



**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:	15 th July 2014
RE:	Application for a Waste Water Discharge Licence from Irish Water for the Churchtown & Environs agglomeration, Co. Cork, Reg. No. D0444-01.

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 500 to 1000
Licence application received:	22/06/2009
Notices under Regulation 18(3)(b) issued:	22/12/2009, 30/04/2010, 15/07/2010, 30/08/2013, 12/11/2013
Information under Regulation 18(3)(b) received:	01/06/2010, 01/09/2010, 04/07/2011, 20/11/2013, 27/02/2014
Site notice check:	17/07/2009
Site visit:	19/08/2013, 05/02/2014
Submissions Received:	None

1. Agglomeration

This application relates to the Churchtown & Environs agglomeration in County Cork. The application was originally made by Cork County Council and subsequently transferred to Irish Water on 1st January 2014 under the Water Services (No. 2) Act 2013.

The Churchtown and Environs agglomeration had a population equivalent (p.e.) of 600 in 2012 and the design capacity of the WWTP is 936 p.e. A projected increase of 20% is used in the mass balance calculations below. There are no identified sources of industrial waste water in the agglomeration.

The WWTP, commissioned in 2008-2009 provides tertiary treatment and consists of inlet works, an extended aeration tank, a clarifier, a balancing tank, a sand filter, a UV system, a sludge holding tank, two storm water tanks and a percolation area. The percolation area is designed to reduce effluent concentrations from 10:10mg/l BOD: Suspended Solids (SS) following sand filtration to 5:5mg/l BOD:SS. There is no

chemical dosing for phosphorus removal. There is a flow meter and a final effluent composite sampler in place at the WWTP.

2. Discharges to waters

Primary Discharge

The primary discharge (GW-1) is the treated outfall from the WWTP indirectly to the Mitchelstown 1 Groundwater Body, via a 1,800m² percolation area, adjacent to the WWTP. The percolation area is arranged in 6 no. bays, each 10m wide by 60m long. Each bay consists of 5 no. 110mm diameter slotted drainage pipes measuring 30m each, total length of percolation pipe is 900m. Percolation pipes are laid in a washed gravel layer with a sand layer and loosened soil layer underneath.

The applicant's 2012 treated effluent monitoring results, for discharge from the waste water treatment plant prior to discharge to the percolation area, 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 (after sand filter)	2.1	16	5	-	-
WWTP Design standards (after sand filter)	10	-	10	-	-
WWTP Design standards (after percolation)	5	70	5	-	-

Secondary Discharges

There are no secondary waste water discharges from the agglomeration.

Storm water overflows

There are no storm water overflows in the agglomeration.

Emergency overflows

There is one emergency overflow in the agglomeration from Churchtown Pumping Station. It discharges to the unnamed stream (EPA Name: Windmill Cross Roads stream). Condition 5.2 of the RL requires the licensee to assess all emergency overflows to determine the effectiveness of their operation.

3. Receiving waters and impact

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	Mitchelstown 1 (Karstic) GWB IE_SW_G_082 Extreme Vulnerability (based on depth of soil in site investigation)	Unnamed stream (EPA Name: Windmill Cross Roads) located 100m east, IE_SW_18_2677, confluence with Awbeg River 1.9km downstream. Unnamed stream was assigned Moderate Status in 2011 and 1a

	Regionally Important Karst Aquifer with good development potential	risk rating in 2008. It has an exemption until 2021 from restoring Good Status.
Relevant designations within 10km	SAC located 1.1km downstream of WWTP	Blackwater (Cork/Waterford) SAC Site Code 002170
Drinking water abstraction within 10 km d/s	Groundwater abstraction, PA1-0500PUB1103 Borehole no.1, borehole no.2 and borehole no.3	3km north east of primary discharge point location
EPA monitoring stations & Biological quality rating (Q value)	RS18A050550 on Awbeg River, 4.5km downstream of WWTP	Q4 in 2012
WFD GW status	Good	2011
WFD GW Risk Category	1a, water body at significant risk of failing objectives.	2008
WFD Objective	Maintain good status	2015
WFD protected areas	RPA drinking water groundwater	

The effluent discharged to the percolation area is very highly treated, achieving values of less than a 10:10mg/l BOD: Suspended Solids standard and has a relatively low nutrient load. It is further noted that the UV treatment, provided prior to discharge to the percolation area, reduces the pathogen load significantly.

