

**Mayo County Council  
Comhairle Chontae Mhaigh Eo**



**Annual Environmental Report for Derrinnumera Landfill**

**Waste Licence W0021-01**

**2009**

**Submitted March 2010**

## **Annual Environmental Report Derrinnumera Landfill**

- **Reporting Period**

This report is the tenth Annual Environmental Report (AER) for the facility. It covers the period from January to December 2009.

- **Details of Activity**

This year the principle activity at the facility was the operation of the civic amenity centre. There was no waste disposed of to the landfill during this year. Other activities include the collection of leachate at the leachate collection point, which is situated at the northern end of the site from where it is pumped to three leachate holding tanks. The leachate is removed from the facility by tanker to Castlebar Waste Water Treatment Plant. Derrinnumera Civic Amenity Centre opened in July 2001 for the recycling and reclamation of materials by members of the public. The numbers of people using the Civic Amenity averaged 5,139 per month in 2009 giving a total of 61,676 users for the year.

A landfill gas management system, which incorporates flaring, is active 24 hours a day at the facility.

- **Quantity and Composition of Waste Received during the Year**

During 2009, 0 tonnes of waste were accepted at Derrinnumera Landfill. The waste totals are set out in Appendix A.

The civic amenity centre at Derrinnumera Landfill was opened in July 2001. A list of the 1,607 tonnes of materials collected and recycled during 2009 is outlined in Appendix B.

Waste characterisation surveys were not conducted this year as the landfill was closed. These surveys will take place in 2010 once the landfill is re-opened.

- **Total Accumulated Quantities of Waste Deposited**

By the end of 2007 it was estimated that the total quantity of waste deposited at Derrinnumera Landfill was 398,257.19 tonnes. Including waste deposited during 2008 this figure now stands at 413,972.59 tonnes.

- **Calculated Remaining Capacity of the Site**

P.J. Tobin & Co. Ltd. carried out computer generated profiling to calculate the remaining void space of the landfill in March 2008. The estimated material volumes for cell construction and final capping were extracted from the overall figures to determine final estimated waste void space.

The total void space in New Cell 2 was approximately 145,336m<sup>3</sup>. There was a remaining void space of 62,304 m<sup>3</sup> at 1/1/09 and as no waste was deposited this is the approximate void space at 31/12/09.

- **Year in which the Final Capacity is expected to be Reached**

Once waste deposition re-commences in January 2010 it is estimated that capacity will be reached in 18 - 24 months, by the middle to end of 2011. This assessment is based on the remaining capacity of the site and the volume of waste acceptable under Waste Licence W0021-02 (i.e. 40,000 tonnes).

- **Area Occupied by the Waste**

The area occupied by the waste at the time of compiling this report is estimated at 14,066m<sup>2</sup> for the lined and fully capped Cell No.1. The surface area of new Cell No.2 is 20,140m<sup>2</sup>, of which approx 15,000 m<sup>2</sup> is currently covered with waste. The entire area of Cell 2 is treated as leachate generating. The area contained within the confines of the cut-off wall, which includes Cell 1 and Cell 2 is 92,314.8m<sup>2</sup>.

- **Methods of Deposition of Waste**

When in operation the procedure is as follows, the waste hauliers tipped waste in close proximity to the working face and from there it is positioned and compacted by the excavator and compactor. Members of the public do not generally deposit their waste in the main tipping area, a compactor unit and a number of open skips are provided within the Civic Amenity Area for the disposal of household rubbish. The compactor unit and skips are emptied as necessary. During 2009 all domestic waste accepted at the CA site was removed to Rathreeen landfill site near Ballina for disposal.

- **Summary of Results and Interpretations of Environmental Monitoring**

- (a) **Landfill Gas Monitoring**

GW2 is located within 1m of Cell 1. Levels of methane and carbon dioxide have fluctuated slightly throughout the year; however the gas levels in this borehole are generally high due to its location in the old waste body.

Gas wells GW6, GW8, GW9, GW13 and GW15 are located within 50m of the waste body, outside the cut-off wall. Over the reporting period, gas levels in GW9, GW13 and GW15 followed normal trends for these wells. Little or no gas was detected in GW9. GW15 is closely linked to the actions of the flare, if the flare is running there is little or no gas present in this well however if the flare is not in operation GW15 shows a marked increase in both methane and carbon dioxide.

GW6 exceeded the trigger level for carbon dioxide at 1.5%v/v throughout most of the year. An investigation into the cause of this increase revealed no obvious source. This borehole will continue to be monitored and investigated in 2010 however it is likely that the low levels of carbon dioxide gas are as a result of emissions from the blanket peat as there is no corresponding level of methane being recorded.

GW8 showed a steady increase in CH<sub>4</sub> levels and carbon dioxide above the threshold during the year. This has been investigated on numerous occasions with no obvious source of gas detected. This investigation will continue in 2010 in order to resolve this issue. This well is close to the old waste body and is over 50m from the main building.

GW14, GW16 and GW17 were constructed at the end of 2001. GW16 showed mainly normal levels of oxygen throughout the year and no methane or carbon dioxide. GW14 and GW17 showed slight fluctuations in carbon dioxide throughout the year. However as there is no corresponding methane it is unlikely that the source of this gas is biodegrading waste.

The results of gas monitoring for each well is set out in Appendix C.

**(b) Dust Monitoring**

Annual dust monitoring was carried out in July/August 2009. The total dust levels in dust gauges D1, D2, D3 and D4 were below the dust limit set out in Waste Licence W0021-01 of 350mg/m<sup>2</sup>/day.

**(c) Noise Monitoring**

Annual noise monitoring for 2009 at Derrinnumera was carried out on September 17th. Sampling locations N1, N2, N5 and N6 were monitored during the daytime and night-time. The Noise report for Derrinnumera was prepared and submitted to the agency.

**(d) Groundwater/Surface Water**

With regard to groundwater emissions some contamination was detected. Upgradient wells MW-1A, MW-5 showed little or no contamination. MW2S, MW2D, MW4S, MW4D, MW8D, MW9, MW3 and MW7 showed little or no contamination. Monitoring wells MW8S, MW17-MW19 located both inside and outside the cut-off wall show evidence of leachate contamination. MW20-MW23 and MW28 showed medium to gross contamination by leachate. The Wellpoint system installed in 2005 and in operation 24 hours per day 7 days per week is slowly reducing the contamination levels in these wells, this system will continue to operate during 2010.

Surface water quality showed little or no contamination throughout the year. SW-1 and SW-6 are background wells showed little or no contamination. SW-2 SW-3, SW4 and SW5 showed little or no contamination.

The results for both groundwater and surface water sampling from the most relevant wells/ locations is set out in Appendix D.

**(e) Biological Monitoring**

Biological monitoring is carried out by the EPA on the Glaishty river each year. The results of the 2009 monitoring have not yet been made available.

**(f) Leachate Monitoring**

Analysis of leachate during the reporting period showed high levels of ammonia, BOD, COD, chloride, conductivity, suspended solids, total phosphorous and ortho-phosphate. High sodium: potassium ratios were also found which is typical of leachate.

The amount of leachate transported off-site during the reporting period was 99,879m<sup>3</sup>. Leachate is transported off-site to Castlebar Waste Water Treatment Plant by means of road tankers. A month by month summary of the loads received by Castlebar Waste Water Treatment Plant is contained in Appendix E.

