



This memo has been cleared for submission to the Board by Senior Inspector, Dr Karen Creed
 Signed: Sonya Smith Date: 01/07/2013

RESOURCE USE.

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	Dara Lynott, Director	
From:	Suzanne Wylde, Yvonne English, Gavin Clabby, Eimer Godsil, Ciara Maxwell & Simon Hussey	Environmental Licensing Programme
Date:	1 st July 2013	
RE:	Application for a Waste Water Discharge Licence from Cork County Council, for the agglomeration named Boherbue and Environs , Reg. No. D0437-01.	

Application Details

Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 500 to 1,000.
Licence application received:	22/06/2009
Notices under Regulation 18(3)(b) issued:	31/05/2010, 15/07/2010,
Information under Regulation 18(3)(b) received:	30/06/2010, 27/07/2010, 04/07/2011
Notices under Regulation 20(1) issued:	28/05/2013
Information under Regulation 20(1) received:	30/05/2013
Site notice check:	15/07/2009
Site Visit:	27/03/2013
Submission(s) Received:	None

1. Agglomeration

This application relates to the agglomeration named Boherbue and Environs in Cork (See map in Appendix 1).

The WWTP was designed to cater for a population equivalent (p.e.) of 800. The maximum p.e. that could be served by the wastewater works is 1,000 which takes account of planning permissions granted for the agglomeration. It should be noted that an upgrade would be required to treat this additional effluent and therefore a review of the licence would be required in accordance with Condition 1.8. The existing p.e. served by the WWTP is 680, as many of these planning permissions have not been constructed. The influent to the wastewater treatment plant is primarily domestic wastewater. The sewage system in the Boherbue and Environs agglomeration is a partially combined system.

The WWTP provides tertiary treatment. The plant consists of an extended aeration process before the final treated effluent is discharged to a constructed wetland that discharges to the River Brogeen. The treatment works consists of inlet works, primary settlement tank (Imhoff tank), percolating filter and settling tank (humus tank).

The constructed wetland was completed in 1998. The local authority confirmed that the wetland was lined with impermeable clay. The RL, as drafted, requires that the licensee carry out an investigation to determine if the constructed wetland conforms to the criteria as outlined in the EPA document "*Guidance on the Authorisation of Discharges to Groundwater*" (2011) (Condition 4.22).

2. Discharges to waters

The final treated effluent discharges through the primary discharge point (SW001) to the River Brogeen. The normal flow from the WWTP is 220m³/day, while the maximum discharge from the WWTP is 660m³/day. The final treated effluent quality from the WWTP in 2011 was within the limits prescribed in the Urban Wastewater Treatment Regulations (BOD 25mg/l, COD 125mg/l and suspended solids 35mg/l). The effluent monitoring results for 2011 for BOD, COD and suspended solids were in the range of 1-6mg/l, 21-38mg/l and 3-10mg/l, respectively. The population equivalent of the agglomeration is below the 2,000 p.e. threshold at which the ELVs specified in Part 1 of the second schedule of the UWWT Regulations (2001, as amended) apply.

For agglomerations under this threshold, "*appropriate treatment*" is required. The term appropriate treatment is defined in the Regulations in terms of the level of treatment necessary to protect water quality.

There are no secondary discharge points within the agglomeration.

There are no pumping stations within the existing network.

There is one stormwater overflow within the agglomeration located at the inlet works to the plant. In the event of high storm flows influent may bypass the plant at the inlet works and discharge via the storm overflow, to the constructed wetland. The licence, as drafted, requires that the stormwater overflow must conform to the criteria as set out in the DoECLG '*Procedures and Criteria in Relation to Storm Water Overflows*', 1995 and any other guidance as may be specified by the Agency. The programme of infrastructural improvements required under Condition 5.1 of the RL requires an assessment of all storm water overflows (Condition 5.2.3) and preparation of an implementation plan as necessary (Condition 5.3).

Schedule A: Discharges & Discharge Monitoring of the recommended licence (RL) specifies the Emission Limit Values (ELVs) to which the discharge(s) from the Boherbue and Environs agglomeration must conform. The ELVs are aimed at providing a high degree of protection to the receiving water body. Monitoring of the discharges will take place as per this schedule of the RL.

