Sewerage Scheme is included in the WSIP 2010-2012, amongst the Towns and Villages Bundle[5], listed as schemes at planning stages. The Preliminary Report on the upgrade needs was commissioned in September 2012.

Schedule C: Specified Improvement Programme of the RL requires the upgrade of the WWTP to provide tertiary treatment by 31st December 2015, and the cessation or upgrade of the non-compliant SWO by the same date. These improvements works are specified with the aim of achieving high status in the River Lurgy, to ensure that it will no longer impact on the FPM downstream.

9. 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:

Water Framework Directive [2000/60/EC]

The RL transposes the requirements of the Water Framework Directive. In particular, *Condition 3: Discharges* provides conditions regulating discharges to waters while *Schedule A: Discharges & Discharge Monitoring* specifies limit values for those substances contained within the waste water discharge. Those limits specified in the RL are determined with the aim of achieving high status in the River Lurgy.

European Communities Environmental Objectives (Surface Water) Regulations 2009, S.I. No. 272 of 2009

The water quality upstream of Kilmacrennan WWTP complies with the EO Regulations standards for high status for BOD and ammonia, however it breaches both the good and high status standards for orthophosphate. This indicates upstream sources of pollution are negatively impacting on river water quality. However, water quality downstream of the WWTP breaches the standards for good and high status, indicating that the WWTP discharge is having a significant negative impact on the river. The RL has regard to the requirements of the EO Regulations, and sets emission limit values with the aim of achieving high status in the Lurgy.

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

As a discharge to freshwater from an agglomeration of less than 2,000 p.e., 'appropriate treatment' of Kilmcrennan's waste water was required under the UWWT Regulations by 31st December 2005. Appropriate treatment in this case is considered to be tertiary treatment (advanced nutrient removal), given the assimilative capacity of the receiving water and the designated freshwater pearl mussel habitat downstream. The existing WWTP provides secondary treatment and is significantly overloaded. The RL requires an upgrade of the WWTP to provide tertiary treatment by 31st December 2015. The RL has regard to the requirements of the Urban Waste Water Treatment Directive.

[5] Buncrana, Carrigart, Kilmacrennan, Milford, Mountcharles, Rathmullan, Ramelton

EC Freshwater Fish Directive [2006/44/EC]

The Lurgy is a designated salmonid river under the European Communities (Quality of Salmonid Waters) Regulations, 1988. The EPA's *Water Quality in Ireland Report 2004-2006* reports several exceedances of the salmonid limits in the Lurgy downstream of Kilmacrennan WWTP for BOD (where 9 out of 28 samples breached the 5 mg/l O_2 limit) and Total Ammonium (where 6 out of 28 samples breached the 1 mg/l NH_4 limit). Nitrite levels upstream and downstream of Kilmacrennan also breached the 0.05 mg/l NO_2 limit. Nitrite is an intermediate in the oxidisation of ammonia to nitrate. Levels of nitrite in unpolluted waters are normally low, below 0.03 mg/l NO_2. Values greater than this may indicate sewage pollution, which is likely to be the case in the Lurgy.

The RL requires WWTP upgrade to achieve strict ELVs in the primary discharge, based on the assimilative capacity of the River Lurgy using the high status water quality standards in the EO (Surface Waters) Regulations 2009, which are stricter than the salmonid water quality standards.

Sensitive Waters

The River Lurgy is not classified as 'sensitive' under the UWWT Regulations.

Drinking Water Abstraction Regulations

There are no drinking water abstraction points downstream of the waste water works.

Bathing Water Directive [2006/7/EC]

The River Lurgy does not fall under the scope of this Directive.

Shellfish Waters Directive [2006/113/EC]

The River Lurgy does not fall under the scope of this Directive.

Dangerous Substances Directive [2006/11/EC]

The applicant has provided once-off sampling results for the 19 dangerous substances in the primary discharge. The measured concentrations show an exceedance of the Dangerous Substances standard for copper (18.1 μg/l compared to 5 μg/l limit). However, the Dangerous Substances standards are ambient standards which apply to receiving waters and are not directly applicable to the primary discharge. Copper has been found in the past in Donegal waters as a naturally occurring element. The EPA's *Dangerous Substances Regulations National Implementation Report 2005* confirms that exceedances of the copper standard in rivers and lakes in Donegal is due to a combination of the natural geology and the soft waters found in the county.

Condition 4.21 of the RL requires the licensee to carry out a risk assessment to determine the priority substances to be monitored, in accordance with the '*Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*' issued by the Agency. Monitoring for the identified priority substances shall be carried out at least annually, unless a case for less frequent monitoring is agreed by the Agency.

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

The primary discharge is directly into the River Leannan SAC (site code 002176). This SAC comprises the River Leannan and its main tributaries (the Lurgy and the lower Glashagh) and lakes. The SAC contains lowland oligotrophic lakes, a habitat listed on Annex I of the Habitats Directive, and also contains Annex II species; Freshwater Pearl Mussel, Atlantic Salmon, Otter and the plant, Slender Naiad.

A screening (Stage 1) for Appropriate Assessment of the discharge from the agglomeration was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the discharge, individually or in combination with other plans or projects is likely to have a significant effect on the European Site. Donegal County Council determined that an Appropriate Assessment was required as there are likely to be significant effects on three qualifying interests downstream of the discharge from Kilmacrennan WWTP; Atlantic Salmon, Freshwater Pearl Mussel, and the Otter. The applicant has conducted a stage 2 Appropriate Assessment to consider the impact of the waste water discharge on the qualifying species with respect to the conservation objectives of the site. The predicted impacts are as follows:

(i) Atlantic Salmon

A 2009 survey of salmon numbers by the Northern Regional Fisheries Board showed that the River Lurgy, downstream of Kilmacrennan WWTP discharge, produced the lowest numbers of juvenile salmonids in the entire Lurgy system. There is monitored evidence that water quality in the Lurgy is being adversely affected by the WWTP discharge, compared to water quality upstream. The WWTP discharge is therefore likely to be a contributory factor to the paucity of salmon numbers in the Lurgy river system.