- **Resource Consumption Summary**

**Diesel**

An estimate of diesel consumed during the reporting period is 32,881 litres. This total consisted 2,070 litres of white diesel used for the site jeep. The excavator used approx 21,600 litres and the remainder 9,211 litres was used for the tractors, skidsteer and the diesel pumps. Approximately 20 litres of petrol was also consumed, for a running a generator, lawnmower, strimmer and a con saw.

**Electricity**

The number of units of electricity used on-site during 2009 was approx 216,638 units. The supplier of Electricity to the site is Airtricity who provide green energy from renewable resources.

**Water**

During 2009 it is estimated that the total volume of water consumed was 1,016m<sup>3</sup>. Of this total 840 m<sup>3</sup> was used for dust control, 176 m<sup>3</sup> for control building and wheelwash unit. Due to heavy rainfall during the year no clean water had to be imported in 2009.

- **Report on development works undertaken during the reporting period**

The following works have been completed during the reporting period:

Leachate recirculation pipework has been installed and is in operation on Cell 1. Ten gas wells were installed into the temporary capping on Cell 2 and connected to the flare. A pilot area of approx 5,000m<sup>2</sup> was covered to divert rainwater away from the leachate collection zone. Drainage from the CA site area was diverted through a petrol interceptor to reduce leachate generation.

- **Proposed development works to be undertaken during the coming year**

A considerable amount of the required site development works to ensure the landfill can be run in accordance with the requirements of the waste licence, have been completed. Due to a reduced amount of finance available in 2010, a final list of development works to be carried out is not currently available.

- **Progress on Restoration of completed Cells/Phases**

Derrinnumera Landfill has been developed as a piggy-back facility where the two new engineered and lined cells are placed on top of the two old unlined cells. Waste deposition into the lined and fully engineered Cell 1 is complete and final capping is completed. Waste deposition will be taking place in the lined and fully engineered Cell No.2 in 2010 until it reaches capacity.

- **Site Survey showing existing levels.**

There was no site survey undertaken in 2009 as the landfill was closed, it is intended that a full survey take place in mid 2010 and the resulting map issued to the agency.

- **Estimated Annual and Cumulative Quantity of Landfill Gas/Methane Emitted from the site.**

No records of waste deposition exist for Derrinnumera until January 2000, and with that from January until September 2000 only a record of the type of vehicle entering the site was kept. Therefore no accurate records exist with regard to the tonnage of waste accepted up to September 2000. Previous years estimates of the annual cumulative quantity of gas produced estimated the volumes of waste that may have placed previous to the installation of a weighbridge. It is estimated that from 1974 to 2009, 413,972 tonnes of waste was deposited at Derrinnumera.

Generally when in operation the flow rate per hour as recorded on the flaring unit averages 150m<sup>3</sup>/hr. The flaring unit automatically shuts down when the flow rate falls below 25m<sup>3</sup>/hr in order to ensure that emissions remain below the limits set under W0021-01.

Consultants were employed for the task of calculating the amount of landfill gas and methane generated on-site using a model. The computerised gas model GASSIM was used to determine emissions as specified by the agency. A full report on this model including the emissions from this site was submitted to the agency in 2008. The predicted total amount of LFG emissions for 2009 is 1,064.69 tonnes of methane and 3,100.137 tonnes of Carbon dioxide. (These figures do not take account of LFG burned via the flare system)

- **Monthly Water Balance Calculation and Interpretation**

Most of the rainwater falling onto the waste body permeates through to the base of the cells, the majority of which drains to the leachate collection point from where it is pumped to three leachate holding tanks. The waste absorbs some of this rainwater. The amount, which is absorbed, is, for the purpose of determining the monthly water balance, termed the Available Absorptive Capacity “C” and the theoretical formula for this is

$$C = (H \times 0.1) + (T \times 0.05) - RA \text{ where}$$

H = the mass in tonnes of household and commercial waste placed in the cell during the month.

T = the mass of inert waste placed in the cell for the month.

R = the effective rainfall for the month – actual rainfall minus evapotranspiration.

A = the uncovered area of the cells into which the rain is falling.

For the leachate generation calculation it is the area inside the cut-off wall, which is used as the surface area generating leachate. The area within the cut-off wall is 92,314.8m<sup>2</sup>. The old Cell No.1 lies beneath the fully capped and engineered Cell 1, and therefore can be regarded as being completely covered.

With regard to the composition of waste received at Derrinnumera it is not possible to calculate the amount of household waste and inert waste accepted. Therefore all waste must be regarded as household waste for this calculation.

A meteorological station was set up on-site at end of September 2001. The actual rainfall recorded during 2009 was 1,439.2mm. Evaporation was calculated as 0.25.

The water balance sheet for Cell No1 is attached in Appendix G.

The amount of leachate generated on-site is estimated by calculation at 83,452.73m<sup>3</sup> (Appendix F) and that which was transported off site was 99,879m<sup>3</sup> (Appendix E), the difference being 16,426.27m<sup>3</sup>. The difference in volume of leachate removed from the facility and that generated is that a number of wastewater sources are not included in the leachate generation calculation. These include the leachate added by the Wellpoint system, the wheelwash system, and the site sewer. There is also a difference in the amount of leachate stored on-site at the start and end of each year.

- **Meteorological Report**

The total rainfall recorded at the onsite meteorological station from January 2009 to December 2009 was 1,439.2 mm, which is above average for the area.

Temperatures ranged between -6.4 and 27.3 degrees celcius.

Atmospheric pressure ranging between 960.2 mbar and 1028.1 mbar. As weather data is recorded on an daily/hourly basis it has not been included in an appendix, but can be made available if requested.

A summary of the monthly rainfalls for the site are set out in Appendix H.

- **Schedule of Environmental Objectives and Targets for the forthcoming year**

The Schedule of Environmental Objectives and Targets will be limited in 2010 due to reduced funding. The areas which will be prioritized are as follows:

1. Reduce leachate generation by extending the embankment cover.
2. Optimise gas collection including installing horizontal wells in cell 2.
3. Prevent odours through effective gas collection and waste covering techniques.
4. Provide a green waste collection service at the CA site.

- **Report on the progress towards achievement of the Environmental Objectives and Targets.**

The objectives set for 2009 were achieved by year end, including diverting surface water from the CA site, installing gas wells on Cell 2, installing leachate recirculation on Cell1 and reducing leachate in a pilot embankment cover project. New objectives are being set for 2010 to meet the conditions of the reviewed licence, with odour management, leachate reduction and gas collection the main target areas.

- **Written Summary of any procedures developed by the licensee in the year which relates to the operation of the facility**

There were no major changes to the Environmental Management System (EMS) during 2009, it will be reviewed during 2010 and submitted for agreement with the Agency. The EMS sets out all procedures drawn up in relation to operations at the facility.

- **Reported Incidents Summary**

There were 26 category 3 incidents reported during 2009, the majority of these (22) related to the results of the monthly groundwater sampling showing evidence of historical leachate contamination and the monthly gas monitoring showing breaches of the threshold limits for CO<sub>2</sub> in the monitoring boreholes.

There were 2 incidents involving the level of leachate in Cell 2 being in breach of the 1m threshold, these incidents occurred to allow leachate levels in the lagoon to be dealt with due to high rainfall in august and November.

There was 1 incident relating to a minor oil spill on-site which was dealt with immediately using on-site spill kits. There was 1 incident following the failure of the motor for the Wellpoint system which was subsequently replaced.