A site investigation completed in 2005, indicated an average percolation (P) value of 45mins/25mm across the site. The depth of soil to bedrock in trial holes was 2.2m. The distance between the percolation pipe-work and the bedrock is estimated by the applicant as 1.9m, which is greater than the 1.2m minimum depth of soil recommended for this P value in *Guidance on the Authorisation of Discharges to Groundwater* (EPA, 2011). However, a depth of clayey soil to bedrock of less than 3m indicates extreme hydrogeological vulnerability of the karst aquifer.

The design Dry Weather Flow (DWF) of 223 m³/day of treated effluent distributed to a percolation area of 1,800 m² equates to 124L/m²/day. The *Code of Practice: Wastewater Treatment Systems for Single Houses* (EPA, 2010) advises that the loading rate should not exceed 25 L/m²/day for a percolation (P) value of 45mins/25mm, indicating that the percolation area at Churchtown WWTP is at risk of being hydraulically overloaded. It is noted that the percolation area was constructed prior to this 2010 guidance and was in compliance with earlier guidance *Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses* (EPA, 2000).

I visited the percolation area at the WWTP on 05/02/2014 and did not observe ponding on the surface of the percolation area, despite a recent period of heavy rain.

Details of historical site investigations, provided by the applicant, are limited. Condition 5.5 of the RL requires a technical assessment of the primary discharge (discharge to percolation area) to demonstrate compliance with the *European Communities Environmental Objectives (Groundwater) Regulations 2010*, S.I. No 9 of 2010, as amended, to be carried out within 6 months of date of grant of this licence. The technical assessment shall include a risk assessment for the protection of

drinking water abstractions points. A report on the outcome of the technical assessment and where relevant recommendations (including a greater level of treatment and the setting of groundwater compliance values, if appropriate) is to be submitted in the next AER. Any actions required to demonstrate compliance with the *European Communities Environmental Objectives (Groundwater) Regulations 2010*, shall be implemented before 22nd December 2015.

The RL proposes Emission Limit Values (ELV) of 10mg/l BOD, 125mg/l COD, 10mg/l Suspended Solids from date of grant of licence which are the design effluent standards of the WWTP after sand filtration, prior to percolation, indicating that these ELVs can be achieved.

The RL proposes 2mg/l Ammonia as N, from 22nd December 2015. There is no anoxic zone/tank in the WWTP. Conventional activated sludge plants can achieve 2 to 5 mg/l Ammonia. Average Ammonia as N in the effluent was 0.07mg/l in 2008-2009 (3 samples) indicating that this ELV could be achieved without plant improvement.

The RL proposes 20mg/l Total Nitrogen as N, from 22nd December 2015. Conventional activated sludge plants can achieve 20 to 40 mg/l Total Nitrogen as N. Total Nitrogen in the effluent in 2008-2009 (5 samples) was 19.86mg/l indicating this ELV could be achieved without plant improvement.

The RL proposes 0.5mg/l Orthophosphate as P, from 22nd December 2015. Plants with chemical dosing for phosphorus removal, which is not yet available at this WWTP, can achieve 0.5 to 0.8mg/l Orthophosphate as P. A sand filter which is in place at this WWTP can achieve 0.5 to 1mg/l Total Phosphate. Average Orthophosphate as P in the effluent was 2.6mg/l in 2008-2009 (4 samples) indicating that plant improvement and/or operational improvements will be required to achieve this ELV.

Interim ELVs for Total Nitrogen, Ammonia and Orthophosphate have not been proposed due to the short timeframe from date of grant of licence until 22nd December 2015, the date when the receiving water is to achieve the Water Framework Directive objective.

