

Comhairle Chontae Laois
Laois County Council



Annual Environmental Report
For Kyletalesha Landfill
Waste Licence W0026-02

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County Hall
Portlaoise
Co. Laois

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1. Introduction.

The contents of the report are based on Schedule C of the Waste License and the report format follows guidelines set in the “Draft Guidance on Environmental Management Systems and Reporting to the Agency” issued by the Environmental Protection Agency (the Agency). The proposed content and reporting format was discussed and agreed with the EPA before the preparation of the report.

This report discusses the findings of the monitoring events completed and reported on to the Agency since the last AER.

Laois County Council (the Council) operates the facility. The addressees of the facility and the operator are as follows: -

Landfill

Kyletalesha Landfill,
Portlaoise,
County Laois.

Operator

Laois County Council,
County Hall,
Portlaoise,
County Laois.

2. Reporting Period.

This is the Ninth Annual Environmental Report (AER) for Kyletalesha Landfill, Clonsoughy, Kyleclonhobert, County Laois. The AER covers the period from 1st January 2009 to the 31st December 2009 and was prepared in compliance with Condition 11.6.2 of Waste Licence Register Number (W0026-2), which superseded Waste Licence (W0026-1) on the 12th November 2003.

3. Waste Activities carried out at the Facility.

Waste Disposal and Recovery operations are carried out at the site in accordance with the schedule of licensed activities. The site is licensed to accept the following categories of waste for disposal; household, commercial, construction & demolition and industrial non-hazardous wastes. The site also accepts wastes for recovery at the civic amenity area, which include glass bottles, car batteries, household batteries, light bulbs, gas cylinders, white goods, metal, aluminum cans, waste oil, waste oil filters, cooking oil, DVD, cd and video tapes, fridges, textiles, hard plastics, cardboard, tyres, plate glass, polystyrene, household hazardous waste and the WEE facility.

4. Quantity and Composition of Waste Received, Disposed of and Recovered during the Reporting period and each previous year.

A summary of the total quantity of each type of waste landfilled at the facility for the reporting period is presented in *Table 1.0* as specified in Schedule A.1 of Waste License (W0026-2 *Table 1.0*).

Table 1.0

WASTE TYPE	Tonnage
Household	4797.23
Commercial	38246.46
Industrial Non-Hazardous Solids	7.26
Construction & Demolition	33.74
Total	43,084.69

A full breakdown of waste landfilled at the facility is presented in *Table 1.1* and a full breakdown of waste recovered at the Civic Amenity Facility is presented in *Table 1.2*.

Table 1.1

Waste Type	Tonnes	Waste type (As per Schedule A.1)	Landfilled	Re-Used
BUILDERS RUBBLE 170107	929.48	Reused		929.48
BUILDING WASTE 170107	33.74	Construction & Demolition	33.74	
COMMERCIAL WASTE 200301	258.32	Commercial	258.32	
COVERING MATERIAL 170504	4260.24	Reused		4260.24
DOMESTIC WASTE 200301	4,797.23	Household	4,797.23	
HOUSEHOLD 200301	1,011.64	Household	1,011.64	
ILLEGAL DUMPING 200303	184.41	Other	184.41	
INDUSTRIAL WASTE 200301	3.4	Industrial	3.4	
MUNICIPAL WASTE 200301	6568.24	Household Commercial	6,568.24	
RUBBER 1912041	3.86	Industrial	3.86	
STONE 170107	374.78	Reused		374.78
STREET SWEEPINGS 200303	453.62	Other	453.62	
TRANSFER STATIONS 200301	29770.23	Household 65% Commercial 30% Industrial 5%	29,770.23	
Total Tonnage			43,084.69	5564.50

Table 1.2

Waste Type	Tonnes
200140 ALUMINUM	33.8
200133 HOUSEHOLD BATTERIES	2.88
200101 CARDBOARD	264.58
200339 DVD'S, DVD'S & VIDEOS	4.92
030103 CAR TYRES	22.88
200339 PLASTIC BOTTLES	127.56
130204 OIL FILTERS	3.22
200307 GAS CYLINDERS	0.0
200201 GRASS	79.84
200201 HEDGE TRIMMINGS	125.00
200339 HARD PLASTICS	94.06
200101 MAGAZINES	0.0
200101 NEWSPAPERS	358.58
200102 PLATE GLASS	16.12
080121 PAINTS	12.60
200123 FRIDGES	62.62
200102 BOTTLE GLASS	255.18
200140 SCRAP METAL	286.62
200111 TEXTILES	87.12
200136 W.E.E.E.	249.62
200136 HOUSEHOLD APPLIANCES	119.40
130204 WASTE ENGINE OIL	18.68
Total Tonnage	2225.28

The total quantity of waste received for 2009 is recorded as being $(42,446.66 + 638.03) = 43,084.69$ tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2008 is recorded as being $(49,362.60 + 546.50) = 49,909.10$ tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2007 is recorded as being $(41,727.71 + 454.73) = 42,182.458$ tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2006 is recorded as being $(47,550.47 + 747.74) = 48,298.213$ tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2005 is recorded as being $(47,974.20 + 430.10) = 48,404.3$ tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2004 is recorded as being 49,835.90 tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2003 is recorded as being 34,870.10 tonnes exclusive of that material recovered for landfill cover and maintenance.

The total quantity of waste received for 2002 is recorded as being 40,510.80 tonnes exclusive of that material recovered for landfill cover and maintenance.

5. Calculated Remaining Capacity of the Facility and year in which Final Capacity is expected to be reached.

It was originally anticipated that the site would have a waste capacity of 1,060,000 tonnes. Based on estimates and records of waste inputs, approximately 430,876 tonnes was deposited to 10th May 2002. A further 24,434.7 tonnes was deposited to 31st December 2002. In total $430,876 + 24,434.7 = 455,310.7$ tonnes were deposited to 31st December 2002. The total quantity of waste received since 31st December 2002 is recorded as being $(34,870.1 + 49,835.9 + 48,404.3 + 48,298.21 + 42,182.458 + 49,909.10 + 43,084.69) = 416,584.75$ tonnes exclusive of that material recovered for landfill cover and maintenance. This leaves a remaining capacity of $(1,060,000 - 455,310.7 - 273,500.06) = 331,189.24$ tonnes. At a maximum filling rate of 47,100 tonnes per annum and maintaining the proposed final profile levels this leaves approximately 7 years capacity.