- **Complaints Summary**

There was 1 complaint received during 2009 in relation to the facility. This related to the introduction of a charge for recycling by Mayo County Council and the covering of skips on the civic amenity to prevent litter. The complainant was contacted by the deputy manager to address the concerns.

A tour of the site is offered to all complainants of environmental issues to allow those concerned to view at first hand the activities of the site.

- **Report on Financial Provision made under the licence**

Derrinnumera Landfill charges were €120/tonne, exclusive of the €20/tonne landfill levy. Bags of domestic refuse are charged at €5 per bag. Use of the Civic amenity for recycling is €2 to the public for all items except WEEE, batteries and textiles which are accepted free of charge.

The estimated cost of operating Derrinnumera Landfill for the year 2009 was €1.9m.

- **Report on Management and Staffing Structure of the facility**

The staffing arrangements on-site at Derrinnumera Landfill have not changed since the submission of the Management Structure in June 2005. Notice of the change in landfill manager following the retirement of Mr. Frank Walsh was notified to the agency in November 2009.

- **Report on the Programme for Public Information**

Records of all monitoring results and reports are maintained at Derrinnumera Landfill. In 2009 there were no requests from any member of the public seeking information pertaining to the landfill monitoring. Requests received mainly pertain to information on recycling and waste management. A number of requests for information were received from students both secondary and third level in relation to project work. All requests for information were replied to and invitations given to visit the facility if so required.



## APPENDIX A

2009 Monthly Landfill Waste Return (tonnes)								
	Hospital	CA Site	Domestic	Commercial	Industrial	*Council clean up	*Street cleanings	Total
Jan	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## APPENDIX B

<b>Civic Amenity 2009</b>													
	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>TOTALS</b>
Paper	32.22	16.56	21.06	28.16	23.42	19.8	41.5	22.28	19.28	19.98	18.56	18.3	<b>281.12</b>
Cardboard	15.1	10.94	17.16	12.7	13.62	19.16	9.8	20.6	13.6	15.5	13.88	0	<b>162.06</b>
Glass	15.02	8.68	14.02	9.86	8.28	8.86	14.3	10.04	12.18	8.72	10.96	11.28	<b>132.2</b>
Car Batteries	4.1	0	1.86	3.36	0.74	0	3.34	1.86	1.9	2.8	1.84	2.08	<b>23.88</b>
Household batteries	Figures supplied by WEEE Ireland												<b>2.761</b>
Clothes	5.5	3.72	3.32	4.62	3.52	4.8	5.4	5.04	5.42	4.06	3.88	5.16	<b>54.44</b>
Electric fence batts	Figures supplied by WEEE Ireland												<b>1.625</b>
White Goods	Figures supplied by WEEE Ireland												<b>66.653</b>
Steel Cans	4.34	0	0	0	7.82	0	0	0	10.74	0	0	0	<b>22.9</b>
Scrap Metal	22.96	24.32	11.84	25.46	11.38	23.99	33.42	35.9	15.12	15.16	27.24	12.36	<b>259.15</b>
Aluminium Cans	0.64	0	0	0	2.52	0	0.86	0	0	1.78	0	0	<b>5.8</b>
Plastics	5.08	2.44	4.26	6.3	0	0	0	0	0	0	0	0	<b>18.08</b>
Type 1 plastic						6.74	1.46	3.1	0	1.82	2.18	0	<b>15.3</b>
Type 2 plastic						2.4	1.88	0.58	2.56	3.86	5.44	0	<b>16.72</b>
Hard plastic												0.84	<b>0.84</b>
Tetrapak	3.02	0	1.46	0	1.88	0	1.26	0	0		4.8	0	<b>12.42</b>
Timber	17.08	14.86	18.22	13.34	12.28	14.7	14.6	17.84	17.3	13.24	13.22	13.68	<b>180.36</b>
Motor Oil	0.62	1.42	0	1.46	0	1.5	0	1.38	1.28	1.5	0	1.5	<b>10.66</b>
Oil filters	0.2	0	0	0	0.2	0	0	0	0.24		0	0	<b>0.64</b>
Televisions	Figures supplied by WEEE Ireland												<b>40.127</b>
Mixed WEEE	Figures supplied by WEEE Ireland												<b>198.244</b>
Waste Paints	0.72	0	1.34	1.52	0	1.44	1.48	1.54	1.52	1.56	0	1.38	<b>12.5</b>
Fridges/Freezers	Figures supplied by WEEE Ireland												<b>27.194</b>
Fluorescent Tubes	Figures supplied by WEEE Ireland												<b>1.107</b>
Farm Plastics	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Tyres (Stockpiled)	6.46	0	0	0	0	0	0	0	0	0	3.66	0	<b>10.12</b>
Window Glass	0	7.42	0	0	5.74	0	0	0	6.64	0	4.86	0	<b>24.66</b>
Light Bulbs	0.12	0	0	0	0	0	0	0	0	0	0.12	0	<b>0.24</b>
Waste Medicines	0.06	0	0	0	0	0	0	0	0.02	0	0	0	<b>0.08</b>
Waste Pesticides	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Aerosols	0.12	0	0.14	0.08	0	0.02	0.12	0	0.16	0	0	0.12	<b>0.76</b>
Gas Cylinders	0	0	0	1	0	0	0	0	0	0	0	0	<b>1</b>
Cooking oil	0	0	0	0	0	0	0.42	0	0	0	0	0	<b>0.42</b>
Plasterboard/Gypsum	1.44	0.3	0	2.18	0	0	6.02	0	4.14	0	3.54	4.06	<b>21.68</b>
Polystyrene	0	0.24	0	0.22	0.24	0.22	0.14	0	0.26	0	0.2	0.36	<b>1.88</b>
<b>Total</b>													<b>1,607.621</b>

**APPENDIX C**

<b>Month</b>	<b>Gas Well No.</b>	<b>CH4 %v/v</b>	<b>CO2 %v/v</b>	<b>O2 %v/v</b>	<b>H2S p.p.m</b>	<b>CO p.p.m</b>	<b>Temp.</b>
January	GW2	83.9	8.8	0.2	0	1	5
February	GW2	83.3	7	1	0	5	6.8
March	GW2	80.2	7.8	1.5	0	5	8.1
April	GW2	77.5	8.5	0.8	0	3	6.9
May	GW2	75.4	6.1	0.7	0	3	10.7
June	GW2	68.4	11.1	1.9	0	0	12.4
July	GW2	73.9	13.8	0.6	0	5	15
August	GW2	80.2	12.5	0.7	0	4	14.9
September	GW2	81	9.7	1	0	2	15.2
October	GW2	79.3	15.6	0.7	0	6	12.7
November	GW2	80.4	9.4	1.5	0	4	5.6
December	GW2	85.2	9.3	1.1	0	4	7.4

<b>Month</b>	<b>Gas Well No.</b>	<b>CH4 %v/v</b>	<b>CO2 %v/v</b>	<b>O2 %v/v</b>	<b>H2S p.p.m</b>	<b>CO p.p.m</b>	<b>Temp.</b>
January	GW6	0	4.4	2.3	0	1	6
February	GW6	0	0.9	19	0	2	12.6
March	GW6	0	5	2.9	0	3	8.8
April	GW6	0	5.9	1.3	0	1	6.9
May	GW6	0	7.2	0.7	0	1	11.2
June	GW6	0.1	8.5	0.3	0	0	12
July	GW6	0	10.7	1.3	0	3	17.3
August	GW6	0	8.2	1.3	0	5	17.5
September	GW6	0	5.4	4	0	6	17.4
October	GW6	0	10.6	0.9	0	1	15
November	GW6	0	6.4	4	0	error	6.6
December	GW6	0	3.7	6.7	0	2	12.2

