

This memo has been cleared for submission to the Director by the Senior Inspector Karen Creed

Signed: M. Buckley Date: 23-10-12  
 Máire Buckley

**OFFICE OF CLIMATE,  
 LICENSING &  
 RESOURCE USE.**



**INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION**

<b>To:</b>	DIRECTORS
<b>From:</b>	STUART HUSKISSON <b>ENVIRONMENTAL LICENSING PROGRAMME</b>
<b>Date:</b>	23 <sup>RD</sup> OCTOBER 2012
<b>RE:</b>	APPLICATION FOR A WASTE WATER DISCHARGE LICENCE FROM CORK COUNTY COUNCIL SOUTHERN DIVISION, FOR THE AGGLOMERATION NAMED CLOUGHDUV. LICENCE REGISTER NO. D0330-01.

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 1,001 to 2,000.
Licence application received:	27 February 2009
Notices under Regulation 18(3)(b) issued:	21 <sup>st</sup> May 2010 & 02 <sup>nd</sup> December 2011
Information under Regulation 18(3)(b) received:	30 <sup>th</sup> September 2010, 12 <sup>th</sup> January 2012 26 <sup>th</sup> March 2012 & 25 <sup>th</sup> April 2012
Site notice check:	25 <sup>th</sup> March 2009
Site visit:	29 <sup>th</sup> November 2011
Submissions Received:	12 <sup>th</sup> June 2009 and 27 <sup>th</sup> January 2010

**1. Agglomeration**

This application relates to the Cloughduv agglomeration. The agglomeration's current 396 population equivalent (p.e.) is serviced by a predominately separate foul sewer network with a single waste water treatment plant (WWTP) located in the north west of the agglomeration. The application from Cork County Council (Southern Division) relates to the maximum design capacity of the recently upgraded WWTP, i.e., 1,500 p.e.. The WWTP receives both domestic and commercial effluent, and the discharge from the WWTP is the primary discharge from the waste water works.

The WWTP at Cloughduv was upgraded and commissioned in August 2010 and provides tertiary treatment and chemical dosing for phosphorus removal. Waste water arriving at the treatment plant passes through a combined screening and grit removal unit and is then pumped forward to the effluent treatment processes.

If the waste water flow to the inlet works of the WWTP is greater than the inlet pump maximum flow rate (169m<sup>3</sup>/hour – 12 times Dry Weather Flow (DWF)) the waste water will divert directly to storm water overflow (SWO). (The applicant has advised that discharge directly to SWO from the inlet works has not been known to

take place, due to the high 12 times DWF maximum forward pump rate to the plant). From the inlet works the waste water is pumped to the forward feed sump which contains: two forward feed pumps (duty and standby - with a capacity of 42m<sup>3</sup>/hour - 3 times DWF), which pump the waste water to the aeration tank; and, storm water pumps (with a capacity of 127m<sup>3</sup>/hour - 9 times DWF) which pump to the storm water holding tank. In the event of the flow rate to the forward feed sump exceeding 42m<sup>3</sup> (3 times DWF) the additional flow will automatically be pumped to the storm water holding tank, which has a capacity of 253m<sup>3</sup> (providing a minimum of 2-hours storage). Once the storage capacity of the storm water holding tank is reached, waste water will divert to the SWO. When the flow to the inlet works subsides sufficiently, the contents of the storm water holding tank will be pumped to the aeration tank for treatment.

The aeration tank at the WWTP is fitted with two air blowers. Phosphorus is reduced by ferric sulphate dosing. The treated effluent flows over a clarifier to a sand filter prior to being transferred to the final effluent pumping station. From this point the treated effluent is pumped to the final discharge point, 1km north of the WWTP to the River Bride. The plant also includes sludge removal and a sludge storage tank.

There are two discharges from the waste water works, i.e., the primary discharge and one SWO, which may also operate as an emergency overflow in the event of prolonged pump failure. There are no secondary discharges in the agglomeration.

The treated effluent from the Cloughduv WWTP is pumped approximately 1km north of the WWTP to the primary discharge point (SW001), which is located in the River Bride. In the event of either: (i) the inlet flow being greater than 169m<sup>3</sup>/hour; or, (ii) the storm water holding tank exceeding its capacity; the SWO at the WWTP (SW002) will operate and the waste water will flow via gravity to the River Brouen, a tributary of the River Bride.