It is previously recorded that approximately 47,600 m² of the landfill has been filled with waste since 1996 comprising of Cells 1, 2, 3, 4 & 5.

It is estimated that the total plan area for Cell 12 is 9,562 m².

It is estimated that the total plan area for Cell 13 is 19,006 m².

It is estimated that the total plan area for Cell 14 is 25,000 m².

It is estimated that the total plan area for Cell 15 is 14,000 m².

6. Methods of Deposition of Waste.

Waste is normally deposited at the top of a waste face. The waste is placed in layers not greater than 0.5m thick and a waste face with an average gradient not steeper than 1:3 is maintained. A steel wheeled landfill compactor is used to level and compact the waste. Any large articles or hollow containers, likely to cause voids, are crushed and buried to a depth of not less than one meter from the surface of the waste and two meters from the flanks and face.

Volumetric surveys of the active cell are regularly undertaken to determine the remaining capacity and the performance of the compaction equipment.

The waste face is covered daily with a soil material. The soil weekly cover material is applied in 150mm thick layers and is free draining to prevent the development of perched water within the waste body. Sufficient stockpiles of soil are maintained on-site to meet all daily and weekly operational requirements.

Only one working face is operated at any time. The working face is maintained at less than 25 meters wide x 50 meters long and 2.5 meters in height after compaction with a slope of no greater than 1 in 3, as per Condition 5.4 of the Waste License.

7. Summary Report on Emissions.

The Council carries out a comprehensive environmental monitoring programme in compliance with license conditions to assess the significance of emissions. The monitoring programme includes Surface Water Quality, Groundwater Quality, Landfill Gas, Leachate Level and Quality, Noise and Dust.

The full details of the monitoring were routinely submitted to the Agency during the reporting period and an overview of the monitoring results is presented in Section 8. The results are discussed in the context of the impact of the emissions on the environment and compared with

available data on background and or ambient conditions.

8. Summary of results and interpretation of environmental monitoring.

Since July 2004 monitoring results for the landfill facility have been inputted into the Labinfo Database as supported by the Local Government Computer Services Board.

Appendix I gives the six-digit grid reference for each monitoring location. Monitoring locations labeled G relate to Groundwater, monitoring locations labeled L relate to Leachate, monitoring locations labeled M relate to Landfill Gas, monitoring locations labeled S relate to Surface Water, monitoring locations labeled V relate to Visual Inspections, monitoring locations labeled BA relate to Biological Assessment, monitoring locations labeled D relate to Dust and monitoring locations labeled N relate to Noise.

Groundwater Monitoring

In accordance with Waste Licence (W0026-2) the Council monitor's groundwater quality in 3 monitoring boreholes (G001, G002 & G008) located around the landfill. The Council also conducts groundwater monitoring at locations G013. Ground water monitoring began at G013 in March 2003 in order to obtain baseline data for the northern end of the site, i.e. down gradient of new-engineered Cells 12, 13 and 14.

Monitoring is conducted by the EPA at quarterly intervals in accordance with licence conditions and includes in situ and laboratory analysis at EPA laboratory, Kilkenny. The Council also carries out groundwater monitoring where analysis is carried out by an Environmental technician in Laois County Council. The range of analysis is as specified in Schedule D.5 of Licence (W0026-2) includes pH, electrical conductivity, temperature, ammonia, total organic carbon (TOC), nitrate and orthophosphate. Other parameters as required by the license are performed by the EPA.

The sampling and analysis is carried out in accordance with recognised quality standards. The detailed monitoring results are presented in the quarterly monitoring reports submitted to the Agency during the reporting period and can also be viewed on the attached compact disc.

Groundwater level monitoring undertaken in the shallow bedrock indicates a groundwater divide trending east west across the site. Groundwater in the northern portion of the site flows to the northwest while groundwater in the southern portion of the site flows to the southeast.

Monitoring locations G001, G002 and G008 are all located in the catchment which drains to the southeast towards the River Triogue. This catchment contains the unlined historic fill areas of the facility. G013 is located in a separate catchment, which drains to the northwest towards the River Blackwater. This catchment contains the current active fill area Cell 14 and lined Cells 12 and 13.

Monitoring locations G001 & G008 are located in the forest to the south of and down gradient of the active landfill. Monitoring location G002 is located on Mr. Pat Smiths turf plot down gradient of the landfill. In compliance with Waste Licence W0026-02, Condition 8.7.1, the council conducts annual private well monitoring at three locations that are within 250m of the facility boundary. These locations comprise of two farmyard water supplies in the northwest catchment in the farmyard of Mr. Denis Whelan, and a monitoring location in the southeast catchment in Mr. Charles Lawless's knackery yard.

Groundwater Levels

Table 8.1 below shows the groundwater levels recorded for the reporting period.

Table 8.1 - Groundwater Levels (Metres OD)

G001 Sample		G002 Sample		G008 Sample		G013 Sample	
Date	Depth	Date	Depth	Date	Depth	Date	Depth
22/01/09	16.4	22/01/09	24.1	22/01/09	13.3	22/01/09	7.2
19/02/09	16.3	19/02/09	23.8	19/02/09	13.5	19/02/09	7.1
10/03/09	16.3	10/03/09	23.4	10/03/09	13.5	10/03/09	7.1
30/04/09	16.2	30/04/09	23.9	30/04/09	13.6	30/04/09	7.2
29/05/09	16.2	26/06/09	23.3	29/05/09	13.4	29/05/09	6.9
26/06/09	15.9	31/07/09	23.5	26/06/09	13.1	26/06/09	6.9
30/07/09	16.9	28/08/09	23.6	31/07/09	13.2	31/07/09	7.2
28/08/09	16.1	17/09/09	23.9	28/08/09	13.5	28/08/09	7.6
17/09/09	16.0	28/10/09	24.4	16/09/09	13.3	16/09/09	7.4
28/10/09	16.1	26/11/09	23.5	28/10/09	13.3	26/11/09	7.8
26/11/09	16.4	21/12/09	24.9	26/11/09	13.3	21/12/09	6.7
21/12/09	16.3			21/12/09	13.5		