<b>Month</b>	<b>Gas Well No.</b>	<b>CH4 %v/v</b>	<b>CO2 %v/v</b>	<b>O2 %v/v</b>	<b>H2S p.p.m</b>	<b>CO p.p.m</b>	<b>Temp.</b>
January	GW8	0	1	16.2	0	0	3.4
February	GW8	0.5	2.2	1	0	2	7.4
March	GW8	0.3	2.5	0.7	0	3	9.4
April	GW8	0.7	2.2	0.7	0	0	7.6
May	GW8	2.3	2.7	0.5	0	2	10.8
June	GW8	4	2.9	0	0	0	11.4
July	GW8	3.7	4.7	0.7	0	2	15.9
August	GW8	3.9	3.8	1.7	0	1	14.1
September	GW8	4.3	2.2	1.3	0	4	14.2
October	GW8	5.9	3.5	0.8	0	1	14.1
November	GW8	7.8	2.9	0.5	0	error	5.3
December	GW8	7.9	1.6	0.7	0	2	8.4

Month	Gas Well No.	CH4 %v/v	CO2 %v/v	O2 %v/v	H2S p.p.m	CO p.p.m	Temp.
January	GW9	0	0.3	20.6	0	1	5.4
February	GW9	0	0.3	21.6	0	2	9.4
March	GW9	0	0.3	22	0	0	9.4
April	GW9	0	0.4	21.6	0	0	10
May	GW9	0	0.3	21.5	0	0	11.4
June	GW9	0	0.6	20.5	0	0	15.1
July	GW9	0	1	20.2	0	3	16.6
August	GW9	0	0.8	20.8	0	2	15.4
September	GW9	0	0.8	21.1	0	0	17.4
October	GW9	0	0.9	20.7	0	3	15.9
November	GW9	0	0.4	21	0	1	8.5
December	GW9	0	0.3	21.5	0	0	7.8

Month	Gas Well No.	CH4 %v/v	CO2 %v/v	O2 %v/v	H2S p.p.m	CO p.p.m	Temp.
January	GW13	0.2	0	19.8	0	1	6.4
February	GW13	0.2	0	20.7	0	5	12.5
March	GW13	0.1	0	20.7	0	4	10.2
April	GW13	0.1	0	20.9	0	5	9
May	GW13	0	0	20.3	0	3	12
June	GW13	0	0	19.8	0	0	13.8
July	GW13	0	0	19.3	0	3	22.3
August	GW13	0.1	0	20.4	0	4	16.8
September	GW13	0.1	0	20.3	0	4	16.1
October	GW13	0.1	0	19.9	0	5	16
November	GW13	1	0	19	0	22	8.2
December	GW13	1.1	0	13.3	0	8	8.6

Month	Gas Well No.	CH4 %v/v	CO2 %v/v	O2 %v/v	H2S p.p.m	CO p.p.m	Temp.
January	GW14	0	2.1	19.7	0	0	6.3
February	GW14	0	1.3	21.3	0	1	9.9
March	GW14	0	1.2	21.5	0	0	10.8
April	GW14	0	1.7	20.8	0	1	8.6
May	GW14	0	1.5	20.5	0	0	11.6
June	GW14	0	1.5	19.7	0	0	12.9
July	GW14	0	1.2	20.1	0	2	19.5
August	GW14	0	1.8	19.8	0	2	15.1
September	GW14	0	2.5	19.8	0	4	17.6
October	GW14	0	2.9	19.6	0	1	18.2
November	GW14	0.5	3.4	19.4	0	0	4.7
December	GW14	0	5.7	19.1	0	0	9

Month	Gas Well No.	CH4 %v/v	CO2 %v/v	O2 %v/v	H2S p.p.m	CO p.p.m	Temp.
January	GW15	0	0	20.8	0	0	4.2
February	GW15	0	0	21.8	0	1	6.6
March	GW15	0	0.1	21.9	0	2	9.1
April	GW15	0	0	21.5	0	1	6
May	GW15	0	0.1	21.7	0	1	11
June	GW15	0	0.1	20.8	0	0	11.6
July	GW15	0	0	21.1	0	4	16.6
August	GW15	0	0	21.5	0	4	18.7
September	GW15	0	0	21.4	0	3	16.3
October	GW15	0	0.1	20.9	0	4	14.4
November	GW15	0	0	21.3	0	3	6
December	GW15	0	0	21.4	0	0	8

Month	Gas Well No.	CH4 %v/v	CO2 %v/v	O2 %v/v	H2S p.p.m	CO p.p.m	Temp.
January	GW16	0	0	20.7	0	0	6
February	GW16	0	0	22	0	0	11.1
March	GW16	0	0	22.2	0	1	10.2
April	GW16	0	0	21.9	0	0	8
May	GW16	0	0	21.7	0	1	11.6
June	GW16	0	0	20.8	0	0	12.5
July	GW16	0	0	21.2	0	3	17.7
August	GW16	0	0	21.4	0	4	15.5
September	GW16	0	0	21.4	0	0	17.5
October	GW16	0	0	21.2	0	0	16.6
November	GW16	0	0	21.3	0	0	4
December	GW16	0	0	21.7	0	2	8.4

Month	Gas Well No.	CH4 %v/v	CO2 %v/v	O2 %v/v	H2S p.p.m	CO p.p.m	Temp.
January	GW17	0	1.2	20.4	0	0	7.7
February	GW17	0	1.6	21.4	0	3	11.1
March	GW17	0	0.8	21.7	0	0	10.6
April	GW17	0	0.5	21.7	0	0	8
May	GW17	0	2.6	20.6	0	3	14
June	GW17	0	4	18.3	0	0	13.3
July	GW17	0	0.5	20.7	0	2	20.6
August	GW17	0	0.2	21.3	0	3	15.9
September	GW17	0	0.1	21.5	0	0	16.9
October	GW17	0	0.3	21.1	0	2	16.4
November	GW17	0	0.9	21	0	1	7.4
December	GW17	0	1.2	21.3	0	0	9.2

**APPENDIX D**

**GROUNDWATER**

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW1A	January			0.05		0.676	7.09	0.2
MW1A	February			0.07		0.605	7.15	0.2
MW1A	March			0.22		0.678	7.4	0.2
MW1A	April			0.0183		0.622	7.24	0.597
MW1A	May			0.0214		0.602	8.27	0.417
MW1A	June			0.0183		0.616	7.52	0.2
MW1A	July			0.0183		0.683	8.32	0.2
MW1A	August			0.0662		0.628	8.37	0.395
MW1A	September			0.0257		0.466	8.35	0.2
MW1A	October			0.0183		0.633	7.31	0.2
MW1A	November			0.0187		0.486	7.98	0.2
MW1A	December			0.0183		0.451	7.67	0.2

