OFFI
LICE
RESOURCE USE

INSPECTORS REPORT ON A LICENCE REVIEW

To:	Director, OCLR
From:	Orla Harrington - Licensing Unit
Date:	10TH JULY 2012
RE:	Review of a waste licence - Drumaboden Landfill, Kilmacrennan, Co Donegal. Licence Register No. W0063-02

Review Details	
Licensee:	Donegal County Council
Location of Installation:	Drumaboden Landfill Site, Drumaboden, Kilmacrennan, Co Donegal.
Type of facility:	Closed landfill.
Class of activity:	D 1. Deposit on, in or under land (including landfill). D 15. Storage pending any of the operations numbered D 1 to D 14 (excluding temporary storage (being preliminary storage according to the definition of 'collection' in section 5(1)), pending collection, on the site where the waste is produced).
Category of Activity under IPPC Directive (2008/1/EC):	5.4
Section 87(1)b notice sent:	30th June 2011
Review form received:	12th September 2011
Submissions received:	(one) 3rd October 2011

1.0 Reason for Licence Review

On the 30th June 2011, the Environmental Protection Agency initiated a review of the waste licence held by Donegal County Council for the facility located at Drumaboden Landfill Site, Drumaboden, Kilmacrennan, Co. Donegal, waste licence register number W0063-01. The review was initiated by writing to the licensee and placing a newspaper notice in the Irish Independent.

The reasons for initiating the review are in light of the requirements under the following regulations:

(1) The European Communities Environmental Objectives (Surface Waters) Regulations 2009;
(2) The European Communities Environmental Objectives (Ground Water) Regulations 2010;
(3) The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009.

Donegal County Council (Donegal Co. Co) has operated Drumaboden Landfill since 1980 and ceased operational activity in April 1999. The total capacity of Drumaboden Landfill is 128,000 tonnes and this amount of municipal waste has already been landfilled. On the 29th June 2001, the EPA granted Donegal Co. Co a waste licence (W0063-01) for the closure, capping and restoration of the landfill facility, in accordance with the third schedule of the Waste Management Act, 1996. Donegal Co. Co was then only allowed to accept inert waste for the purpose of restoration and aftercare of the site, which was limited to 40,000 tonnes. The facility was fully restored during 2007-2008 and there has been no waste accepted at the facility since 2007. However, under the existing licence, the closed landfill is subject to on-going monitoring. Appendix 1 illustrates the location of the facility.

2.0 Emissions to Surface Waters

Drumaboden Landfill is an unlined landfill, which historically operated on the 'dilute and disperse' principle, whereby leachate generated by rainfall infiltration and the decomposition of the landfill waste is allowed to disperse into the surrounding environment. The landfill is situated on a blanket bog and is bound to the north by the River Leannan. The facility is located approximately 10km north of Letterkenny town, in a rural area surrounded by a mixture of pasture and peatland. The nearest resident is located 130 metres away from the facility.

The collection and treatment of leachate is carried out on site. Leachate from the landfill is captured in a toe drain around the perimeter of the site and pumped into a Bord na Mona Puraflo treatment system. This involves filtration of the leachate through a 2m thick peat bed, which is housed in a 25m by 16m lined lagoon providing a surface area of 400m^2. Following treatment the effluent is discharged into a pipeline and effluent quality is sampled at location L-1; effluent is then discharged into the River Leannan via emission point S5.

Priority substances are not limited in the existing licence.

Surface water is monitored at locations SW1, SW2, SW4, SW5 and SW6. SW1 is located upstream of the landfill, with SW2, SW4, SW5 and SW6 downstream.

2.1. Receiving waters and impact

The River Leannan rises in North Donegal and travels for 14km before it flows in and out at the south end of Lough Fern. The River Leannan eventually reaches the sea at the Swilly Estuary. The following table summarises the main considerations in relation to the River Leannan downstream of the treated leachate discharge.