Groundwater Quality

All the monitoring locations show concentrations of ammonia characteristic of peat deposits owing to diagenesis. Chloride is a conservative ion which remains in the aqueous phase, unaffected by subsurface geochemical transformations. This ion occurs at high concentrations in landfill leachate and is used as a tracer to disseminate potential leachate migration. At all monitoring locations the chloride level complied with the trigger limit and generally complimented the EPA Guide Value of 30 mg l⁻¹ for groundwater nationally (Table overleaf). Additionally, all other parametric trigger limits were conformed to at the groundwater monitoring wells. A more detailed account of groundwater quality is provided in the Quarterly Reports available on the disc attached.

Table 8.2 Groundwater chloride levels

Lab No.	Date	ID	Chloride mg l ⁻¹	Licence Trigger Limit	EPA Guide
053	22/01/09	G001	23.60	250	30
054	22/01/09	G002	14.12	250	30
055	22/01/09	G008	07.93	250	30
056	22/01/09	G013	12.84	250	30
259	19/02/09	G001	22.56	250	30
260	19/02/09	G002	08.76	250	30
261	19/02/09	G008	10.03	250	30
262	19/02/09	G013	09.41	250	30
402	10/03/09	G001	32.92	250	30
403	10/03/09	G002	02.01	250	30
404	10/03/09	G008	02.42	250	30
405	10/03/09	G013	03.88	250	30
777	30/04/09	G001	22.96	250	30
778	30/04/09	G002	07.91	250	30
779	30/04/09	G008	12.32	250	30
780	30/04/09	G013	08.24	250	30
950	29/05/09	G001	20.44	250	30
951	29/05/09	G002	-	250	30
952	29/05/09	G008	09.58	250	30
953	29/05/09	G013	20.85	250	30
1172	26/06/09	G001	19.00	250	30
1173	26/06/09	G002	04.83	250	30
1174	26/06/09	G008	08.01	250	30

1175	26/06/09	G013	07.91	250	30
2140	30/07/09	G001	18.06	250	30
2141	30/07/09	G002	05.11	250	30
2142	30/07/09	G008	07.76	250	30
2143	30/07/09	G013	16.65	250	30
2157	28/08/09	G001	17.97	250	30
2158	28/08/09	G002	06.27	250	30
2159	28/08/09	G008	08.30	250	30
2160	28/08/09	G013	12.75	250	30
2231	17/09/09	G001	18.40	250	30
2232	17/09/09	G002	06.18	250	30
2233	17/09/09	G008	09.00	250	30
2234	17/09/09	G013	11.78	250	30
2515	28/10/09	G001	17.65	250	30
2516	28/10/09	G002	07.58	250	30
2517	28/10/09	G008	09.11	250	30
2518	28/10/09	G013	14.34	250	30
2677	26/11/09	G001	20.71	250	30
2678	26/11/09	G002	07.56	250	30
2679	26/11/09	G008	08.58	250	30
2680	26/11/09	G013	17.93	250	30
2822	21/12/09	G001	22.24	250	30
2823	21/12/09	G002	07.11	250	30
2824	21/12/09	G008	08.51	250	30
2825	21/12/09	G013	23.20	250	30

Surface Water Quality Monitoring

The Council monitors surface water quality in 12 locations (S001, S002, S003, S004, S007, S008, S009, S010, S011, S012, S025 & S030). S001, S002, S003 & S007 are located on the Tip Stream. S004 is located on a surface water drain on the landfill site. S010 and S025 are located upstream of the former leachate treatment plant discharge to the Triogue. The leachate treatment plant was decommissioned in May 2007, and no leachate had been discharged from the plant since June 2006. S008 is located beside the former discharge point to the River Triogue and S009 is located downstream of the former leachate treatment discharge point. Surface water monitoring began at S030 in March 2003 in order to obtain baseline data for the northern end of the site, i.e. down gradient of new-engineered Cells 12, 13 and 14. An additional monitoring station, S031, which precedes S030, was established during this reporting period following direction from the Agency.

The monitoring is to be conducted at quarterly intervals in accordance with Licence conditions and includes in situ and laboratory testing. The range of analysis is as specified in Schedule D.5 of Licence (W0026-02) and includes dissolved oxygen, pH, electrical conductivity, and organic and inorganic parameters. The agency conducts surface water monitoring and analysis on a quarterly basis. Laois County Council carries out surface water quality monitoring and analysis in excess of licence requirements.

The sampling and analysis is carried out in accordance with recognized quality standards. The detailed monitoring results are presented in the quarterly monitoring reports submitted to the Agency during the reporting period and can also be viewed on the attached compact disc.

Biological Assessment

Under the requirements of Condition 8.12 of the Licence, Laois County Council must carry out an annual biological assessment on the River Triogue. Details of assessment are given in **Appendix V1**.

Leachate Quality

Leachate sampling from the inspection chambers on Cells 1-5 (at monitoring locations L021, L023, L025 and L026), Cell 12 (at monitoring location L016), Cell 13 (at monitoring location L018) and the active Cell 14 (at monitoring location L019) is required as part of the annual EPA monitoring for the site. The samples are analyzed for a range of organic and inorganic parameters defined in the Waste Licence. Leachate is also sampled at the lined lagoon (at monitoring location L017), the unlined lagoon (at monitoring location L050), the new storage tank (at monitoring location L027) and in historically filled areas outside cells 1-5 (at monitoring locations L002, L003 and L004). In addition to annual EPA leachate monitoring, the council conducts analysis in excess of licence requirements. This data will be used to model changes in leachate characteristics in relation to rainfall levels, seasonal temperature variations, age of waste, and type of waste, depth of fill and effectiveness of capping. The detailed monitoring results are presented in the quarterly monitoring reports submitted to the Agency during the reporting period and can also be viewed on the attached compact disc.