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW17	January			0.05		1.32	6.96	1.5
MW17	February			0.19		1.513	6.94	2.1
MW17	March			0.1		1.426	6.84	1.8
MW17	April			0.147		1.35	6.84	1.61
MW17	May			0.132		1.29	7.59	1.47
MW17	June			0.0736		1.29	7.4	1.53
MW17	July			0.0183		1.38	8.1	1.56
MW17	August			0.0802		1.42	7.89	1.78
MW17	September			0.0651		1.17	7.9	2.16
MW17	October			0.0183		1.27	6.83	1.55
MW17	November			0.0274		1.36	6.99	1.68
MW17	December			0.0183		1.38	7.31	1.77

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW18	January			0.14		1.525	6.67	8
MW18	February			0.11		1.517	6.64	7.5
MW18	March			0.24		1.51	6.73	8
MW18	April			0.0867		1.33	6.63	6.86
MW18	May			0.0869		1.41	7.66	6.98
MW18	June			0.0886		1.35	7.23	6.93
MW18	July			0.0183		1.37	8.23	7.03
MW18	August			0.119		1.42	7.99	5.53
MW18	September			0.106		1.25	7.67	6.36
MW18	October			0.0183		1.34	6.67	5.2
MW18	November			0.0709		1.45	7.22	6.46
MW18	December			0.0183		1.49	7.2	6.09

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW19	January			0.05		1.518	6.59	7.6
MW19	February			0.27		1.536	6.59	7.5
MW19	March			0.17		1.53	6.7	7.8
MW19	April			0.102		1.34	6.6	0.471
MW19	May			0.128		1.42	6.7	6.39
MW19	June			0.289		1.36	6.86	6.68
MW19	July			0.0183		1.37	8.16	6.42
MW19	August			0.0336		1.35	7.58	6.56
MW19	September			0.559		1.26	7.54	6.14
MW19	October			0.0183		1.31	6.59	6
MW19	November			0.059		1.45	7.36	6.38
MW19	December			0.0298		1.49	7.13	6.35

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW20	January			0.05		3.032	7.24	194.4
MW20	February			0.33		1.213	7.05	35.2
MW20	March			0.22		1.161	7.07	31.1
MW20	April			0.467		2.73	6.99	119
MW20	May			0.523		2.98	8.05	127
MW20	June			0.2		1.49	7.8	49.1
MW20	July			0.0715		0.963	8.5	20.6
MW20	August			0.192		1.6	8.1	41.8
MW20	September			0.184		1.35	8.27	44.3
MW20	October			0.241		2.37	7.09	110
MW20	November			0.617		2.64	8.15	121
MW20	December			0.558		2.52	7.86	130

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW21	January			0.26		3.574	7.22	220.7
MW21	February			0.56		2.36	6.86	8.4
MW21	March			0.42		2.591	7	128.8
MW21	April			0.429		2.87	6.94	141
MW21	May			0.477		3.36	7.99	155
MW21	June			0.792		2.48	8.31	113
MW21	July			0.112		2.4	8.54	119
MW21	August			0.121		2.6	8.06	126
MW21	September			1.13		2.47	8.38	129
MW21	October			0.412		2.79	7.02	141
MW21	November			0.54		2.9	7.92	134
MW21	December			0.466		2.85	7.47	134



Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW22	January			0.15		4.143	7.13	253.3
MW22	February			0.37		2.491	7.02	101.6
MW22	March			0.3		2.245	7.09	96.8
MW22	April			0.775		3.65	7.1	183
MW22	May			0.84		3.72	7.63	197
MW22	June			0.419		2.26	7.84	95.4
MW22	July			0.168		1.94	8.43	73.2
MW22	August			0.437		3.59	7.95	156
MW22	September			0.367		2.4	7.88	118
MW22	October			0.584		2.94	7.13	165
MW22	November			0.843		3.13	7.78	171
MW22	December			1.01		2.9	7.64	173

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW23	January			0.35		3.02	7.36	237.1
MW23	February			0.95		3.102	7.25	95.7
MW23	March			2.96		2.826	7.3	171
MW23	April			1.42		2.5	7.06	130
MW23	May			1.21		2.93	7.45	155
MW23	June			0.884		2.61	7.54	135
MW23	July			0.797		4.04	8.83	222
MW23	August			1.08		3.45	8.08	156
MW23	September			0.697		1.68	7.79	57.7
MW23	October			0.146		2.49	7.07	141
MW23	November			7.3		2.15	7.88	116
MW23	December			2.15		1.47	7.26	78.3

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW24	January			0.07		3	6.7	73.4
MW24	February			0.18		2.918	6.78	180.7
MW24	March			0.2		2.902	6.8	57.1
MW24	April			0.208		2.62	6.78	56.3
MW24	May			0.221		2.66	7.13	53.4
MW24	June			0.449		2.56	7.23	65.9
MW24	July			0.105		2.56	8.04	48.7
MW24	August			0.109		2.47	7.78	49.2
MW24	September			0.226		2.25	8.15	53
MW24	October			0.0747		2.43	7.38	56.9
MW24	November			0.189		2.63	7.55	52.6
MW24	December			0.182		2.65	7.06	55.2

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
MW25	January			0.1		0.835	7.03	7.9
MW25	February			0.23		0.84	6.92	55.8
MW25	March			0.19		0.843	7.07	8.7
MW25	April			0.0612		0.719	6.87	7.14
MW25	May			0.0153		0.751	7.32	7.41
MW25	June			0.0183		0.772	7.38	7.41
MW25	July			0.0183		0.828	8.49	8.73
MW25	August			0.0354		0.814	7.94	8.82
MW25	September			0.0556		0.791	8.34	8.48
MW25	October			0.0434		0.777	7.38	8.83
MW25	November			0.0251		0.847	7.29	8.58
MW25	December			0.0398		0.881	7.19	8.81

## SURFACE WATER

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
SW1	January	2	10	0.05	0.03	0.12	5	0.2
SW1	February	2	10	0.08	0.04	0.135	4.81	0.2
SW1	March	4	10	0.07	0.03	0.123	4.87	0.2
SW1	April	1	6	0.105	0.08	0.113	4.7	0.2
SW1	May	2.11	20	0.059	0.08	0.116	5.17	0.2
SW1	June	1.98	14.5	0.0327	0.08	0.111	7.2	0.2
SW1	July	1	126	0.154	0.08	0.112	4.94	0.2
SW1	August	2.53	2	0.0183	0.08	0.0869	5.04	0.616
SW1	September	1.21	2	0.0183	0.08	0.0805	5.94	0.2
SW1	October	1.92	2	0.0183	0.03	0.0985	5	0.2
SW1	November	*	2	0.0183	0.08	0.102	4.71	0.2
SW1	December	1.06	2	0.0183	0.03	0.108	4.65	0.2

Low flow resulted in high TSS at SW1 in July.