Table 1.0 Receiving waters

Characteristic	Information	Comment
Receiving water name and code	River Leannan	The River Leannan flows in (IE_NW_39_2205) and out (IE_NW_39_1591) of Lough Fern (IE_NW_39_13).
EPA monitoring stations	39L010500 No monitoring station upstream of Lough Fern and downstream of the facility 39L010600	60 meters upstream of the facility. The River Leannan flows for 1.5km after the landfill before it reaches Lough Fern On the River Leannan (IE_NW_39_1591) and 2km downstream of Lough Fern
Biological quality rating (Q value)	Q4 (2010) 39L010500 Q4 (2010) 39L010600	Upstream of the facility On the River Leannan downstream of Lough Fern
WFD Status	Poor (2011)	Objective is to restore by 2021 [Note 1].
WFD Risk	1a, at risk	
WFD Protected Areas	Leannan River SAC Site code: 002176 Lough Fern SPA Site code: 004060 Salmonid River River Leannan containing *Margaritifera margaritifera*	Direct discharge into SAC Direct discharge into SPA Direct discharge into Salmonid River. The facility is within the Leannan Catchment [Note 2]
WMU Action plan	Leannan/Clady/Owencarrow/Glaskeelan water management unit action plan.	The landfill has not been identified as a pressure to the River Leannan.
Sub-basin management plan for the freshwater pearl mussel	Freshwater Pearl Mussel Leannan Sub Basin Management Plan.	Reviewing and issuing of discharge licences shall be prioritised for pearl mussel catchments.

Note 1: North West River Basin Management Plan www.wfdireland.ie/maps.html
Note 2: The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009, S.I. No. 296 of 2009.

The River Leannan is required to support the freshwater pearl mussel; both under the *European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations S.I No. 296 of 2009 (Pearl Mussel Regulations 2009)* and the Freshwater Pearl Mussel Leannan Sub Basin Management plan. The proposed emission limit values (ELVs) are based on the high status standards as laid down in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009 (*Surface Waters Regulations 2009).*

The facility is identified as being a risk but not a point pressure in the Leannan/Clady/Owencarrow/Glaskeelan Water Management Unit Action Plan under the Water Framework Directive (WFD). Monitoring undertaken by the Agency indicates that the River Leannan has Q4 status upstream of the facility and no Q- value downstream before it reaches Lough Fern; however there is a Q4 status on the River Leannan once it flows out of Lough Fern. This lake has poor status. Following consultation with the Office of Environmental Assessment (OEA), the Milford Waste Water Treatment Plant (WWTP) (D0342-01) discharges into the Maggy's Burn River which flows into the north of the lake and this seems to be the main cause for concern regarding the poor status of the lake.
The Milford WWTP was licenced by the Agency in November 2011. It is also interesting to note that OEA have sampled both upstream and downstream of the landfill in recent years and no significant issues were noted.

Although the Q-value is 4, the River Leannan has a water quality status rating of poor. Station 39L010300 is located 6.5km upstream of the facility and is classified as poor; therefore the WFD principle of 'one out all out' applies. OEA have indicated that it's likely that the River Leannan will be upgraded from poor to moderate shortly. It should be noted that in July 2010, the overall ecological condition of the river remained satisfactory. Only two stations of the five surveyed (0250 and 0300, both of which are upstream of the facility) showed signs of unsatisfactory conditions with increased silt, algal growth and lack of pollution sensitive macroinvertebrates (EPA publication 'Water Framework Status Update 2007-2009').

The licensee's assessment of the impact of the discharge used 0.654m^3/sec 95%ile flow. The licensee in the application did not indicate where this figure came from. The licensee has also proposed an increase in the ELV from 30mg/l to 35mg/l for suspended solids (SS) in their assessment of impact on the River Leannan. An increase in ELVs is not considered in this review and historical monitoring results during 2010 and 2011, for SS indicate that the facility can meet the current limit.