The onsite leachate treatment plant was decommissioned on the 21st of May 2007; therefore treated leachate quality monitoring is no longer required. Discharge of treated leachate to the River Triogue has not taken place since June 2006.

Leachate Levels

Leachate levels are currently monitored manually in Cells 1-5 (at monitoring locations L021, L023, L025 and L026). Levels are continuously monitored in fully lined and capped Cells 12 and 13 (at monitoring locations L016 and L018). Levels are also continuously monitored in the active cell 14 (at monitoring location L019). The freeboard in the lined leachate storage lagoon exceeded the 0.75 meters limit stipulated in condition 5.11.4 of Waste Licence (W0026-2) during the reporting period (250209). The main contributing factor to the elevated level was particularly high levels of rainfall during this period.

Elevated leachate levels at this monitoring location were at the request of the agency treated as an incident. All elevated leachate levels are reported to the agency as an incident and entered in to the relevant quarterly monitoring reports. The detailed monitoring results are presented in the quarterly monitoring reports submitted to the Agency during the reporting period and can also be viewed on the attached compact disc.

Toxicity

Under the requirements of Condition 8.8.2 of the Licence, Laois County Council must carry out a bi-annual toxicity assessment on the treated leachate discharge. Following consultation with the EPA Licence Inspector, this assessment is no longer required due to the decommissioning of the onsite leachate treatment plant.

Landfill Gas

The Council currently monitors landfill gas at 16 monitoring locations on a monthly basis around the perimeter of the landfill. The monitoring locations are positioned both inside and outside the landfill cells.

In compliance with condition 3.20.1(b) of Waste Licence (W0026-2), a permanent landfill gas monitoring system has been installed in all site buildings and in compliance with condition 3.19.2(e) the data gathered from this system is recorded. The monitoring includes methane,

carbon dioxide, oxygen, atmospheric pressure, and temperature. The detailed monitoring results are presented in the quarterly monitoring reports submitted to the Agency during the reporting period and can also be viewed on the attached compact disc.

Trace levels of methane have been detected in all site buildings (i.e. site office, weighbridge office, civic amenity building and the LIFE project building), but the levels detected were all well below the trigger level of 1.0% v/v. Carbon dioxide has been detected in all of the site buildings, during different monitoring events, however the levels detected were all well below the trigger level of 1.5% v/v.

Carbon dioxide concentration greater than 1.5% v/v was measured in trial pits M001, M002, M003, M004, M006, M015 and M016 during the monitoring period. Elevated gas levels in trial pits are, at the request of the agency on the 11/09/2001, treated as an incident. In all cases, Corrective Action Procedure CAP 5 was applied and the agency was notified.

Monitoring locations M001 to M004 are located within the body of waste.

Monitoring locations M007, M008 & M009 are located in the south western area of the site, while M015 & M016 are located in the northwestern area of the site. Site investigations involving excavation in the respective surrounding areas showed that all five locations are located in peat, which naturally emits CO₂. "Report on Landfill Gas Monitoring at Laois County Council Kyletalesha Landfill Site" was submitted to the agency on 23/10/2002 and states that carbon dioxide levels above the trigger limit values in landfill gas monitoring locations outside the body of waste are attributable to natural background levels from the natural decay of peat.

Monitoring locations M001 to M004 are located inside the body of waste where carbon dioxide and methane levels above Exceedance Limit Values are expected and therefore are not a non-compliance issue.

Landfill Gas Control

In accordance with condition 3.14.1 of Waste Licence (W0026-2), infrastructure for the collection and flaring of landfill gas from Cells 1 to 5 and Cell 12 , 13 ,14 a and b have been installed. The horizontal gas extraction system is currently being installed in cell 14(c). This is carried out with each lift of waste.

Noise Monitoring

Noise monitoring is carried out at four locations, N1 to N4 in accordance with Schedule C.1 of Waste Licence (W0026-2). Full details of analysis may be found in the quarterly monitoring reports as submitted to the Agency and can also be found on **Appendix V11**

Dust Monitoring

In accordance with schedule D.3.1, dust monitoring was carried out at monitoring locations D1, D2, D3 and D4. Full details of analysis may be found in the quarterly monitoring reports as submitted to the Agency and can also be found on the attached compact disc.

Dust monitoring was performed in accordance with Standard method VDI2119 - Determination of Dust fall using the Bergerhoff Instrument (German Engineering Institute). As outlined in Schedule D Table D.1.1 of the licence dust measurements are undertaken at four specified locations D1-D4 three times annually. All results were compatible with the maximum permissible value 350 mg/m²/day. Full details of analysis may be found in the fourth quarterly monitoring report submitted to the Agency and can also be found on the attached compact disc.

Parameter Exceedances

In 2009 a total of 420 samples for perimeter landfill gas, groundwater, surface water, leachate, noise and dust deposition were taken and analyzed by either independent laboratories or the Council laboratory. This figure is exclusive of the comprehensive continuous monitoring which takes place on site. The maximum parameter values are those referred to in Schedule C of Waste Licence (W0026-2). Details of parameter exceedances are presented in **Table 8.2**.

Table 8.2 Parameter Exceedances (Schedule C)

Date:	Parameter Exceedance:	Reason:
30-01-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
20-02-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
25-02-2009	Lined Lagoon freeboard	High leachate generation due to rainfall
16-03-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
01-04-2009	Noise	Traffic along adjoining Roads
30-04-2008	CO2 in Trial Pits	Peat Naturally emitting CO2
26-05-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
25-06-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
31-07-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
31-08-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
21-09-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
21-10-2009	CO2 in Trial Pits	Peat Naturally emitting CO2
31-12-2009	CO2 in Trial Pits	Peat Naturally emitting CO2

9. Resource and energy consumption summary.

The following resources were used on-site during the reporting period: -

• Electricity

154,147 kWhr. Of electricity was used onsite throughout the reporting period

• Water

Surface Water Lagoon:

Dust Suppression using a 9m³ tanker, 8 weeks at 4 days per week at 3 passes per day
 = 9 x 8 x 4 x 3 = **864 m³**

Metered:

A total of 1520m³ was used from the mains supply throughout the reporting period.