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
SW2	January	2	12	0.05	0.03	0.249	7.31	0.5
SW2	February	2	10	0.12	0.06	0.283	7.12	0.5
SW2	March	2	26	0.07	0.03	0.229	7.45	0.2
SW2	April	1	6	0.105	0.127	0.227	7.48	0.569
SW2	May	1.13	6	0.0342	0.08	0.261	8.08	1.01
SW2	June	1.28	10	0.0298	0.08	0.33	7.54	1.21
SW2	July	1	7	0.0183	0.08	0.341	7.82	0.654
SW2	August	1.23	3.5	0.0455	0.08	0.248	8.05	1.05
SW2	September	1.43	3	0.0276	0.08	0.153	7.34	0.211
SW2	October	1.56	2	0.0183	0.03	0.338	7.19	1.19
SW2	November	*	3.5	0.0199	0.08	0.173	7.3	0.344
SW2	December	1.8	4.5	0.0183	0.03	0.2	7.54	0.272

Sample Identity	Month	BOD Unfiltered mg/l	Total Suspended Solids mg/l	Total Phosphorous mg/l	ortho Phosphate mg/l	Electrical Conductivity @ 25C ms/cm	pH	Ammoniacal Nitrogen mg/l
SW3	January	2	10	0.05	0.04	0.156	7.3	0.2
SW3	February	2	10	0.05	0.2	0.18	7.27	0.2
SW3	March	2	10	0.06	0.03	0.136	6.99	0.2
SW3	April	1	6	0.0183	0.08	0.144	7.56	0.31
SW3	May	1	9	0.0257	0.08	0.167	7.59	0.208
SW3	June	1	19	0.0255	0.08	0.19	5.37	0.2
SW3	July	1.08	15	0.0353	0.08	0.207	7.79	0.2
SW3	August	1.81	5.5	0.0526	0.08	0.149	7.64	0.273
SW3	September	1.53	4.5	0.0262	0.08	0.101	7.98	0.2
SW3	October	1.11	2	0.0183	0.03	0.181	7.51	0.2
SW3	November	*	2	0.0183	0.08	0.116	7.13	0.2
SW3	December	1.2	2	0.0183	0.03	0.108	6.94	0.2

\* An error by the laboratory they reported a COD result instead of a BOD result for November.

**APPENDIX E**  
**Volume of Leachate Transported Off-Site in 2009**

<b>MONTH</b>	<b>Volume m<sup>3</sup> (Tanker loads)</b>
January	14,259.24m <sup>3</sup> (603)
February	8,661.78m <sup>3</sup> (365)
March	6,260.68m <sup>3</sup> (266)
April	4,784.12m <sup>3</sup> (203)
May	6,643.82m <sup>3</sup> (288)
June	0m <sup>3</sup> (0)
July	9,956.06m <sup>3</sup> (433)
August	6,508.6m <sup>3</sup> (276)
September	11,747.97m <sup>3</sup> (495)
October	2,513.56m <sup>3</sup> (105)
November	15,643.98m <sup>3</sup> (659)
December	12,899.565m <sup>3</sup> (530)
<b>Total</b>	<b>99,879.375m<sup>3</sup> (4,223)</b>

The volume transported by each tanker varies between 20-26m<sup>3</sup>

The total volume of leachate transported in 2009 was 99,879.375m<sup>3</sup>

## APPENDIX F

### Volume of Leachate Produced and Volume of Leachate Transported off-site Calculation of Leachate Generated 2009

$Lo = [ER(A) + LW + IRCA + ER(l)] - [aW]$  where:

$Lo$  = leachate produced in cubic metres

$ER = 1,079.4\text{mm}$  (rainfall recorded on-site (1,439.2) minus evaporation taken as 0.25 (359.8))

$A = 92,314\text{m}^2$  (Area within cut-off wall) –  $15,000\text{m}^2$  (Capped Cell 1) =  $77,314\text{m}^2$

$LW = 0$  (no sludge accepted)

$IRCA = 0$ .

$l = 0$  (included in area within the cut off wall)

$a = 0.1\text{m}^3/\text{tonne}$

$W = \text{weight of waste deposited} = 0 \text{ tonnes}$

#### **January to December 2009**

$Lo = (1.0794\text{m} \times 77,314\text{m}^2) - (0.1 \times 0)$   
 $= 83,452.73\text{m}^3$

**Total leachate generated therefore =  $83,452.73\text{m}^3$**

## APPENDIX G

### Water Balance Return Form

**Site:** Derrinnumera Landfill

**Year:** 2009

**Cell No.2:** 20,140 m<sup>2</sup>

Month	Household Waste (tonnes)	Inert Waste	Effective Rainfall (m)	Available Absorptive Capacity for Cell (tonnes)	
		(tonnes)		Month C	Cumulative C
	H	T	R		
January	0	0	107.4	-2163036	-2163036
February	0	0	43.6	-878104	-3041140
March	0	0	61.8	-1244652	-4285792
April	0	0	90.8	-1828712	-6114504
May	0	0	120	-2416800	-8531304
June	0	0	58	-1168120	-9699424
July	0	0	217.6	-4382464	-14081888
August	0	0	214.4	-4318016	-18399904
September	0	0	73.8	-1486332	-19886236
October	0	0	125.6	-2529584	-22415820
November	0	0	285.4	-5747956	-28163776
December	0	0	40.8	-821712	-28985488

Available Absorptive Capacity “C” is defined as:

$$C = (H \times 0.1) + (T \times 0.05) - (RA) \text{ tonnes where}$$

H = the mass in tonnes of household and commercial waste input to the cell for the month;

T = the mass in tonnes of transfer station and general skip waste input to the cell for the month;

R = effective rainfall

A = original plan area of the cell in square metres

APPENDIX H

2009 Monthly Rainfall Figures.

DERRINUMERA LANDFILL - 2009

MONTH	RAINFALL (mm)
January	107.4
February	43.6
March	61.8
April	90.8
May	120
June	58
July	217.6
August	214.4
September	73.8
October	125.6
November	285.4
December	40.8
<b>Total</b>	<b>1,439.2</b>





Environmental Protection Agency

| PRTR# : W0021 | Facility Name : Derrinnumera Landfill Facility | Filename : W0021\_2009.xls | Return Year : 2009 |

# AER Returns Worksheet

Version 1.1.10

<b>REFERENCE YEAR</b>	2009
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**1. FACILITY IDENTIFICATION**

Parent Company Name	Mayo County Council
Facility Name	Derrinnumera Landfill Facility
PRTR Identification Number	W0021
Licence Number	W0021-01

Waste or IPPC Classes of Activity

No.	class_name
3.1	Deposit on, in or under land (including landfill).
3.13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
3.5	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.
3.6	
3.7	##### Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.
4.13	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.2	
4.3	Recycling or reclamation of metals and metal compounds.
4.4	Recycling or reclamation of other inorganic materials.
Address 1	Derrinnumera/Drumilra (Townlands)
Address 2	Newport
Address 3	County Mayo
Address 4	
Country	Ireland
Coordinates of Location	-9.45379 53.8838
River Basin District	IEWE
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
<b>AER Returns Contact Name</b>	Killian Farrell (W0021)
<b>AER Returns Contact Email Address</b>	kfarrell@mayococo.ie
<b>AER Returns Contact Position</b>	Deputy Landfill Manager
<b>AER Returns Contact Telephone Number</b>	098-41632
<b>AER Returns Contact Mobile Phone Number</b>	087-9155475
<b>AER Returns Contact Fax Number</b>	098-41676
<b>Production Volume</b>	0.0
<b>Production Volume Units</b>	
<b>Number of Installations</b>	0
<b>Number of Operating Hours in Year</b>	0
<b>Number of Employees</b>	0
<b>User Feedback/Comments</b>	

<b>Web Address</b>	
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**2. PRTR CLASS ACTIVITIES**

Activity Number	Activity Name
5(d)	Landfills
5(c)	Installations for the disposal of non-hazardous waste
5(d)	Landfills
50.1	General

**3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)**

Is it applicable?	
Have you been granted an exemption ?	
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4.1 RELEASES TO AIR

| PRTR# : W0021 | Facility Name : Derrinnumera Landfill Facility | Filename : W0021\_2009.xls | Return Year : 2009 |