The applicant does not state whether the SWO performs in compliance with the requirements of the Department of the Environment, Heritage & Local Government (DoEHLG) guidance on SWOs. The Recommended Licence (RL) requires the SWO to be assessed against DoECLG criteria and, where required, a programme of improvements implemented to bring this into compliance with these criteria for operation of storm water overflows.

## **2. Contributions to WWTP**

Wastewater from the agglomeration arises from domestic and non-domestic sources, including a neighbourhood centre, small to medium sized industrial units and a local school.

## **3. Discharges to Water**

The primary discharge from the Cloughduv WWTP (SW001) is to the River Bride. The design Dry Weather Flow (DWF) from the WWTP (operating at 1,500 p.e.) is approximately 338m<sup>3</sup>/day. The River Bride is a tributary of the River Lee. The single SWO (SW002) discharges to the River Brouen, a tributary of the River Bride.

There is one pumping station located in Cloughduv village and the collection system serving this is a separate system. A discharge from this pumping station, as an emergency overflow, would only occur in the rare event of prolonged power or pump failure and, as such, this is not considered further here or in the Recommended Licence (RL). The pumping station located at the inlet works of the WWTP would also operate as an emergency overflow in the rare event of prolonged pump failure.

The waste water generated in the agglomeration flows or is pumped to the WWTP inlet pumping station and is then pumped to the WWTP forward feed sump. SW002 may operate as either a SWO or an emergency overflow. In the event of an overflow

from the storm water tank at the WWTP the discharge will flow by gravity, approximately 250 metres, to the River Brouen (a tributary of the River Bride). In the rare event of pump failure, SW002 would operate as an emergency overflow to the River Brouen. Standby power generation is provided at the WWTP of sufficient capacity to maintain the effluent discharge standards during any period when mains electricity is unavailable.

The RL as drafted provides for the regulation and control of discharges from the Cloughduv agglomeration, it does not deal with the issues of odour, noise or management of the waste water works infrastructure as these matters are regulated under other legislative mechanisms.

#### 4. Receiving waters and impact

The following table (Table 1) summarises the main considerations in relation to the River Bride downstream of the primary discharge.

**Table 1. Receiving waters**

Characteristic	Classification	Comment
Receiving water name and type	River Bride	Tributary of the River Lee which is a designated salmonid river (14km downstream of the primary discharge).
Resource use	Drinking water	Lee Road Water Works - drinking water abstraction 21 km downstream
Amenity value	Fishing and general amenity	-
Applicable Regulations	Environmental Objectives Regs. <sup>Note 1</sup> Abstraction regulations <sup>Note 2</sup>	Details included in Section 4 of this report. Compliant at intake (21 km downstream)
Designations	None	-
EPA monitoring stations	19B040600 (upstream) 19B040610 (upstream) 19B040900 (downstream)	Br. at Crookstown LHS - 3.5 km upstream Br. at Crookstown RHS - 3.5 km upstream Coolmucky Br. - 800 metres downstream
Biological quality rating (Q value)	Q4 upstream Q2-3 upstream  Q4-5 downstream	2011 2011 - RHS moderately polluted as a result of discharges in the locality (not associated with the Cloughduv agglomeration) 2011
WFD Risk Category	1a (2008)	At risk of achieving good status
River status at discharge location	'Good'	2011
WFD Objective	Protect 'Good' Status	As per Lower Lee Owenboy Water Management Unit Action Plan (WMUAP)
WFD protected areas	pSPA (4030) Cork Harbour River Lee Lee Road Water Works Lee Estuary/ Lough Mahon	Site 33 km downstream. Salmonid water 14km downstream Drinking water 21km downstream Sensitive water 21km downstream

**Note 1:** European Communities Environmental Objectives (Surface Waters) Regulations, 2009. S.I. No. 272/2009.

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

The River Bride is located within the South Western River Basin District (SWRBD) and the Lower Lee-Owenboy Water Management Unit. The Lower Lee Owenboy WMUAP identifies the Cloughduv discharge as a pressure point, but the discharge is not identified as a WWTP risk. The objective for the receiving waterbody is to achieve and protect 'good' status by 2015.

The water quality upstream of the WWTP at the Bridge at Crookstown LHS has consistently been Q4 or better since 1999, the water quality at the Bridge at Crookstown RHS has fluctuated from Q2 in 1999, to Q4-5 in 2008 and to Q2-3 in

2011 due to localised discharge influences associated with the Crookstown agglomeration (Certificate of Authorisation Reg. No. A0354-01, issued 18/04/2011). The Certificate of Authorisation for the Crookstown agglomeration requires Cork County Council to identify appropriate improvements to the wastewater works, including a waste water treatment system, necessary to ensure all discharge(s) from the agglomeration contribute towards achieving at least good status in accordance with the European Communities Environmental Objectives (Surface Waters and Groundwater Regulations).