• Diesel,

Approximately 35,000 liters were used throughout the reporting period for onsite machinery.

• Stone

A total of **2,576** tonnes was used for landfill roads throughout the reporting period

10. Proposed development of the facility and timescale of such development.

For the work undertaken in 2009 and work due for completion in 2010 please refer to chapter 12. There are no details available present for development works proposed for beyond the next reporting period.

11. Volume of leachate produced and volume of leachate transported / discharged off-site.

The historically filled areas, including Cells 1 to 5, and lined Cells 12 and 13 have been permanently remediated. Incident rainfall on historical filled areas is now diverted to surface water source. Incident rainfall on the active fill area Cell 14 is collected via the leachate drainage blanket and pumped to on-site lined leachate storage lagoon prior to treatment at council wastewater treatment plant and discharge to surface water. Other potential sources of leachate such as groundwater and surface water run-off are prevented from entering the waste fill areas by cell design. Leachate collected from each unlined landfill cell is directed to the leachate storage tank located in the eastern area of the landfill. Leachate is tankered off site to waste water treatment plants for treatment. **Table 11** identifies the volume of leachate tankered off site for treatment during the reporting period.

The onsite leachate treatment plant has been decommissioned since the 21st of May 2007; therefore discharge of treated leachate to the River Triogue is no longer taking place. The last discharge of treated leachate took place in June 2006. A new leachate storage tank has been installed near to the unlined lagoon and is now fully commissioned. The unlined lagoon will be decommissioned over a phased period.

Table 11.0 – Volume of Leachate Tankered Off-Site

Mass of Leachate Removed (Tonnes)	Volume of Leachate Removed (m ³)	Month
1606.02	1477.479	Jan
1441.10	1325.759	Feb
1567.64	1442.171	March
1451.74	1335.547	April
1515.68	1394.37	May
1555.36	1430.874	June
1677.96	1543.661	July
1362.78	1253.707	Aug
1571.30	1445.538	Sept
663	609.9356	Oct
658.56	605.851	Nov
1889.40	1738.178	Dec
16963.54	15603.07	Grand Total

12. Report on development works undertaken during the reporting period and a timescale for those proposed during the coming year.

Developments Undertaken in 2009:

1. In compliance with condition 4 of waste licence W0026-2 works on the capping of mini cell 14(b) commenced in 2009

In 2008, LCC awarded the contract for the capping of Cell 14A to Priority Construction Limited. In 2009, Priority completed the capping of Cell 14 A, and commenced the capping of Cell 14B. As part of the capping of Cell 14B, Priority capped the northern slope of the cell and part of the top of the cell. They then demobilised from site in March to allow LCC to finalise the filling of the cell. Once LCC had completed the filling of the Cell, Priority then remobilised to site in April, and completed the capping of Cell 14B in July 2009.

2. In compliance with condition 3.5.1 of waste licence W0026-2 site roads were provided

and maintained to ensure the safe movement of vehicles within the facility. The main access road through the landfill was resurfaced on a regular basis from a location past the wheel wash to the lined lagoon. This work was carried out using a clause 804 material sourced from a nearby quarry.

In addition to the existing Haul road in preparation for Cell 15 the haul road was extended around the back of Cell 14 north and around the new cell 15 to provide access for construction of Cell 15 and once construction is complete it will be the new access road for the Cell.

3. In compliance with condition 3.14.3 of waste licence W0026-2 landfill gas extraction wells were provided by Irish Bio-Tech in the lined Cell 14(b) to match the phased development of the Cell. A total of 7 vertical well were constructed by drilling to a depth of 10m using a 600mm auger. Perforated HDPE pipes of 160mm diameter were placed in the borehole and backfilled with a suitable pea gravel material. The top of the well consists of a 160mm solid HDPE pipe which is connected to a well head. The boreholes were sealed with a bentonite material to prevent passive venting of landfill gas. Each well head is connected to the main gas line using a 125mm solid HDPE pipe.
4. Horizontal landfill gas extraction wells were placed in the active cell 14(c) in November 2009 to the requirements of condition 3.14.3 of the waste licence (W0026-2).
5. Construction of the New Cell 15

The works consist of the construction of a new 14,000m² lined landfill cell, split into two smaller Cells, 15A, and 15B, with composite liner systems and leachate collection systems.

LCC appointed Mathew Mahon to remove the peat from the area where Cell 15 was to be constructed. This contractor commenced works in July and finished works in September. His works included the removal of the peat from the Cell 15 area, removal of some of the underlying till, and drain diversions. He also diverted drains which were located in the proposed Cell 15 area.

PCL mobilised to site on the 27th of October 2009, and commenced their works. Initially

PCL had to drain out the cell, On the 9th of November PCL commenced the bulk excavation of Cells 15 A & B and stockpiled the material at a location North of Cell 14. Once PCL dug deeper into the layers of silt and marl, some large areas of dry material were found and these were placed into the locations where the berms were to be constructed. Construction will continue into 2010.

Proposed Development work for 2010

1. Capping of mini Cell 14(c) to the requirements of condition 4.3 of the waste licence (W0026-2) is to be completed by October 2010.
2. Construction of Cell 15 to the requirements of condition 3.12 and 3.16 of the waste license (W0026-2) is to be completed by June 2010

Which include an upgrade of the Scada system and the Leachate line.

3. Horizontal landfill gas extraction wells to be provided in the remainder of active cell 14(c) and in the new Cell 15 (a) as we expect to commence filling Cell 15 in June of 2010, These works will be carried out to the requirements of condition 3.14.3 of the waste licence (W0026-2) and will be ongoing throughout 2010 & 2011
4. Annually Exceedence reports are submitted to the EPA in relation to Locations M001, M002, M003, M004, M015 and M016. This is due to the fact that trial pits M001, M002, M003 and M004 are situated in waste which was historically deposited at the edge of the site. M015 and M016 are located in peat, which naturally emits CO₂. A gas assessment report was submitted to the Agency in October 2002 to confirm this entitled "Report on Landfill Gas Monitoring at Laois County Council Kyletalesha Landfill Site." As requested by the EPA this report will be updated in 2010 with a view to investigating the historical data of the Monitoring locations and setting New Trigger levels. This report will be submitted to the EPA on completion
5. Site road resurfacing to the requirements of condition 3.5.1 of the waste licence W0026-2 will be ongoing throughout 2010

6. Permanent landfill gas extraction wells to be provided in the active cell 14(c) to the requirements of condition 3.14.3 of the waste licence (W0026-2) is to be completed by Nov 2010
7. Servicing of boundary tree line will take place in accordance with maintenance contract.