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**SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS**

POLLUTANT		METHODOLOGY		QUANTITY			
No. Annex II	Name	M/C/E	Method Code	Method Used	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
03	Carbon dioxide (CO2)	M	CRM	GASSIM	3088702.5	0.0	0.0
01	Methane (CH4)	E	Estimate	Calculation	320546.5	0.0	320546.5

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

**SECTION B : REMAINING PRTR POLLUTANTS**

POLLUTANT		METHODOLOGY		QUANTITY			
No. Annex II	Name	M/C/E	Method Code	Method Used	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

**SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)**

POLLUTANT		METHODOLOGY		QUANTITY			
Pollutant No.	Name	M/C/E	Method Code	Method Used	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

**Additional Data Requested from Landfill operators**

Please enter summary data on the quantities of methane flared and / or utilised	T (Total) kg/Year	M/C/E	Method Used		Facility Total Capacity m <sup>3</sup> per hour
			Method Code	Designation or Description	
Total estimated methane generation (as per site model)	1060766.5	M	CRM	GASSIM	N/A
Methane flared	740220.0	E	Estimate	Calculation	250.0
Methane utilised in engine/s	0.0				0.0
Net methane emission (as reported in Section A above)	320546.5	E	Estimate	Calculation	N/A

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A; Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Derrinnumera Landfill Facility

4.3 RELEASES TO WASTEWATER OR SEWER

| PRTR# : W0021 | Facility Name : Derrinnumera Landfill Facility | Filename : W0021\_2009.xls | Return :

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OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
No. Annex II	POLLUTANT	Name	M/C/E	METHOD		Designation or Description	QUANTITY		
				Method Code	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
55		1,1,1-trichloroethane	M	CRM	GCMS		0.129843188	0.0	0.0
56		1,1,2,2-tetrachloroethane	M	CRM	GCMS		0.51937275	0.0	0.0
34		1,2-dichloroethane (EDC)	M	CRM	GCMS		0.329601938	0.0	0.0
26		Aldrin	M	CRM	GCMS		0.000998794	0.0	0.0
61		Anthracene	M	CRM	GCMS		0.099879375	0.0	0.0
27		Atrazine	M	CRM	GCMS		0.099879375	0.0	0.0
62		Benzene	M	CRM	GCMS		0.98879375	0.0	0.0
91		Benzof(g,h,i)perylene	M	CRM	GCMS		0.099879375	0.0	0.0
63		Brominated diphenylethers (PBDE)	M	CRM	GCMS		0.099879375	0.0	0.0
18		Cadmium and compounds (as Cd)	M	CRM	ICP MS		0.077905913	0.0	0.0
28		Chlordane	M	CRM	GCMS		0.000998794	0.0	0.0
79		Chlorides (as Cl)	M	CRM	GCMS		30862.73	0.0	0.0
31		Chloro-alkanes, C10-C13	M	CRM	GCEZ		0.99879375	0.0	0.0
30		Chlorofeniphos	M	CRM	GCMS		0.000998794	0.0	0.0
19		Chromium and compounds (as Cr)	M	CRM	ICP MS		2.608851688	0.0	0.0
20		Copper and compounds (as Cu)	M	CRM	ICP MS		0.159807	0.0	0.0
82		Cyanides (as total CN)	M	CRM	GCMS		4.99	4.99	0.0
33		DDT	M	CRM	GCMS		0.000998794	0.0	0.0
70		Di-(2-ethyl hexyl) phthalate (DEHP)	M	CRM	GCMS		0.19975875	0.0	0.0
35		Dichloromethane (DCM)	M	CRM	GCMS		0.369553688	0.0	0.0
36		Dieldrin	M	CRM	GCMS		0.000998794	0.0	0.0
38		Endosulphan	M	CRM	GCMS		0.000998794	0.0	0.0
39		Endrin	M	CRM	GCMS		0.000998794	0.0	0.0
65		Ethyl benzene	M	CRM	GCMS		0.249698438	0.0	0.0
88		Fluoranthene	M	CRM	GCMS		0.099879375	0.0	0.0
83		Fluorides (as total F)	M	CRM	GCMS		49.94	49.94	0.0
41		Heptachlor	M	CRM	GCMS		0.000998794	0.0	0.0
32		Chlorpyrifos	M	CRM	GCMS		0.099879375	0.0	0.0
43		Hexachlorobutadiene (HCBd)	M	CRM	GCMS		0.099879375	0.0	0.0
42		Hexachlorobenzene (HCB)	M	CRM	GCMS		0.099879375	0.0	0.0
89		Isoflin	M	CRM	GCMS		0.000998794	0.0	0.0
23		Lead and compounds (as Pb)	M	CRM	ICP MS		0.384535694	0.0	0.0
45		Lindane	M	CRM	GCMS		0.000998794	0.0	0.0
21		Mercury and compounds (as Hg)	M	CRM	ICP MS		0.000998794	0.0	0.0
68		Naphthalene	M	CRM	GCMS		0.349577813	0.0	0.0
22		Nickel and compounds (as Ni)	M	CRM	ICP MS		3.256067625	0.0	0.0
49		Pentachlorophenol (PCP)	M	CRM	GCMS		0.099879375	0.0	0.0
71		Phenols (as total C)	M	CRM	GCMS		0.099879375	0.0	0.0
51		Simazine	M	CRM	GCMS		0.099879375	0.0	0.0
73		Toluene	M	CRM	GCMS		0.139831125	0.0	0.0
13		Total phosphorus	M	CRM	ICP MS		204.75271875	0.0	0.0
54		Trichlorobenzenes (TCBs)(all isomers)	M	CRM	GCMS		0.309626063	0.0	0.0
77		Trifluralin	M	CRM	GCMS		0.000998794	0.0	0.0
60		Vinyl chloride	M	CRM	GCMS		0.11985525	0.0	0.0
78		Xylenes	M	CRM	GCMS		0.169794938	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
Pollutant No.	Name	M/C/E	METHOD		Designation or Description	QUANTITY			
			Method Code	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
303	BOD	M	CRM	5 day		467.44	467.44	0.0	0.0
341	Sodium	M	CRM	ICP MS		29664.17	29664.17	0.0	0.0
338	Potassium	M	CRM	ICP MS		17978.29	17978.29	0.0	0.0
305	Calcium	M	CRM	GCMS		21873.58	21873.58	0.0	0.0
321	Manganese (as Mn)	M	CRM	GCMS		173.79	173.79	0.0	0.0
343	Sulphate	M	CRM	KONE		12285.16	12285.16	0.0	0.0
306	COD	M	CRM	Spectro		29664.17	29664.17	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

[ PRTR# : W0021 | Facility Name : Derrinnumera Landfill Facility | Filename : W0021\_2009.xls | Return Year : 2009 ]

[ PRTR# : W0021 | Facility Name : Derrinnumera Landfill Facility | Filename : W0021\_2009.xls | Return Year : 2009 ] 34