The water quality downstream of the Cloughduv WWTP discharge has consistently been at Q4/5 since 1999, with the exception of 2008 when Q5 was achieved. The River Lee approximately 14 km downstream of the discharge point is compliant with the Salmonid Regulations. Therefore the waste water works does not appear to adversely affect the River Lee.

The ambient monitoring data supplied as part of the application indicates that the water quality of the River Bride upstream (at monitoring station 19B040600) and downstream of the discharge complies with the 'good' status (95%ile) standards of the Surface Water Regulations, 2009.

### Receiving water and impact

The impact assessment of the discharge considered the waste water composition and quality, the treatment capabilities of the plant and assimilative capacity calculations. A dilution factor of approximately 28.8 is available based on the DWF discharge volume at 1,500 p.e. (338m<sup>3</sup>/day) and the 95%ile flow in the river. The 95%ile used is 0.113m<sup>3</sup>/second, which has been determined by the EPA Office of Environmental Assessment based on the catchment ratio and data from the nearest hydrometric station with continuous flow data (Station 19016 - Ovens). Table 2 below presents the results of the assimilative capacity/receiving water concentration calculations for the primary discharge, with reference to relevant water quality standards.

Table 2. Mass Balance Calculations based on WWTP discharge at 1,500 p.e.

Parameter	Background Concentration (mg/l)	Proposed ELV from SW001 (mg/l)	Contribution from WWTP (mg/l) <small>Note 1</small>	Predicted Downstream Quality (mg/l)	Water Quality Standard (mg/l)
<b>BOD</b> (95%ile)	0.5	10	0.34	0.82	≤2.6 <small>Note 2</small>
<b>Ortho-P</b> (95%ile)	0.031	0.8	0.027	0.057	≤0.075 <small>Note 2</small>
<b>Total Ammonia (N)</b> (95%ile)	0.045	2.0	0.067	0.11	≤0.14 <small>Note 2</small>

**Note 1:** Based on the dry weather flow of WWTP operating at 1,500 p.e. (0.0039 m<sup>3</sup>/second) and the proposed ELVs.

**Note 2:** 'Good Status' - European Communities Environmental Objectives (Surface Waters) Regulations, 2009. S.I. No. 272/2009.

The assimilative capacity calculations are based on the volumetric discharge (at 1,500 p.e) and ELVs as set in the RL. The calculations suggest that the receiving water, based on the existing background values, is capable of accommodating the proposed discharge of BOD, orthophosphate and Total Ammonia without exceeding the standards outlined in National and European legislation.

## **BOD**

Table 2 above shows that there is assimilative capacity in the receiving water for BOD, based on the water quality standards specified in S.I. No. 272 of 2009 and the existing background concentration of 0.5mg/l. This is based in an ELV of 10mg/l BOD, i.e., the design limit of the new WWTP which is consistently achieved.

## **Phosphorus**

Table 2 above shows that there is assimilative capacity in the receiving water for orthophosphate based on the water quality standards specified in S.I. No. 272 of 2009 and the existing background concentration (0.031mg/l). This is based on an ELV of 0.8mg/l orthophosphate and the existing background concentration of 0.031mg/l.

Cork County Council provided two months daily monitoring of the orthophosphate discharge from the upgraded waste water treatment plant. The maximum orthophosphate discharge concentration recorded was 0.7mg/l, with an average of approximately 0.19mg/l. Phosphorus reduction is achieved by dosing the ferric sulphate. The 0.8mg/l orthophosphate ELV requires the applicant to manage the ferric sulphate dosing in order to consistently achieve this discharge concentration. The RL, through the second AER, also requires the applicant to review the WWTP performance to reduce the Total Phosphorus loadings to the maximum practicable extent.

## **Ammonia**

In the case of ammonia, a discharge which complies with an ELV of 2.0 mg/l Total Ammonia can be accommodated by the receiving water without causing a breach in the relevant standards as outlined in National and European legislation. The ELV requested by the applicant was 5mg/l, however, where nitrification is taking place in the WWTP significantly lower Total Ammonia discharge concentrations are generally recorded. The RL requires Cork County Council to achieve the lower ELV of 2.0mg/l and to reduce the Total Ammonia loading in the discharge to the maximum practicable extent. The existing discharge concentration for Total Ammonia from the WWTP is generally in the order of 1mg/l.