13. Report on Restoration of Completed Cells

In compliance with condition 4 of waste licence (W0026-2) final capping of mini cell 14(b) was completed in September 2009, the capping of cell 14(c) shall commence in June 2010 due for completion by October 2010. Cells 12, 13 and 14 a and b are now fully capped and restored.

14. Site survey showing existing levels of the facility at the end of the reporting period. :

Site Survey can be viewed in **Appendix 1V**

15. Estimated annual and cumulative quantities of landfill gas emitted from the facility.

Landfill Gas Volumes

The Council prepared a report entitled "Proposal for Utilisation of Landfill Gas as an Energy Source" which was submitted and accepted by the Agency in compliance with Condition 4.17.7 of the waste licence 26-1. This report estimated that approximately 1,941 m³ of landfill gas would be generated on-site in the year 2000. The results of this assessment indicated that the feasibility for utilisation of landfill gas as an energy source in the short to medium term (10 years) was not viable. A repeat assessment is currently being carried out by RPS Consultants on the feasibility of utilising landfill gas as an energy source.

The exceedances recorded in **Table 15** are due to the fact that trial pits M001, M002, M003 and

M004 are situated in waste which was historically deposited at the edge of the site. M015 and M016 are located in peat, which naturally emits CO₂. A gas assessment report was submitted to the Agency in October 2002 to confirm this entitled “Report on Landfill Gas Monitoring at Laois County Council Kyletalesha Landfill Site”.

Table 15: Average Landfill Gas Concentrations for 2009.

Location	CH₄	CO₂	O₂
TPITM001 Average	0.09	2.9	16.6
TPITM002 Average	0.07	2.2	18.0
TPITM003 Average	0.08	3.0	16.5
TPITM004 Average	0.11	3.5	16.5
TPITM005 Average	0.06	0.2	20.2
TPITM006 Average	0.07	1.3	19.2
TPITM007 Average	0.11	1.3	19.1
TPITM008 Average	0.08	0.3	20.1
TPITM009 Average	0.06	0.8	19.6
TPITM014 Average	0.05	0.0	18.4
TPITM015 Average	0.11	1.1	17.9
TPITM016 Average	0.05	1.3	19.2
TPITM017 Average	0.06	1.7	16.7
Overall Average	0.08	1.51	17.04

16. Estimated annual and cumulative quantity of indirect emissions to groundwater.

The historically filled areas, including Cells 1 to 5, and lined Cells 12 and 13 have been permanently restored and vegetated. Incident rainfall on the active fill areas is collected in the leachate collection drains and treated in a council waste water treatment plant.

The landfill is designed to utilise the natural ground conditions to mitigate environmental impacts associated with leachate. The design incorporates leachate collection facilities using internal and perimeter drains to direct leachate and leachate contaminated surface water to the on-site leachate lagoon.

The peat and the underlying boulder clays have a low permeability, which inhibits the percolation of leachate downward to limestone bedrock beneath the site. A comprehensive site investigation at the site completed in 2000 established that the thickness of the peat ranges from 3 - 7 m and the boulder clay from 7.5 - 10 m across the site. The permeability of the peat ranges from 1.9×10^{-9} m/s to 9.8×10^{-10} m/s. The underlying till has variable permeability depending on composition. In some sand and gravel zones permeability of 1×10^{-4} m/s can be expected. The till is however, more silt dominated and in these areas permeabilities ranging from 2.41×10^{-8} m/s to 4.78×10^{-10} m/s have been recorded.

The groundwater level monitoring indicates that the bedrock aquifer is confined by the overlying boulder clays and peats across much of the site. These conditions also inhibit the percolation of leachate to the bedrock due to differences in pressure head.

There is the potential for the indirect discharge of leachate to groundwater in the bedrock aquifer either by percolation through the underlying peat and boulder clay, or through recharge by contaminated surface water.

Using Darcy's equation which calculates groundwater flow and assuming a permeability of 1.9×10^{-9} m/s, an average depth of 5 m of underlying peat, a 1 m head of leachate and a fill area of $186,600 \text{ m}^2$, it is estimated that the theoretical potential percolation through the basal peats and

boulder clays is approximately 48.54 m³/acre/year which is less than 1.5% of the total annual rainfall. The calculation does not take into consideration the pressure head in the bedrock aquifer, which would inhibit the discharge to the bedrock aquifer.

The peat has a proven capability, as demonstrated in the leachate treatment plant, to effectively reduce the concentration level of contaminants in the leachate. Any leachate that does percolate to groundwater will have undergone significant attenuation. This is confirmed by the groundwater quality monitoring at the site which shows that the landfill is not impacting on groundwater quality.

17. Annual water balance calculation and interpretation.

The water balance calculations are based on the methodology specified in the EPA's Landfill Site Design Manual. The calculation used is as follows:

$$Lo = [ER(A) + LW + IRCA + ER(l)] - [aw]$$

Lo	leachate produced (M3)
ER	effective rainfall (m) (Use actual rainfall (R) for active cells)
A	Area of cell (M2)
LW	liquid waste (also includes excess water from sludges) (M3)
IRCA	infiltration through restored and capped areas (m)
l	surface area of lagoon (M2)
a	absorptive capacity of waste (m ³ /t)
W	weight of waste deposited (t/a)

The meteorological data used was from the Birr, Co Offaly weather station. The meteorological reports for both the Birr, Mullingar and Johnstown castle weather stations can be found in **Appendix III**. The landfill areas included in the calculations were the active fill area and the temporary restored area of Cell 14. The calculations in Table 17.0 are based on the Actual Rainfall and do not allow for Evapotranspiration. An absorptive capacity of 0.06 m³ per tonne was assumed based on a compacted waste density of 0.85 tonnes/m³. Table 17.1 compares Leachate produced and Leachate tankered off site for treatment.