3. Receiving waters and impact

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

Table 1: Receiving waters

Characteristic	Classification	Comment
Receiving water name and type	Brogeen River	WFD Code: IE_SW_18_2121
Applicable Regulations	UWWT Regulations ^{Note 1}	In compliance
	Surface Water Regulations ^{Note 2}	Not achieving high status
Designations	Blackwater River (Cork/Waterford)	SAC (Site code: 2170)
EPA monitoring stations	Br N of Islandav EPA RS Code: RS18B060100	1.4km u/s of SW001 on Brogeen River
	Brogeen Br EPA RS Code: RS18B060300	6.5km d/s of SW001 on Brogeen River
Biological quality rating (Q value)	Q4 Unpolluted (2012)	u/s of SW001 on Brogeen River
	Q4 Unpolluted (2012)	d/s of WWTP on Brogeen River
WFD status	Moderate (2011)	Restore by 2015
WFD Risk Category	1a (2008)	At risk of not achieving good status

Note 1: Urban Wastewater Treatment Regulations, as amended, 2001.

Note 2: European Communities Environmental Objectives (Surface Water) Regulations 2009 (as amended).

The primary discharge point (SW001) is located within the Blackwater (Cork/Waterford) SAC (site code: 002170), which has been designated partly on the basis that the fresh water pearl mussel, *Margaritifera margaritifera* is a qualifying interest. The first schedule of the *European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations S.I No. 296 of 2009 (Pearl Mussel Regulations 2009)* lists the 27 designated Freshwater Pearl Mussel sites. The Brogeen is one of these designated freshwater pearl mussel sites.

The Blackwater Water Management Unit Action Plan (WMUAP) identifies the WWTP in Boherbue and Environs as a point pressure on the Blackwater catchment.

The Local Authority carried out upstream and downstream ambient monitoring for 2008 and 2009. The monitoring results indicate that the receiving water is not achieving high status as specified in European Communities Environmental Objectives (Surface Water) Regulations 2009, (as amended).

The Brogeen River is required to support the freshwater pearl mussel (*Margaritifera margaritifera*) both under the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations (2009) and the '*Freshwater Pearl Mussel Munster Blackwater Sub-Basin Management Plan*'. The proposed emission limit values (ELVs) for the RL, as drafted, are therefore based on the high status standards as laid down in the European Communities Environmental Objectives (Surface Water) Regulations (2009). The high status limits (95%ile) for BOD, ammonia and orthophosphate are 2.2mg/l, 0.090mg/l and 0.045mg/l, respectively.

Table 2: Mass Balance Calculations.

Parameter	Notional Clean River Values ^{Note 1}	Proposed ELVs for discharge from SW001 (mg/l)	Contribution from primary discharge (mg/l)	Predicted downstream concentration (mg/l)	Relevant standard (mg/l)
BOD	0.026	15	1.704	1.73	2.2 ^{Note 2}
Orthophosphate	0.005	0.3	0.029	0.034	0.045 ^{Note 2}
Total Ammonia	0.008	0.5	0.049	0.057	0.090 ^{Note 2}

Note 1: Notional clean river values for AC based on 1/5th of the mean "High Status" standard in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.}

Note 2: European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.

The 'notional clean river' approach (formulated by the Office of Environmental Assessment) has been used, whereby other sources of upstream pollution will be dealt with separately. The purpose of the mass balance calculations is to show the impact of the discharge with respect to water quality standards. The sources which give rise to the background concentrations are outside the control of this licence. The South Western River Basin Management Plan provides details of recommendations and planned measures to reduce pollution in water courses such as control of unsewered wastewater discharges, control of agricultural sources of pollution and control of environmental impacts from forestry. The mass balance calculations are based on the 95th percentile flow in the receiving water, the notional clean river background concentrations, the normal effluent discharge rate and the maximum concentration of the parameter in the effluent (Table 2). The 95th percentile flow in the river at primary discharge point is 0.023m³/s.

Using the notional clean river approach the mass balance calculations indicate that the predicted downstream concentrations for BOD, orthophosphate and ammonia are within the high status standards set in the European Communities Environmental Objectives (Surface Water) Regulations 2009, (as amended).

The limit of 0.045mg/l for orthophosphate, 0.090mg/l for ammonia and 2.2mg/l for BOD in the receiving water are statutory limits set in the European Communities Environmental Objectives (Surface Water) Regulations 2009, (as amended), to achieve high status in the surface water. An emission limit value of 0.3mg/l is recommended for orthophosphate, 0.5mg/l for ammonia and 15mg/l for BOD in the RL. The limits are set based on the mass balance calculations. The WWTP is an extended aeration plant (percolating filters) which can achieve standards of 4.5-9mg/l for orthophosphate and 5-10mg/l for ammonia in the discharge. Operational efficiencies and infrastructural improvements will be required to reduce ammonia levels in the final discharge. The Boherbue and Environs WWTP also requires phosphorus removal to be installed at the plant. Following discussions with the Department of Environment, Community and Local Government (DECLG) inspector the Programme of Improvements stipulates that these could be completed by 31st December 2014.

