



Comhairle Contae an Chláir
Clare County Council

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Clare County Council

Central Waste Management Facility, Ballyduffbeg, Inagh, County Clare.

► Annual Environmental Report

2011

Prepared by: Transportation, Water Services and Environment Directorate, Clare County Council.

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2. INTRODUCTION

2.1 Preamble.

The Environmental Protection Agency granted Clare County Council a waste licence for the Central Waste Management Facility (CWMF) located at Ballyduff Beg, Inagh, County Clare, on 13th June 2001 (W0109-01). Landfilling commenced at the site on the 30th September 2002. A revised licence was issued in March 2010 (W0109-02). This Annual Environmental Report is prepared in compliance with Condition 2.3 of the waste licence.

2.2 Reporting Period

This report covers the period January 1st to December 31st 2011. All landfill tonnage figures refer to the period between the 1st January and the 26th November 2011; the landfill closed on an interim basis on the 26th November.

2.3 Waste Activities carried out at CWMF.

Waste activities at the CWMF are restricted to those outlined in Part 1 Activities of the waste licence, these are reproduced in Appendix 8.1.

Municipal solid non-hazardous waste was accepted at the facility from both commercial and domestic customers and disposed of in engineered lined cells, up to the 26th November 2011.

The Civic Amenity Site provides recycling receptacles for the collection and recycling of various recyclable waste streams, the materials accepted are detailed in Table 3.3. The Civic Amenity Site remains in operation.

A composting facility was developed in 2006 to accept and treat green waste from domestic customers only. The green waste is composted in an aerated static pile and the mature compost is used within the site as a soil conditioner. The facility has diverted a total of 1,950t of domestic green waste from landfill between 2006 and the end of 2011. This facility remains in operation.

3. MATERIALS/WASTE TRANSPORTED ON/OFF SITE

3.1 Quantity of disposed waste

The type and quantity of waste accepted for landfill in 2011 is shown in Table 3.1.

TABLE 3.1: QUANTITY (TONNES) OF MSW DISPOSED OF IN 2011.

Waste type	Household Waste	Commercial Waste*	Total
Quarter 1 January to March	4,170	3,189	7,359
Quarter 2 April to June	4,232	,2877	7,109
Quarter 3 July to September	3,932	5,594	9,526
Quarter 4 October to December	3,398	3,301	6,698
The CWMF landfill closed on an interim basis on the 26 th November 2011.			
Total	15,730	14,962	30,692

TABLE 3.2: WASTE VOLUME (TONNES) ACCEPTED FOR LANDFILLING SINCE JULY 2002

Period	Waste Type			Cumulative Total
	Household	Commercial	Total	
July 2002 - June 2003	31,548	5,799	37,347	37,347
July 2003 - June 2004	33,522	9,764	43,287	80,634
July 2004 - December 2004	19,929	10,055	29,934	110,568
January - December 2005	30,773	22,169	52,942	163,510
January - December 2006	20,227	13,484	33,712	197,222
January - December 2007	26,386	19,903	46,289	243,511
January - December 2008	19,996	13,328	33,324	276,835
January - December 2009	15,417	10,278	25,695	302,530
January - December 2010	14,458	7,229	21,686	324,216
January - December 2011	15,730	14,962	30,692	354,908

3.2 Method of Deposition of Waste

Waste was deposited in compacted layers from the base of the cell up. A 37-tonne steel-wheeled compactor was used to compact the waste with a minimum of three passes of the compactor employed over each load received.

All exposed areas of the active cell were covered daily with a layer of GeoPoly or Hessian material with additional cover material applied to the surface of the daily cover layer to weigh it down. Larger quantities of additional cover material were applied over the Hessian/GeoPoly on a weekly basis. During 2011, the cover material comprised wood ash, construction & demolition fines and clay. Small quantities of recycled wood chip were also used to provide temporary cover during the working day over particularly odorous waste loads.

Nuisance control measures were employed at the site to reduce to a minimum the nuisance effect of landfilling operations. These are detailed in section 7.0.

3.3 Waste Received in the Civic Amenity Area for Recovery

All non-commercial customers are directed to the Civic Amenity site. Various receptacles are provided within the site for collection of recyclable waste. The waste streams accepted for recycling are outlined in Table 3.3. Collection receptacles for household residual waste deposited by the public are also provided. The collection of waste electrical and electronic equipment (WEEE) commenced on August 13th 2005. All WEEE is stored on site prior to collection by the nominated contractor.

Green waste composting commenced in January 2006, using an aerated static pile to process domestic green waste received directly in the CWMF CA site and also green waste brought from Lisdeen, Ennis and Shannon CA sites. Exhaust air from the aerated static pile is drawn through a woodchip biofilter to protect against odours. The compost is turned regularly and compost temperature is recorded. The finished product is tested in accordance with the requirements of W01090-02. CWMF compost is used mainly as a soil conditioner within the site. Small quantities of compost have been used in the past by the gardening section of Clare County Council. However all of the material produced in 2011 (**447 tonnes**) was used or is yet to be used, within the site. The Council began accepting garden waste in January 2006 with a total of 1950 tonnes recovered to the end of 2011.

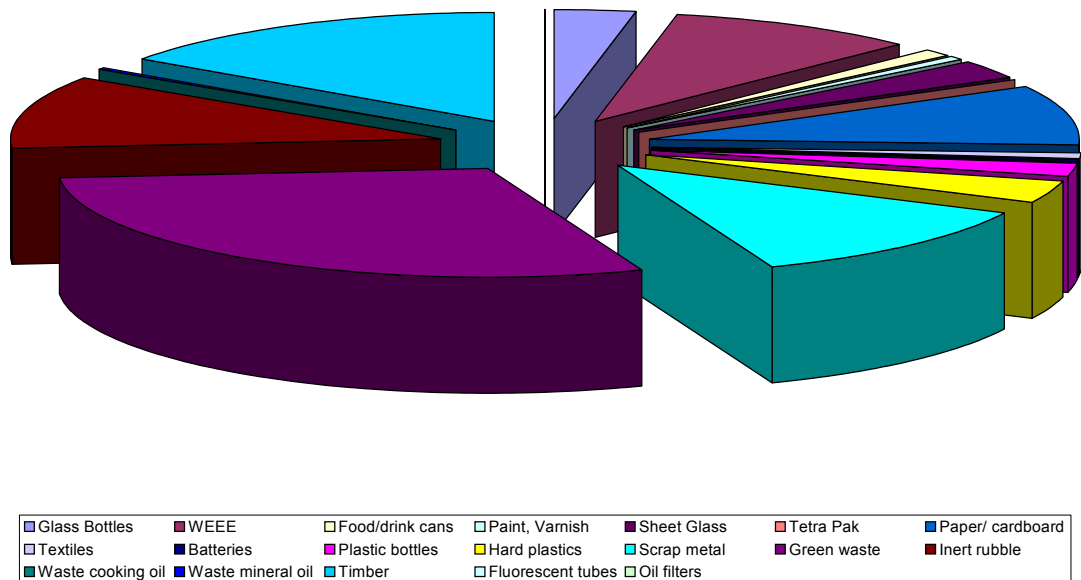
Hard plastics have been accepted at the facility for recovery since mid 2008.

In early 2009, construction & demolition waste from domestic customers was accepted with the agreement of the Agency. A total of approximately 48 tonnes was received during the year. This material was used in the construction of haul roads within the active cell. Since the closure of the landfill in November 2011, only small quantities of inert rubble have been accepted, as there is no longer a facility on site for recovery of this stream. This material will be moved off site for recovery by Clean Ireland during 2012.

TABLE 3.3: QUANTITY (TONNES) OF MATERIALS RECYCLED/RECOVERED IN 2011

Material	Quantity	Material	Quantity	Material	Quantity
Glass Bottles	45	Textiles	13	Waste cooking oil	0.5
WEEE	146	Batteries	2.6	Waste mineral oil	6.1
Food/drink cans	16	Plastic bottles	29	Timber	229
Paint, Varnish	5.4	Hard plastics	53	Fluorescent tubes	1
Sheet Glass	42	Scrap metal	179	C&D fines	1,928
Tetra Pak	3	Green waste	447	Wood ash	1,021
Paper/ cardboard	134	Inert rubble	160	Oil filters	0.5
Wood chip (recovery)	789	Harbour dredging spoil	1,754	TOTAL	7,004

Figure 3.1: Quantity of Household Material Recycled/Recovered during 2011 (percentage by weight)

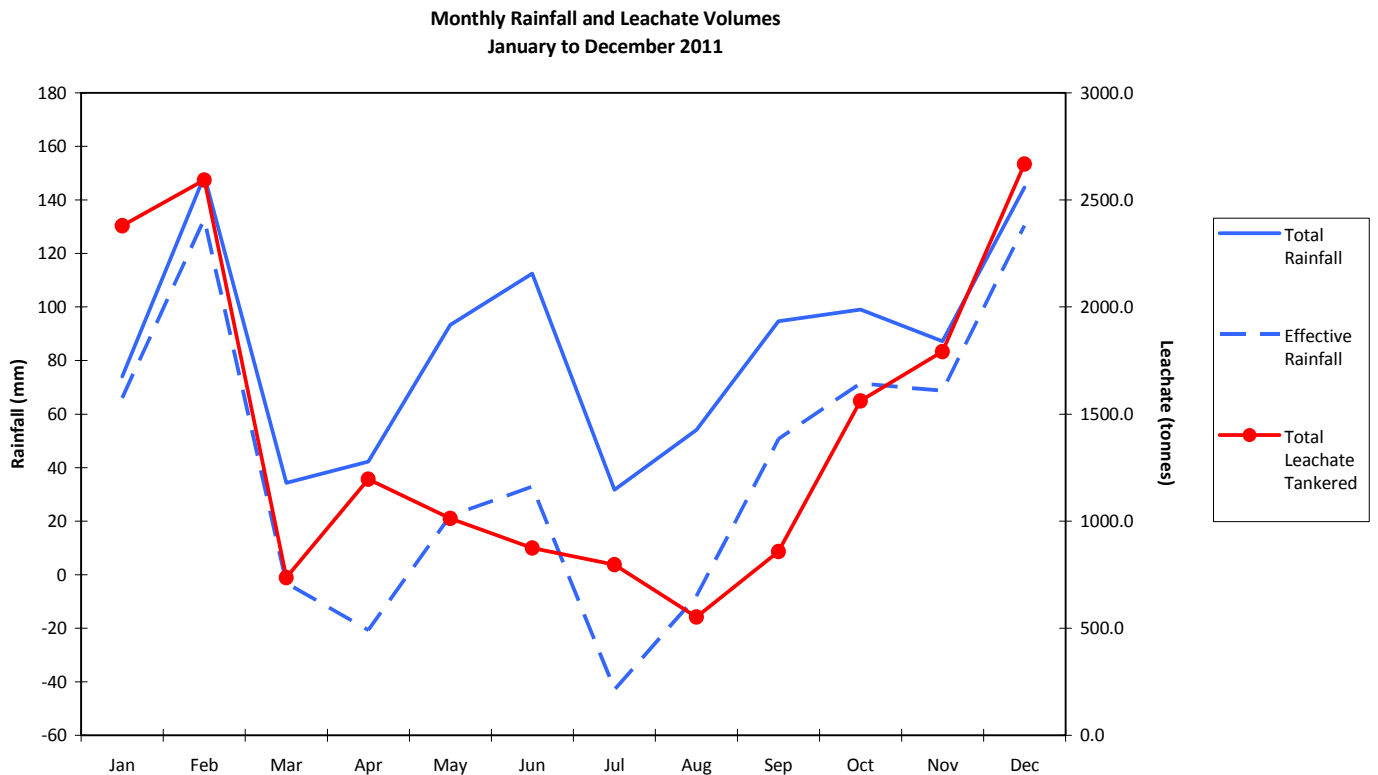


Note re Figure 3.1: Chart excludes commercial waste recovered in the facility landfill ((i.e. C&D fines, wood ash, wood chip, harbour dredging spoil)).

3.4 Leachate Quantities/Water Balance.

Leachate is pumped from a collection sump at the base of each landfill cell to a storage tank within the civic amenity site. Pumps are controlled via the Supervisory Control and Data Acquisition (SCADA) system to start and stop at pre-set levels within the cells. Potentially contaminated stormwater from designated areas within the civic amenity site is discharged to a second site leachate storage tank. Leachate is pumped from these tanks and transported by Lack Plant Hire (permit number WCP/LK/115/05c) to wastewater treatment plants in Lisdoonvarna, Sixmilebridge and Bunlicky (Limerick City Main Drainage). In total, 17,020 tonnes of leachate were transported off site during 2011. The quantities moved each month are graphed against monthly rainfall in figure 3.2 below. Effective rainfall volumes are also shown in the graph; although transpiration rates would be zero for un-vegetated areas such as concrete, lined side slopes and within the active cell, there would be some reduction in rainfall volumes expected due to evaporation during summer months.

Fig. 3.2: 2011 Rainfall and Leachate Levels:



As can be seen from the graph, leachate volumes are closely linked to total rainfall levels except during summer months when evaporation would have resulted in lower effective rainfall.

Annual leachate and rainfall volumes from 2003 to 2011 are shown in fig. 3.3 below. The graph shows that the volume of leachate increased with the development of new landfill cells up to 2008/2009. Volumes reduced after 2009 in part due to lower annual rainfall (see fig.3.4 below). The reduction in leachate was also achieved as a result of the implementation of active leachate reduction measures pursued under Objective 3 of the facility EMS. These measures included i) the installation of rainflaps on all side slopes adjoining the active cell to minimise infiltration of clean rainwater into the waste body; ii) during 2010, kerbing was installed along the civic amenity site lower road to minimise overflow of clean rainwater from the road onto the leachate collection area, a problem which had previously occurred during extreme rainfall events; iii) in October 2011, with the approval of the EPA, modifications were made to the storm drains at the upper level of the civic amenity site, diverting rainfall from this area to the stormwater lagoon. The upper CA site drains previously discharged to the leachate-holding tank. Plans are underway for 2012 to divert clean rainfall from sections of the lower CA site level away from the leachate holding tank. This work will be subject to EPA approval.

Fig. 3.3: Annual Leachate Tonnages (2003 to 2011)

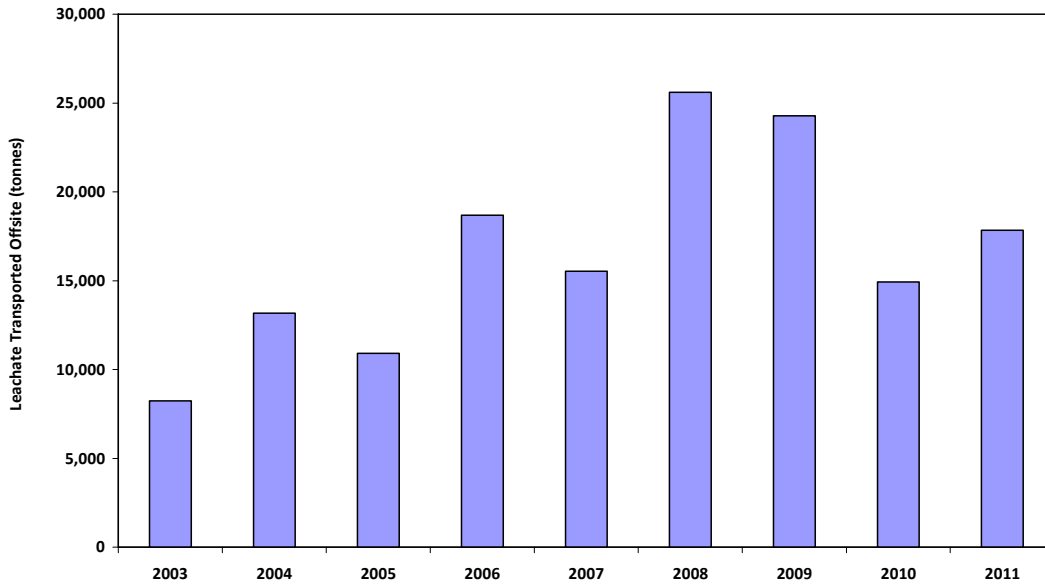
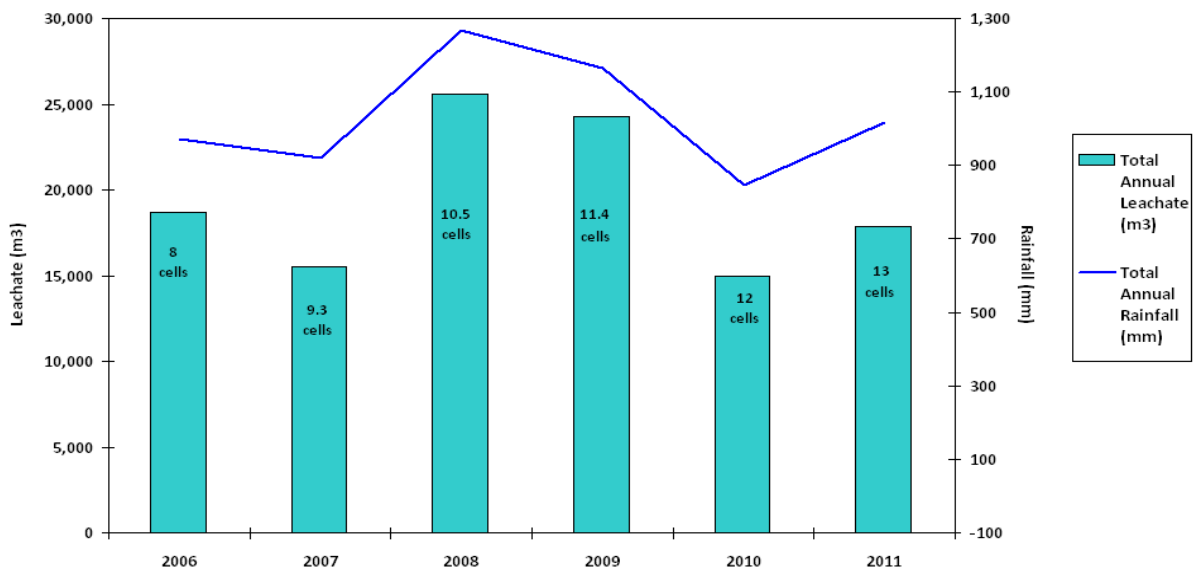


Figure 3.4: Summary of Annual Leachate and Rainfall Volumes, 2006 to 2011 (No. of cells filled or part-filled by year end is shown on graph)



A monthly water balance calculation for the site is attached in Appendix 8.2. This calculation gives a theoretical leachate volume for the year of 16,144m³ (tonnes) based on Shannon total rainfall. The actual leachate volume for 2011 was higher than the theoretical figure, at 17,847 tonnes. This is most likely due to infiltration from side slopes when rainflaps had to be decommissioned due to rising waste height.

The water balance assumes an infiltration rate of 10% over capped areas. During 2011, SCADA data was used to estimate volumes of leachate pumped from capped cells. While volumes were seen to vary between cells, the total volume pumped was equivalent to 10% infiltration.

3.5 Landfill Gas Management, January to December 2011

During 2011, downtime for the enclosed flare totalled 104 hours, including periods for flare servicing. The flare was down in July for 36 hours due to a blower problem. Trained Council staff were unable to restart the flare so the service company were brought to site. The delay was due mainly to travel time; the service agents for 2011 were Greenfield Technical Services, based in the U.K. The service company for 2012 has been changed to Irish Biotech Systems Ltd (IBSL), an Irish-based company. The gas collection network was modified during the year to a ring-main system. The approach to controlling gas well suction was changed for cell 12 from a manifold system to a system of separate control valves at each well.

The approach to active cell gas field management was also modified during 2012. In the previous cell (cell 12), gas extraction was based on the old type of horizontal pipes. Shallow wells were installed into the partially-filled waste body three months before the completion of filling and vertical wells were drilled into the waste one month before the completion of cell filling. Other measures were also employed in cell 11, including lining of the lower side slope with a gas barrier membrane.

For cell 13, a new horizontal extraction system was used in conjunction with the old type of horizontal network. The new system was based on separate runs of horizontal extraction lines exiting the waste body through the southern flank, with a 1m bentonite plug installed at the outlet. Each extraction line was equipped with a separate control valve and dewatering point. The extraction lines were connected to a main line running along the base of the cell, equipped with a gravity knockout pot. The original older type of extraction line in place along the intercell bund was also connected to the main extraction line and supplied with a control valve to optimise extraction. In addition to these control measures, four vertical wells were installed from the base of the cell as the cell was filled. The zone of extraction around each well was increased by running horizontal lines where possible towards the wells. These four built vertical wells were connected to the gas extraction network as soon as gas started to build up in the wells. However, the two top slope vertical wells were found to be problematic for odours during September 2011 due to odours/gas emission from the drainage stone annulus. These odours were a problem in the active cell despite the presence of a bentonite plug in the top one metre of the annulus. To correct for this problem, Clare County Council designed a flux-box type of extraction system to install over the top slope wells. The flux boxes were constructed by IBSL and were equipped with two separate extraction lines, one for the well itself and one for the headspace area, to collect any gas released from the drainage stone. The flux boxes were installed in October 2011 and had an immediate beneficial effect based on subjective assessment by site staff. The wells were shown to be clear of all VOC emissions during an OMI surface emissions survey carried out in November 2011.

The temporary flare installed for odour management from cell 12 was decommissioned during January 2011 after completion of all lining works on cell 12. A second temporary flare was installed during October 2011 to collect and flare gas from cell 13. This flare ran until it was decommissioned on the 22nd December 2011. At that time, lining works were well progressed in cell 13 with only the side slopes remaining unlined. Lining works were completed by the 13th January 2012.