Table 17.0: Water Balance Calculations

Cell	14
ER	1.315
Area of cell (A)	16,600
Area Infiltration (ER x A)	16,600 x 1.315 = 21,829 m ³
Liquid Waste (LW)	0m ³ (2)
l	200m ²
A	0.06 (m ³ /t)
W	70,000 tonne
Absorptive Capacity	70,000 x 0.06 = 4,200m ³
	Lo = [ER(A) + LW + IRCA +ER(l)] – [aw]
Leachate Produced Lo	17,892m ³

Table 17.1 Leachate produced and Leachate Tankered Offsite

Leachate Tankered Off site	15,603.07m³
Estimated Leachate Volumes	17,892m³

18. Report on the progress towards achievement of the Environmental Objectives and Targets contained in previous year's report.

OBJECTIVE	TARGET	PROGRESS
<p>1. To communicate effectively to all users of the landfill the Environmental Policy Statement.</p>	<p>Policy to be communicated on an ongoing annual basis in conjunction with seasonal waste minimization and recycling campaigns.</p>	<p>Policy to be communicated on an ongoing annual basis in conjunction with seasonal waste minimization and recycling campaigns.</p>
<p>2. Increase public awareness on waste issues and encourage reduction, recovery and recycling on a county wide basis as well as at the landfill in accordance with the Waste Management Plan for the Midland Region.</p>	<p>Maintain seasonal public information campaigns to encourage reduction, and recycling.</p> <p>Complete and distribute public information leaflets to promote waste reduction and recycling.</p> <p>Environmental Awareness Officer: Host public information evenings for community groups Host waste mgt seminars for the business community Promote sustainable waste mgt practices via schools education programme.</p> <p>Provide householders in County Laois with relevant information on reducing, reusing and recycling their waste (A5 brochure) Deliver national waste programmes</p> <p>At a local level e.g. Race Against Waste programme Update www.laois.ie with relevant information.</p> <p>Signage on site to encourage recycling.</p>	<p>Ongoing public information campaigns to encourage reduction, and recycling. Ongoing tours of landfill facility given to schools, public representatives and community groups.</p> <p>Ongoing distribution of public information leaflets to promote waste reduction and recycling.</p> <p>On going on an annual Basis</p> <p>Ongoing on an annual Basis</p> <p>Ongoing on an annual Basis</p>

OBJECTIVE	TARGET	PROGRESS
3. Improvements to Site Infrastructure.	<p>Installation of a telemetry system for the recording of all specified monitoring data as per licence condition 3.19.2 (c).</p> <p>Installation and maintenance of new camera system</p>	<p>Installed initially in 2008 Being up graded in 2009/2010 as part of the development of Cell 15</p> <p>Ongoing</p>
4. Landfill Gas Management.	Horizontal extraction system in place in cell 14 and is being updated as the cell fills with waste.	Ongoing
5. Landfill Site Restoration	<p>Continue works in Cell 14 in compliance with condition 4 of waste licence (W0026-2)</p> <p>Installation of Horizontal gas extraction system</p>	<p>Ongoing</p> <p>Ongoing</p>
6. Staff Training.	Review and update if necessary landfill staff training manuals and training matrix to represent waste licence (W0026-2).	Ongoing
7. Landfill Site Information Brochures	<p>Distribute landfill site and waste information brochures as follows.</p> <ul style="list-style-type: none"> • Landfill site design and operation. • Waste Disposal at Laois County Council landfill site. • Waste reduction and recycling. 	Ongoing
8. Prepare and Implement Written Procedures.	Complete review of all written procedures.	Ongoing

OBJECTIVE	TARGET	PROGRESS
9. Surface Water	Install surface water management system in compliance with licence condition 3.15.1.	Ongoing

19. Schedule of Environmental Objectives and Targets for the forthcoming year.

OBJECTIVE	TARGET
1. To communicate effectively to all users of the landfill the Environmental Policy Statement.	Policy to be communicated on an ongoing annual basis in conjunction with seasonal waste minimization and recycling campaigns.
2. Increase public awareness on waste issues and encourage reduction, recovery and recycling on a county wide basis as well as at the landfill in accordance with the Waste Management Plan for the Midland Region.	<p>Annual surveys to measure public feed back in relation to waste services provided at the facility.</p> <p>Maintain seasonal public information campaigns to encourage reduction, and recycling.</p> <p>Complete and distribute public information leaflets to promote waste reduction and recycling.</p> <p>Environmental Awareness Officer: Host public information evenings for community groups Host waste mgt seminars for the business community Promote sustainable waste mgt practices via schools education programme.</p> <p>Provide householders in County Laois with relevant information on reducing, reusing and recycling their waste (A5 brochure) Deliver national waste programmes at a local level e.g. Race Against Waste programme Update www.laois.ie with relevant information.</p>

OBJECTIVE	TARGET
<p>3. Improvements to Site Infrastructure.</p>	<p>Review of wastewater treatment system at the facility.</p> <p>Construction of Cell 15</p> <p>Continued upgrade of scada system</p> <p>Extension to existing Haul Road</p> <p>Improvement of existing Haul road</p>
<p>4. Landfill Gas Management.</p>	<p>Continue horizontal gas extraction system in cell 14.</p> <p>Complete Vertical gas extraction system in Cell 14</p> <p>Horizontal gas extraction system to be implemented in Cell 15</p>
<p>5. Landfill Site Restoration</p>	<p>Complete capping of Cell 14.</p>
<p>6. Staff Training</p>	<p>Review and update if necessary landfill staff training manuals and training matrix to represent waste licence (W00262).</p>
<p>7. Landfill Site Information Brochures</p>	<p>Distribute landfill site and waste information brochures as follows.</p> <ul style="list-style-type: none"> • Landfill site design and operation. • Waste Disposal at Laois County Council landfill site. • Waste reduction and recycling.