The calculations in Table 2 are based on the maximum flow rates from L-1 which is 48m^3/day (0.0005m^3/sec) and 95%ile flow[1] in the River Leannan (0.258m^3/s). The dilution factor is 517 for the River Leannan under 95%ile flow conditions. There is no chemical dataset available at the EPA monitoring stations on the River Leannan upstream of the facility. The adjusted background values used in the following table are in accordance with the criteria set out in the *Guidance, Procedures and Training on the Licensing of Discharges to Waters and to Sewer for Local Authorities* issued by the Water Services Training Group. Ambient monitoring submitted as part of the review exceeded the requirements of the *Surface Waters Regulations 2009* upstream of L-1 for BOD and there was no background monitoring data submitted for Ortho P or Total P.

[1] 95%ile flow determined using the EPAs Hydrometric Data System; confirmed by the Office of Environmental Assessment (OEA).

Table 2: Mass Balance

Parameter	**Background Concentration (mg/l)** [Note 1]	*Current* **ELVs (mg/l)**	*Proposed* **ELVs (mg/l)**	**Contribution from the discharge (mg/l)**	**Predicted downstream concentration (mg/l)** [Note 2]	**95%ile standard (mg/l) (high)** [Note 3]
BOD	1.2	20	20	0.03	1.23	≤2.2
Ortho P	0.02	2 (TP)	2	0.03	0.023	≤0.045
Total Ammonia - N	0.03	25	25	0.048	0.078	≤0.090

Note 1: For high status waters the 'adjusted background conc.' is taken as high status EQS less 50% of the difference between Good status and High status EQS (mean standard).
Note 2: Based on proposed ELVs
Note 3: European Communities Environmental Objectives (Surface Waters) Regulations 2009.

Table 2 demonstrates that the discharge based on existing ELVs from the facility is not significant and that a reduction is not required. The Ortho P limit will replace the total phosphorus limit currently specified in the existing licence.

Monitoring results reported in the Annual Environmental Report (AER) 2011 for ammonia in the treated leachate (L-1) show a minimum concentration of 36.7mg/l and a maximum of 47mg/l over the 2011 monitoring period, which exceeds significantly the current ELV of 25mg/l. Monitoring results submitted in the review for ammonia also show elevated results, with a reading of 37mg/l in February 2011 at L-1. This highlights that the performance of the leachate treatment system at the facility is not satisfactory.

A reduction in the concentration of ammonia being discharged needs to be achieved in order to comply with the requirements of *Schedule B: Emission Limits* in the RD. The existing licence (W0063-01) requires that in the case of an exceedence of the treated leachate limits to surface water as outlined in *Schedule B* of this licence, discharge of this leachate will cease and arrangements will be made to tanker the leachate off site. This condition will be carried forward as a requirement in the RD and takes immediate effect.

Downstream surface water monitoring results submitted with the review do not indicate any significant impact on the waterbody, with ammonia (as a potential indicator of leachate contamination) results below the 95%ile standard for high status.

Control of Specific pollutants and Priority substances

The facility is a closed, fully restored unlined landfill and therefore specific pollutants and priority substances are characteristic of the treated leachate emissions to surface water. Neither specific pollutants nor priority substances are limited in the existing licence. However, the licence did require the monitoring of leachate, surface water and ground water for specific pollutants/priority substances (Schedule D5) which are typically characteristic of leachate.

The Office of Environmental Enforcement (OEE) granted approval to dispense with parameters tested for on an annual basis as listed in *Schedule D5: Surface Water, Groundwater and Leachate Monitoring Parameters* of the current licence on leachate, groundwater and surface water in 2009. The justification being that the landfill is fully restored and had demonstrated very low levels of emissions.

However, the last set of results were included in the 2009 AER for leachate and the limit of detection of the monitoring data submitted exceeded the environmental quality standard (EQS) in the *Surface Waters Regulations 2009.* Therefore the existing monitoring data is insufficient in quality to determine whether the emission can achieve the environmental quality standards specified in the regulations for these substances. The RD reinstates the monitoring requirements under the current licence (W0068-01) for L-1. Monitoring requirements will also be reinstated for surface water at location SW4 downstream of the landfill for similar reasoning. The RD requires the licensee to monitor for priority substances/ priority hazardous substances/specific pollutants within three months from date of grant of licence. Where elevated substances relative to the *Surface Waters Regulations* are identified, this monitoring will be carried out on an annual basis unless a case for less frequent monitoring can be demonstrated by the licensee.