Because landfill gas rates vary due to differential decomposition of the waste, the level of methane generation in a waste cell will fluctuate, decreasing over time as the waste becomes substantially biodegraded. Extraction must be regulated so as to optimise the amount of methane going to the flare and minimise the amount of oxygen in the landfill gas. This is done by weekly (or more frequent) gas field monitoring. This monitoring is supported by monthly pressure checks on wells to ensure that all wells are under negative pressure and that there are no blockages in gas lines. Maintaining the integrity of the pipe network and freeing blocked lines is an essential element of the gas management system.

During 2011, a total of 1,448,032 kg of methane was flared. The main flare burned 1,371,635kg. The two temporary flares burned 76,396 kg.

By the end of 2011, landfill gas was being extracted from five permanently capped cells in phase one (cells 1, 2, 3, 4 and 5), from four permanently capped cells in phase two (cells 6, 7, 8 and 9), from three permanently capped cells in phase 3 (cells 10, 11 and 12) and from the last cell of phase 3 (cell 13) which was approximately 70% lined by year end.

An application was submitted to ESB Networks during 2009 for a grid connection for an engine with the total generating capacity of 1MW. A connection agreement offer was received in 2010, with a cost of close to 1m euro. The high cost of the grid connection and the early closure of the landfill has caused Clare county Council to reassess the economic value of this project. The possibility of using a smaller engine is still under consideration.

3.6 Resource and Energy Consumption Summary

Resource and energy consumption figures are outlined below for the facility for 2011:

TABLE 3.4: RECORDED DIESEL CONSUMPTION IN 2011

Plant/Machinery	Unit	Quantity
Generator	litres	100
JCB, (CCC)	litres	2,354
Tractors	litres	3,189
Dumpers and CCC excavator, pumps	litres	12,160
CCC Site Vehicle (Toyota Pick-up)	litres	1,257
Compactor (Lack Plant Hire-active cell) and Excavator (cell capping)	litres	35,000
Hyundai Track Machine (Kearney Plant Hire, active cell and capping)	litres	12,000
Total amount of Diesel Consumed:	litres	66,060

Diesel consumption figures are based on plant hire contractor information and Council records.

Electricity consumption was **142,750** kWh for the reporting period January to December 2011.

4. SUMMARY OF MONITORING AND EMISSIONS

4.1 General

Section 4.0 presents the results of groundwater, surface water, leachate, noise, dust and flare monitoring for compliance with Condition 9 of Waste Licence W0109-02 for the period January to December 2011. Monitoring was conducted in accordance with Schedule E of the Waste Licence as indicated in Table 4.1 below.

TABLE 4.1: CENTRAL WASTE MANAGEMENT FACILITY (W0109-02) MONITORING SCHEDULE

Schedule	Monitoring Requirement
E.1	Landfill Gas
E.2	Landfill Gas Flare
E.3	Dust
E.4	Noise
E.5	Surface water, Groundwater and Leachate

Monitoring was carried out at the locations and frequencies specified in each of the above referenced schedules of the Waste Licence unless otherwise noted in this report. Surface water, groundwater, leachate, noise and dust monitoring surveys were conducted by TMS Environment Limited. Conservation Services assessed biological quality of surface waters. Biosphere Environmental Services carried out the ecological surveys for the facility. Biannual monitoring of flare stack emissions was carried out by TMS Environment Ltd. Environmental monitoring locations are shown in Drawing No. 1, attached in Appendix 8.5.

4.2 Landfill Gas

See also section 3.5 above. Monitoring of waste body wells was carried out on a weekly basis throughout the year. Gas monitoring results were submitted to the Agency in monthly reports during the year.

Perimeter gas wells were monitored on a weekly basis throughout the year at LG1 to LG21b. As for previous years, methane levels at a number of the perimeter wells were elevated during the year. This is believed to be due to the ongoing decomposition of vegetation left in place prior to construction of the embankments. A number of investigations have been carried out over the past five years that confirm this assessment. These included pumping trials, use of hydrogen sulphide as a marker gas, use of spike bars on the landfill side of the access road, and the installation of additional monitoring wells. Odour Monitoring Ireland (OMI) carried out a comparative assessment of the VOC profile of the landfill gas and of the perimeter well gas in early 2007. Results of the assessment showed no relationship between the two VOC profiles, indicating that elevated perimeter well methane levels are unrelated to landfilling activities. This study was repeated during 2010; results again showed no comparison between waste body and perimeter well VOC type and level, providing further confirmation that the source of the perimeter well gas is unrelated to landfilling activities.

4.3 Landfill Gas Flare

The outlet from the landfill gas flare was monitored on two occasions during the year. Results were submitted to the Agency in separate reports for each survey. A summary of survey findings is given in table 4.2 below:

TABLE 4.2: FLARE MONITORING RESULTS:

Parameter (units)	22 nd June 2011	23 rd November 2011/ 10 th January 2012	Emission Limit ¹
Nitrogen Oxides (NO _x) as NO ₂ (mg/Nm ³)	113	65.6	150 mg/m ³ for Flare Stacks
Carbon Monoxide (CO) (mg/Nm ³)	NR	49.4	50 mg/m ³ for Flare Stacks
Sulphur Dioxide (SO ₂) (mg/Nm ³)	245	<5.65	-
Temperature (°C)		1024	-
Volumetric Flow Rate (Nm ³ /hr)	716	665	3,000
Vinyl Chloride (mg/Nm ³)		<15.9	-
Acetonitrile (mg/Nm ³)		<15.9	-
Dichloromethane (mg/Nm ³)		<15.9	-
Tetrachloroethylene (mg/Nm ³)		<15.9	-
TA Luft Class I (mg/Nm ³)		<1.59	20 mg/m ³ (at mass flows >0.1 kg/hr)
TA Luft Class II (mg/Nm ³)		<7.94	100 mg/m ³ (at mass flows >2 kg/hr)
TA Luft Class III (mg/Nm ³)		<15.9	150 mg/m ³ (at mass flows >3 kg/hr)
HCl (mg/Nm ³)		8.5	50 mg/m ³ (at mass flows >0.3kg/hr)
HF (mg/Nm ³)		<0.258	5 mg/m ³ (at mass flows >0.05 kg/hr)

All monitoring results were within emission limit values specified in Schedule F.4. of Waste Licence W0109-02.

4.4 Dust

Three ambient dust-monitoring surveys were carried out during the year. Results are summarised below in table 4.3.

TABLE 4.3: TOTAL DUST MONITORING RESULTS.

Sample location	Monitoring Period			Limit for Dust Deposition (mg/m ² /day)
	24 th May to 23 rd June 2011	8 th July to 17 th August 2011	17 th August to 8 th September 2011	
ST1	34	150	85	350
ST2	166	80	128	350
ST6	185	263	97	350
ST7	320	NR*	255	350

Note*: no reading possible due to the presence of organic material in collection vessel.

As can be seen from table 4.3, all results were below the licence limit of 350mg/m²/day.

PM₁₀ monitoring was carried out at four locations using size selective sampling and gravimetric analysis. Results are shown in table 4.3a below:

TABLE 4.3A: PM₁₀ MONITORING RESULTS.

Monitoring Location	ST1	ST2	ST3	ST4
Start date and time	07/07/11, 10:35	07/07/11, 10:24	07/07/11, 10:02	07/07/11, 10:17
24 hour average PM ₁₀ , ug/m ³	2.0	1.0	1.0	1.0
24 hour maximum PM ₁₀ ug/m ³	12.0	4.0	3.0	1.0

All results were within the licence limit of 50ug/m³. These results were submitted in the quarterly environmental monitoring report for July to September 2011.

4.5 Noise

Results of noise monitoring surveys carried out during the year are summarised in Table 4.4. Survey results were submitted to the Agency in the environmental monitoring report for each quarter.

Noise results were similar to previous surveys, with noise levels at noise sensitive locations NS4, NS5 and NS6 in compliance with the 55 dB(A) daytime limit and noise levels at NS1, NS2 and NS3 above licence limits. The elevated noise levels at NS1, NS2 and NS3 (and at NS5 in November 2011) were attributed to passing road

traffic, as was reflected in the high L10 readings recorded at each monitoring point. Monitoring consultants concluded that site noise did not contribute to the measured noise levels at these locations.

TABLE 4.4: ENVIRONMENTAL NOISE SURVEY RESULTS.

Location ID	31 st May 2010			15 th November 2011		
	L _{Aeq} , 30min dB(A)	L _{A90} , 30 min dB(A)	L _{A10} , 30 min dB(A)	L _{Aeq} , 30 min dB(A)	L _{A10} , 30 min dB(A)	L _{A90} , 30 min dB(A)
NS1	70	48	74	59	60	48
NS2	68	45	73	69	74	46
NS3	73	43	77	66	71	44
NS4	48	41	50	46	40	33
NS5	46	40	49	57	51	38
NS6	50	39	48	48	40	-

4.6 Surface Water, Groundwater and Leachate

4.6.1 Surface Water

Surface water monitoring was carried out on a quarterly basis at SW1, SW1a, inlet to the stormwater ponds (SW inlet 1 and SW inlet 2), outlet from the sand filters for both ponds (SW outlet 1 and SW outlet 2), SW2, SW3, SW4, SW5, SW7, SW8, SW9, SW10, SW11 and SW12 (an eastern boundary drain feeding into Stream 2). Access to sample point SW6 is not permitted by the landowner. Samples were analysed for the parameters specified in Schedule E5 of Waste Licence W0109-02. In addition, as in previous years, surface water was monitored on a monthly basis for total suspended solids. Weekly surface water visual inspections were also carried out. Sample locations are shown on the drawing attached in Appendix 8.5.

Results for key parameters (ammonia, BOD and total suspended solids) are discussed in this report. Detailed results of all surface water monitoring carried out during the year have previously been submitted to the Agency in separate reports for each quarter.

The Inagh River in the vicinity of the landfill is currently assigned High Status under the Shannon River Basin Management Plan. For High Status waters, the EU Environmental Objectives (Surface Waters) Regulations (SI 272 of 2009) prescribe physiological conditions that support the biological elements that define status. Where relevant, surface water results for the site are compared to these objectives. Results are also compared, as for previous years, to appropriate limits for Salmonid waters, although the Inagh river and streams are not designated Salmonid waters.

4.6.1.1. Surface Water BOD:

BOD results for surface water streams, for the Inagh river and for the inlet and outlet to the stormwater ponds are graphed in figures 4.1 to 4.5. The 5ppm BOD limit for Salmonid waters is shown on the graph for comparative purposes only. In relation to the surface water regulations, the objective for BOD for the Inagh River in the vicinity of the landfill is less than or equal to 1.3ppm (mean result) or less than or equal to 2.2ppm (95%ile). The BOD detection limit in the TMS laboratory is 2ppm; BOD results below this level are reported as less than 2ppm. TMS do not have the capability at present to analyse to a lower BOD detection limit so it is not possible to compare mean results for 2011 with the environmental quality objectives. Clare County Council will request that BOD analyses carried out during 2012 take account of the lower limit of detection in order that results can be directly compared with the surface water mean BOD standard.

Figure 4.1

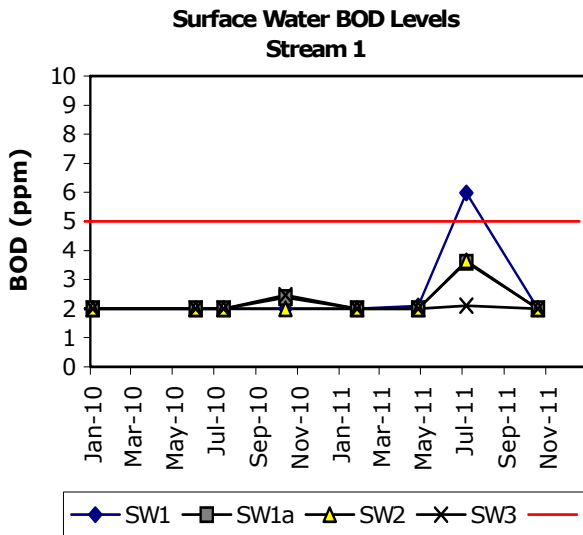


Figure 4.2

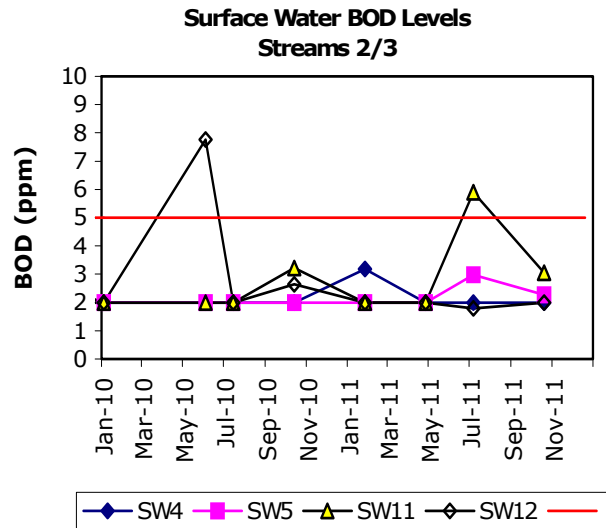


Figure 4.3

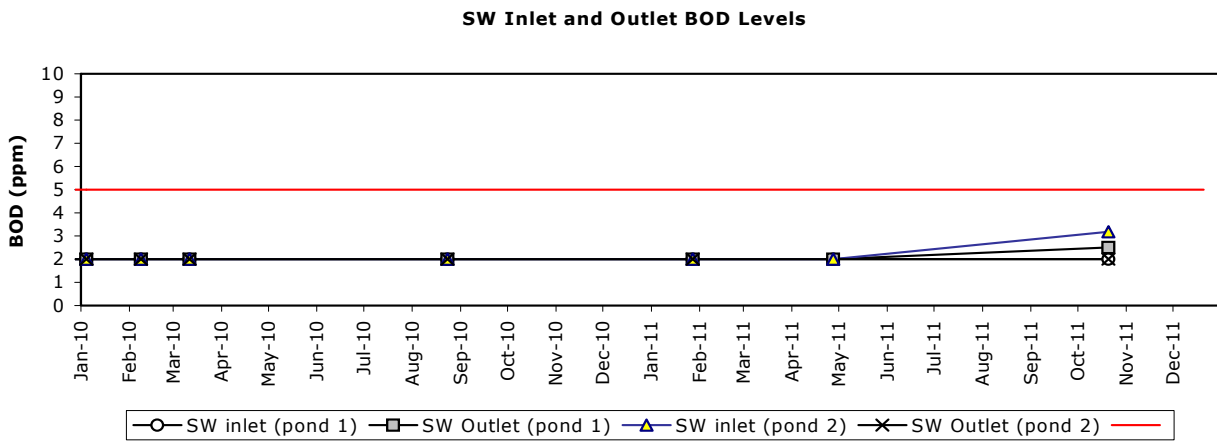
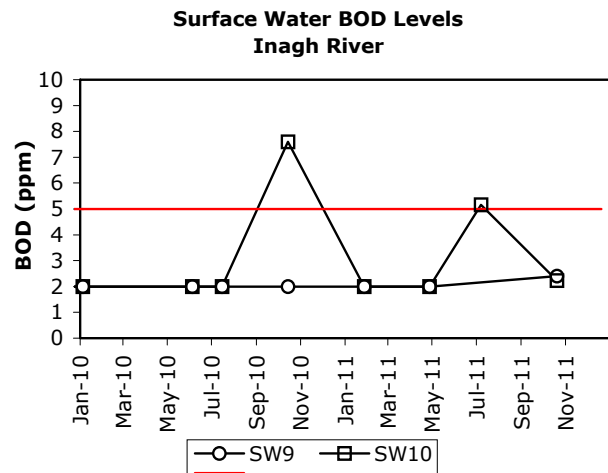
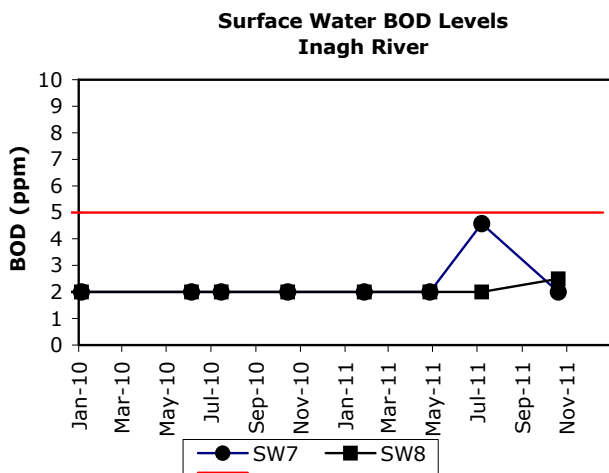


Figure 4.4

Figure 4.5



As can be seen from the graphs, surface water BOD levels for 2011 were below the 5ppm comparative Salmonid limit with the exception of results for stream locations SW1 and SW11 in July 2011. The July sampling event was carried out during a period of extremely heavy rainfall. Runoff from adjoining lands is the most likely cause of the slightly elevated BOD in these streams in July. BOD levels in the inlet to and outlet from both stormwater ponds were below 5ppm throughout 2011. The majority of results were below the 2ppm method detection limit.

4.6.1.2 Surface Water Ammonia:

Surface water ammonia levels in Streams 1, 2 and 3 and in the Inagh river are graphed in figures 4.6 to 4.9 for 2010 and 2011. The ammonia limit for Salmonid waters is shown on the graphs for comparative purposes only. As stated above, none of the surface waters are classified as salmonid waters.

The ammonia limit under the Surface Water Regulations (2009) is 0.040ppm (mean) or 0.090ppm (95%ile) for high status waters.

Figure 4.6

Figure 4.7

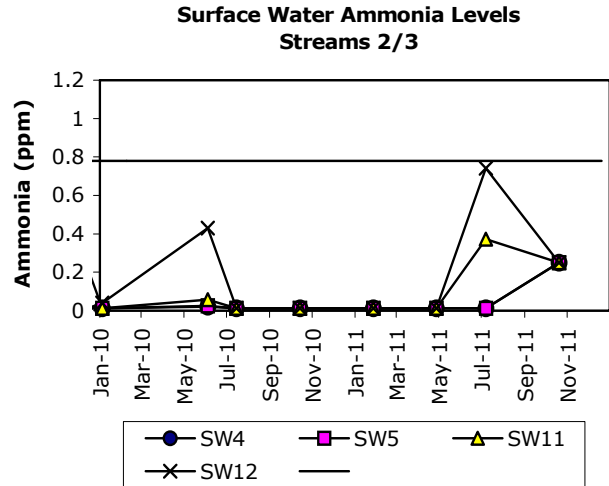
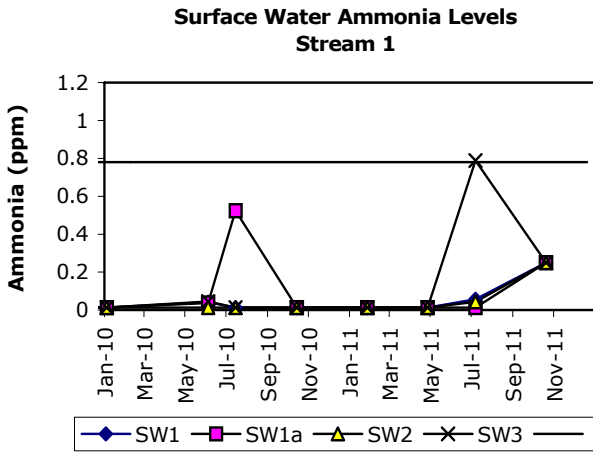
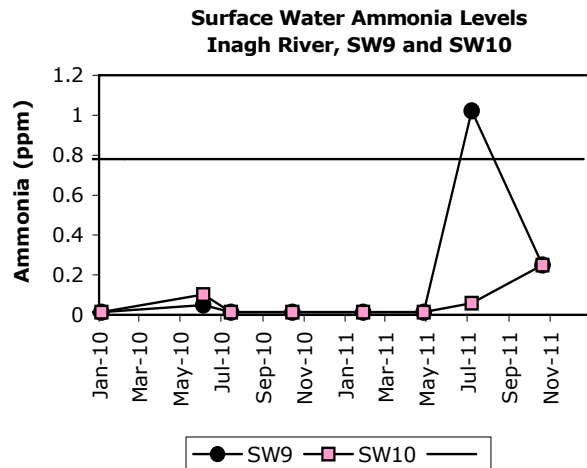
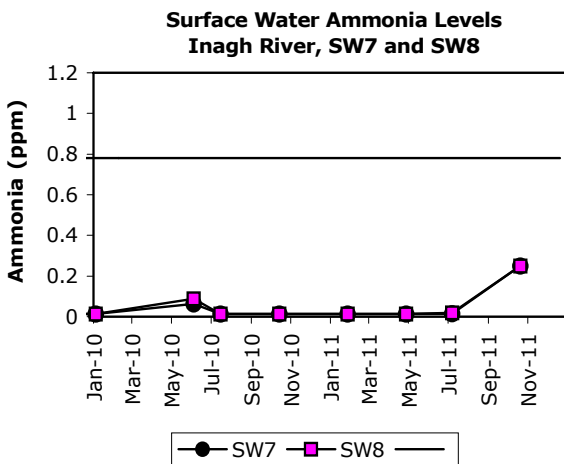


Figure 4.8

Figure 4.9

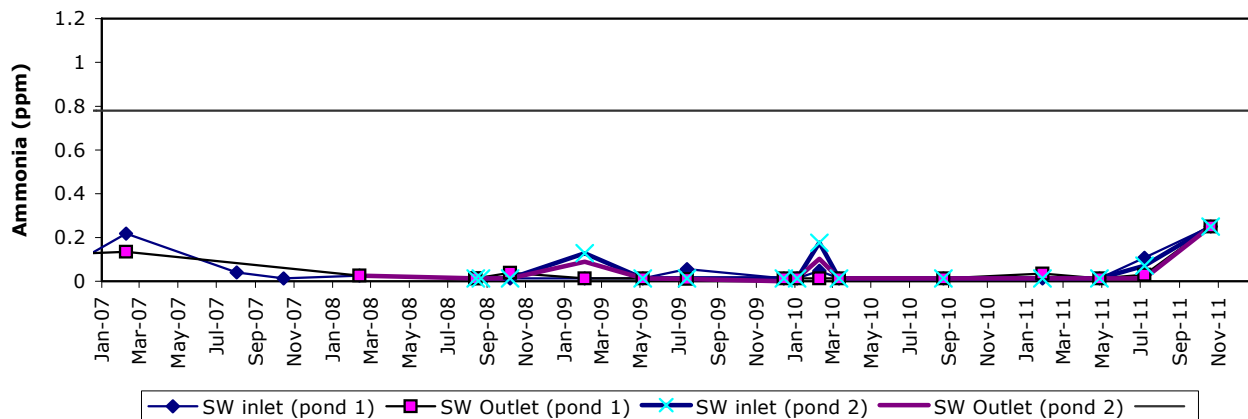


As shown on the graphs, surface water ammonia results for 2011 remained below the Salmonid limit with the exception of results for SW9 in July 2011. As mentioned previously, the July sampling event was carried out during a period of extremely heavy rainfall. Runoff from adjoining lands may have accounted for this elevated result. The apparent increase in ammonia results at all locations in November 2011 is due to the fact that the ammonia analysis was subcontracted to a different laboratory in October'11. The detection limit of the subcontract laboratory was 0.25 compared to 0.0129 in the TMS laboratory. All results were below the

laboratory method detection limit. Due to this higher detection limit, it is not possible to compare results with the ammonia limits under the Surface Water Regulations, 2009.