## **Suspended Solids**

As the upgraded Cloughduv WWTP provides tertiary treatment (by sand filtration), the RL includes a Suspended Solids ELV of 15mg/l. This ELV is appropriate for a WWTP providing effective tertiary treatment and the discharge from the Cloughduv WWTP is consistently below this concentration.

## **General**

The discharges from the Cloughduv waste water works have not affected the biological water quality status of the downstream monitoring location, which has been rated Q4/5 consistently since 1999, as outlined above. This Q4/5 rating is consistent with 'good' status, which is required to be achieved and maintained under the Water Framework Directive. In addition, **Condition 3.2** requires that no deterioration in the quality of the receiving waters shall occur as a result of the discharge.

*Schedule A: Discharges* of the RL specifies ELVs for the primary discharge (SW001). It is considered that the RL will provide a high level of protection to the River Bride, as it will ensure that all discharges from the Cloughduv agglomeration are provided with an appropriate level of treatment, as per **Condition 3: Discharges**. By ensuring that the waste water is treated to a high standard the RL will act to ensure no deterioration of the receiving water quality and will contribute to the objective of achieving and maintaining 'good' water status.

Monitoring of the discharges will take place as specified in *Schedule B: Monitoring of the RL*.

## **5. Ambient Monitoring**

The RL requires ambient monitoring to be carried out upstream and downstream of the primary discharge (SW001). This is to verify that there is no deterioration in the status of the receiving water quality due to the discharges from the waste water works (*Schedule B.4*).

## **6. 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), where applicable, 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. Programme of Improvements**

The Cloughduv WWTP upgrade works were completed in 2010. The RL specifies the discharge limits required to be achieved by the WWTP. There are no further programme of improvements planned for the WWTP, or for the infrastructure in the agglomeration. Condition 5 of the RL requires Cork County Council, as part of the second AER, to reduce Total Phosphorus and Total Ammonia loadings in the discharge to the maximum practicable extent.

The conditions and ELVs specified in the RL should therefore ensure no deterioration in the quality of the receiving waters as a result of the discharge and assist in maintaining 'good' status in the receiving water.

## **8. 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:

### 8.1 Drinking Water Abstraction Regulations

There is a drinking water abstraction from the River Lee (0400PUB1001), approximately 21 km downstream of the primary discharge point. Having regard to limits of quantification and the extent of the monitoring suite, results for the downstream drinking water works intake indicates that the quality standard for A1 surface water is met the majority of the time. Therefore, the Cloughduv waste water works do not adversely affect drinking water abstraction at the intake to Cork City Council water works (approximately 21km downstream of the discharge).

It should be noted that discharges from the Ballincollig agglomeration (Licence Reg. No. D0049-01) enter directly into the River Lee approximately 10km upstream of the drinking water abstraction point. The discharges from the Ballincollig agglomeration (24,600 p.e.) contribute a significantly greater volume of treated effluent to the receiving water than from the Cloughduv agglomeration.

### 8.2 Sensitive Waters

The River Bride is not designated as sensitive under the Urban Waste Water Treatment Regulations (S.I. No. 254 of 2001), as amended.



### 8.3 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 limit values for those substances contained within the waste water discharge. Those limits specified in the RL are determined with the aim of achieving and maintaining 'good' status water quality.

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

Based on the ambient monitoring data provided as part of the application, the River Bride, downstream of the primary discharge, complies with the environmental quality standard set in the Surface Water Regulations, 2009.

The Lower Lee Owenboy WMUAP identifies that the River Bride, in the vicinity of the Cloughduv WWTP discharge is required to achieve and maintain of 'good' status. The limits specified in the RL are determined with the aim of maintaining compliance with the requirements of the Surface Water Regulations, 2009, including when the new Cloughduv WWTP is operating at its design capacity of 1,500 p.e..

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

It should be noted that the p.e. of the Cloughduv agglomeration is below the 2,000 p.e. threshold at which the ELVs specified in Part I of the second schedule of the Urban Waste Water Treatment Regulations (S.I. 254 of 2001) apply. For agglomerations under this threshold, "appropriate treatment" is required as specified in Article 7 of the Regulations. The term appropriate treatment is defined in the Regulations in terms of the level of treatment necessary to protect water quality.