The *Surface Waters Regulations 2009* specify water quality standards (WQS) for a range of metals. It should be noted that priority substances could be present in varying degrees in the discharge as a result of the landfill practice. Although the leachate is subjected to treatment it is likely that the total elimination of these substances in not possible. The Regulations require the drawing up, by June 2012, of pollution reduction plans by coordinating local authorities (in consultation with the EPA) to reduce pollution by priority substances and to cease and/or phase out discharges, emissions or losses of priority hazardous substances. The relevant pollution reduction plan has not yet been completed. In the absence of the pollution reduction plan, the RD requires the licensee to review the plan when it is established; implement appropriate measures or controls and report them in the AER.

2.2 Specific Standards or Objectives for Protected Areas

In considering the application regard was had to the requirements of standards or objectives laid down for protected areas specifically the following:

<u>The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009</u>

The River Leannan is required to support the freshwater pearl mussel (*Margaritifera margaritifera*) and therefore must achieve the ecological quality objectives as set out in the *Pearl Mussel Regulations 2009.* The ELVs specified in the RD are determined with the aim of achieving high status standards specified in the *Surface Waters Regulations 2009.*

The Freshwater Pearl mussel population is at unfavourable conservation status in the Leannan catchment. It is currently ranked as 16th out of the 27 Freshwater Pearl Mussel SAC populations in the country on the basis of population status, habitat condition and current pressures. The catchment fails all of the five Environmental Quality Objectives (EQOs) as specified in Schedule 4 of the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations, S.I. 296 of 2009 The Leannan catchment lies in North West Donegal in the North Western International River Basin Management District (NWIRBMD) and is one of the largest pearl mussel catchments in Ireland at 237.64km^2.

Survey work was conducted by Moorkens and Killeen in 2009 to assess the presence, density and condition of the freshwater pearl mussel in the River Leannan. This assessment concentrated more upstream of the Drumaboden Landfill, however it was reported that it is likely that much of the former population of mussels in the more downstream stretches towards Lough Fern (1.5km downstream of the facility) have been lost through general intensification of the catchment. The population, although in unfavourable condition, is recoverable due to reasonable adult numbers being present and their location in the upper

section of the river is below a large lake. The Leannan River is one of the few SAC (and non-SAC) rivers where the majority of the mussel population is at the top of the river.

This means that the Leannan population has good potential for recovery, as there is less area of catchment needed to be controlled in managing its recovery.

The RD requires the licensee to review the finalised version of the Freshwater Pearl Mussel Leannan Sub Basin Management Plan for the Leannan Catchment on an annual basis, implement applicable measures and submit a measures report as part of the AER.

It is considered that the RD as drafted will provide a high level of protection to the River Leannan. *Schedule B and C* of the RD sets ELVs and monitoring requirements for the discharge. These limits specified in the RD are determined with the aim of achieving high status by 2021.

Habitats and Species of European Sites directly dependant on water

The River Leannan is part of the Leannan River Special Area of Conservation (SAC 002176) and Lough Fern Special Protection Area (SPA 004060). The facility discharges directly into this SAC and SPA. The objectives for the SAC are to maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the SAC has been selected.
As previously highlighted, this review is for the purposes of assessing existing discharges in the context of new environmental quality standards and objectives and does not consider any further increase in the ELVs for emissions to waters. The Agency has examined the scope of the European Communities (Birds and Natural Habitats) Regulations 2011 and within the limited scope of this review; the Agency is satisfied that the discharge will not likely have a significant effect on the Leannan River SAC. With respect to water quality, the ELVs in the RD aim to achieve high status in the Leannan River SAC, and hence, will contribute to the favourable conservation objectives for the area.

EC Freshwater Fish Directive [2006/44/EC]

The River Leannan is designated salmonid water both upstream and downstream of the discharges. Discharges permitted under the RD will not cause any breach of salmonid standards in the receiving water.

2.3 Emission controls and environmental quality standards

The ELV's specified in the RD have been established according to the combined approach whereby the stricter of the requirements which would result from the application of limits which aim to achieve the quality standards and the application of limits based on BAT.