Ammonia levels in SW inlet and outlet samples are graphed below for the period January 2007 to December 2011.

Figure 4.10: Ammonia Results for SWinlet and SWoutlet Samples



As can be seen from figure 4.10, ammonia levels in inlet and outlet samples were consistently low throughout the period. As discussed in the previous paragraph, results for October 2011 appear slightly higher than normal due to the fact that the ammonia analysis was done in a subcontract laboratory with a higher limit of detection (0.25ppm). All inlet and outlet ammonia results for October were below the detection limit.

4.6.1.3 Surface Water Suspended Solids.

Surface water monitoring locations are visually inspected each week for turbidity, gross solids, colour and surface film. Monthly surface water samples are analysed for suspended solids levels by TMS Environment Ltd. Results obtained from January 2010 to December 2011 are graphed below in figures 4.11 to 4.15. The 25ppm suspended solids limit for Salmonid waters is included in figures 4.11 to 4.14 for comparative purposes only. The 35ppm licence limit for surface waters discharging from the site is shown on figure 4.15.

Figure 4.11

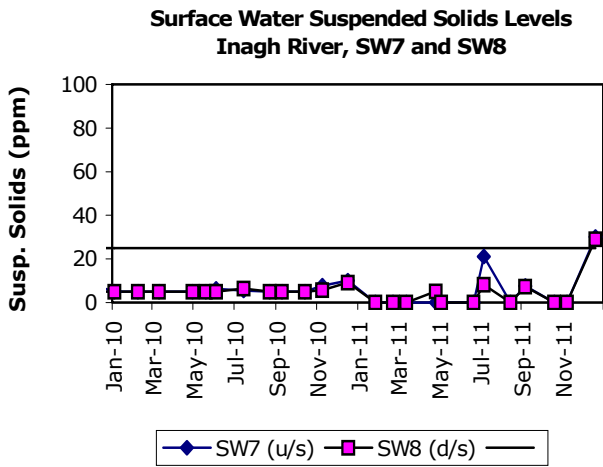
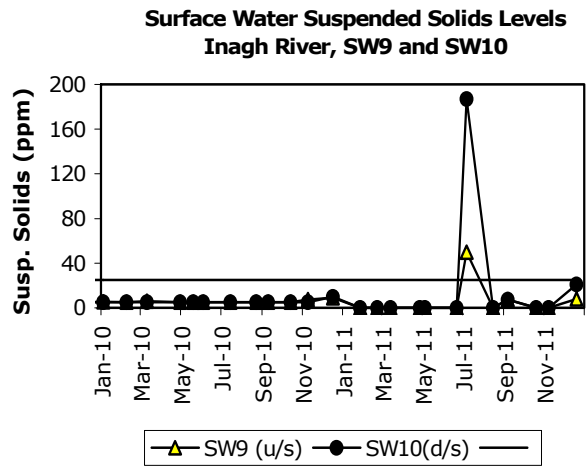


Figure 4.12



Inagh River suspended solids levels were below the 25ppm Salmonid limit throughout 2011 with the exception of results for SW9 and SW10 in July 2011. Results for SW7 and SW8 were slightly elevated above the Salmonid limit in December 2011 at 30ppm and 29ppm respectively.

Suspended solids results for streams 1, 2 and 3 are shown in figures 4.13 and 4.14 below.

Figure 4.13

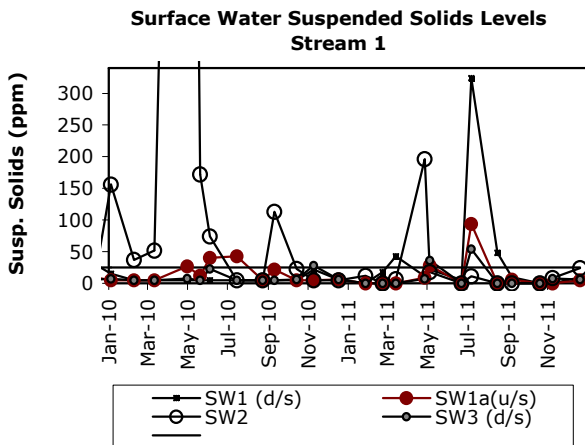
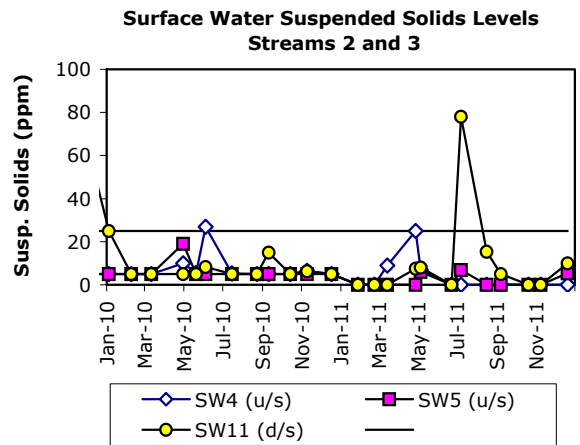


Figure 4.14

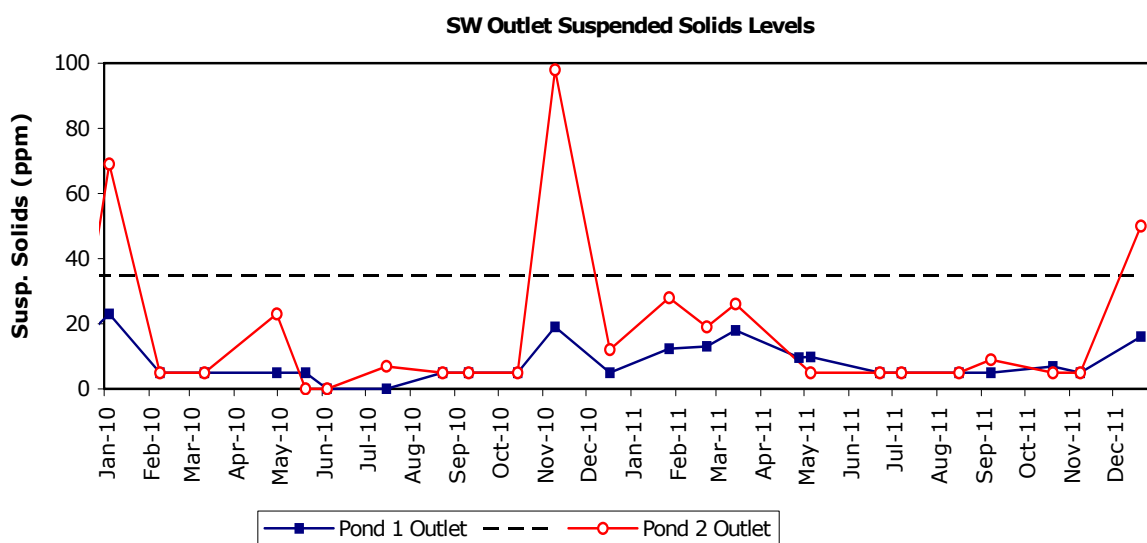


As can be seen from figure 4.13, suspended solids levels in Stream 1 were above the 25ppm comparative limit for Salmonid waters on a number of occasions during the year, particularly in July 2011, when the stream 1 sample result was over 300ppm. These elevated results were not related to site activities; All results for the stormwater pond discharging to stream 1 were within limits throughout 2011 (see figure 4.15 below).

Results for stream 2 (figure 4.14) were within limits during the year except at SW11, again in July 2011. As discussed elsewhere in this report, the July 2011 monitoring event was carried out during a period of very heavy rainfall. Runoff from adjoining clay ground would most likely have accounted for the elevated suspended solids results obtained at a number of locations during this period. In addition, works were being carried out on the stream 2/3 bridge on the N85 close to the site entrance at the time. This may also have contributed to the elevated results at SW11.

Suspended solids levels at both surface water outlet points during 2011 are graphed below in figure 4.15. Also shown on the graph is the 35ppm licence limit.

Figure 4.15



As Figure 4.15 shows, the outlet from both stormwater ponds was within the 35ppm suspended solids limit throughout 2011 with the exception of the Pond 2 outlet in December (50ppm). This suspended solids exceedence was attributed to unavoidable earthworks carried out during persistent rain in late November/December to prepare cell 13 for capping. A further exceedence occurred at this location in January 2012. Site staff responded by cleaning out and replacing the sand in both of the sand filters receiving the discharge from pond 2.

Measures were put in place during 2010 to reduce the risk of suspended solids exceedences. These measures included the addition of topsoil/compost and grass seed to exposed clay areas around future phases 4 and 5 and the vegetation of swales around the landfill area with wetland plants. The wetland plants continued to spread through the swales during 2011. Additional works are proposed for 2012, including further vegetation of exposed clay areas. Extensive earthworks are required to shape embankments around the phase 4/5 areas

and to reduce the steepness of the slope between phase 3 and 4. These works will be carried out during suitable weather conditions and exposed areas will be vegetated as soon as possible after completion of the works to minimise runoff.

4.6.2 Groundwater

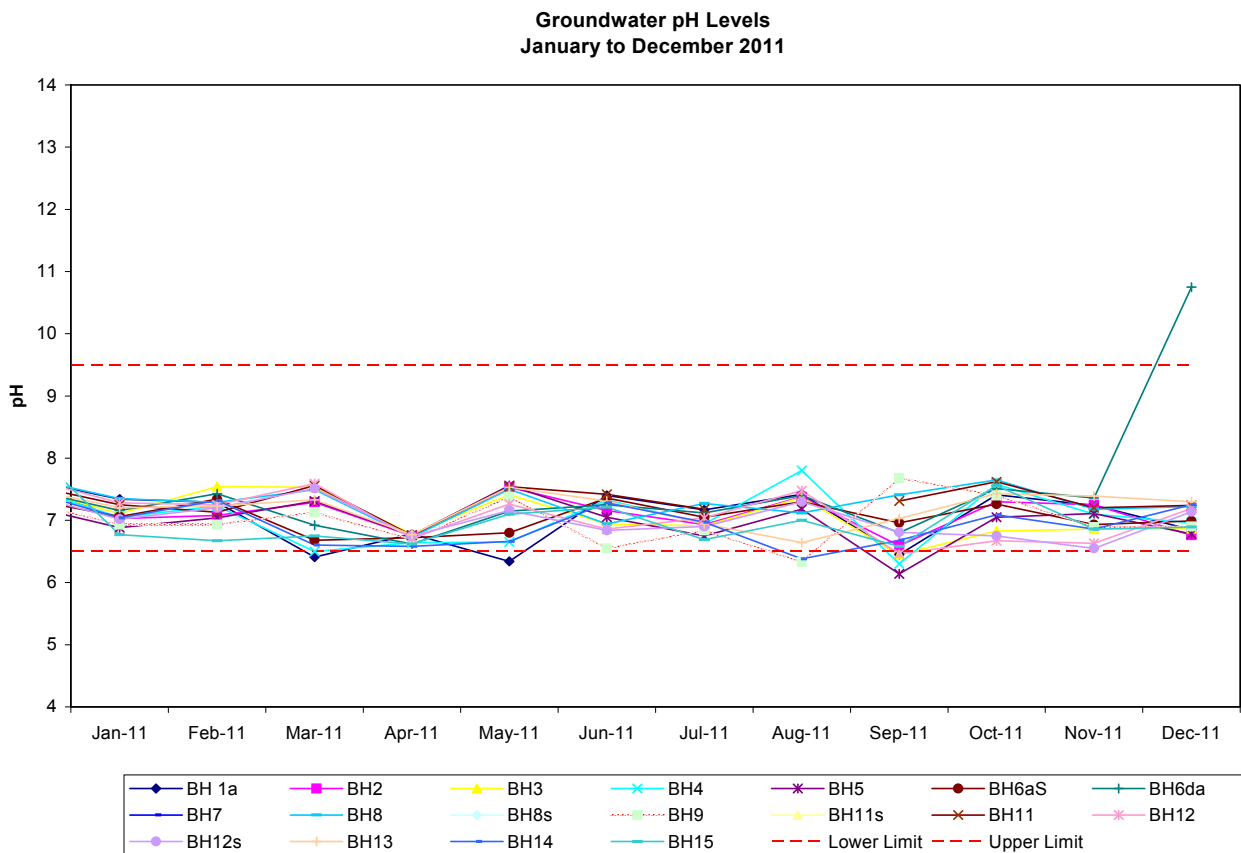
Groundwater monitoring was carried out on a monthly basis during the year at BH1a, BH2, BH3, BH4, BH5, BH6As and BH6Ad, BH12s, BH12d, BH13, BH14 and BH15. Private wells and the site drinking water supply (canteen tap) were also sampled each month. Samples were analysed for the parameters and frequency specified in Schedule E5 of Waste Licence W0109-02. Monitoring wells BH7 BH8 and BH11 were lost early in 2007 due to Phase III construction. BH8 and BH11 were replaced in March 2008.

Results for key groundwater parameters are summarised in this report. Detailed results of all groundwater monitoring carried out during the year were previously been submitted to the Agency in quarterly reports. Where relevant limits exist, groundwater results are compared against the threshold levels specified in European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No 9 of 2010). The threshold levels given in columns 3 and/or 4 of schedule 5 are used for comparison. These thresholds are annual arithmetic mean levels. However for groundwater metals, fluoride, cyanide and sulphate, only one result is available for 2011 as these parameters are monitored annually in accordance with W0109-02.

4.6.2.1 Groundwater pH:

Groundwater pH results from January to December 2011 are graphed below in figure 4.16. The original EPA Interim Guidance Value range for pH (6.5 – 9.5) is also shown on the graph for comparative purposes. Limits for pH are not specified in S.I. 9 of 2010.

Figure 4.16



As can be seen from Figure 4.16, pH results were within the upper IGV for all groundwater samples with the exception of results for BH6aD in December 2011. This elevated result is attributed to an historic lime contamination problem in the area, most likely from concrete runoff generated during construction of the belowground well chamber as lime is not used anywhere on the site.

The lower IGV was exceeded at BH1a in March, May and September and at BH 9 and Bh14 in August and BH5 and 12 in September. Results were slightly below the lower limit of 6.5 at these locations.

4.6.2.2. Groundwater Conductivity:

Groundwater conductivity results for 2011 are graphed in figures 4.17 and 4.18. The threshold value of 1,875us/cm (from S.I.9, 2010) is shown on the graphs for comparative purposes (as ms/cm).

Figure 4.17: Groundwater Conductivity Levels
Overburden Wells

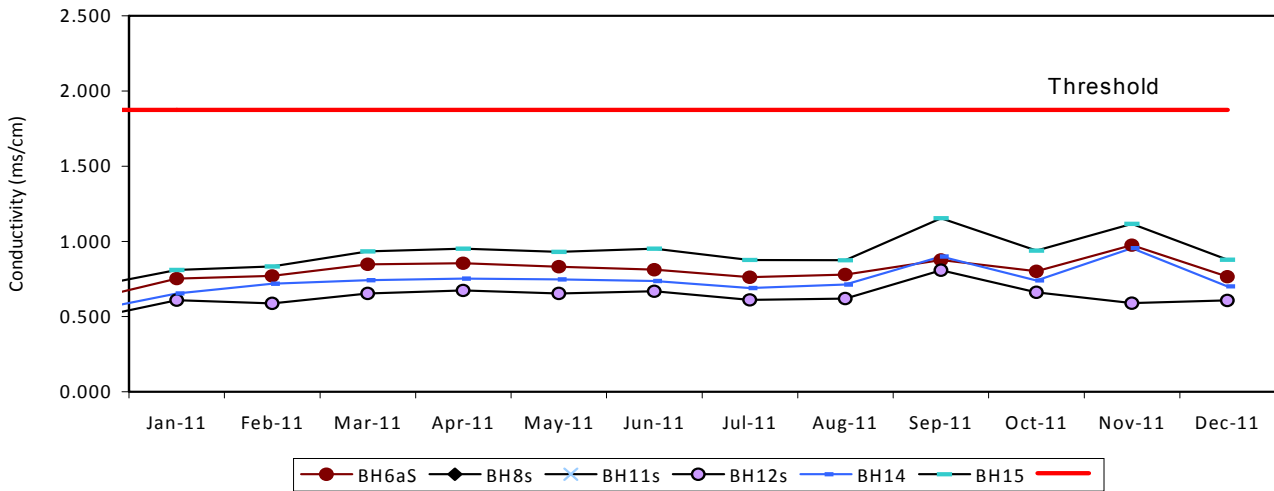
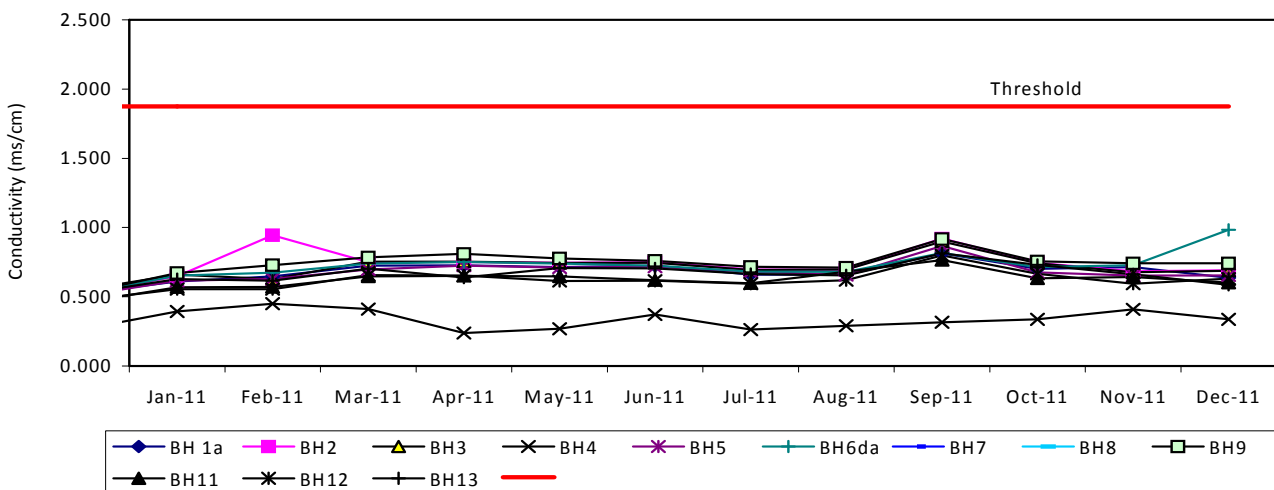


Figure 4.18: Groundwater Conductivity Levels
Bedrock Wells

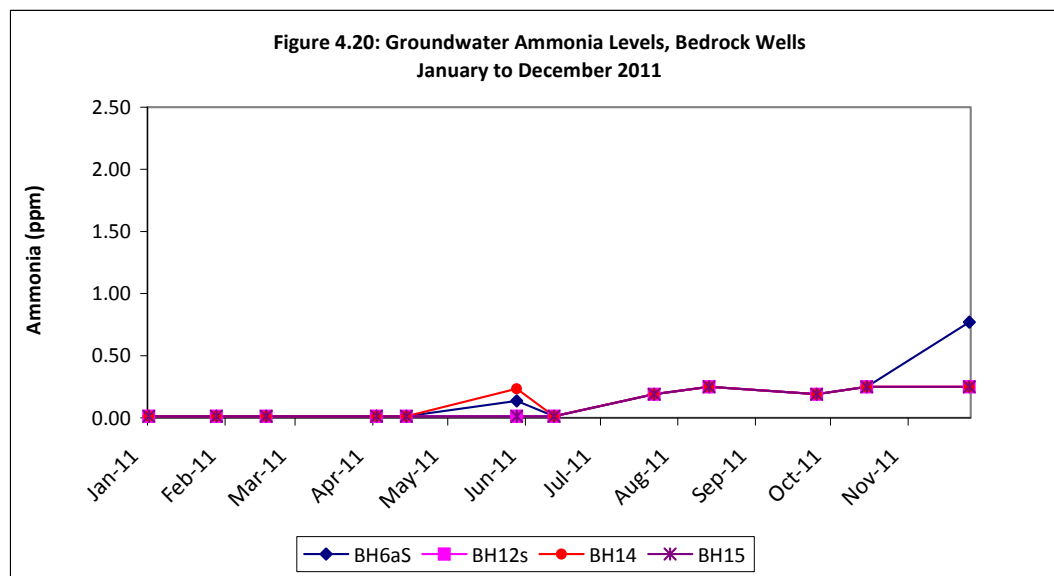
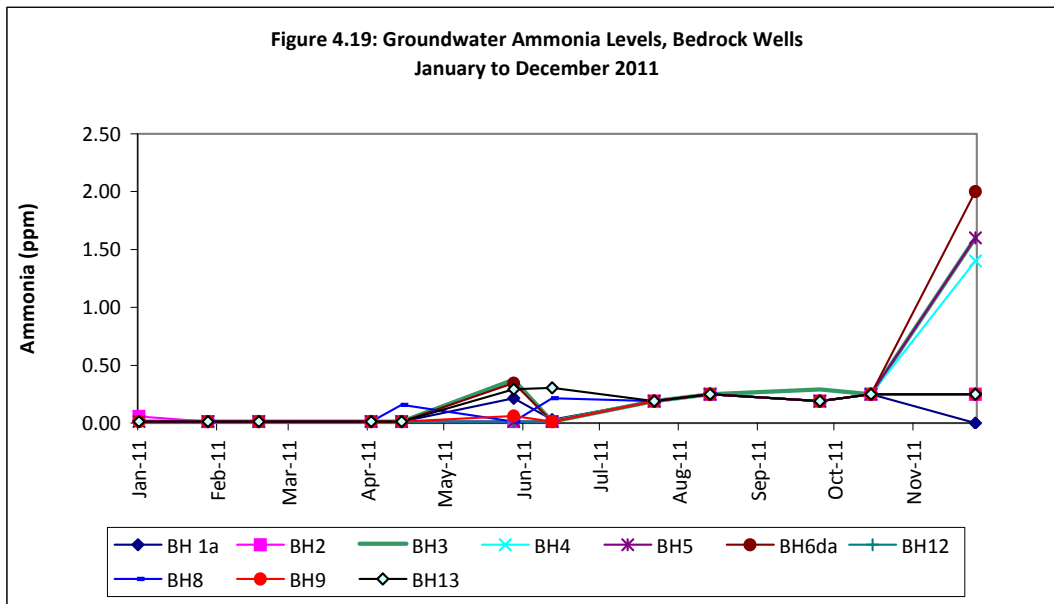


Groundwater conductivity levels remained below the groundwater threshold level of 1,875us/cm throughout 2011.