Condition 4.21 of the RD, as drafted, requires the licensee to review the finalised version of the Freshwater Pearl Mussel Munster Blackwater Sub Basin Management Plan for the Blackwater (Munster) Catchment on an annual basis, implement applicable measures and submit a report of the measures implemented as part of the AER.

4. Ambient Monitoring

Schedule B.2: Receiving Water Monitoring of the RL specifies the parameters, analysis method and frequency for which ambient monitoring of the primary discharge shall be carried out. The requirements for ambient monitoring in *Schedule B.2: Receiving Water Monitoring* are sufficient to ensure that there will be no deterioration in the status of the receiving water as a result of the discharge.

5. Combined Approach

The Wastewater Discharge (Authorisation) Regulations (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 (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 Wastewater Discharge (Authorisation) Regulations (2007, as amended).

6. Programme of Improvements

The WWTP in the Boherbue and Environs agglomeration provides tertiary treatment for wastewater in the form of a constructed wetland. The RL, as drafted, requires the local authority to install phosphorous removal and any upgrades necessary to reduce ammonia by the 31st December 2014 to ensure that the receiving water can achieve the high status requirements of the European Communities Environmental Objectives (Surface Water) Regulations (2009). Condition 5.1 of the RL requires the licensee to prepare and submit to the Agency a programme of infrastructural improvements to maximise the effectiveness and efficiency of the waste water works. The conditions and emission limit values specified in the RL will ensure no deterioration in the quality of the receiving waters as a result of the discharge.

7. Compliance with EU Directives

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

Drinking Water Abstraction Regulations

There are no drinking water abstractions downstream of the discharge from the Boherbue and Environs WWTP.

Sensitive Waters

The Brogeen River is not designated as a sensitive water under the Urban Wastewater Treatment Regulations.

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. *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 good water quality status by 2015.

European Communities Environmental Objectives (Surface Water) Regulations 2009, (as amended)

The ambient monitoring data supplied by local authority demonstrates that the receiving water is not achieving high status as specified in the European Communities Environmental Objectives (Surface Water) Regulations 2009, (as amended). The RL, as drafted, includes emission limit values to ensure that the treatment provided by the plant is sufficient to satisfy the high status standards specified in the European Communities Environmental Objectives (Surface Water) Regulations 2009, (as amended).

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

Boherbue and Environs WWTP complies with the requirements of the Urban Waste Water Treatment 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.

Dangerous Substances Directive [2006/11/EC]

The applicant has provided once-off sampling results for 18 of the 19 dangerous substances in the primary discharge for the purposes of the licence application. The measured concentrations are not considered significant. Condition 4.20 of the RL, as drafted, requires the licensee to identify the priority substances for monitoring by undertaking a risk-based assessment in accordance with "*Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*" issued by the Agency. Monitoring for any identified priority substance shall be carried out as required by the Agency.

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

Boherbue WWTP discharges to the Brogeen River. The Brogeen outfalls to the River Allow and is part of the Blackwater River (Cork/Waterford) SAC¹ (Site code: 002170). The SAC is protected for priority habitats listed under Annex 1 of the *Habitats Directive*. The qualifying habitats are: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Perennial vegetation of stony banks; *Salicornia* and other annuals colonizing mud and sand; Atlantic salt meadows; Mediterranean salt meadows; Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation; Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* and **Taxus baccata* woods of the British Isles².

It is also selected for protection of species listed under Annex II of the *Habitats Directive*. The qualifying species of the SAC are: Freshwater Pearl Mussel; White-clawed Crayfish; Sea Lamprey; Brook Lamprey; River Lamprey; Twaite Shad; Atlantic Salmon; Otter and the Killarney Fern. This SAC overlaps with a number of SPAs³, designated under the *Birds Directive*: Blackwater Estuary SPA (004028), Blackwater Callows SPA (004094) and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161). It is also adjacent to Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365).

¹ SAC: Special Area of Conservation designated under the *Habitats Directive*, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

² * indicates a priority habitat under the *Habitats Directive*.

