This report has been cleared for submission to Director/Board by Breen Higgins. Grainne Power, 23/11/2015 12:48

OFFICE OF CLIMATE, LICENSING, RESOURCES & RESEARCH

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	Dara Lynott, Director
From:	Tara Higgins, Yvonne English, Michael Martin, & Deirdre French. Environmental Licensing Programme
Date:	**23/11/2015**
RE:	Application for a Waste Water Discharge Licence from **Irish Water**, for the agglomeration named **Coachford**, Reg. No. D0427-01.

Application & Agglomeration Details	
Agglomeration Name:	Coachford (Appendix 1)
County:	Cork
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 500 to 1,000.
Licence application received:	22nd June 2009
Notices under Regulation 18(3)(b)[1] issued:	31st May 2010 & 23rd Sept. 2015
Information under Regulation 18(3)(b) received:	27th Sept. 2010, 10th Nov. 2010 & 16th Oct. 2015
Site notice check:	13th July 2009
Site Visit:	16th Sept. 2015
Submission(s) Received:	One – 01st May 2015.
Design Population Equivalent:	402
Actual Population Equivalent:	990
Type of treatment:	Primary treatment
Wastewater treatment plant (WWTP) description:	The plant consists of a septic tank which acts as a primary settlement tank.

[1] Waste Water Discharge (Authorisation) Regulations, 2007, as amended.

1. Discharges to waters

The following table outlines the main considerations in relation to discharges to waters from this agglomeration.

Table 1: Discharges to waters

Primary discharge point	
Receiving water name	Inniscarra Reservoir
Type of receiving water	Freshwater Lake
Normal flow	178 m^3/day
Maximum flow	535 m^3/day
Storm water overflow(s)	
Storm water overflow(s)	Yes (two)
Receiving water name(s)	Knockanowen Stream, which discharges to the Dripsey River.

Schedule A: Discharges & Discharge Monitoring of the recommended licence (RL) specifies the Emission Limit Values (ELVs) to which the discharge from the Coachford agglomeration must conform. Monitoring of the discharges will take place as per this schedule of the RL.

There is a large variation noted between the normal and maximum flows recorded from the primary discharge point. This variation can be attributed to the combined nature of the collection network.

2. Receiving waters and impact

The following table summarises the main considerations in relation to the receiving water, Inniscarra Reservoir.

Table 2: Receiving waters

Characteristic	Classification	Comment
Receiving water name	Inniscarra Reservoir	(WFD Code: IE_SW_19_138)
Designations	Great Island Channel SAC Cork Harbour SPA Salmonid Lake Drinking Water Lake	SAC (Site code: 001058) SPA (Site code: 004030) PA1_19_138
Receiving water lake monitoring stations	Site 2 EPA Code: LS190022800800020	1.3 km from SW001 on Inniscarra Reservoir
Lake Water Quality	Strongly Eutrophic	2009
WFD status	Moderate	Heavily modified water body. Good ecological potential to be achieved by 2015.

The Lower Lee - Owenboy Water Management Unit Action Plan (WMUAP) identifies the WWTP in Coachford as a point pressure on the Lower Lee - Owenboy catchment.

To determine the impact of the discharge on the receiving water, Inniscarra Reservoir, a desktop assimilative capacity model for lakes was applied, developed in collaboration with NUI Galway and based on the advection/diffusion equation developed by Fischer *et al.* (1979)[2]. The model takes into account the normal effluent discharge rate, the maximum permitted pollutant concentration in the effluent, the mean lake width, the mean water depth in the receiving lake and the turbulent diffusion coefficient for the receiving lake.

An EU Common Implementation Strategy document for the EQS Directive (2008/105/EC) entitled, "*Technical Background Document on Identification of Mixing Zone*" (December 2010) provides an example of a calculation for determining the appropriate length of mixing zones in lake water bodies. The extent of the mixing zone is proportional to the dimensions of the water body. Based on this approach the mixing zone for Upper Lough Corrib was determined to be 80 meters (m).

In the case of Inniscarra Reservoir the following values were used to populate the model: mean water depth 7.38 m, mean lake width 320 m, and prevailing current 0.0146 m/s (calculated by dividing the mean flow in the river draining the lake, the river Lee, by the mean lake cross sectional area). The outputs from the model are presented in Table 3, which shows the modelled pollutant concentration at 80 m.

[2] Fischer, HB, List, J, Koh, R, Imberger, J and Brooks, N, (1979) 'Mixing in inland and coastal waters', Academic Press Inc., Florida, USA.

Table 3: Outputs of assimilative capacity model for lakes.

Parameter	Proposed ELVs for discharge (to apply from 31/12/2017) (mg/l)	Contribution from discharge (mg/l)	Relevant standard (mg/l)
Total P	1.2	0.022 at 80 m	≤0.025 Note 1
Total Ammonia	6.5	0.12 at 80 m	≤0.14 Note 2

Note 1: Interim mean concentration standard for good status adopted by the Office of Environmental Assessment (OEA).