There have been occasional problems with elevated pH and conductivity levels in the area around BH6 in the past (see preceding paragraph and 2009 AER). However, conductivity levels at all wells were satisfactory for 2011.

4.6.2.3 Groundwater Ammonia

Groundwater ammonia results for 2011 are graphed below in figures 4.19 and 4.20. The groundwater ammonia threshold is 0.175ppm (S.I.9, 2010).



During this twelve-month reporting period the majority of ammonia results were within the (varying) method detection limits. However, as can be seen from the graphs, results for BH3, Bh4, BH5, BH6aD and BH6aS were elevated in December 2011 in comparison to previous surveys. Given that a subcontract laboratory was used for this round of analysis and this was the only occasion on which elevated results were obtained, Clare County Council considers that the December 2011 results are anomalous and may be attributed to laboratory error. Close attention will be paid to laboratory accreditation and to method detection limits during the 2012 monitoring programme to ensure that detection limits are low enough to enable results to be compared with relevant limits, as far as practicable.

4.6.2.4 Groundwater Chloride.

Groundwater chloride levels from 2002 to 2011 are graphed below in Figures 4.21 and 4.22. The chloride groundwater threshold of 187.5ppm is included in the graphs for comparative purposes. The in-house trigger level of 80ppm is also included in the graphs (to be reviewed during 2012).

Figure 4.21: Groundwater Chloride Levels
Bedrock Wells, 2002 to 2011

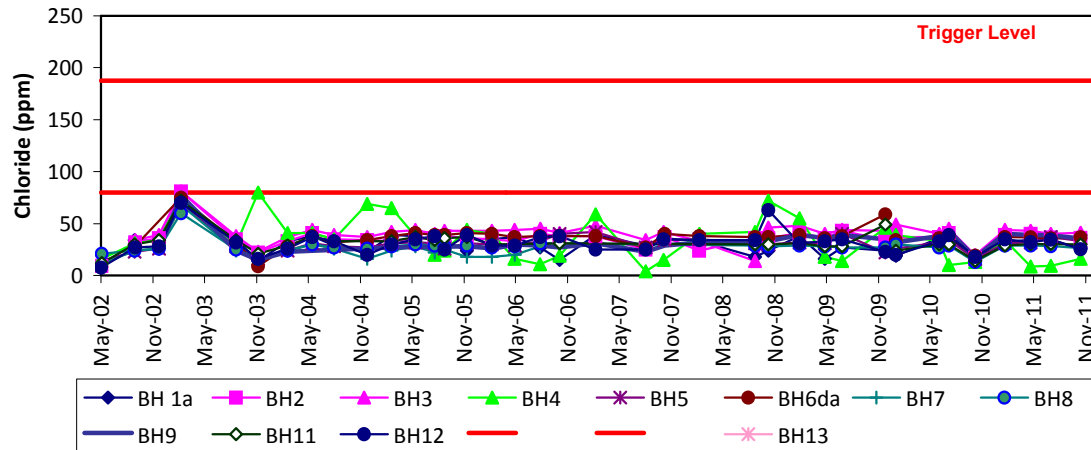
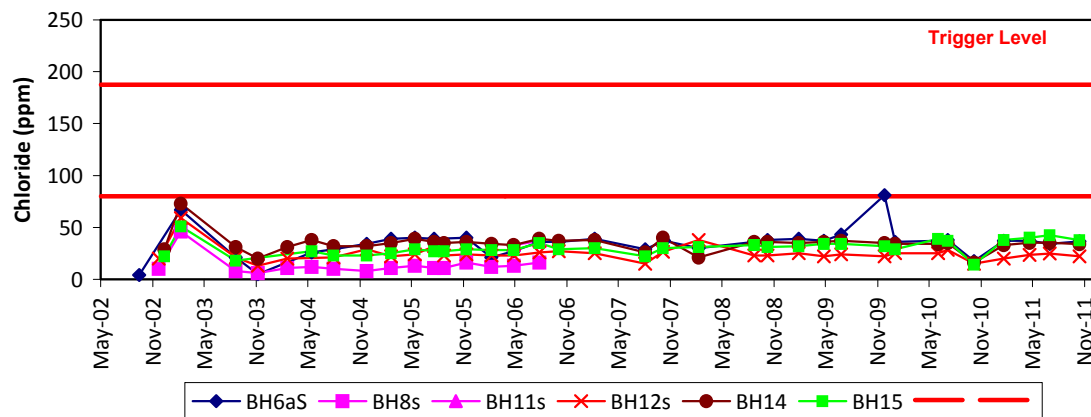


Figure 4.22: Groundwater Chloride Levels
Overburden Wells, 2002 to 2011



As can be seen from the graphs, groundwater chloride results have not exceeded either the groundwater threshold level of 187.5ppm or the 80ppm in-house trigger level since monitoring commenced at the site.

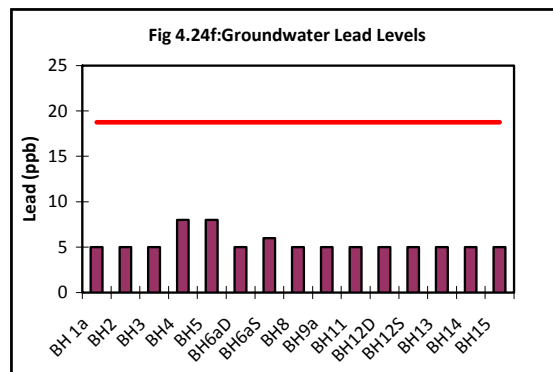
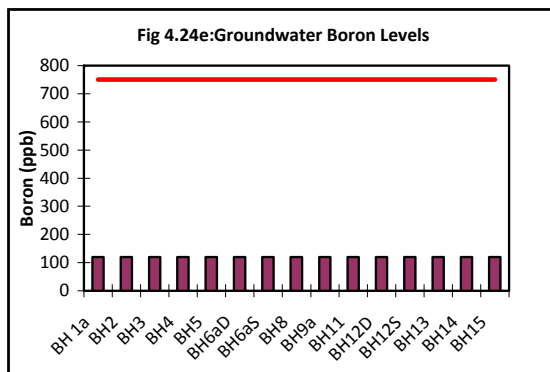
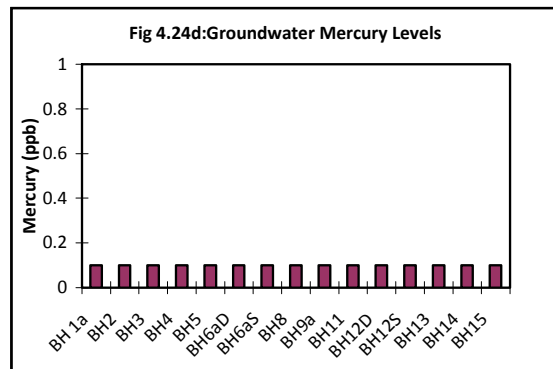
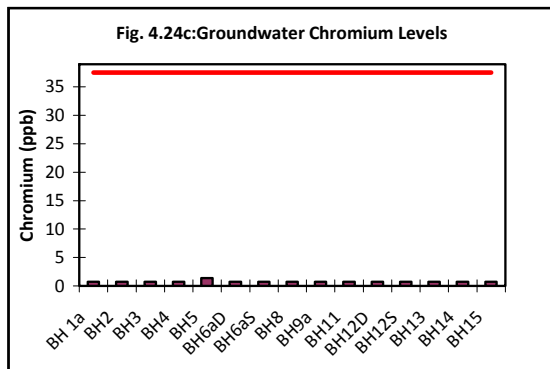
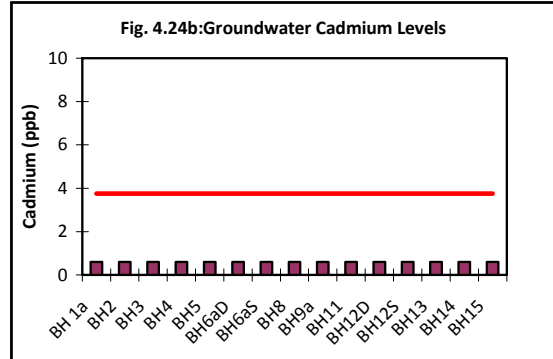
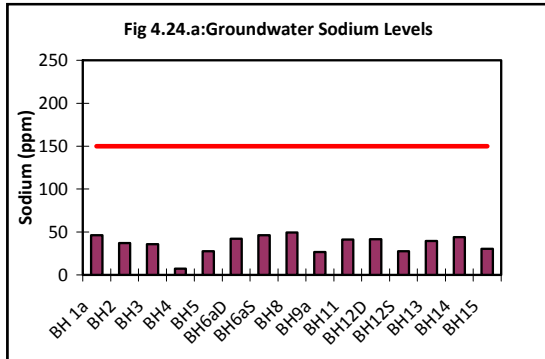
4.6.2.5 Groundwater volatile and semi-volatile organic compounds

Groundwater samples were analysed for VOC's and sVOC's in July 2011. Results were below method detection limits for all samples (<1ppb). Levels of dichloromethane, toluene and xylene were also below method detection limits (<1ppb).

4.6.2.6 Groundwater metals levels:

Groundwater samples were analysed for metals in July 2011. Results are graphed below in figures 4.24a-f.

Figure 4.24a to 4.24f; Groundwater Metals Levels (2011)



Note: The limits shown on the graphs are the groundwater threshold values specified in columns 3 / 4 of Schedule 5 of SI 9 of 2010.

As can be seen from the graphs, sodium, cadmium, chromium, mercury, boron and lead levels were all below the relevant groundwater threshold levels.

Results for cyanide and sulphate (not shown) were also below the relevant threshold levels for all samples.

4.6.3 Leachate.

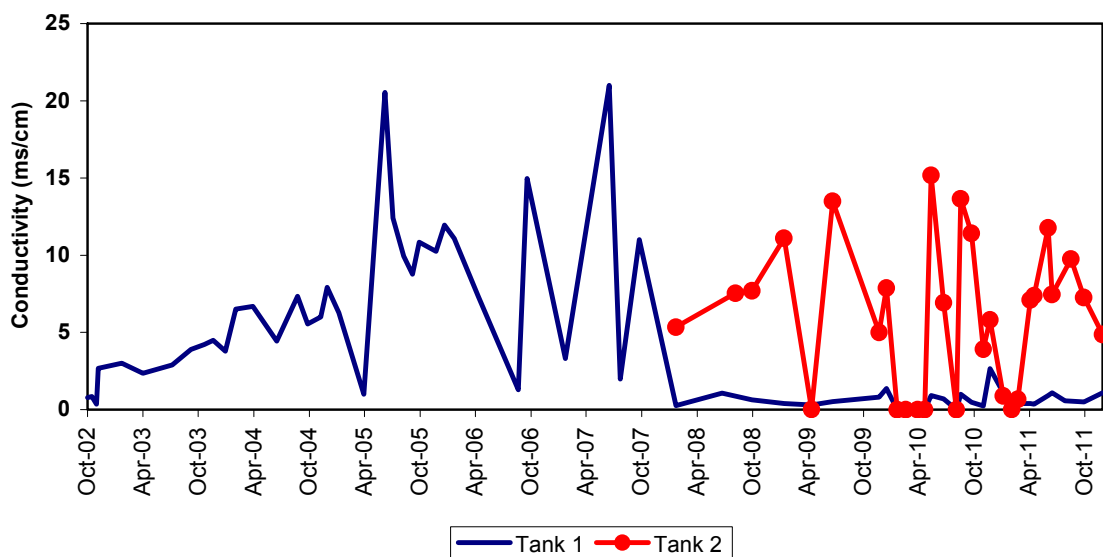
Leachate generated on site is discharged to one of two leachate storage tanks for transport offsite to a designated wastewater treatment facility. An underground storage tank (tank 1) was installed when the facility was initially developed. Up to November 2007, all leachate generated on site was discharged to this tank, including landfill leachate from within the waste body and runoff from designated concrete areas of the civic amenity site. A second leachate tank (Tank 2) was installed in November 2007 as part of the Phase 3 construction project. This tank now holds all leachate from the waste body and the older tank receives leachate/potentially-contaminated runoff from the composting area and the lower level of the civic amenity site only. In October 2011, modifications were made to the drains at the upper level of the civic amenity site to divert clean runoff from this area to the stormwater pond. Runoff from this section of the site previously discharged to the leachate tank 1. This work was done, with the agreement of the EPA, to reduce site leachate volumes.

Results for leachate tanks 1 and 2, for conductivity, BOD, COD and ammonia levels, are graphed in figures 4.23 to 4.28 of this report. All results have previously been submitted in quarterly environmental reports for the facility.

4.6.3.1 Leachate Conductivity

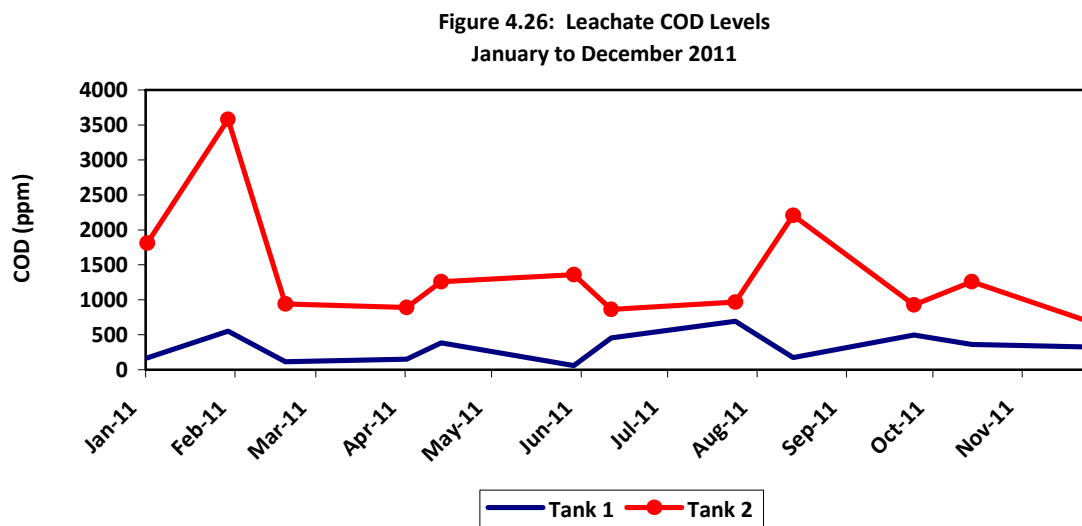
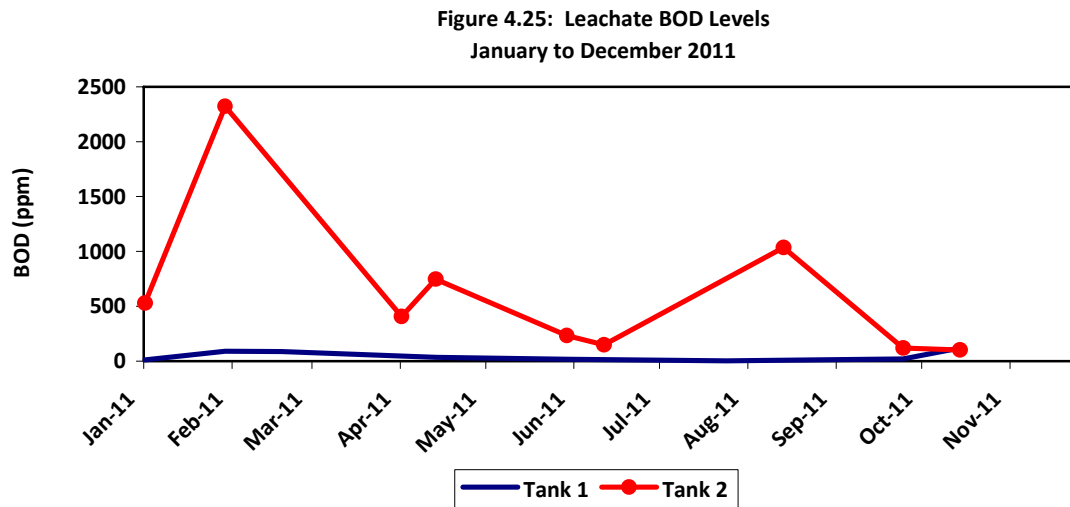
Leachate conductivity levels are graphed in figure 4.24. As would be expected with the diversion of higher strength landfill leachate away from the old leachate lagoon (tank 1) in early 2008, conductivity levels in tank 1 reduced significantly in 2008 and have remained low since then. Higher levels were observed in the new tank. Leachate conductivity is within the range expected for landfill leachate.

Figure 4.24: Leachate Conductivity Levels
2002 to 2011



4.6.3.2 Leachate BOD and COD

Leachate BOD and COD results for 2011 are graphed below in figures 4.25 and 4.26.



As can be seen from the graphs, BOD and COD levels were consistently lower in tank 1 than in tank 2. This is as expected given that the leachate in tank 2 is landfill leachate while the leachate in tank 1 is composed of surface water runoff from the civic amenity and composting areas.

The leachate BOD:COD ratio is a useful tool for assessing leachate biodegradability. Ideal ratios should be in the region of 0.3 or greater. Additional leachate samples were collected for BOD and COD analyses during 2011 in order to obtain more information on leachate biodegradability because early 2009 results for the landfill leachate (tank 2) indicated a poor relationship. The ratio for landfill leachate from February 2009 to December 2011 is graphed below in figure 4.26 (5-pt moving average trendline also shown).