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste Name and Licence/Permit No of Next Recovery/Disposer	Haz Waste: Name and Address of Next Recovery/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination (ie. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	20 03 01	No	2515.0	Municipal waste	D5	M	Weighed	Offsite in Ireland	Rathroen Landfill Site, W0067-01	Killalla Road, No/A, Ballina, No/A, Ireland		
Within the Country	20 01 01	No	162.0	Cardboard	R3	M	Weighed	Offsite in Ireland	Greyhound Recycling, W0205-01	Crag Avenue Clondalkin N/A, Dublin ,22, Ireland		
Within the Country	20 01 01	No	141.1	paper	R3	M	Weighed	Offsite in Ireland	Greyhound Recycling, W0205-01	Crag Avenue Clondalkin ,Dublin ,22, Ireland		
Within the Country	20 01 01	No	139.9	paper	R3	M	Weighed	Offsite in Ireland	WERS waste, wcp-mo-09-0608-02	Tuam Business Park, Weir road, Tuam Co. Galway, , Ireland		
Within the Country	15 01 07	No	132.0	Glass bottles and jars	R5	M	Weighed	Offsite in Ireland	REHAB.Exempt	...Ballymount Dublin, , Ireland		
Within the Country	20 01 02	No	25.0	Window glass	R5	M	Weighed	Offsite in Ireland	Eclipse recycling Services Ltd./WMP -005D	Harbour street , Mountmellick Co. Laois, , Ireland		
Within the Country	15 01 04	No	2.64	Aluminium cans	R4	M	Weighed	Offsite in Ireland	ERIN recyclers, wp-so-08-93	Deepwater quay Finisklin Sligo harbour , , Co. Sligo, , Ireland		
Within the Country	15 01 04	No	3.36	Aluminium cans	R4	M	Weighed	Offsite in Ireland	Greyhound Recycling, W0205-01	Crag Avenue Clondalkin ,Dublin ,22, Ireland		
Within the Country	15 01 04	No	23.0	Steel cans	R4	M	Weighed	Offsite in Ireland	ERIN recyclers, wp-so-08-93	Deepwater quay Finisklin Sligo harbour , , Co. Sligo, , Ireland		
Within the Country	20 01 40	No	119.8	metal	R4	M	Weighed	Offsite in Ireland	ERIN recyclers, wp-so-08-93	Sligo harbour , , Co. Oranmore Co. Galway, , Ireland		
Within the Country	20 01 40	No	139.2	metal	R4	M	Weighed	Offsite in Ireland	Galway metal, WPR 05/4	Greyhound Recycling, W0205-01		
Within the Country	15 01 02	No	52.0	plastic bottles	R5	M	Weighed	Offsite in Ireland	Bourke Waste Removals Ltd	...Dublin ,22, Ireland		
Within the Country	20 01 39	No	1.0	polystyrene	R5	M	Weighed	Offsite in Ireland	...PER -4	Clogher Westport Co. Mayo, , , Ireland		
Within the Country	15 01 05	No	12.0	tetrapack	R5	M	Weighed	Offsite in Ireland	Greyhound Recycling, W0205-01	Crag Avenue Clondalkin ,Dublin ,22, Ireland		
Within the Country	20 01 11	No	54.0	textiles	R3	M	Weighed	Offsite in Ireland	Textile recycling Ltd / WPR -014	Belgard Road, Tallaght Dublin 24, 24, Ireland		
Within the Country	20 01 38	No	619.0	timber	R3	M	Weighed	Onsite in Ireland	Mayo County Council / W0021-01	...Newport Co. Mayo, , Ireland		
To Other Countries	16 06 01	Yes	10.06	lead acid batteries	R4	M	Weighed	Abroad	ENVA RECYCLERS, W0184-01	Cionniam Industrial Estate ...Portlaoise Co. Laois, , Ireland	Campine Recycling ,License: MLAV/05-173/GYDA, ...Beerse ,Belgium	... ,Belgium
To Other Countries	16 06 01	Yes	13.82	lead acid batteries	R4	M	Weighed	Abroad	KMK Metals Recycling Ltd, W0113-02	Cappincur Ind Est Dairinean road ,Tullamore Co. Offaly, , Ireland	HJ Enthoven & Sons ,BL5598 Dairley Dale smelter, ,South Darley Matlock Derbyshire, DE42LP, England	... ,United Kingdom
To Other Countries	16 06 02	Yes	1.181	household batteries	R4	M	Weighed	Abroad	ENVA RECYCLERS, W0184-01	Cionniam Industrial Estate ...Portlaoise Co. Laois, , Ireland	Accurec Wiewhagen 12-14 ,Reg: 52.03.06.06 Accu-9/99, ,Mühlheim , ,Germany	... ,Germany

Transfer Destination	European Waste Code	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/WCE	Method Used		Haz. Waste Licence/Permit No of Next Destination Facility Non-Haz.Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						Method Used	Method Used			
Within the Country	16 06 02	1.58	household batteries	R4	M	Weighed		KMK Metals Recycling Ltd,W0113-02,Cappincur Ind road ...Tullamore Co. Offaly,...Ireland	KMK Metals Recycling Ltd,W0113-02,Cappincur Ind road ...Tullamore Co. Offaly,...Ireland	.....Ireland
Within the Country	16 06 04	1.7	other batteries	R4	M	Weighed		Cappincur Ind Est. Daingean road ...Tullamore Co. Offaly,...Ireland		.....Ireland
Within the Country	13 02 08	10.86	motor oil	R9	M	Weighed		Cappincur Ind Est. Daingean road ...Tullamore Co. Offaly,...Ireland	ENVA ,W0184-01,Cionnam Industrial Estate ...Portlaoise Co. Laois ...Ireland	.....Ireland
To Other Countries	20 01 26	0.64	oil filters	R9	M	Weighed		Cionnam Industrial Estate ...Portlaoise Co. Laois ...Ireland	R.D. Recycling Houthalen 51727/1KD ... Houthalen ...Belgium	.....Belgium
Within the Country	20 01 25	0.42	vegetable oil	R9	M	Weighed		Cionnam Industrial Estate ...Portlaoise Co. Laois ...Ireland		.....Belgium
To Other Countries	20 01 27	12.5	paint	D15	M	Weighed		4 Haddington terrace ...dun Laoighre Co. Dublin,...Ireland	Nehlsen GmbH & co KG,D33300040,louis - Strasse,...Bremen,I028237,Germany	.....Germany
Within the Country	16 01 03	10.12	tyres	R5	M	Weighed		Mooretown Dromiskin ... Dundalk Co. Louth ...Ireland		.....Ireland
Within the Country	17 08 02	22.0	plasterboard	R5	M	Weighed		Rathcoffey Donadea ...Kaes Co.Kildare...Ireland		.....Ireland
Within the Country	20 01 99	0.24	light bulbs	R4	M	Weighed		Cionnam Industrial Estate ...Portlaoise Co. Laois ...Ireland		.....Ireland
Within the Country	20 01 32	0.02	medicine	D15	M	Weighed		ENVA RECYCLERS,W0184-01 ...Portlaoise Co. Laois ...Ireland		.....Ireland
<b>Within the Country</b>	<b>20 01 32</b>	0.06	medicine	D15	M	Weighed		ENVA RECYCLERS,W0184-01 ...Portlaoise Co. Laois ...Ireland		.....Ireland
To Other Countries	16 05 04	0.36	aerosols	R4	M	Weighed		Indaver Ireland/W0036-02 ...Portlaoise Co. Laois ...Ireland	SBH ...Germany AVG,BOIVS0013,Borfgrass e 2...Hamburg,D...	.....Germany
To Other Countries	16 05 04	0.4	aerosols	R4	M	Weighed		Indaver Ireland/W0036-02 ...Portlaoise Co. Laois ...Ireland		.....Germany

\* Select a row by double-clicking the Description of Waste then click the delete button