(ii) Freshwater Pearl Mussel (FPM)

The FPM is extremely sensitive to pollution. The FPM species has not been found in any numbers in the River Lurgy. A potential reason for this is the lack of salmon numbers in the catchment which reduces the possibility of the glochida[6] finding a suitable host. The *Freshwater Pearl Mussel Leannan Sub-Basin Management Plan (March 2010)* states "*Effluent discharging into the Leannan from Kilmacrennan WWTP was recorded. If Kilmacrennan WWTP is not upgraded, significant damage will continue to be caused to the FPM population and habitat.*" The Plan goes on to state "*Immediate upgrade of Kilmacrennan WWTP is required as it is considered a significant cause of mussel decline in the lower reaches of the Leannan".*

(iii) Otter

The main prey of the otter is fish, with salmonids, eels and sticklebacks comprising the bulk of this prey group. Therefore, an activity which impacts on the fish population, particularly salmonids, is regarded as potentially impacting on the otter population. Otters prey on other non-fish species such as frogs and mammals when fish numbers are reduced. The 2004/5 NPWS survey of otters indicates a general decline in otter numbers although the report concludes that no significant relationship was detected with pollution or human disturbance. The Leannan SAC was not included in that survey, hence specific data on this area is not available.

Overall, Kilmacrennan WWTP discharge can be described as having an impact on the ability of the River Leannan SAC qualifying interests achieving favourable conservation status within the River Lurgy system. Mitigation measures are required to improve and subsequently maintain the River Leannan SAC in order that there is no significant impact on the species involved.

[6] The FPM's reproductive strategy involves the annual production of millions of parasitic larvae called glochida that attach themselves to the soft gill tissues of trout and salmon during late summer. Several months later, and further upstream, the glochida drop off the host fish and settle into the stream substrate as juvenile mussels.

The Appropriate Assessment demonstrated that the discharge will not adversely affect the integrity of the European Site, subject to the mitigation measures proposed. These mitigation measures involve the upgrade of Kilmacrennan WWTP to an appropriate level of treatment in order to ensure the receiving water quality achieves high status. The RL requires a significant upgrade of Kilmacrennan WWTP to tertiary treatment level.

In accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), pursuant to Article 6(3) of the Habitats Directive, the discharge will not adversely affect the integrity, in terms of maintaining favourable conservation status of the qualifying interests of the European Site, having regard to its conservation objectives.

Environmental Liabilities Directive [2004/35/EC]

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

Environmental Impact Assessment Directive [85/337/EEC]

An EIS was not submitted with the licence application. Donegal County Council has not yet applied for planning permission for Kilmacrennan sewerage scheme upgrade. As an agglomeration of 500 – 1,000 p.e., Kilmacrennan falls well below the WWTP mandatory EIA threshold of 10,000 p.e. However, even as a sub-threshold development, it is possible that an EIA may be required by An Bord Pleanála, given the sensitivity of the receiving waters. If an EIS is required in support of a future planning application for the upgraded WWTP, it will be dealt with as per Condition 1.8 of the RL.

10. Cross Office Liaison

I have consulted with Rebecca Quinn, Office of Environmental Assessment (OEA), regarding 95%ile flow data in the River Lurgy.

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 through 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.

11. Submissions

One submission was received in relation to this application on 09/08/2010 from Dr. Milton Matthews, Acting CEO, Inland Fisheries Ireland, North Western RBD.

> *Dr. Matthews submission states that under the Lennon/Clady/Owencarrow/Glaskeelan Water Management Unit Action Plan, Kilmacrennan WWTP has been identified as impacting negatively on the River Lurgy, a sub-catchment of the River Leannan. The River Lurgy is a designated salmonid river and a SAC for, among others, the Freshwater Pearl Mussel. Kilmacrennan WWTP has insufficient capacity, the receiving waters have insufficient assimilative capacity and the discharge is the principal cause for a historical deterioration in Q values for a distance of 3km of the outfall. The FPM Action Programme states categorically that "significant damage will continue to be caused to the FPM population and habitat' if Kilmacrennan WWTP is not upgraded".*

Recent investigations indicate a very poor density of juvenile salmonids in this sub-catchment downstream of the WWTP discharge as compared to upstream of the discharge. IFI believe that an increase in WWTP capacity and the provision of tertiary treatment will greatly protect the overall ecological integrity of this catchment and its statutory designations. As such, Kilmacrennan WWTP should be viewed as a priority for improvement.

Response: The contents of this submission have been taken into consideration. It is acknowledged that the current waste water works in Kilmacrennan is inadequate in terms of the level of treatment provided. A significant upgrade of Kilmacrennan WWTP to tertiary treatment level is required in the Recommended Licence (RL), and also the upgrade of the non-compliant storm water overflow to meet DoECLG standards. The RL sets timeframes for the upgrading works to be completed and requires monitoring of the final effluent and receiving water quality. The overall objective is to achieve high status in the River Lurgy.

12. Charges

The RL sets an annual charge for the agglomeration at €4,155 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

13. 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

Aoife Loughnane
Inspector
Environmental Licensing Programme

Appendix A: Kilmacrennan waste water discharge and receiving waters