Figure 4.27: Leachate BOD:COD Ratio
January 2009 to December 2011

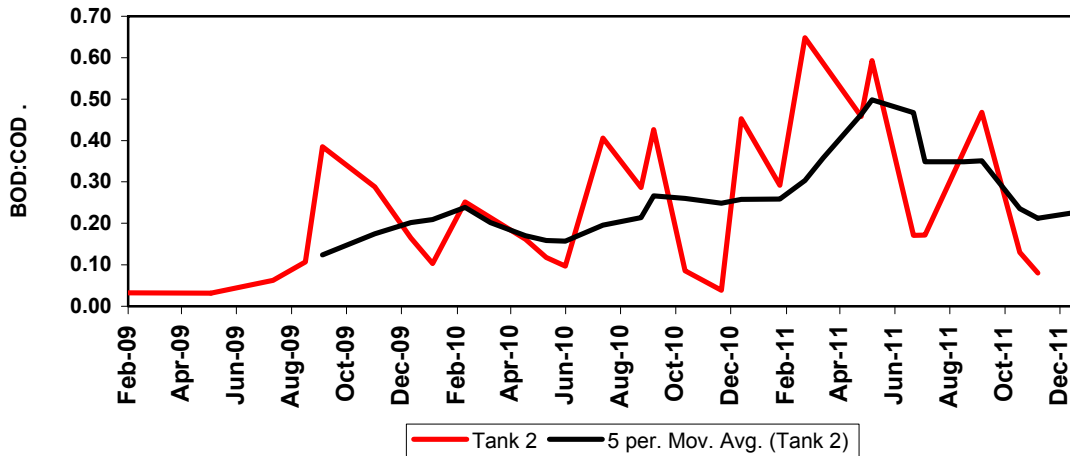


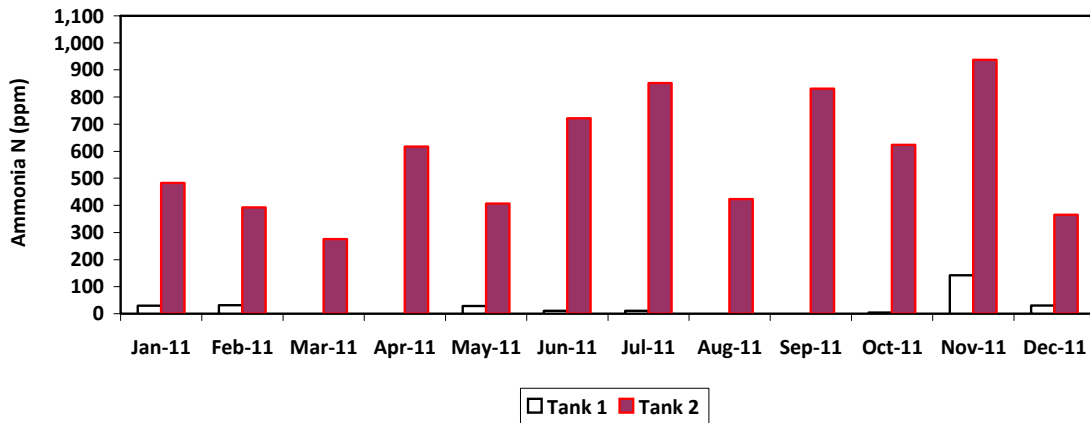
Figure 4.27 shows an increase in BOD: COD ratio for landfill leachate (tank 2) after August 2009. The mean result for 2011 was 0.33 although individual results for the year varied between 0.08 and 0.65. The practice of recirculating leachate within the waste body was discontinued in 2008 because of the possibility that this practice could result in high strength leachate with reduced biodegradability (see 2008 AER). From early 2008 to late 2009, only relatively low strength leachate from tank 1 was used for recirculation. Leachate recirculation was discontinued in October 2009. At this time, there are no plans to recommence leachate recirculation unless or until waste cells appear to be drying out. A rainfall irrigation system was installed in the last two capped cells (cell 12 and 13). The old leachate recirculation system in cell 9 was modified to an irrigation system during 2011 as part of lining works to reseal around the recirculation tank. The irrigation system will be used in the future if gas results or SCADA leachate levels indicate that landfill cells are drying out.

4.6.3.3 Leachate Ammonia Levels.

Leachate ammonia results from January to December 2011 are graphed below in figure 4.28. As would be expected, ammonia levels in tank 1 were significantly lower than in tank 2 due to the fact that the leachate discharged to tank 1 is CA site runoff rather than true landfill leachate.

Leachate levels in tank 2 fluctuated slightly during this reporting period, most likely due to variation in rainfall/dilution. Results ranged from 275ppm to 940ppm with a mean of 580ppm for the year.

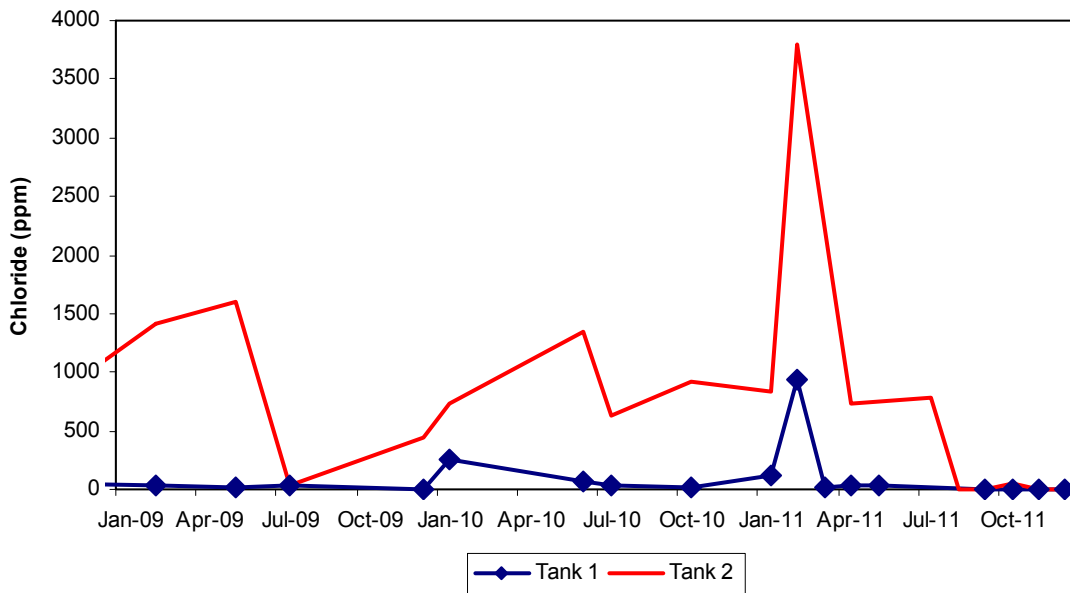
Figure 4.28: Leachate Ammonia Levels
January to December 2011



4.6.3.4. Leachate Chloride Levels

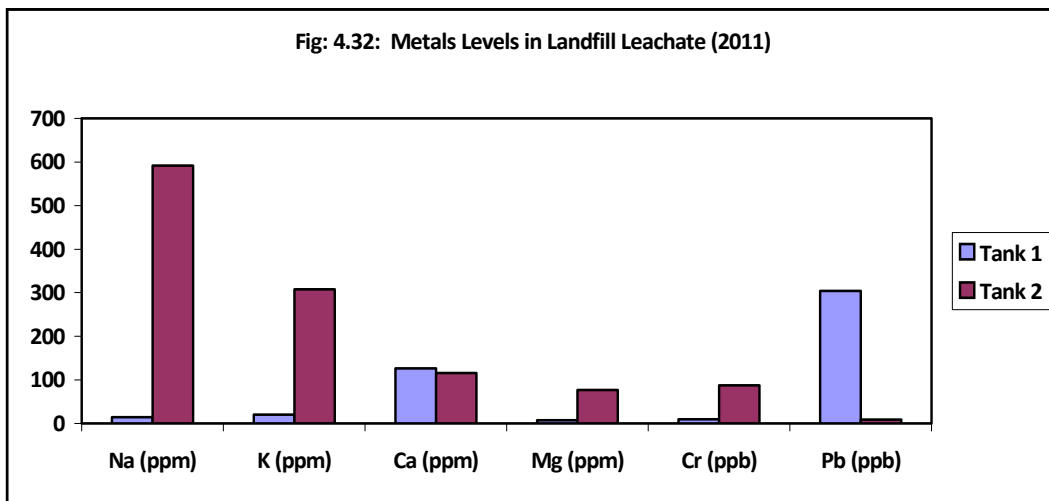
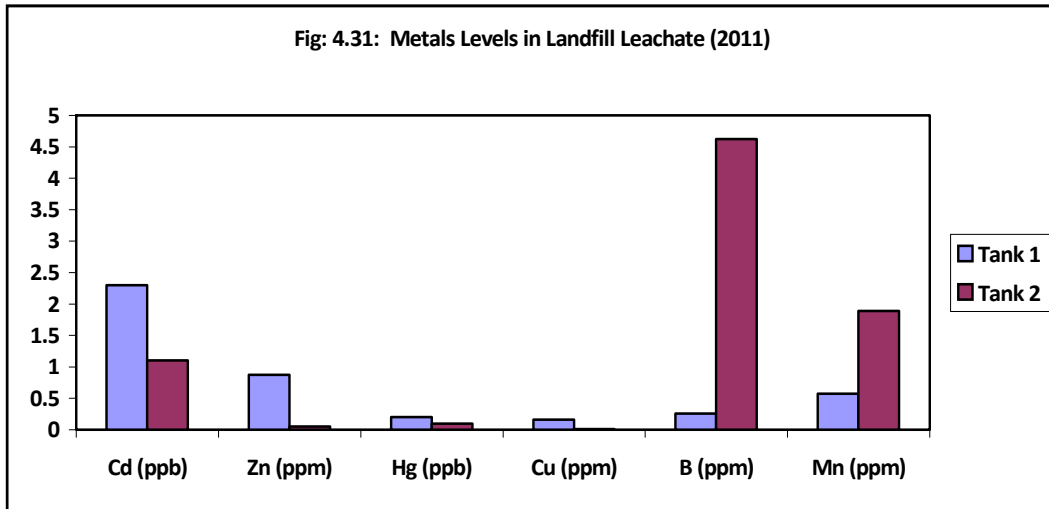
Leachate chloride levels are graphed in figure 4.29 for the period January 2009 to December 2011. As discussed above, the reduced chloride results for tank 1 are due to the nature of the leachate discharging to this tank. The variation in levels in tank 2 is most likely due to rainfall.

Figure 4.29: Leachate Chloride Levels
2009 to 2011



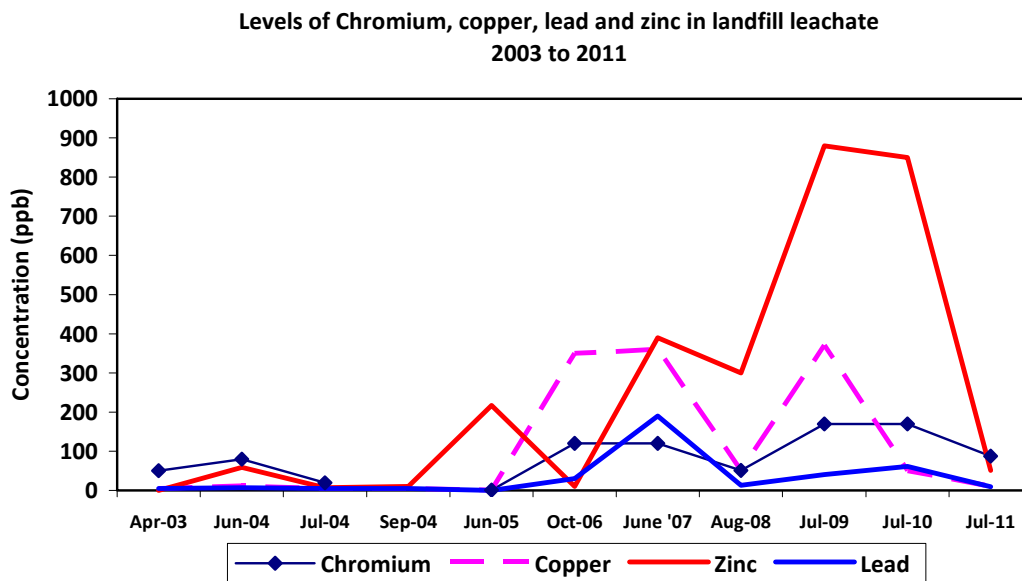
4.6.3.5. Leachate Metals

Results for leachate metals levels are shown in figures 4.31 and 4.32 for 2011.



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Results for chromium, copper, lead and zinc levels in landfill leachate are shown below in figure 4.33. Results prior to 2008 are shown for Tank 1 as this tank received all landfill leachate until then. For 2008 to 2011, results are shown for tank 2.



As can be seen from the graph, zinc and copper levels increased significantly in 2008/2009, possibly due to the use of ASR as cover material during that period. Results for 2011 are significantly lower. ASR has not been used as landfill cover since December 2009.

In summary, levels of all leachate parameters were within the ranges expected for municipal waste landfills. Levels were higher in the landfill leachate tank (tank 2) than in the civic amenity site runoff tank (tank 1), as would be expected. BOD, COD, conductivity and ammonia levels varied during the year, most probably due to changes in rainfall. Leachate would be expected to be more concentrated during dry weather.

4.7 Biological and Ecological Monitoring.

4.7.1 Biological Monitoring:

Biological and ecological monitoring surveys were carried out during the year in accordance with Condition 9.15 of W0109-02. Details have previously been submitted in separate reports to the Agency. The Biological Monitoring survey was done on the 2nd August 2011. The report concludes that there is no evidence of an impact from the landfill on surface waters. Inagh river monitoring points retained a Q3-4 status. Streams in the vicinity of the landfill retained a Q3 rating at both upstream and downstream locations.

4.7.2 Ecological Monitoring:

A general habitat and vegetation survey was carried out on the 13th July 2011. As for previous years, the survey report concluded that while there are no habitats of significant conservation value within the site, the site does provide useful habitat for local wildlife including such species as the common frog and badger. Furthermore the diversity of species within the site is increasing as new habitats are being established.

Two countryside bird surveys were carried out during the year, on the 29th April and on the 4th June. These surveys have been conducted at the facility since 2002. Twenty-nine bird species were recorded in 2011, which is within the range of previous years. No new species were recorded. No significant concentrations of crow species were recorded in 2011.

Two surveys for Hen Harriers were carried out on the same dates as the countryside bird surveys. No sightings were made within the landfill but one male was recorded to the south of the site.

With the agreement of the Agency, the mammal survey frequency was reduced to once every two years in 2009. The 2010 survey commenced in December 2010 but was not completed until March 2011, due to adverse weather in December/January. The report of this survey concluded that the site is of limited wildlife interest. Frogs, pine martens and badgers are present on site. The presence of otters in streams was confirmed in the 2011 survey. Brown rats were present but signs were few; the report states that in terms of pest control, the current practice of landfill management is operating satisfactorily.

A second mammal survey was arranged for September 2011 to assess the phase 4/5 area proposed for tree felling as part of interim restoration works for the site. The survey report concluded that disturbance to frog breeding ponds must be avoided during the frog-breeding season. When tree felling was subsequently carried out in the phase 4/5 area, it was limited to the outer edge of the planted area, away from the frog breeding ponds. As a safeguard, works were completed in January 2012 before the frog-breeding season commenced.

4.8 EPA Site Visits

The following is a summary of EPA site visits made during 2011:

EPA monitoring personnel were on site in July 2011 to carry out groundwater and surface water monitoring at the facility. Results were similar to those obtained by Clare County Council and by TMS Environment on behalf of the Council.

EPA personnel were on site for an announced audit of waste acceptance practices on the 26th July 2011.

The EPA inspector for the facility made an unannounced site visit/audit in November 2011.

5. WORKS PROGRAMME 2011/2012

5.1 Development Works carried out during 2011

Site development works that were carried out during the reporting period are outlined in Table 5.1.

TABLE 5.1: LIST OF DEVELOPMENT WORKS CARRIED OUT DURING 2011 (NON-EXHAUSTIVE).

Site Development Works	Completion Date
Installation of sacrificial horizontal gas extraction system in active cell (cell 13) (including temporary vertical wells)	Ongoing throughout 2011
Installation of temporary clay cap to side/top slope of cell 13	Ongoing as cell was constructed
Installation of rainflaps in cell 11/12 side slope, to reduce leachate volumes in cell 13	January and March 2011
Installation of sealed end caps on leachate riser pipes for cells 6, 7, 8, 9	Completed end of February 2011
Seeding of cell 12 cap	March/April 2011
Installation of final clay cap on cell 12	Completed end of March 2011
Installation of four constructed vertical wells in cell 13	Ongoing throughout life of cell
Installation of new type of horizontal gas extraction network for cell 13	Ongoing throughout life of cell
Installation of dedicated 180mm gas collection line for extracting active cell gas from horizontal and vertical wells. Line was equipped with gravity knockout pot..	May 2011
Installation of additional pipe-work to convert the gas extraction network to a ring main system, including new pumped knockout pot for cell 12.	May 2011
Installation of flux box type seals on built vertical wells and dewatering points on horizontal wells	September/October 2011
Installation of rainwater irrigation system in cell 13 (for future use)	Late November 2011
Diversion of CA site stormwater from leachate collection system to stormwater management system (upper level only).	October 2011
Completion of headwall around cell 12/13 leachate risers	Late November 2011
Installation of permanent gas extraction wells in cell 13	Completed November 2011
Capping of cell 13	Commenced December 2011. Completed 13 th January 2012 (except for top slope clay liner)
Installation of static compactor unit in CA site in preparation for interim landfill closure.	November 2011
Modification of cell 9 recirculation system to a rainwater irrigation system as for cells 12-13	December 2011-January 2012

The bund integrity and water tightness test was last carried out in December 2009. This test is due to be repeated during 2012.

5.2 Proposed Development Works 2012

Proposed site development works for 2012 are set out in Table 5.2 below:

TABLE 5.2: PROPOSED DEVELOPMENT WORKS FOR 2012

Description of Works	Date
Tree felling in phase 4/5 in preparation for interim restoration works	January 2012
Cleaning of sand filters	February 2012
Earthworks in Phase 4/5 to shape slopes/reduce slope steepness	April/May 2012
Installation of final clay cap on cell 13	April/May 2012
Seeding of cell 13 and phase 4/5 area	June 2012
Extension of gas trunk main to include cell 13 wells	May/June 2012
Permanent connection of cell 13 vertical wells. Wells are currently connected on a temporary basis. Temporary connections have been done to a high standard to minimise the risk of breaks in connection points.	May 2012
Application to divert part of lower level CA site stormwater away from leachate collection system.	Summer 2012
Diversion of lower level CA site stormwater from leachate collection system*.	Before year end.

Note *: assuming EPA approval is received.

5.3 Progress to Site Restoration

A Restoration Plan was submitted to the Agency in April 2003. The plan covered the following issues related to the restoration of the site, including:

- Final landfill profile
- Final cap construction
- Access roads
- Proposed land use
- Fencing and security
- Environmental monitoring and pollution
-

A revised interim closure plan was issued in December 2011 to address the premature closure of the landfill after completion of filling of phase 3.

By the end of December 2011, a permanent cap was in place on the following cells:

- Cells 1 to 5 of Phase 1.
- Cells 6 to 9 of Phase 2.

- Cells 10 to 12 of Phase 3.
- Cell 13 of phase 3 (part complete by December).

To date all capped cells have been vegetated with meadow grass.

5.4 Site Survey and Remaining Void Space

The site is surveyed each year to ensure that the landfill profile does not exceed the licence specification. The most recent topographical survey submitted to the EPA in May 2011. The 2012 profile will be carried out after the completion of clay capping on cell 13.

Landfilling commenced in cell 13 on the 13th December 2010 and was completed on the 26th November 2011. This completes the filling of phase 3 of the landfill. At present, Clare County Council does not have plans in place for the construction of phases 4 and 5. Therefore, landfilling activities at this site ceased on an interim basis on the 26th November 2011.

6. FINANCIAL ASPECTS

6.1 Annual Budget and Operating Costs

The annual budget for the Central Waste Management Facility for 2011 is outlined in Table 6.1 below.

TABLE 6.1: SUMMARY OF FINANCIAL PROVISIONS 2010

Item	2011 budget
CWMF - Landfill operation	€1,204,269
CWMF - Recycling centre operation	€277,622
CWMF - Compost operation	€18,272
Total	€1,500,163

Until the interim closure of the landfill in late 2011, part of the recycling centre costs were absorbed in the landfill operational budget (e.g. electricity consumption, CA site leachate processing costs, staffing/machinery costs, other services). This has been corrected for the 2012 (post-closure) budget.

6.2 Report on the use of a portion of the waste charges and gate fees on appropriate environmental improvement projects.

The Community Fund was a result of the Government Policy Statement on waste management “Changing Our Ways” - Local authorities working in partnership with local communities to mitigate the impact of waste management facilities on these communities through appropriate environmental improvement projects. An

amount of €1.27* per tonne of waste accepted for disposal at the landfill is allocated to the Community Fund (*start 2002 and index-linked). The fund will be available as long as the facility continues to accept waste for on-site disposal. Eligible local communities to benefit from the Community Fund are Inagh, Cloonanaha and Kilnamona.

A structure was put in place for the distribution of the Fund, which was agreed with the Community Liaison and Monitoring Committee (CLMC). A weighting criteria ranging between 5 to 10 with projects nearest to the facility carrying the greatest weighting was also adopted.

Following a review on the Community Fund carried out by Exodea Europe Consulting Ltd, it was recommended that three members of the Community Liaison Monitoring Committee sit on the adjudication panel along with three external members. Members from the Community Liaison Monitoring Committee include Sheila Mc Tigue, Tom Long and Michael Hehir. Catherine Dalton, Mary Immaculate College, University of Limerick, (Chairperson), Gerard Kennedy, Rural Resource Development Ltd and Mairead Corbett, Clare County Council represent the external members. The first meeting of the adjudication panel to discuss the distribution of Tranche 4 of the Community Fund took place in March 2010. A total amount of €140,775 is still available for distribution under Tranche 4 (2007 and 2008). A number of meetings have been held by the adjudication panel and a report is expected shortly. Once the report has been received, its recommendations will be considered and forwarded to Clare County Council for resolution prior to distribution. There is a residual sum in the Community Fund at present to cover waste deposited at the facility in 2009, 2010 and 2011. It is expected that the final tranche of funding (Tranche 5) will be advertised during 2012.