³ SPA: Special Protection Area designated under the *Birds Directive*, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

A screening (Stage 1) for Appropriate Assessment of the discharge(s) from the agglomeration was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the discharge(s), individually or in combination with other plans or projects, is likely to have a significant effect on the European Sites.

Boherbue WWTP is listed on the Freshwater Pearl Mussel Munster Blackwater Sub-Basin Management Plan (Second Draft) as a plant potentially having an adverse effect on the pearl mussel – *“This plant is a considerable distance upstream of the mussels and requires investigation. The aim is to reduce the overall nutrient, organic and sediment loads in Munster Blackwater catchment”*. Following screening it was determined that an Appropriate Assessment was required to assess the impact of the discharge(s) on the Blackwater River (Cork/Waterford) SAC.

Pearl mussel populations are located approximately 15km downstream of the Boherbue discharge on the Blackwater (Munster) River, downstream of the confluence of the Allow with the Blackwater. The Appropriate Assessment (AA) assessed the impact of the discharge from Boherbue WWTP on the Blackwater River (Cork/Waterford) SAC, in combination with other pressures, including the discharge from Kanturk WWTP⁴, which discharges treated effluent to the River Allow, just upstream of the confluence of the Brogeen with the Allow. Agriculture and afforestation are also considered significant pressures in the area.

While it is considered that due to the scale of the Boherbue discharge, there is unlikely to be a direct impact on the pearl mussel populations, it is considered that indirect effects on the qualifying species (River and Brook Lamprey and Atlantic Salmon) in the Allow catchment are possible due to deterioration in the receiving water quality. An elevation in suspended solids from effluent discharges poses a risk to salmon and lamprey recruitment where settlement on spawning gravels and /or redds may occur. Nutrient enrichment would lead to accelerated algal and plant growth with implications for pearl mussel, lamprey and salmon stocks. A reduction in salmonids as prey species may negatively affect otter populations in the catchment. EPA monitoring of the Brogeen River in 2012 has shown good status (Q4) at upstream (RS18B0100 Br N of Islanduv) and downstream (RS18B060300; approximately 6.5 km downstream of discharge) locations.

The AA concluded that no significant impacts are likely on the Blackwater River (Cork/Waterford) SAC from the Boherbue WWTP subject to the commencement of phosphorous removal at the WWTP. The Water Services Authority proposes to install phosphorus removal by the 31st December 2014 to avoid impacts from the discharge on the European Site. An emission limit value of 25 mg/l has been set for suspended solids in the Recommended Licence to provide protection for the relevant qualifying species. A limit of 0.05mg/l has been set for ammonia and the RL requires that any infrastructural improvements required to meet this limit are completed by 31st December 2014. The limits set for BOD, orthophosphate and total ammonia will assist in the achievement of High Status for the water body, in accordance with the Water Framework Directive.

The Appropriate Assessment demonstrates that the discharge will not adversely affect the integrity of the European Site subject to the mitigation measures of phosphorus removal at the treatment plant and adherence to appropriate emission limit values in the discharge. 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.

⁴ Kanturk Agglomeration, Licence Reg. No. D0319-01, granted 11/12/2012.

Schedule C.1: Specified Improvement Programme requires the installation of phosphorus removal at the WWTP by 31st December 2014.

Environmental Impact Assessment Directive [85/337/EEC]

An EIS was not required and should one be required as part of any programme of improvements, it will be dealt with as per Condition 1.8 of the RL.

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 II of 2004/35/EC.

8. Cross Office Liaison

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.

9. Site Visit

A site visit was carried out by Mr Gavin Clabby, and Mr Simon Hussey, Inspectors, both from the Environmental Licensing Programme, on 27th March 2013. The site visit encompassed a walk through the workings of the WWTP and inspection of the discharge location.

10. Submissions

No submissions were received in relation to this application.

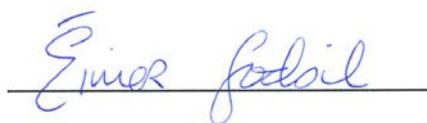
11. Charges

The RL sets an annual charge for the agglomeration at €5,530.68 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

12. 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,

A handwritten signature in blue ink, reading "Eimer Godsil", is written over a horizontal line.

**Suzanne Wylde, Yvonne English, Gavin Clabby, Eimer Godsil,
Ciara Maxwell & Simon Hussey)** Environmental Licensing Programme

Annex 1: Map showing location of Boherbue and Environs WWTP and associated primary discharge point.