The ELVs specified in the RL are based on the performance of the upgraded WWTP, and can be considered to be "appropriate treatment" in terms of impact on water quality, as discussed in Section 4 above. The effluent monitoring requirements specified in the RL are based on the requirements for a 2,000 p.e. agglomeration, and therefore comply fully with the requirements of the Urban Waste Water Treatment Directive (91/271/EEC).

### 8.6 Bathing Water Directive [2006/7/EC]

There are no designated bathing waters on the River Bride or River Lee.

### 8.7 EC Freshwater Fish Directive [2006/44/EC]

The River Bride is not designated as salmonid waters. The River Lee, 21km downstream of the discharge, is a designated salmonid river and is compliant with the Salmonid Regulations and Dangerous Substances Directive (2006/11/EC) requirements. Therefore the discharges from the waste water works do not appear to adversely affect the River Lee.

### 8.8 Shellfish Waters Directive [2006/113/EC]

There are no designated shellfish waters located in the vicinity of the discharges from the Cloughduv agglomeration.

### 8.9 Dangerous Substances Directive [2006/11/EC]

The applicant has provided sampling results for all of the 19 dangerous substances in the primary discharge for the purposes of the licence application. The measured concentrations are not considered significant. The agglomeration is effectively domestic in nature with a limited contribution from commercial activities. The initial screen for the application is therefore considered sufficient and the agglomeration is compliant with the Dangerous Substances Directive.

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

The primary discharge from the Cloughduv agglomeration is to the River Bride and the nearest downstream site designated under the E.U. Habitats and Birds Directive is the Cork Harbour SPA (Site Code 004030), approximately 33km downstream of the discharge point.

Cork Harbour is selected as an SPA for being of international importance both for the total numbers of wintering birds (i.e., >20,000) and also for its population of Redshank. Several of the species which regularly occur are listed on Annex I of the E.U. Birds Directive.

There are no discharges from the Cloughduv agglomeration directly into any site designated under the E.U. Habitats or Birds Directives.

The applicant determined that an Appropriate Assessment was required and this was completed. The applicant submitted a Natura Impact Statement, as defined in Regulation 2(1) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011).

The Appropriate Assessment demonstrates that the discharges from the Cloughduv waste water works will not adversely affect the integrity of the European Site.

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 discharges 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.

#### 8.11 Environmental Impact Assessment Directive [85/337/EEC]

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

Cork County Council confirmed that an EIS was not required as part of the planning approval for the Cloughduv waste water treatment works.

#### 8.12 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.

### **10. 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.

### **11. Submissions**

Two submissions were received in relation to this application from Ms. Ruth Butler.

Both submissions relate to the proximity of the new Cloughduv WWTP to Ms. Butler's residential dwelling. At the time of the first submission, 12/06/09, the WWTP had been constructed but was not operational. The two submissions refer to EPA guidelines on WWTPs in relation to recommended buffer zone around the WWTPs. The second submission relates to the same issue and included a copy of the response from Cork County Council, which noted that Ms. Butler had not made a



submission in relation to the planning consultation process for the new Cloughduv WWTP. Ms. Butler states in the second submission (received 27<sup>th</sup> January 2010) that she had not received a satisfactory response from Cork County Council on the issue.

#### Response

While the two e-mails received from Ms. Butler have been included as submissions on the Cloughduv Waste Water Discharge Licence application, neither relates to discharges from the waste water works and, therefore, the issues raised cannot be addressed through the waste water discharge licensing process. Matters in relation to planning permission for development are considered by the Local Planning Authority/An Bord Pleanála. These submissions were passed on to the EPA OEE Water Team, who has reverted to Cork County Council in relation to addressing the concerns raised. Cork County Council has been asked by the OEE to liaise directly with the submitter to discuss the concerns and to agree measures to address them and this is currently an on-going process.

#### **12. Site Visit**

A site visit of the WWTP was undertaken on 29<sup>th</sup> November 2011. The visit included a tour of the WWTP, from the inlet works through to the waste water discharge point and the storm water overflow discharge point associated with the WWTP. The WWTP appeared to be well managed and operating satisfactorily.

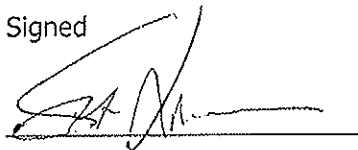
#### **13. Charges**

The RL sets an annual charge for the agglomeration at €2,966.26 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

#### **14. 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



Stuart Huskisson  
Office of Climate, Licensing and Resource Use

**Figure 1. Cloughduv Agglomeration D0330-01**