6.3 Review of Environmental Liabilities.

An environmental liability risk assessment was carried out for the facility during 2009. The report of this assessment was submitted to the EPA during 2009. Clare County Council submitted revised closure costs as part of the interim CRAMP submitted to the Agency in December 2011.

7. REVIEW

7.1 Nuisance Controls.

Controls are in place to minimise nuisance from litter, birds, vermin, fires, vehicles, odours, dust, visual intrusion and noise associated with activities at the site. A complaints register is maintained at the facility, located in the site administration office. Control measures are described below under separate headings for each nuisance type:

7.1.1 Litter Control

Measures to minimise litter nuisance from waste deposition during the year were as follows:

- Litter fencing was installed around each landfill active cell to minimise windblown litter from the cell. Perimeter fencing (still in place) also intercepts any wind-blown litter.
- The incidence of wind blown litter was reduced by waste compaction and the use of adequate cover material.
- The active cell was closed during high winds.

Since the interim closure of the landfill last November, daily litter inspections are still ongoing within the site. Loose material is gathered and disposed of regularly to keep the site tidy. The main roads outside the facility are checked for litter during the daily odour patrol and cleanup is carried out as required. One of the site conditions for waste acceptance is that all waste is completely covered en route to the facility.

7.1.2 Birds

Clare County Council currently employs Falcon Bird Control to control bird activities on site. Both active and passive methods are employed. Falcon Bird Control maintains controls on site from dawn to dusk by way of flash kites, dummy launchers, ranger kites, acoustic distress calls and birds of prey. Birds of prey are flown daily (weather permitting) to discourage birds from congregating on site. An operational report is completed each day and a file copy kept at the site office. Bird scavenging is minimised by the compaction and daily covering of waste. The level of bird control at the site has recently been reduced with the agreement of the EPA, as the landfill is now closed.

7.1.3 Vermin

Curtin Pest Control are employed by Clare County Council to control vermin. Daily covering of waste ensures that food waste is unavailable to minimise nuisance from vermin. The use of daily/weekly cover also mitigates against colonisation of the landfill active cell by flies. Spraying with an approved insecticide is utilised as required by trained personnel to further control fly/wasp levels. A log is kept of insecticide spraying. Curtin Pest Control conducts monthly inspections on site and maintains a baiting programme to control rat or mice infestations. Details of the inspections and baiting programme are kept on file at the facility. The level of pest control will continue as for pre-landfill closure.

7.1.4 Fires

Adequate fire fighting equipment capable of handling small outbreaks of fire is maintained on site. Site staff are trained in the use of the equipment. In the event that a fire breaks out, it will be treated as an emergency and dealt with immediately. The county Fire Brigade and the EPA will be contacted in the event of any fire incident.

7.1.5 Vehicles

During 2011, all vehicles leaving the active tipping area were directed to use the dry-wheel shakeout and wheel wash unit prior to leaving the facility. In the event that mud and debris was carried from the active site onto the

main access road due to inclement weather conditions, the site manager arranged for cleaning of the site road. Internal roadways were brushed or wetted as required in dry periods.

All roads around the Civic Amenity area, the access roads to the flare and the old stormwater pond are tarred. Access roads around the landfill footprint are stone-coated and are cleaned/scraped with fresh stone applied as required.

7.1.6 Odours

Waste odours:

The haul road into cell 13 was extended as required during the year in order to reduce double handling of waste and minimise waste odours. Covering the waste on a daily basis with suitable material also helped to control waste odours from the cell. The waste was covered during weekdays/weekends with a combination of suitable site clay, wood ash, construction and demolition fines and a fabric material as a base (Geopoly) to minimise odours. Wood chip was used as a biofilter where required by placing directly onto particularly odorous loads to filter the odour and to assist in waste odour management. Control of odour was also achieved by minimising the active cell area.

Landfill Gas Odours:

Active Cell Gas Odours:

Landfill gas odours from within the active cell (cell 13) were controlled using two separate sacrificial horizontal gas extraction systems to draw gas to the flare. The first system was based on a network of pipes drawing to the flare via one exit point in the cell. This system was complemented with the installation of separate horizontal pipes running from north to south, exiting the cell via the southern flank with separate control valves and dewatering points on each line. The drainage stone horizontal line was connected to both the new and old extraction network to maximise gas extraction and minimise odours from this area. Vertical wells were constructed from the base of the cell, as the cell was built, to further optimise active cell gas extraction. A new dedicated extraction pipe was laid to the cell, equipped with a large gravity dewatering pot at the lowest point. A flux box type of head-space seal was designed by site staff and installed to minimise head space odours from the vertical wells.

As the cell was constructed, a clay cap was placed on the side and top slopes to minimise gas migration. Small gas barrier membranes were installed at points in the vicinity of the haul road to minimise fugitive emissions from this area.

A temporary flare was brought to site in October 2011 to optimise extraction of gas from the active cell. The temporary flare ran from the 7th October to the 22nd December.

Capped Cell Gas Odours:

Final capping of completed waste cells includes a gas barrier membrane (LLDPE) installed on all top and side slopes to control gas release from within the cells. This membrane is sealed by welding to all adjoining LDPE/HDPE liners.

Vertical gas extraction wells are installed within the filled cells and connected to the gas collection network to draw gas out of the cells to the flare. Capping of cell 13 commenced in December 2011 in line with this methodology. The gas extraction network is now based on a ring main system. In place of a manifold for cell 12, separate control valves were installed on each of the cell 12 vertical wells. The same approach is proposed for cell 13.

A daily odour patrol is carried out to investigate whether odours are present on-site and off-site. Results of all odour patrols are logged in a site folder. Where an offsite odour is detected, an incident report is issued to the Agency and measures are taken to deal with the odour. Independent odour patrols are also carried out on a random basis, generally twice per month, by Environmental Health Inspectors of the Health Services Executive based in Ennis.

A monthly odour report is completed by site staff and retained on file in the administration office. This report provides useful summary information in relation to odour performance and the effectiveness of the various odour control measures employed at the facility.

7.1.7 Dust

Site access roads are water-sprayed in dry weather to suppress dust. On very dry, windy days, this is done throughout the working day.

Ambient dust monitoring is carried out three times per annum at four boundary locations in accordance with the conditions of the waste licence. All results for 2011 were within the ambient dust limit of 350mg/m² per day.

7.1.8 Visual Intrusion

The principle method of limiting visual intrusion is by the retention of a screening belt of trees around the site. The site entrance and access roads are also landscaped to minimise visual intrusion. The earthen embankments surrounding the landfill area to the east, west and north of the site were raised some years ago and new screening embankments were constructed as part of the phase 3 development works. These new embankments enclose future phases 4 & 5. All embankments have been grassed and planted with Scots Pine and Sitka Spruce. External contractors carry out twice- annual maintenance of the landscaped embankments.

7.1.9 Noise

Two noise surveys are carried out each year at noise sensitive locations adjacent to the facility. Results indicate that noise generated by activities at the site comply with licence limits (see section 4.5 for further information).

7.1.10 Complaints Register

Details of all complaints are recorded in the Complaints Register. This register is located in the site administration office. The register includes the name of the complainant, the nature of the complaint, the date of the complaint and the actions taken to remedy the complaint. The site manager signs off completed complaint forms. The Register is available for inspection by members of the public.

7.2 Environmental Objectives

The Site EMP was updated during 2010 to reflect changes in operation of the facility since the last update. The schedule of Objectives and Targets for 2010-2012 are summarised below. The EMP will be further revised during 2012 to take account of the interim closure of the landfill. :

7.2.1 Objective 1: Improve gas abstraction from capped and active cells:

The list of tasks identified in the 2010 AER for completion during 2011 are summarised below in tables 7.1 to 7.3.

TABLE 7.1: PROGRESS REPORT ON 2010 LIST OF TASKS ASSOCIATED WITH IMPROVED GAS EXTRACTION FROM CAPPED AND ACTIVE CELLS.

Task No.	Description of Task	Completion Date
1	Install end caps on all leachate riser pipes	Completed for cells 1,5,10,11,12,13 during 2010. Different type of riser cap was required for cells 6,7,8,9. Egeplast provided a specially designed end cap in early 2011. All end caps in place by end of February 2011.
2	Investigate options for capping of side slope of cell 12	Completed within specified timeframe.
3	Install welded 110mm lines for gas collection network, cell 11.	Completed within specified timeframe.
4	Apply to EPA for permission to carry out capping of cell 12 side slope.	Completed within specified timeframe.
5	Advertise for capping contractor	Completed within specified timeframe.
6	Carry out side slope capping up to bench height	Completed within specified timeframe. Extraction pipes were installed behind the liner to extract gas to the flare.
7	Investigate options for built well installation and apply to EPA for approval	Completed within specified timeframe.
8	Install wells, subject to approval being received	Completed within specified timeframe. Wells were installed in early November 2010 while cell 12 was still being filled.

TABLE 7.2 PROGRESS REPORT ON ADDITIONAL TASKS RE INSTALLATION OF VERTICAL WELLS WITHIN CELL 13:

Task No.	Description of Task	Completion Date
1	Submit SEW to EPA for installation of built vertical wells in cell 13.	Complete
2	Commence installation of wells	Complete
3	Connect wells	Complete

TABLE 7.3 **PROGRESS REPORT ON ADDITIONAL TASKS RE NSTALLATION OF NEW HORIZONTAL SYSTEM:**

Task No.	Description of Task	Completion Date
1	Submit SEW to EPA for horizontal gas extraction system.	Complete
2	Commence installation of gas collection network.	Complete
3	Modify main gas line to enable horizontal wells to be connected at southern slope of cell. SEW may be required. Dewatering points to be included.	Complete
4	Connect wells	Complete

A significant amount of additional work was carried out during the year to optimise gas extraction within the active cell. This work included further modifying the new horizontal system to provide dewatering points as necessary on each line. Modifications were also made to the four vertical wells constructed within the active cell as the cell was filled; the drainage stone around the two top slope wells was found to be causing odour problems within the active cell during late August/early September 2011. This was in spite of a 1m bentonite clay barrier kept in place above the drainage stone on each well. In response to this problem, site staff designed an outer flux box type of container for placement around each of the top slope wells. The container was equipped with separate extraction lines for the well and for the drainage stone annulus/head space. IBSL fabricated these boxes for CCC and site staff installed them on the 14th September. With the flux boxes in place, the wells were confirmed to be completely free of all VOC emission when checked by OMI in November 2011 as part of the biannual site VOC survey. A further modification was the connection of the old type of horizontal line running along the drainage stone layer on the southern boundary of the active cell, to the new gas extraction network. This was found to be very successful; the OMI survey of November 2011 showed the drainage stone layer to be completely clear of all emissions.

A temporary flare was installed in October 2011 to increase suction across the active cell without compromising the operation of the main flare by high oxygen levels in intake gas.

Filling of cell 13 was completed on the 26th November 2011. Capping works were expedited and lining contractors came on site on the 3rd December to commence capping. The cell was fully lined by mid January 2012. Application of the clay cap is proposed for April/May 2012, weather permitting.

7.2.2. Objective 2: Provision of separate organics collection in Civic Amenity Area.

This objective was proposed to assist in achieving compliance with Condition 1.15.1 of revised licence W0109-02 (i.e. to achieve required targets in terms of diversion of biodegradable waste from landfill).

Progress against this objective is outlined in table 7.4 below:

TABLE 7.4: PROGRESS REPORT ON 2010 TASKS ASSOCIATED WITH PROVISION OF SEPARATE ORGANICS COLLECTION CONTAINER AT THE CIVIC AMENITY SITE.

Task No.	Description of Task	Completion Date
1/2	Investigate options for collecting/treatment of organics waste and carry out feasibility study of various options.	Complete
3	Select most suitable option and apply for approval to implement	Tasks 3 to 5 were put on hold in view of the early closure of CWMF landfill.
4	Implement option	
5	Assess effectiveness of system by means of customer surveys etc	

7.2.3. Objective 3: Reduce the tonnage of leachate removed from the facility.

Leachate generated on site is tankered to wastewater treatment plants at Lisdoonvarna, Sixmilebridge and Limerick Main Drainage for treatment. During 2009, over 24,000 tonnes of leachate was removed from the CWMF for treatment at these facilities. In response to these elevated leachate volumes, Clare County Council identified a number of objectives relating to reduced leachate volumes for offsite treatment. Progress against these objectives is discussed below in table 7.6 and 7.7:

TABLE 7.6. PROGRESS REPORT ON 2010 TASKS ASSOCIATED WITH OBJECTIVE TO REDUCE LEACHATE VOLUMES

Task No.	Description of Task	Comments/Completion date
1	Install rainflaps on side slopes of capped cells.	Ongoing for relevant side slopes as cells are filled.
2	Investigate feasibility of diverting surface water from CA site.	Completed during 2010
3	Apply for EPA approval re task 2.	Completed during 2010
4	Implement modifications	Phase 1 (higher level of CA site) completed during 2011.
5	Carry out feasibility study on the treatment of leachate on site (as required during EPA audit of December 2009)	Still under investigation. However the landfill closure has resulted in significantly reduced leachate volumes so the need for on site treatment has reduced.

TABLE 7.7. ADDITIONAL TASKS ASSOCIATED WITH LEACHATE REDUCTION.

Task No.	Description of Task	Completion Date
1	Installation of rainflaps on side slope of cell 13	Completed
2	Divert higher level CA site runoff (as described in table 7.5)	Completed.
3	Submit proposal for diversion of rainwater from sections of the CA site lower level.	Not yet completed
4	Implement modifications (assuming approval is granted)	Not yet completed.
5	Monitor infiltration rates into capped cells via SCADA pump data.	Ongoing throughout 2011
6	Investigate/remediate cells identified as having high infiltration rates (i.e. >10%)	Not yet completed. SCADA data indicates that infiltration rate is only 10% on average.

7.2.4. Objective 4: Progress project on installation of landfill gas engine.

A preliminary report on landfill gas utilisation at Ballyduff Beg was completed by Tobin Consulting Engineers on behalf of Clare County Council in 2006. A supplementary report was issued in 2008, taking into account targets for diversion of biowaste from landfill and the impact of this on methane generation at the facility. An application was submitted to ESB Networks in August 2010 for a grid connection for a 1MW gas engine at the facility. A connection agreement offer was received in 2010, at a cost of close to 1 million euro. This cost has placed a significant economic barrier to the landfill gas utilisation project. However Clare County Council is continuing to investigate options for pursuing this project. Tasks associated with the project are outlined below:

TABLE 7.7: PROGRESS REPORT ON INITIAL TASKS ASSOCIATED WITH INSTALLATION OF GAS ENGINE.

Task No.	Description of Task	Completion Date
1	Evaluation of the future gas generation potential of the site, taking into account reduced waste intake and the diversion of biowaste, pumping trials, gas quality and contaminants-	Initial report prepared by TES on behalf of CCC. Gas siloxane content established in July 2010.
2	Investigate power generation capacity based on information obtained from task 1-	See comments under task 3, 5, 6.
3	Determine the export potential of energy generation on site and acquire grid connection for same -ongoing	A connection agreement offer was received in 2010, with a cost of close to 1m euro.
4	Identify commercial model for electricity generation on site and identify appropriate supplier, including seeking expressions of interest from appropriate bodies,.	Completed by TES on behalf of CCC.
5	Determine cost element associated with grid connection/civil and electrical works/licence purchase/agreements with land owners etc-	See comments under task 3, 5, 6.
6	Decide on course of action based on commercial viability and environmental saleability of project	See next table.

TABLE 7.8: ADDITIONAL TASKS ASSOCIATED WITH INSTALLATION OF GAS ENGINE, FOR 2011.

Task No.	Description of Task	Completion Date
1	Final evaluation of gas generation potential (quality and quantity) over the next two to three years, taking into consideration the early closure of the landfill in November/December 2011.	Tasks are not yet complete. The grid connection cost and the early closure of the landfill have placed economic barriers on the project. The original proposed 1MW engine is no longer viable. The possibility of a smaller engine is still under investigation.
2	Sizing of appropriate engine based on gas generation potential identified in task 1.	
3	CCC to invite expressions of interest from suitable parties to utilise LFG possibly in combination with another alternative energy technology.	

7.2.5. Objective 5: Progress ISO 14001.

The purpose of Objective 5 (achieving ISO 14001) was to provide external validation of the EMS already in place at the facility. This objective was set assuming the ongoing operation of the landfill. However as the landfill is due to close before the end of 2011, this objective is no longer as relevant. Clare County Council believes that ongoing review and revision of the existing EMS will be sufficient to comply with regulatory requirements for an aftercare landfill facility, without going to the additional expense of implementing and maintaining ISO 14001 standard. Progress against the 2010 tasks list is described below in table 7.9. A summary of SOP's updated during 2010 is included in table 7.9. Further details on site SOP's are provided in appendix 8.7.

TABLE 7.9: PROGRESS AGAINST 2011 TASKS ASSOCIATED WITH SETTING-UP/MAINTAINING ISO 14001.

Task No.	Description of Task	Completion Date
1	Update all site procedures to reflect new requirements of revised Waste Licence	SOP's revised as required during 2011. New procedures were prepared during 2010 as follows: i. Accident prevention policy (draft) ii. Procedure for preparation of BMW returns.
2	Arrange for site visit/assessment by NSAI	Tasks 2 to 4 were put on hold in view of early closure of CWMF landfill. The landfill closed on an interim basis on the 26 th November 2011.
3	Implement corrective actions/measures identified in assessment	
4	Registration Assessment, formal registration	

A summary of the SOP revisions is provided in Appendix 8.6.

7.3 Programme of Public Information

The following information is held in public files at the site offices and is available for the public inspection.

- A copy of the waste licence.
- All correspondence from the Agency relating to the facility.
- All correspondence from Clare County Council to the Agency relating to the facility.
- Copies of quarterly monitoring reports.
- Copies of annual environmental reports (AER).
- Copy of all procedures relating to the facility.
- Incident reporting files.
- Complaints Register.

A community liaison and monitoring committee (CLMC) was established when the facility opened. The purpose of the CLMC is to provide a forum for the local community to raise issues in relation to, and to receive regular updates on, the operation of the facility. The committee consists of 13 members of the local

community and local Councillors. While the landfill was operational, the CLMC met every one to two months in the Inagh National School hall. Since the interim closure of the landfill, the meeting frequency has been reduced to Quarterly. CLMC meetings afford members of the public the opportunity to ask questions, to comment on site operation and to seek information/clarification as required. The meeting also enables Clare County Council to pass on any information regarding the operation of the facility during the preceding month and regarding planned future projects.

In addition to attending the CLMC meetings, Clare County Council personnel working at or associated with the site are available to meet with members of the public and answer queries regarding the facility if requested.

7.4 Management and Staffing Structure

The current management structure is outlined in the chart in Appendix 8.3.

7.5 Environmental Incidents and Complaints

Condition 3 of the waste licence requires that the licensee shall make written records of environmental incidents. When incidents arise, completed incident reports are forwarded to the EPA by fax and hard copy. A list of the incident reports submitted during the reporting period is provided in appendix 8.4. A summary of the incident numbers and types is provided in table 7.9 below:

TABLE 7.9: SUMMARY OF INCIDENTS ARISING IN 2011

Nature of Incident	Number of Incidents
Odours detected offsite during daily odour patrol:	39
Leachate levels:	2
Flare carbon monoxide levels	2
SCADA / Equipment malfunction:	1
Flare downtime:	3
Perimeter well gas levels:	12
Other	3

Condition 3 of the waste licence also requires that the licensee shall make written records of all complaints. Details of complaints received during 2011 are summarised below.

TABLE 7.10: SUMMARY OF COMPLAINTS RECEIVED DURING 2011.

Date	Nature of Complaint
5 th January	Complaint about gas odour. Cell 12 capping was completed in mid January 2011.
Received during March CLMC meeting.	Complaint of gas odour returning with the recent cold weather Clay cap was not in place at that time. Clay cap was in place before shortly afterwards..
18 th March	Littering on N85 from inadequately covered load. Contractor identified and contacted re incident.
12 th July	Landfill gas odour (flare down since 11 th July due to blower problem).
30 th July	Very strong gas odour on the night of the 29 th July.
17 th August	Gas odour on the 14 th August.
30 th August	Gas odour this morning (30 th). An intruder to the site had interfered with the condensate system. This compromised the operation of the flare and resulted in the offsite odour.
Received during September CLMC meeting	Report of ten separate incidents of offsite odours during July and August (3 waste odours, 7 gas odours)
27 th September	Odour for the past two weeks.
4 th October	Strong waste odour all weekend.
22 nd –23 rd November	Bad odour over the last few days (four complaints received). The problem was attributed to the flux box having been removed from one of the top slope constructed vertical wells when filling against the wells. Box was replaced and reconnected on the 24 th .
1 st December	Odour in village.
2 nd December	Bad odour yesterday and today (temporary flare was down on the night of the 2 nd December. Text function failed due to poor signal. New antenna installed on the 3 rd).
7 th December	Received via EPA. Complaint referred to odours during the period from 19 th November to 3 rd December. Preparation for capping was underway during this period.