The ELVs specified in the RD aim to achieve the environmental objectives and standards established in the European Communities Environmental Objectives (Surface Waters) Regulations 2009 / The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009.

3.0 Emissions to Groundwater

The unlined landfill is considered to represent a point source of pollutant input into groundwater. The licensee currently carries out an extensive groundwater monitoring programme which is detailed in their AER.

Groundwater is monitored at locations GW1 and GW5 upstream of the landfill and GW6 and GW7 are representative of downstream conditions. Wells labelled GW2, GW3 and GW4 are located within the waste body.

Groundwater monitoring results indicate that the landfill has had an impact on the local groundwater. The RD includes a requirement to carry out a risk screening and where necessary a technical assessment in accordance with the EPA *Guidance on the Authorisation of Discharges to Groundwater* as a means to demonstrate compliance with the requirements of the European Communities Environmental Objectives (Groundwater) Regulations 2010. Any actions arising are to be agreed by the Agency and implemented before 22nd December 2015.This requirement is to assess the existing plume of pollution in the groundwater body beneath the landfill.

Elevated Ammonia and Ortho P were noted in the AER 2011 for GW1 and GW7.

The limit of detection for cyanide in GW6 and GW7 (down gradient of the waste body) monitored is above the EQS specified in the *Groundwater Regulations 2010.* The RD reinstates all monitoring requirements under the current licence (W0068-01) for GW6 and GW7. The RD requires the licensee to monitor for priority substances/ priority hazardous substances within three months from date of grant of licence. Where elevated substances are identified, this monitoring will be carried out on an annual basis unless a case for less frequent monitoring can be demonstrated by the licensee.

The requirements specified in the RD aim to achieve the environmental objectives and standards set out in the European Communities Environmental Objectives (Ground Water) Regulations 2010.

4.0 Updating the existing licence

The RD has transposed all relevant existing licence conditions from W0068-01 into the Agency's current licence format. Consequently the RD specifies amendments and additional requirements.

Table 3 summarises the amendments made to the existing licence as a result of changes to the following;

- Adjustments approved by the OEE
- Once off assessments and reports being closed out
- Landfill Directive
- The European Communities Environmental Objectives (Surface Waters) Regulations 2009
- Environmental Objectives (Groundwater) Regulations 2010

The licensee is currently operating under Class 1 and Class 13 under licensed waste disposal activities, in accordance with the Third Schedule of the Waste Management Act 1996. This has been updated to include amendments to the Waste Management Acts 1996 to 2011 by the European Communities (Waste Directive) Regulations 2011.

Table 3: List of new or amended conditions proposed in the RD

Condition or Schedule No.	Reason for change	Description
Condition 1.3, 1.7	Better management and control of site/ statutory requirement	Scope of the licence
Condition 2.1.1, 2.2, 2.2.2.7, 2.2.2.8, 2.2.2.9	Better management and control of site	Management of the facility/Environmental management system/ communications,

		maintenance and efficient process control.
Condition 3.2.2, 3.3, 3.5, 3.6, 3.7, 3.8,	Better management and control of site	Better infrastructure/operation of the facility.
Condition 3.9, 3.10,3.15,3.16	Groundwater infrastructure/ leachate management	Groundwater protection/ leachate infrastructure shall be updated as appropriate/guidance on landfills
Condition 3.17	Better management and control of site	Surface water management/prevention of contamination.
Condition 4.1, 4.3,4.4	Better management and control of site	Interpretation/discrete sampling/noise/ dust & particulate matter.
Condition 5.4	Better management and control of site	Emissions to surface water
Condition 6.1, 6.2	Better management and control of site	Control and monitoring
Condition 6.8, 6.11, 6.15	Pearl Mussel Regs/ Ground water Regs/surface water regs	Groundwater assessment/ pearl mussel sub basin management plan/pollution reduction plan.
Condition 6.10, 6.9	Better management and control of site	PRTR/Data management
Condition 7	Better management and control of site	Resource use and energy efficiency.
Condition 8.1, 8.2	Updating the licence	No waste will be recovered or accepted at this facility
Condition 9.1, 9.2, 9.4.2	Updating the licence	Accident prevention/ emergency response
Condition 10.1, 10.2, 10.3, 10.4	Statutory requirement	Closure, restoration, and aftercare management plan (CRAMP)
Condition 11.1, 11.6, 11.7	Better management and control of site	Reporting
Condition 12.2		Environmental liabilities
Schedule A	Update the licence	limitations
Schedule C.5.2	Ground water Regs/surface water regs	analysis