Note 2: 95%ile concentration standard for good status set by the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.

The purpose of the model is to show the impact of the discharge with respect to water quality standards. The sources which give rise to the background concentrations in the lake are outside the control of this licence and will be dealt with separately. The South Western River Basin Management Plan provides details of recommendations and planned measures to reduce pollution in the Lower Lee - Owenboy catchment.

The European Communities Environmental Objectives (Surface Water) Regulations, 2009, as amended, set environmental quality objectives for lakes for ammonia but not for phosphorus or Biochemical Oxygen Demand (BOD). BOD is not a physicochemical parameter used to measure lake quality. Total phosphorus is an important measure of lake trophic status and is included as part of the Agency's lakes monitoring programme. In the absence of statutory standards for total phosphorus, interim environmental quality standards of 0.010 mg/l and 0.025 mg/l for high/good and good/moderate boundaries have been adopted by Office of Environmental Assessment (OEA) and were applied here.

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 Urban Wastewater Treatment Regulations, 2001, as amended, apply.

For agglomerations under this threshold, appropriate treatment is required.

Article 7 of Directive 91/271/EC[1] requires that urban waste water entering collection systems shall, before discharge, be subject to appropriate treatment, as defined in Article 2(9), for discharges to freshwater and estuaries from agglomerations of less than 2,000 p.e.. The term 'appropriate treatment' is defined in the Directive as 'treatment of urban waste water by 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 Directive and of other Community Directives'.

It is considered that the treatment currently provided in this agglomeration (primary treatment) is not appropriate. Irish Water has proposals in place to upgrade the Coachford WWTP to ensure sufficient hydraulic and organic treatment capacity for the Coachford agglomeration. The upgrade will include a primary settlement tank and a Rotating Biological Contactor (RBC) plant (secondary treatment). Secondary treatment is considered appropriate treatment for the Coachford agglomeration.

The RL sets interim percentage reductions of 20% for BOD and 50% for suspended solids to apply from date of grant of licence. An ELV of 25 mg/l for BOD and 125 mg/l for Chemical Oxygen Demand (COD) shall apply from 31/12/2018.

The River Lee, which drains Inniscarra Reservoir, is a designated salmonid water body and *Margaritifera margaritifera* pearl mussel site. The National Parks and Wildlife Service (NPWS) were consulted with in relation to the status of the

Freshwater Pearl Mussel (*Margaritifera margaritifera*). It was concluded that 'good' status is required to protect the Pearl Mussel (i.e. good status water quality standards have been used in the mass balance calculations).

An ELV of 25 mg/l for suspended solids shall apply from 31/12/2018 in keeping with the protection required under the Water Framework Directive for salmonid waters designated on the Register of Protected Areas.

An emission limit value of 1.2 mg/l is recommended for total phosphorus and 6.5 mg/l for ammonia in the RL for the primary discharge point, to apply from 31/12/2018. The limits are set based on the assimilative capacity model and will contribute towards the receiving water achieving good ecological potential.

Applying these ELVs the model predicts no significant impact on water quality in Inniscarra Reservoir as a result of the discharge from Coachford WWTP following mixing. Total phosphorus is predicted to reduce to below the interim concentration standard for good status within 80 m of the primary discharge point and total ammonia is predicted to reduce to below the 95%ile standard for good status within 80 m.

The proposed upgrade of Coachford WWTP to include a primary settlement tank and RBC will be capable of achieving standards of 5–10 mg/l for total phosphorus, 5–10 for ammonia and 30–35 mg/l for suspended solids.

Based on this information, further improvement works will be required to achieve the proposed ELVs as recommended in *Schedule A: Discharges and Discharge Monitoring* and to increase the hydraulic and organic treatment capacity of the plant to ensure compliance with Condition 1.7.

3. Ambient Monitoring

Schedule B: Ambient 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: Ambient Monitoring* are sufficient to monitor for potential impacts on the status of the receiving water as a result of the discharge.

4. Combined Approach

The Waste Water 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 Waste Water Discharge (Authorisation) Regulations, 2007, as amended.

5. Programme of Improvements

The WWTP in Coachford provides primary treatment for wastewater from the Coachford agglomeration. 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.

Improvement works are required to increase the hydraulic and organic treatment capacity of the plant and achieve the proposed ELVs as recommended in the RL. The RL, as drafted, requires that these works be completed by 31/12/2018 in order to ensure compliance with the emission limit values as set out in *Schedule A: Discharges & Discharge Monitoring* and Condition 1.7 of the RL.

6. 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 4: Compliance with EU Directives/Regulations

Compliance with Directives/Regulations	Description and Conditions in RL
Urban Waste Water Treatment Directive [91/271/EEC]	Appropriate treatment to be provided.
Water Framework Directive [2000/60/EC]	Good ecological potential to be achieved by 2015.
EC Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009), as amended	Schedule A of RL sets ELVs to contribute towards achieving the environmental quality objectives.
Drinking Water Abstraction Regulations	Inniscarra drinking water abstraction point (RPA code: PA1_0500PUB3401) is ~9.6 km downstream. Condition 4 requires risk assessment for the protection of d/s abstraction points.
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 Coachford WWTP.