Corrective actions were taken in response to incidents and complaints in accordance with the requirements of the licence and with the site Corrective Action Procedure

7.6 Waste Reduction and Recovery

7.6.1 Civic Amenity Centre

In order to maximise waste recoveries in the area, the capacity of the civic amenity centre at the CWMF has been expanded over the years to include additional streams such as plate glass, bulky plastic, metal and timber items, household green waste and household inert rubble. The list of materials now accepted at the facility is provided below:

- Cardboard and paper
- Plastic bottles
- Glass bottles
- Steel and aluminium cans
- Timber items
- Disposable Light bulbs
- Waste engine oil
- Car batteries
- Paint/Varnish/pesticides etc
- Household green waste
- Tetrapaks
- Hard plastic
- Sheet glass
- Large metal items
- Textiles
- Fluorescent tubes and long-life bulbs
- Waste cooking oil
- Household and dry cell batteries
- WEEE
- Inert rubble

7.6.2 Composting Area

The composting of garden waste commenced in January 2006. Members of the public bring clean green waste e.g. cut grass, hedge and bush clippings etc. to the CWMF CA site and to the CA sites at Lisdeen, Shannon and Ennis. The material is processed on site to remove litter and other unsuitable items before being placed in one of two aerated static piles. Air is continuously drawn through the piles by means of an air blower to provide the oxygen needed to break down the waste. The temperature of the static pile is monitored weekly to maintain optimum composting conditions. Each pile is turned to ensure even decomposition. After approximately twelve weeks, a mature compost product is formed. This product is mainly used within the site as a soil conditioner. Site compost is tested on a quarterly basis in accordance with W0109-02. The CWMF has accepted approximately 1950 tonnes of green waste for composting since 2006. 447 tonnes of green waste were received during 2011.

7.7 Report on Biodegradable Waste Diversion from Landfill

The process of submission of quarterly returns to the EPA on the biodegradable municipal waste (BMW) content of waste landfilled commenced in July 2010. A target of 47% BMW content is set in W0109-02. Clare County Council achieved an average of 61% BMW content during 2011. Organic fines were not accepted for landfill at any time. C&D fines were inspected and routinely tested to ensure that the organics content of this stream was low. However, a large volume of 2 and 3 bin commercial waste was received during the year, which increased the overall BMW factor of the waste received. In the 2010 AER, it was stated that acceptance of biostabilised residual waste as landfill cover would assist in reducing the overall BMW content of waste received for landfill; although approval for use of this material was requested and received during 2011, none of our customers were in a position to provide us with this recovery stream.

The waste enforcement section of Clare County Council continued its enforcement of the Food Waste Regulations to ensure that commercial facilities carry out food waste separation at source. CWMF staff liaised with the enforcement team to advise of problem loads received at the CWMF landfill.

7.8 Report on progress in meeting the requirements of the Landfill Directive

The overall aim of the Landfill Directive is to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from the landfilling of waste, during the whole lifecycle of the landfill. The Landfill Directive represents a change in the way that waste is managed, requiring waste minimisation and increased levels of recycling and recovery. The Central Waste Management facility meets the following parameters outlined in the Directive: It is an engineered, non-hazardous waste landfill and so meets the requirements of such a facility, as outlined in Annex I of the Directive. It is licensed as required under Article 7 of the Directive and managed in accordance with Article 8-13 of the Directive. The facility has a civic amenity area for acceptance of recyclable waste, household hazardous waste and household construction and demolition waste and green waste for on site recovery. The site is managed in such a way as to maximise recycling by the public and by commercial operators (see also sections 7.7 and 7.9).

7.9 Statement on the achievement of the waste acceptance and treatment obligations of W0109-02.

Waste licence W0109-02 imposes conditions on the licensee in relation to waste inspection and pre-treatment prior to landfill. In order to ensure compliance with these conditions, Clare County Council revised its waste acceptance procedure in May 2010. As part of this revision, a revised waste transfer form was created for use by all commercial customers during 2010. Letters were issued to commercial customers advising them of the requirement to pre-treat the waste. Waste inspections of smaller customers were used to determine whether the customers were complying with this pre-treatment requirement. In addition, CWMF staff participated in offsite workshops for waste collectors during July 2010. These workshops were arranged by the regional waste management office to inform the waste collectors on their pre-treatment requirements and to advise as to how these requirements could be complied with. The CWMF offered (with Agency agreement) to facilitate the use of its civic amenity site to ensure that recyclable materials are removed by the waste collector prior to landfill. This proved to be very successful for the small number of permitted bulky waste collectors who continued to use the CWMF landfill until its closure in November 2011. The collectors separated the smaller recycling streams within the CA site. At the working face, the waste was inspected by the banksman and larger unsuitable items were removed and transferred to the appropriate receptacle in the CA site. Periodic waste inspections were carried out on the waste received to ensure that pre-treatment requirements were complied with.

In relation to waste brought to the civic amenity site by domestic customers, this area is staffed by a minimum of two operators, with four operators present during busy periods. The operators instruct and advise the public on appropriate disposal. A leaflet has been printed showing the various streams that can be recycled at the facility. This leaflet is handed out at the weighbridge by site staff.

7.10 Statement of compliance with relevant updates of the Regional Waste Management Plan.

The Regional Waste Management Plan was last updated in 2005. The relevant sections of the plan and a statement in relation to compliance with this plan are outlined below:

- **15.5.1 Biological Treatment**

Policy: “ To reduce the quantity of biodegradable waste landfilled in accordance with the EU landfill Directive”

Objective: “To achieve the targets of National Strategy of Biodegradable Waste through a combination of source separated collection and appropriate treatment”.

- **15.8 Landfill Disposal**

Policy: Landfills will have a decreasing role in waste management in the Limerick/Clare/Kerry Region in the future as recycling increases and biological/thermal treatment are introduced.

Objective: “Landfills are developed and operated to the highest international standard and in accordance with EPA Waste Licence and to ensure adequate capacity in the Region”.

- **Statements re compliance:**

The Central Waste Management Facility is compliant with the Regional Waste Management Plan. The facility is a modern, engineered landfill that is operated to the highest standards in compliance with W0109-02.

All waste collectors operating in Clare had their waste collection permits reviewed in 2010 to ensure compliance with landfill diversion targets. Small bulky waste collectors removed recoverable waste items such as timber, metal and hard plastic items prior to disposing of the residual waste in the facility landfill. The recoverable items were placed in the appropriate receptacles in the CWMF Civic Amenity Site. This initiative was undertaken, with the agreement of the Agency, from mid-2010 until landfill closure in November 2011.

During 2011, CWMF facility staff liaised closely with the Clare County Council enforcement section to ensure customers’ compliance with the Food Waste Regulations.

8. APPENDICES

8.1 Licensed Activities at CWMF

APPENDIX 1A: LICENSED WASTE DISPOSAL ACTIVITIES, IN ACCORDANCE WITH THE THIRD SCHEDULE OF THE WASTE MANAGEMENT ACT, 1996 - 2005

- Class 4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons:
This activity is limited to the storage and management of leachate and stormwater in lined lagoons.*
- Class 5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
This activity is limited to the disposal of a maximum of 56,500 tonnes of non-hazardous waste, excluding sewage sludge, per annum into engineered lined cells.*
- Class 6. 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:
This activity is limited to leachate re-circulation and the disposal of compost that is produced on site.*
- Class 7. Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) 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 (including evaporation, drying and calcination):
This activity is limited to possible future leachate treatment at the facility in order to reduce the strength and volume of leachate tankered off-site for treatment.*
- Class 11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
This activity is limited to the mixing of waste at the Civic Waste Facility prior to being landfilled.*
- Class 12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
This activity is limited to the mixing or compaction of waste and the reloading of waste tipped for inspection into a container prior to landfilling at the facility or disposal off site.*
- Class 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.
This activity is limited to the storage of waste at the Civic Waste Facility prior to disposal either off site or at the landfill.*

Appendix 1b: Licensed waste recovery activities, in accordance with the Fourth Schedule of the Waste Management Act, 1996 – 2005.

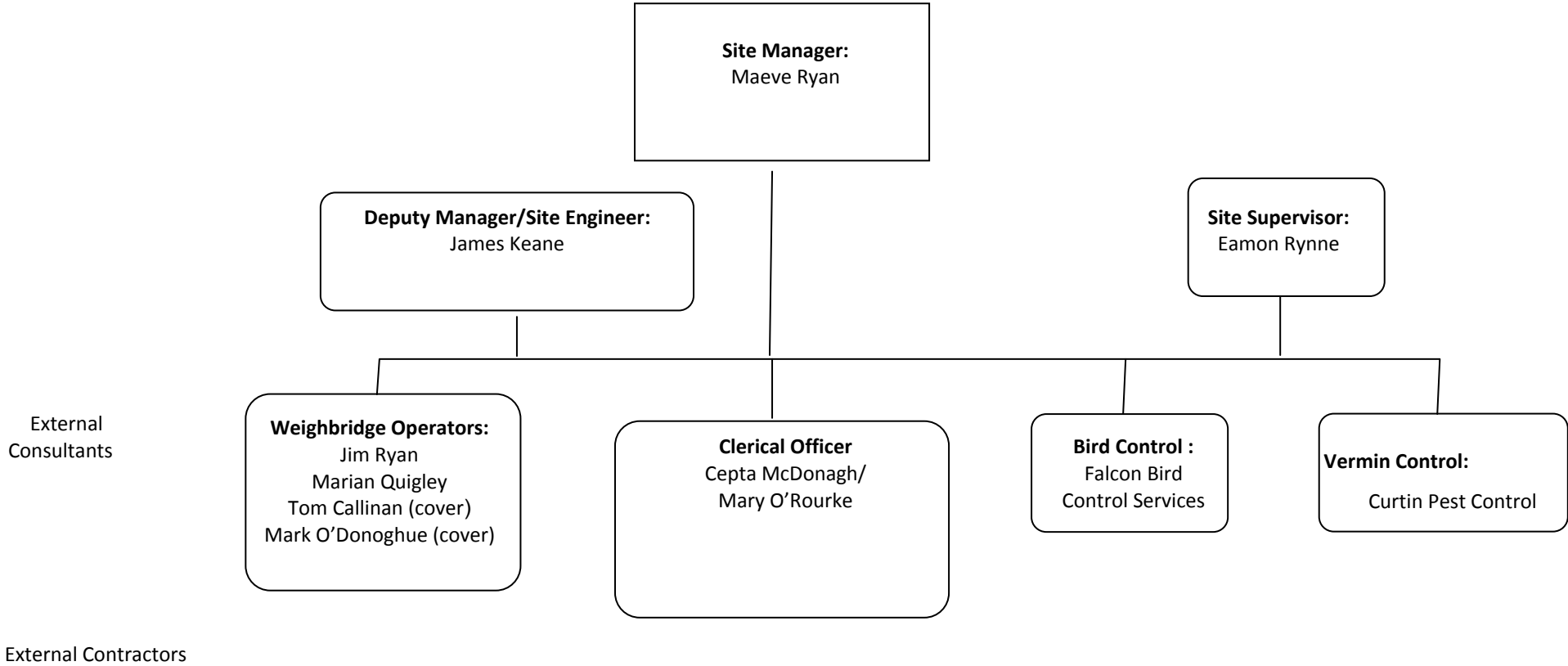
- Class 2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes):
This activity is limited to the composting of waste and the recovery of organic wastes including timber, paper and cardboard at the facility.*
- Class 3. Recycling or reclamation of metals and metal compounds:
This activity is limited to the storage of metals including white goods, batteries and scrap metal at the facility pending further recovery off-site.*
- Class 4. Recycling or reclamation of other inorganic materials:
This activity is limited to the storage and recovery of glass and construction and demolition waste at the facility pending the recovery off-site or in the case of construction and demolition waste its use in landfill restoration and engineering works.*
- Class 9. Use of any waste principally as a fuel or other means to generate energy:
This activity is limited to the possible future use of landfill gas as an energy resource to produce electricity and heat.*
- Class 10. The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.
This activity is limited to the use of compost as a soil conditioner at the facility for restoration.*
- Class 11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule:
This activity is limited to the use of compost and construction and demolition waste as cover material or in restoration, and the use of construction and demolition waste as building material at the facility.*
- Class 13. 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:
This activity is limited to the storage of waste destined for recovery activities.*

8.2 Water Balance Calculation

Month	Monthly Rainfall Figures (mm) (Shannon)	Landfill Operations			Area (m ²)				Infiltration (m ³)				Estimated Total Leachate (m ³)	
		Active Cell	Temp Cap	Full Cap	Active Area*	Temp Cap	Full Cap	Concrete	Active Area @ 100% estimated infiltration	Temp Cap @ 100% infiltration	Full Cap @ 10% estimated infiltration	Concrete @ 100% infiltration	Monthly	Cumulative
January	74.1	13	12	Cells 1 - 11	8,000	3000	56,500	2,500	593	222	419	185	1,308	454
February	149	13	-	Cells 1 - 12	8,000	0	59,500	2,500	1,192	0	887	373	2,451	2,905
March	34.3	13	-	Cells 1 - 12	8,000	0	59,500	2,500	274	0	204	86	564	3,469
April	42.2	13	-	Cells 1 - 12	8,000	0	59,500	2,500	338	0	251	106	694	4,163
May	93.3	13	-	Cells 1 - 12	8,000	0	59,500	2,500	746	0	555	233	1,535	5,698
June	112.5	13	-	Cells 1 - 12	8,000	0	59,500	2,500	900	0	669	281	1,851	7,549
July	31.7	13	-	Cells 1 - 12	8,000	0	59,500	2,500	254	0	189	79	521	8,070
August	54.1	13	-	Cells 1 - 12	8,000	0	59,500	2,500	433	0	322	135	890	8,960
September	94.7	13	-	Cells 1 - 12	8,000	0	59,500	2,500	758	0	563	237	1,558	10,518
October	99.1	13	-	Cells 1 - 12	8,000	0	59,500	2,100	793	0	590	208	1,591	12,109
November	87.2	13	-	Cells 1 - 12	8,000	0	59,500	2,100	698	0	519	183	1,400	13,508
December	144.7	13	13	Cells 1 - 12	0	3,000	64,500	2,100	0	434	941	304	1,679	15,187
Total:														16,144

8.3 Management Structure

Appendix 8.3: Site Management Structure, Central Waste Management Facility



8.4 Summary Details of Incident Reports Issued During 2011

Central Waste Management Facility, Ballyduff Beg

Incident Report Tracking Sheet 2011

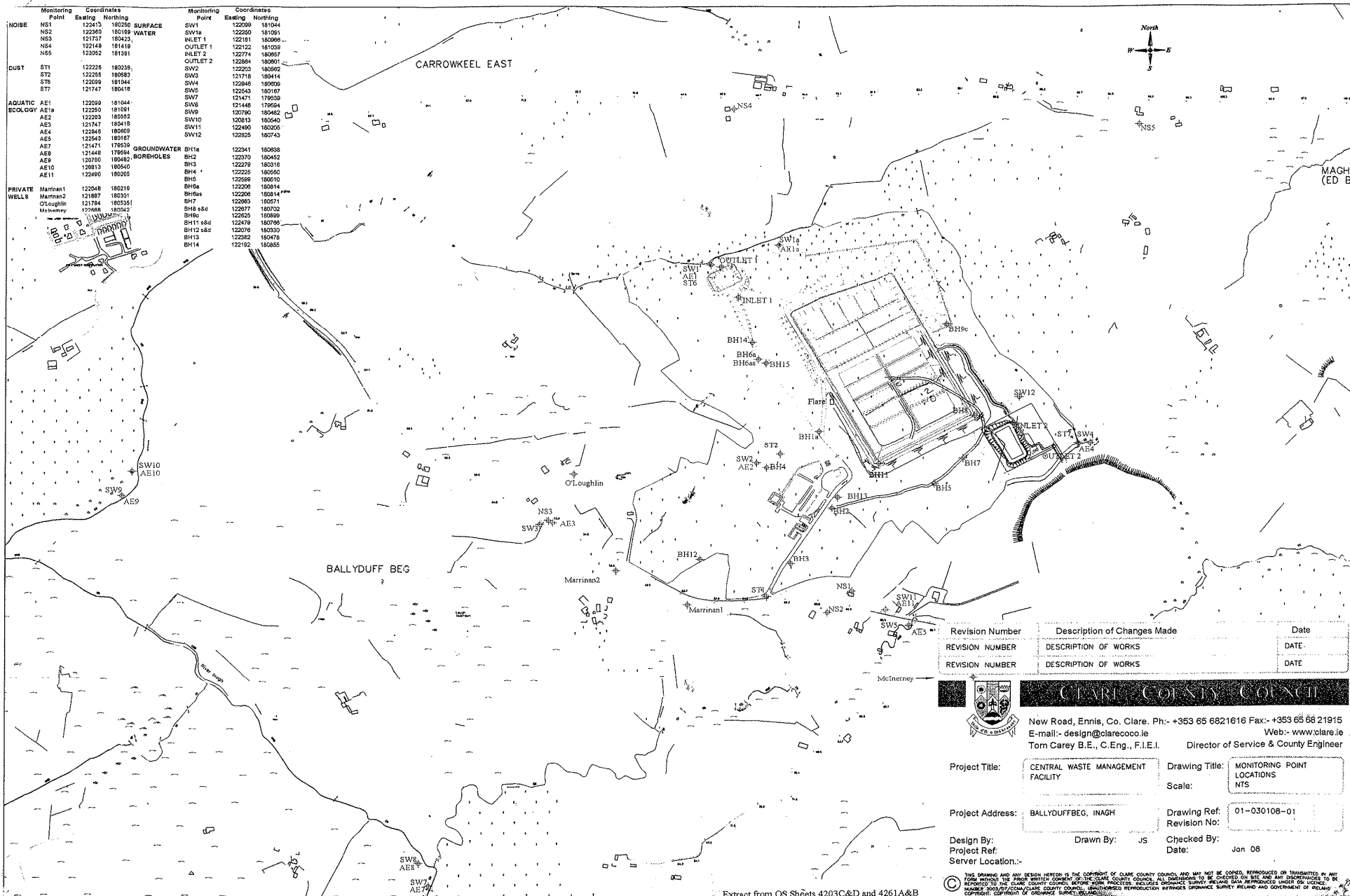
Incident Report Ref	Subject	Date
2011/01	Offsite odour at Bridget Fitzgerald's residence	05/01/2011
2011/02	Perimeter gas wells	06/01/2011
2011/03	Offsite odour at main rd SW3	06/01/2011
2011/04	Offsite odour at Carrowkeel/Maghera Rd	10/01/2011
2011/05	Offsite odour at Inagh Cross	11/01/2011
2011/06	Offsite odour at Maghera Rd	12/01/2011
2011/07	SCADA problem	14/01/2011
2011/08	leachate level cell 6	17/01/2011
2011/09	offsite odour Leckaun	17/01/2011
2011/10	offsite odour, B. Fitzgeralds	18/01/2011
2011/11	offsite waste odour, Maghera Rd	20/01/2011
2011/12	VOC emissions in active cell	03/02/2011
2011/13	VOC emissions in active cell	03/02/2011
2011/14	Perimeter gas wells	03/02/2011
2011/15	leachate level cell 13	07/02/2011
2011/16	offsite odour, Maghera Rd	10/02/2011
2011/17	Flare downtime	10/02/2011
2011/18	Perimeter gas wells	09/03/2011
2011/19	Perimeter gas wells	11/04/2011
2011/20	offsite waste odour, Maghera Rd	03/05/2011
2011/21	Perimeter gas wells	06/05/2011
2011/22	offsite odour, Bridget Fitzgerald's	13/05/2011
2011/23	offsite waste odour, B. Fitzgerald's	18/05/2011
2011/24	offsite odour, Bridget Fitzgerald's	20/05/2011
2011/25	offsite odour, Bridget Fitzgerald's	27/05/2011
2011/26	Perimeter gas wells	03/06/2011
2011/27	offsite odour, Bridget Fitzgerald's	28/06/2011
2011/28	offsite odour, Bridget Fitzgerald's	29/06/2011
2011/29	Flare downtime	12/07/2011
2011/30	Perimeter gas wells	12/07/2011
2011/31	offsite odour outside main gate	12/07/2011
2011/32	offsite waste odour Boolavaun/Maghera Rd	27/07/2011
2011/33	Perimeter gas wells	11/08/2011
2011/34	offsite odour, Bridget Fitzgerald's	11/08/2011
2011/35	SW conductivity	16/08/2011
2011/36	Gas odour, Boolavaun/Maghera Rd	19/08/2011
2011/37	offsite waste odour, Bridget Fitzgerald's	06/09/2011
2011/38	offsite gas odour, Bridget Fitzgerald's	08/09/2011

Central Waste Management Facility, Ballyduff Beg

Incident Report Tracking Sheet 2011

Incident Report Ref	Subject	Date
2011/39	Perimeter gas wells	09/09/2011
2011/40	offsite gas odour, Boolavaun/Maghera Rd	09/09/2011
2011/41	offsite waste odour, Bridget Fitzgerald's	14/09/2011
2011/42	offsite gas odour, Brian Fitzgerald's	21/09/2011
2011/43	offsite gas odour Boolavaun/Maghera Rd	23/09/2011
2011/44	offsite gas odour Boolavaun/Maghera Rd	29/09/2011
2011/45	offsite odour Boolavaun/Maghera Rd	13/10/2011
2011/46	Perimeter gas wells, October	13/10/2011
2011/47	offsite gas odour Boolavaun/Maghera Rd	14/10/2011
2011/48	offsite gas odour Boolavaun/Maghera Rd	26/10/2011
2011/49	offsite gas odour, Bridget Fitzgerald's	27/10/2011
2011/50	offsite gas odour Boolavaun/Maghera Rd	02/11/2011
2011/51	Perimeter gas wells, November	09/11/2011
2011/52	Offsite gas odour, Carrowkeel East	15/11/2011
2011/53	Offsite gas odour, Bridget Fitzgeralds	16/11/2011
2011/54	Flare carbon monoxide levels, 22nd November	22/11/2011
2011/55	offsite gas odour Maghera Rd	23/11/2011
2011/56	offsite gas odour Maghera Rd	01/12/2011
2011/57	Perimeter gas wells, December	06/12/2011
2011/58	Flare carbon monoxide levels, 23rd November	06/12/2011
2011/59	offsite gas odour, Bridget Fitzgerald's	07/12/2011
2011/60	offsite gas odour, Bridget Fitzgerald's	08/12/2011
2011/61	Flare downtime	12/12/2011
2011/62	Offsite gas odour, Maghera Rd	14/12/2011