5.0 Cross Office Liaison

John Gibbons of the OEE, offered advice and guidance in terms of current compliance, historical issues and timeframes relating to the facility. OEE is satisfied that the following conditions from the current licence (W0063-01) can be amended or removed to update the RD; Condition 1.3 and 1.4 (scope), Condition 4.8, 4.10.2, 4.10.3, 4.11 (site infrastructure), Condition 5.1, 5.2 and 5.3 (waste management), Condition 6.4 (environmental nuisances),

Condition 7.7 (toxicity), Condition 8.1, 8.3 (restoration and aftercare), Condition 9.2, 9.3, 9.9, 9.10 (environmental monitoring), Condition 10.1 (contingency). Considering this is a closed, fully restored landfill no changes are proposed in the RD in relation to noise.

Submissions

One submission was received and dealt with below:

Mr Paul McMahon, Development Applications Unit, Department of Arts, Heritage and the Gaeltacht;

The Department is of the view that this development could significantly damage/destroy the habitat of Freshwater Pearl Mussel (Margaritifera margaritifera), Atlantic salmon (Salmo solar) and Otter (Lutra lutra), all of which are species listed in Annex II of the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora). The potential impacts could be caused by the deterioration of the water quality in the Leannan River resulting from pollution from the discharge of the treated leachate from the landfill site. The Department have noted the current ELVs and assimilative capacity calculations; however they feel that these limits have not been assessed in relation to the potential impacts to species listed above. There has been no assessment of the potential ecological implications arising from this licence and that further information should include an appropriate assessment, which should include measures that will avoid, reduce and mitigate for any such impacts.

Response

This review was initiated by the Agency to bring the licence into compliance with the European Communities Environmental Objectives (Surface Waters) Regulations 2009 and European Communities Environmental Objectives (Groundwater) Regulations 2010. The review relates principally to the discharges to water and groundwater.

As previously stated, the facility discharges directly into the Leannan River Special Area of Conservation (SAC 002176) and the Lough Fern Special Protected Area (SPA 004060). There are no environmental objectives or standards specified for the SAC or SPA. The RD does not propose any increase in ELVs. As required by the *Surface Waters Regulations 2009,* the ELV's aim to achieve high status in the receiving water body and consequently, will contribute to the achievement of a favourable conservation status in the SAC and SPA.

As part of the River Basin District Management Plan, an Appropriate Assessment (AA) was carried out to ascertain any impacts on Protected Areas in the River Basin District, and a Natura Impact Statement (NIS) was prepared. The pollution reduction plan will deal with the findings of the AA and the licensee has to have regard to that as part of this reviewed licence.

Within the limited scope of this review, the Agency is satisfied that the discharge is not likely to have a significant effect on the SAC or SPA and therefore the requirements regarding Appropriate Assessment set out in Part *5* of the European Communities (Birds and Natural Habitats) Regulations 2011 do not apply.

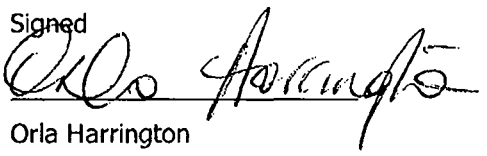
Charges

The charge specified in the RD is €4,559.43 the same as the invoice for 2012.

Recommendation

I recommend that a Proposed Determination be issued subject to the conditions and for the reasons as drafted in the RD.

Signed



Orla Harrington

Procedural Note

In the event that no objections are received to the Proposed Determination of the application, a licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Acts 1992 and 2011 as soon as may be after the expiration of the appropriate period