ELVs proposed in the RL of 10mg/l BOD, 125mg/l COD, 10mg/l Suspended Solids, 2mg/l Ammonia, 20mg/l Nitrogen and 0.5mg/l Orthophosphate are more stringent than the minimum performance standards for on-site domestic wastewater treatment systems set out in the Code of Practice: Wastewater Treatment Systems for Single Houses (EPA, 2010).

Churchtown WWTP is listed as a point pressure in the Blackwater Awbeg Water Management Unit Action Plan with risks related to insufficient future (2015) capacity and discharge to a protected area. The WWTP was upgraded in 2008- 2009 and has sufficient tertiary treatment capacity. However, an assessment of the primary discharge to demonstrate compliance with the European Communities Environmental Objectives (Groundwater) Regulations 2010 is required in the RL as discussed above.

4. Site Visit

I visited Churchtown and Environs agglomeration on 19/08/2013 and met with a representative of Cork County Council. I visited the WWTP and observed the percolation area. The sand filter was out of commission on the date of the site visit. I visited the Churchtown and Environs agglomeration again on 05/02/2014 and met with a representative of Irish Water. I visited the percolation area at the WWTP and

did not observe ponding on the surface of the percolation area, despite a recent period of heavy rain. However, there was a fault with a pipe from the distribution box and treated effluent was discharging to the surface of the percolation area rather than underground. The applicant undertook to repair the fault.

5. Ambient Monitoring

Schedule B.2 Receiving Water Monitoring of the RL specifies quarterly monitoring of the groundwater.

The locations identified by Cork County Council are aSW-1u (grid ref. 150454E 113195N) located approximately 150m upstream of the WWTP on the unnamed tributary of the Awbeg River and aSW-1d, (grid ref.150328E 115578N) located upstream on the Awbeg River. These locations are not considered appropriate as the primary discharge is to a percolation area.

Condition 5.5.5 of the RL requires the licensee to submit a proposal for suitable ambient groundwater monitoring points, one upgradient and two downgradient of the primary discharge, to the Agency as part of the AER.

6. Programme of Improvements

There are no planned improvements proposed by the applicant for Churchtown WWTP. Plant operational improvement or upgrade may be required to achieve ELVs of 2mg/l Ammonia as N and 0.5mg/l Orthophosphate as P.

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 3. 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.
Water Framework Directive [2000/60/EC]	Maintain Good Status. Not a salmonid water. No shellfish waters present
EC Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended	Schedule A of RL sets ELVs to contribute towards good status water quality standards. Condition 5.5 requires an assessment of the primary discharge to demonstrate compliance with these regulations.
Drinking Water Abstraction Regulations	Groundwater abstractions, PA1-0500PUB1103, 3km from SW001 UV treatment installed at WWTP. Condition 5.5.2 requires a risk assessment for the protection of drinking water abstraction points to be carried out.
Bathing Water Directive [2006/7/EC]	No bathing waters present
Dangerous Substances Directive [2006/11/EC]	Condition 4 requires screening for priority substances.

Environmental Impact Assessment Directive [85/337/EEC]	An EIS was not required for Churchtown WWTP.
Environmental Liability Directive [2004/35/CE]	Condition 7.2 of RL satisfies the requirements of the Directive.

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

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activity, individually or in combination with other plans or projects is likely to have a significant effect on a European Site(s). In this context, particular attention was paid to the European site at Blackwater River (Cork/Waterford) (SAC Site Code: 002170) and the Agency considered, for the reasons set out below, that the activity is not directly connected with or necessary to the management of the site as a European Site and that it can be excluded on the basis of objective scientific information, that the activity, individually or in combination with other plans or projects, will have a significant effect on a European site, and accordingly the Agency determined that an Appropriate Assessment of the activity is not required.

It has been determined that the activity does not have the potential for significant effects on a European Site due to the volume and quality of the effluent discharge.

9. Submissions

No submissions were received in relation to this licence application.

10. Charges

The RL sets an annual charge for the agglomeration at € 4,152.18 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

11. 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

Churchtown and Environs Agglomeration D0444-01