8.5 Monitoring Point Location Map



Monitoring Point	Coordinates		Monitoring Point	Coordinates		
	Easting	Northing		Easting	Northing	
NOISE NS1	122413	180250	SURFACE SW1	122009	181044	
NS2	122360	180189	WATER SW1a	122250	181091	
NS3	121737	180423	INLET 1	122181	180099	
NS4	122148	181418	INLET 2	122274	180957	
NS5	123052	181381	OUTLET 2	122584	180901	
DUST ST1	122228	180338	SW2	122203	180592	
ST2	122255	180983	SW3	121718	180414	
ST3	122009	181841	SW4	122846	180939	
ST7	121747	180418	SW5	122543	180187	
AQUATIC AEC1	122009	181044	SW7	121471	179539	
EC1a	122250	181091	SW8	121448	179594	
AE2	122203	180952	SW9	120780	180482	
AE3	121747	180418	SW10	120818	180540	
AE4	122848	180859	SW11	122460	180205	
AE5	122543	180187	SW12	122825	180743	
AE7	121471	179539	GROUNDWATER BH1a	122241	180938	
AE8	121448	179594	BOREHOLES BH2	122370	180452	
AE9	120750	180454	BH3	122278	180318	
AE10	120813	180540	BH4	122205	180560	
AE11	122490	180205	BH5	122588	180610	
PRIVATE WELL1	Marrinan1	122048	180219	BH6a	122205	180814
WELL2	Marrinan2	121887	180351	BH6as	122206	180814
	O'Loughlin	121794	180355	BH7	122083	180571
	McInerney	121988	180542	BH8 s8d	122077	180702
				BH8	122025	180889
				BH11 s8d	122478	180798
				BH12 s8d	122078	180230
				BH13	122382	180478
				BH14	122192	180855

Revision Number	Description of Changes Made	Date
REVISION NUMBER	DESCRIPTION OF WORKS	DATE
REVISION NUMBER	DESCRIPTION OF WORKS	DATE

CLARE COUNTY COUNCIL

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Project Title:	CENTRAL WASTE MANAGEMENT FACILITY	Drawing Title:	MONITORING POINT LOCATIONS NTS
Project Address:	BALLYDUFFBEG, INAGH	Scale:	
Design By:		Drawing Ref:	01-030108-01
Project Ref:		Revision No:	
Server Location:-		Checked By:	JS
		Date:	Jan 08

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8.6 List of Site Standard Operating Procedures

Site Procedures List

SOP	Description	Last Revision Date
1	<i>Procedure to be followed in the event of malfunction/non-operation of TOC analyser</i>	08/06/2010
2	<i>Procedure to be followed in the event of activation of the pH alarm</i>	08/06/2010
3	<i>Procedure to be followed in the event of activation of the conductivity alarm</i>	08/06/2010
4	<i>Landfill gas monitoring/training procedure</i>	25/01/2010
5	<i>Exceedence of Trigger Levels for Key Parameters in Groundwater Samples</i>	25/01/2010
6	<i>Communications Programme</i>	08/06/2010
7	<i>Documentation Procedure</i>	15/01/2010
8	<i>Procedure to be followed in the event of landfill gas flare malfunction.</i>	04/04/2011
9	<i>Awareness and Training Procedure</i>	25/01/2010
10	<i>Emergency Response Procedure</i>	20/01/2010
11	<i>Corrective Action Procedure</i>	26/01/2010
12	<i>Complaints Procedure</i>	08/06/2010
13	<i>Waste Acceptance Procedure</i>	29/09/2011
14	<i>Procedure for handling hazardous domestic waste</i>	02/06/2011 (No revision)
15	<i>Handling Procedure for Difficult Wastes and Non-Hazardous Industrial Solid Wastes</i>	02/06/2011
16	<i>Odour Patrol Procedure</i>	05/11/2010
17	<i>Surface Water Visual Inspection Procedure.</i>	02/06/2011
18	<i>Administrative Procedure</i>	04/09/2011
19	<i>Procedure for Handling, storage and deposition of wood ash</i>	02/06/2011
20	<i>Procedure for Leachate Handling</i>	08/09/2010
21	<i>Procedure for Removal of Recyclable Waste from the Civic Amenity Site</i>	16/06/2010
22	<i>Procedure for Application of Landfill Cover</i>	18/01/2011
23	<i>Accident Prevention Policy</i>	19/04/2011 (draft)
24	<i>Procedure for preparation of BMW returns under condition 3.16 of W0109-02</i>	03/10/2011

8.7 Landfill Gas Survey Returns for 2011

A survey of landfill sites to determine the quantity of methane flared and or recovered in utilisation plants for 2011

Please choose from the drop down menu the license number for your site	<input type="text" value="W0109"/>
Please choose from the drop down menu the name of the landfill site	<input type="text" value="Ballyduff Beg"/>
Please enter the number of flares operational at your site in 2011	<input type="text" value="2"/>
Please enter the number of engines operational at your site in 2011	<input type="text" value="Select"/>
Total methane flared	<input type="text" value="1,444,560"/> kg/year
Total methane utilised in engines	<input type="text" value="0"/> kg/year

Please note that the closing date for receipt of completed surveys is 31/03/2012

Introduction

The Office of Climate Licensing and Resource Use (OCLR) of the Environmental Protection Agency acts as the inventory agency in Ireland with responsibility for compiling and reporting national greenhouse gas inventories to the European Commission and the United Nations Framework Convention on Climate Change. In addition to meeting international commitments Ireland's national greenhouse gas inventory informs national agencies and Government departments as they face the challenge to curb emissions and meet Ireland's targets under the Kyoto Protocol. The national inventory also informs data suppliers, making them aware of the importance of their contributions to the inventory process and a means of identifying areas where input data may be improved.

It is on this basis that the Environmental Protection Agency is asking landfill operators to partake in this survey so that the most up to date information on methane flaring and recovery in utilisation plants at landfill sites is used in calculating the contribution of the waste sector to national greenhouse gas emissions

The Environmental Protection Agency wishes to thank you for partaking in this survey. If you have any questions about the survey and how to complete it please view the "Help sheet" worksheet. If however, your query is not answered by viewing the "Help sheet" worksheet please contact:

LFGProject@epa.ie

Once completed please send the completed file as an attachment clearly stating the name and or license number of the landfill site (e.g. W000 Xanadu landfill_2011) to:

LFGProject@epa.ie

Flare No. 1

Flare type ? AFS HT750 If "other" enter flare description here

Is the flare an open or enclosed flare ? Enclosed Rated flare capacity ? 850 m3/hr

Month /year commissioned ? September 2003

Month decommissioned if decommissioned in 2011 ? Select

What is the function of the flare ? Extraction from capped and uncapped ar If "other" enter flare function here

Monthly	Method M/C/E	Runtime days/month	Runtime hrs/day	Downtime hrs	Total runtime hrs/month	Average Inlet Pressure (mbg)	Average Flow Rate (m ³ /hr)	Average CH ₄ %v/v	Average CO ₂ %v/v	Average O ₂ %v/v	Combustion efficiency (%)	Total CH ₄ m ³	Total CH ₄ kgs
January	M	31	24.0	0.0	744	-16	653	34.70	22.00	2.00	98.0	165,212	112,269
February	M	28	24.0	15.0	657	-16	724	39.40	25.70	2.00	98.0	183,665	124,809
March	M	31	24.0	0.0	744	-17	731	38.50	25.10	2.60	98.0	205,200	139,303
April	M	30	24.0	0.0	720	-18	729	37.80	24.80	2.80	98.0	194,437	131,864
May	M	31	24.0	3.0	741	-15	715	37.40	24.50	2.70	98.0	194,188	132,092
June	M	30	24.0	0.0	720	-11	731	36.70	24.20	3.50	98.0	189,296	129,281
July	M	31	24.0	36.0	708	-11	728	38.30	25.10	3.50	98.0	193,459	132,124
August	M	31	24.0	0.0	744	-16	734	36.10	24.90	3.70	98.0	193,198	131,287
September	M	30	24.0	3.0	717	-12	738	35.10	24.30	4.50	98.0	182,016	124,184
October	M	31	24.0	0.0	744	-11	577	31.60	23.50	3.50	98.0	132,942	90,793
November	M	31	24.0	0.0	744	-11	360	28.20	21.70	2.60	98.0	78,132	53,361
December	M	31	24.0	47.0	697	-10	437	33.00	23.00	3.00	98.0	98,504	67,341
Total					8,680							2,010,249	1,368,708

Flare No. 2

Flare type ? Fans and Blow If "other" enter flare description here

Is the flare an open or enclosed flare ? Open Rated flare capacity ? 500 m3/hr

Month /year commissioned ? October 2011

Month decommissioned if decommissioned in 2011 ? December

What is the function of the flare ? Extraction from uncapped area If "other" enter flare function here

Monthly	Method M/C/E	Runtime days/month	Runtime hrs/day	Downtime hrs	Total runtime hrs/month	Average Inlet Pressure (mbg)	Average Flow Rate (m ³ /hr)	Average CH ₄ %v/v	Average CO ₂ %v/v	Average O ₂ %v/v	Combustion efficiency (%)	Total CH ₄ m ³	Total CH ₄ kgs
January					0						50.0	0	0
February					0						50.0	0	0
March					0						50.0	0	0
April					0						50.0	0	0
May					0						50.0	0	0
June					0						50.0	0	0
July					0						50.0	0	0
August					0						50.0	0	0
September					0						50.0	0	0
October	C	25	24.0	26.0	574	-20	255	32.00	22.60	5.60	50.0	23,419	15,851
November	C	30	24.0	0.0	720	-20	417	31.10	21.90	7.70	50.0	46,687	31,599
December	C	22	24.0	14.0	514	-20	394	32.40	24.30	7.20	50.0	32,808	22,205
Total					1,808							102,914	69,654

Flare No. 3

Flare type ? Fans and Blow If "other" enter flare description here

Is the flare an open or enclosed flare ? Open Rated flare capacity ? 500 m3/hr

Month /year commissioned ? September 2010

Month decommissioned if decommissioned in 2011 ? January

What is the function of the flare ? Odour control If "other" enter flare function here

Monthly	Method M/C/E	Runtime days/month	Runtime hrs/day	Downtime hrs	Total runtime hrs/month	Average Inlet Pressure (mbg)	Average Flow Rate (m ³ /hr)	Average CH ₄ %v/v	Average CO ₂ %v/v	Average O ₂ %v/v	Combustion efficiency (%)	Total CH ₄ m ³	Total CH ₄ kgs
January	C	17	24.0	13.0	395	-20	144	32.20	25.50	6.70	50.0	9,158	6,198
February					0						50.0	0	0
March					0						50.0	0	0
April					0						50.0	0	0
May					0						50.0	0	0
June					0						50.0	0	0
July					0						50.0	0	0
August					0						50.0	0	0
September					0						50.0	0	0
October					0						50.0	0	0
November					0						50.0	0	0
December					0						50.0	0	0
Total					395							9,158	6,198

8.8 PRTR Returns for 2011



Environmental Protection Agency

[Guidance to completing the PRTR workbook](#)

AER Returns Workbook

Version 1.1.13

REFERENCE YEAR	2011
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1. FACILITY IDENTIFICATION

Parent Company Name	Clare County Council
Facility Name	Central Waste Management Facility
PRTR Identification Number	W0109
Licence Number	W0109-02

Waste or IPPC Classes of Activity

No.	class name
3.5	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from
3.11	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
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.
3.2	Land treatment, including biodegradation of liquid or sludge discards in soils.
3.4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
3.6	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.
3.7	#####
4.10	The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.13	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.
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and
4.3	Recycling or reclamation of metals and metal compounds.
4.4	Recycling or reclamation of other inorganic materials.
4.9	Use of any waste principally as a fuel or other means to generate energy.

Address 1	Ballyduff Beg
Address 2	Inagh
Address 3	Co. Clare
Address 4	
	Clare
Country	Ireland
Coordinates of Location	-9.14882 52.5393
River Basin District	IEGBNISH
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Maeve Ryan
AER Returns Contact Email Address	mryan@clarecoco.ie
AER Returns Contact Position	Exec Scientist/Facility manager
AER Returns Contact Telephone Number	065 6836960
AER Returns Contact Mobile Phone Number	087 9999949
AER Returns Contact Fax Number	065 6836959
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

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

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

Is it applicable?	No
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

[Link to previous years emissions data](#)

| PRTR#: W0109 | Facility Name: Central Waste Management Facility | Filename: W0109_2011.xls | Return Year: 2011 |

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SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	M	OTH	Flue gas analyser, online	0.0	84844.0	0.0	84844.0
03	Carbon dioxide (CO2)	M	OTH	Flue gas analyser, online	7034614.0	7034614.0	0.0	0.0
02	Carbon monoxide (CO)	M	OTH	Flue gas analyser, online	17.5	17.5	0.0	0.0
08	Nitrogen oxides (NOx/NO2)	C	OTH	Flue gas analyser, mean of two one-off results used	411.7	411.7	0.0	0.0
11	Sulphur oxides (SOx/SO2)	C	OTH	Flue gas analyser, mean of two one-off results used	801.5	801.5	0.0	0.0

ADD NEW ROW | DELETE ROW * | * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
60	Vinyl chloride	C	OTH	Adsorption, GCMS, one sample	92.86	92.86	0.0	0.0
35	Dichloromethane (DCM)	C	OTH	Adsorption, GCMS, one sample	92.86	92.86	0.0	0.0
52	Tetrachloroethylene (PER)	C	OTH	Adsorption, GCMS, one sample	92.86	92.86	0.0	0.0

ADD NEW ROW | DELETE ROW * | * 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)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			ADD EMISSION POINT	QUANTITY		
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
230	TA Luft organic substances class 1	M	OTH	Adsorption, GCMS, one sample	9.29	9.29	0.0	0.0
231	TA Luft organic substances class 2	M	OTH	Adsorption, GCMS, one sample	46.25	46.25	0.0	0.0
232	TA Luft organic substances class 3	M	OTH	Adsorption, GCMS, one sample	92.86	92.86	0.0	0.0
319	Inorganic acids	M	OTH	Impinger, ISE, one sample	54.05	54.05	0.0	0.0

ADD NEW ROW | DELETE ROW * | * Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Landfill operators

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:		Central Waste Management Facility				
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 m3 per hour	
			Method Code	Designation or Description		
Total estimated methane generation (as per site model)		1529404.0	E	OTH	Gassimlite model	N/A
Methane flared		1444560.0	M	OTH	Flue gas analyser	0.0 (Total Flaring Capacity)
Methane utilised in engine/s		0.0	M	OTH	blank	0.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A above)		84844.0	C	oth	subtracted methane flared f	N/A

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Please enter all quantities on this sheet in Tonnes

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 Destination Facility Non Haz Waste : Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address 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)
						M/C/E	Method Used					
Within the Country	15 01 01	No	3.0	paper and cardboard packaging, tetrapak	R3	M	Weighed	Offsite in Ireland	Clean Ireland,W0253-01	Cree,Kilrush,County Clare,,Ireland		
Within the Country	15 01 01	No	39.0	paper and cardboard packaging	R3	M	Weighed	Offsite in Ireland	Mr Binman,W0061-03	Luddenmore,Grange,Kilmallock,County Limerick,Ireland		
Within the Country	20 01 01	No	95.0	paper and cardboard	R3	M	Weighed	Offsite in Ireland	Clean Ireland,W0253-01	Cree,Kilrush,County Clare,,Ireland		
Within the Country	15 01 07	No	45.0	glass packaging	R5	M	Weighed	Offsite in Ireland	Mr Binman,W0061-03	Luddenmore,Grange,Kilmallock,County Limerick,Ireland		
Within the Country	20 01 02	No	42.0	glass	R5	M	Weighed	Offsite in Ireland	Tullagower Quarries Ltd,004/08/WPT/CL	Tullagower,Kilrush,County Clare,,Ireland		
Within the Country	15 01 04	No	14.0	metallic packaging, steel cans	R4	M	Weighed	Offsite in Ireland	Clare Waste,WFP/CE/08/0002/01	Raheen,Tuamgraney,County Clare,,Ireland		
Within the Country	15 01 04	No	7.0	metallic packaging, aluminium cans	R4	M	Weighed	Offsite in Ireland	Mr Binman,W0061-03	Luddenmore,Grange,Kilmallock,County Limerick,Ireland		
Within the Country	20 01 40	No	179.0	metals	R4	M	Weighed	Offsite in Ireland	Hegarty Metals, WFP/LK/2008/07C	Ballysimon Road,Limerick,,Ireland		
Within the Country	15 01 02	No	29.0	plastic packaging	R3	M	Weighed	Offsite in Ireland	Mr Binman,W0061-03	Luddenmore,Grange,Kilmallock,County Limerick,Ireland		
Within the Country	20 01 39	No	53.0	plastics	R3	M	Weighed	Offsite in Ireland	Mr Binman,W0061-03	Luddenmore,Grange,Kilmallock,County Limerick,Ireland		
Within the Country	19 07 03	No	7584.078	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Limerick City Council ,D0013-01	Bunlickey WWTP,Dock Road,Limerick,0,Ireland		
Within the Country	19 07 03	No	7432.2	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Lisdoonvarna Wastewater Treatment plant ,D0077-01	Knocknagulla,Lisdoonvarna,County Clare,0,Ireland		
Within the Country	19 07 03	No	2830.68	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Sixmilebridge WWTP,D0076-01	Sixmilebridge ,County Clare,,Ireland		
Within the Country	20 01 11	No	13.0	textiles	R3	M	Weighed	Offsite in Ireland	African Clothing Exports Ltd,,,Ireland		
Within the Country	20 01 38	No	229.0	wood other than that mentioned in 20 01 37	R3	M	Weighed	Offsite in Ireland	Clean Ireland,W0253-01	Cree,Kilrush,County Clare,,Ireland		
To Other Countries	16 06 01	Yes	2.33	lead batteries	R4	M	Weighed	Abroad	Enva,W0184-01	Enva,W0184-01	Campine Recycling,047 4955451,Beerse,.....,Belgium,Belgium
Within the Country	16 06 04	No	0.26	alkaline batteries (except 16 06 03)	R4	M	Weighed	Offsite in Ireland	KMK Metals,W0113/03	Offaly,,Ireland		
Within the Country	13 02 08	Yes	6.6	other engine, gear and lubricating oils including oil filters	R9	M	Weighed	Offsite in Ireland	Enva,W0184-01	Enva,W0184-01	Clonminan Industrial Estate,Portlaoise,County Laoise,,Ireland	Clonminan Industrial Estate,Portlaoise,County Laoise,,Ireland
Within the Country	20 01 25	No	0.48	edible oil and fat	R9	M	Weighed	Offsite in Ireland	Agrienergy,WFP-FG-09-0007-01	St Anns,Cloghran,Swords,County Dublin,Ireland		
Within the Country	20 01 28	No	5.4	paint, inks, adhesives and resins other than those mentioned in 20 01 27	R1	M	Weighed	Offsite in Ireland	Enva,W0184-01	Enva,W0184-01	Clonminan Industrial Estate,Portlaoise,County Laoise,,Ireland	
Within the Country	20 03 01	No	117.16	mixed municipal waste	D13	M	Weighed	Offsite in Ireland	Clean Ireland,W0253-01	Cree,Kilrush,County Clare,,Ireland		
To Other Countries	20 01 23	Yes	23.0	discarded equipment containing chlorofluorocarbons	R4	M	Weighed	Abroad	Electrical Waste Management,WFP DS-09001201	Jordanstown Drive,Greenogue Industrial Estate,Rathcoole,County Dublin,Ireland	European Metal Recycling Ltd.,Bentley Road South,Darlaston,WS10 8LW,West Midlands,United Kingdom,United Kingdom
Within the Country	20 01 35	Yes	33.78	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	R4	M	Weighed	Offsite in Ireland	The Recycling Village,,Unit 21,Duleek Business Park,Commons,Duleek Meath,Ireland,Ireland	The Recycling Village,,Unit 21,Duleek Business Park,Commons,Duleek Meath,Ireland,Ireland
To Other Countries	20 01 35	Yes	2.28	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	R4	M	Weighed	Abroad	Electrical Waste Management,WFP DS-09001201	Jordanstown Drive,Greenogue Industrial Estate,Rathcoole,County Dublin,Ireland	Interrec BV,,Korte Beemd 2,5705BL,Helmond,,Netherlands,Netherlands
Within the Country	20 01 36	No	87.25	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	R4	M	Weighed	Offsite in Ireland	Electrical Waste Management,WFP DS-09001201	Jordanstown Drive,Greenogue Industrial Estate,Rathcoole,County Dublin,Ireland		Dangan Road,Tullamore,County Offaly,,Ireland
Within the Country	20 01 21	Yes	1.0	fluorescent tubes and other mercury-containing waste	R4	M	Weighed	Offsite in Ireland	KMK Metals,W0113/03	Offaly,,Ireland	KMK Metals,W0113/03	Offaly,,Ireland