Birds Directive [2009/147/EC] & Habitats Directive [92/43/EEC]

The Coachford WWTP discharges into the Inniscarra Reservoir approximately 37.5 km upstream of the Great Island Channel SAC[3]. The Cork Harbour SPA is located approximately 32.5 km downstream of the primary discharge. The following table lists the European sites that were considered as part of the appropriate assessment screening:

	European Site (site code)	**Distance/ Direction from discharge(s)**	**Qualifying interests** (* denotes a priority habitat)	**Conservation objectives**
1	Great Island Channel SAC (001058)	The primary discharge discharges into Inniscarra Reservoir – approximately 37.5 u/s of Great Island Channel SAC.	**Habitats:** Mudflats and sandflats not covered by sea water at low tide Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	As per NPWS (2014) Conservation objectives for Great Island Channel SAC (001058). Generic Version 4.0. Department of Arts, Heritage and the Gaeltacht (dated 06/06/14).
2	Cork Harbour SPA (004030)	The primary discharge discharges into Inniscarra Reservoir – approximately 32.5 u/s of Cork Harbour SPA.	**Species:** Great Crested Grebe *Podiceps cristatus* Cormorant *Phalacrocorax carbo* Shelduck *Tadorna tadorna* Wigeon *Anas Penelope* Little Grebe *Tachybaptus ruficollis* Grey Heron *Ardea cinerea* Shoveler *Anas clypeata* Teal *Anas crecca* Pintail *Anas acuta* Red-breasted Merganser *Mergus serrator* Oystercatcher *Haematopus ostralegus* Golden Plover *Pluvialis apricaria* Grey Plover *Pluvialis squatarola* Lapwing *Vanellus vanellus*	As per NPWS (2014) Conservation objectives for Cork Harbour SPA [004030]. Generic Version 4.0. Department of Arts, Heritage and the Gaeltacht (dated 16/12/14).

[3] 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.

			Dunlin *Calidris alpina alpina* Black-tailed Godwit *Limosa limosa* Bar-tailed Godwit *Limosa lapponica* Curlew *Numenius arquata* Redshank *Tringa totanus* Black-headed Gull *Chroicocephalus ridibundus* Common Gull *Larus canus* Lesser Black-backed Gull *Larus fuscus* Common Tern *Sterna hirundo* **Habitats:** Wetlands	

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 any European Site. In this context, particular attention was paid to the European site(s) at the Great Island Channel SAC and the Cork Harbour SPA**.**

The Agency considered, for the reasons set out below, that the activity is not directly connected with or necessary to the management of any European site and that it can be excluded, on the basis of objective information, that the activity, individually or in combination with other plans or projects, will have a significant effect on any European site and accordingly determined that an Appropriate Assessment of the activity was not required.

This determination is based on the following:

1. The 2013 and 2014 physiochemical monitoring, approximately 11 km downstream of the primary discharge (RS19L030600), demonstrates that the results for ammonia, orthophosphate and BOD are within the environmental quality standards specified in the *European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended.*
2. In 2011, the ecological status of the River Lee at Leemount Bridge, RS19L030700 (approximately 20 km downstream of the primary discharge and 12.5 km upstream of the closest European site) was Q4.
3. The Cork Harbour SPA and the Great Island Channel SAC are located approximately 32.5 km and 37.5 km (respectively) downstream of the primary discharge.

7. Cross Office Liaison

Dr Deirdre Tierney and Ms. Rebecca Quinn, OEA were consulted as part of the assessment. In addition, advice and guidance issued by the Waste Water Technical Working Group (WWTWG) was followed in the assessment of this application. Advice and guidance issued by the WWTWG 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 WWTWG for use by licensing inspectors in the assessment of wastewater discharge licence applications.

8. Submissions

One (1 no.) submission was received in relation to this application. The issues raised in the submission are summarised below. However, the original submission should be referred to at all times for greater detail and expansion of particular points.

Submission 1: A submission was received from Mr Willie Dennehy on behalf of Aghabullogue Coachford Rylane Community Council. In his submission, Mr Dennehy raises local concerns regarding the environmental and health and safety risks posed by the discharge of the effluent from the waste water treatment plant.

Response: The RL, as drafted, recommends emission limit values for the discharge that will ensure the receiving water shall meet the relevant environmental quality standards. *Schedule A: Discharges & Discharge Monitoring* of the RL sets appropriate monitoring requirements for the effluent and *Schedule B: Ambient Monitoring* sets appropriate monitoring requirements for the receiving water, including microbiological monitoring. In addition, Condition 3.7 of the RL ensures that neither gross solids or litter associated with discharges from the waste water works shall result in an impairment of, or an interference with, amenities or the environment.

9. Charges

The RL sets an annual charge for the agglomeration at €5,978.10 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

10. 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

Michael Martin

Environmental Licensing Programme

Appendix 1: Map showing location of Coachford WWTP and associated primary discharge point.