20. Full title and a written summary of any procedures developed by the licensee in the year which relates to the facility operation.

A full review of current and additional procedures is being undertaken.

21. Tank, pipeline and bund testing and inspection report.

In Compliance with condition 3.11.5 of Waste Licence W0026-2 the integrity and water tightness of all the bunds and leachate/contaminated waste storage tanks were carried out and reported in the 2008 AER .

22. Report on the performance and compatibility of the septic tank (and associated percolation area) with the Agency's Wastewater Treatment manual: Treatment Systems for Single Houses.

The new site facility office has been connected to the existing septic tank which has proven to be in good working order

23. Reported incidents and Complaints summaries.

The Council maintains a comprehensive register of incidents and complaints received in accordance with Condition 3.13 of the waste licence. *Table 23* lists the incidents and complaints throughout the reporting period.

Table 23: Incident and Complaints for 2009

Date	Ref.	Incidents relating to Flare
08/01/2009	080109	Flare shut down
05/02/2009	07022009	The CO emission limit value (62.50 ppm) was exceeded (106.08 ppm) for a brief period due to a sudden decrease in combustion temperature. The temperature quickly adjusted and the CO concentration was 4.97 ppm within 5 minutes of the incident occurring.
28/02/2009	280209	Flare shutdown
04/10/2009	041009	Flare shutdown
04/11/2009	041109	Flare shut down

Date	Ref.	Incident related to Gas
30/01/2009	300109	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MOO1 (2.8 %) & M002 (2.8%).
20/02/2009	200209	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits M001, M015 & M016.
16/03/2009	160309	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MOO1 (2.3%), M007 (1.6%) & M016 (4.3%).
30/04/2009	300409	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MOO1 (5.1%), M003 (2.2%), M007 (1.9%) & M017 (4.8%).
26/05/2009	260509	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits M001 (6.8%), M003 (3.1%), M007 (1.7%), M002 (2.4%) & M009 (2.7%).
25/06/2009	250609	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MOO1 (4.0%), M002 (1.9%), M003 (4.3%), M004 (7.6%) & M006 (2.7%).
31/07/2009	310709	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MO17 (2.7%), M002 (3.0%), M003 (5.5%), M004 (3.0%) & M006 (2.8%).
31/08/2009	310809	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MO17 (3.5%), M002 (3.4%), M003 (5.0%), M004 (1.6%), M007 (1.8%) & M009 (1.8%).
21/09/2009	210909	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits MO17 (2.9%), M002 (2.5%), M003 (4.3%), M004 (8.6%) & M001 (2.1%).
21/10/2009	211009	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits M006 (2.6%), M002 (3.3%), M003 (5.2%), M004 (6.6%), M016 (2.7%) & M001 (2.7%).
31/12/2009	311209	Landfill gas monitoring detected CO ₂ levels above 1.5% in trial pits M004 (2.7%), M015 (7.5%) & M016 (2.1%).

Date	Ref.	Incident related to Lagoon
25/02/2009	250209	Exceedance of Lined Lagoon Freeboard limit (0.75m)
27/11/2009	271109	Exceedance of Lined Lagoon Freeboard limit (0.75m)

Date	Location	No.Odour Complaints
2 nd Jan 2009	Derryguile	1 Odour Complaint
5 th Jan 2009	Derryguile	1 Odour Complaint
13 th Jan 2009	Derryguile	6 Odour Complaints
14 th Jan 2009	Derryguile	4 Odour complaints
15 th Jan 2009	Clonsoughy	2 Odour Complaint
16 th Jan 2009	Derryguile	1 Odour Complaint
28 th Jan 2009	Derryguile	2 Odour Complaint
29 th Jan 2009	Derryguile	2 odour Complaints
31 st Jan 2009	Derryguile	2 odour Complaints
2 nd Feb 2009	Derryguile	1 Odour Complaint
9 th Feb 2009	Derryguile	1 Odour Complaint
10 th Feb 2009	Derryguile	1 Odour Complaint
13 th Feb 2009	Derryguile	2 Odour Complaints
13 th Feb 2009	Ballyfin rd	1 Odour Complaint
20 th Feb 2009	Derryguile	1 Odour Complaint
03 Nov 2009	Derryguile	1 odour complaint

24. Review of Nuisance Controls.

Condition 7.1.

To control landfill odours, vermin, dust, litter and noise in compliance with condition 7.1 of Waste Licence W0026-2 the following is carried out.

- Each evening once work completes, a layer of soil is placed over the entire working face of the active cell to reduce odour emissions and littering.
- At the end of each week a layer of 150mm minimum of soil is place on the working face.
- The use of Rentokill for vermin control.
- During the dry weather water is sprayed continuously on the road way to reduce dust levels
- Netting is placed around the active cell to reduce littering
- Daily litter patrols are carried out around the site.
- Installation of the flaring system.

Condition 7.3.4.

In compliance with condition 7.3.4 :

Litter nets are installed and maintained around the peimeter of the active cell area.

Litter control infrastructure is inspected on a daily basis.

Loose litter is removed in accordance with condition 7.3.3.

Also in co-operation with the Waste Enforcement Section of Laois County Council the use of CCTV is utilised in identifying vehicles from which litter is emanating due to poor or lack of covering.

Condition 7.6.1.

In compliance with condition 7.6.1 the use of Falcons has proven to be a significant factor in bird and vermin control.

25. Reports on financial provision made under this licence, management and staffing structure of the facility, and a programme for public information.

Management and Staffing Structure:

Grade	Name	Responsibility
Executive Engineer	B Cuddy	Landfill Manager
Exec. Technician	K. Farrell	Executive Technician
Technician Grade 1	M. Chawke	Monitoring Technician
Gen. Services Supervisor	N. Farrell	Overseer
Ganger	L. Dunne	Domestic Waste Area
Light Equip. Operator	M. Brennan	Nuisance Control
General Operator	D. O'Rourke	Weighbridge Operator
General Operator	P. Thompson	Civic Amenity Site

Public Information:

-
- Appointment of an Environmental Awareness Officer.
- School and community tours held on an ongoing basis.
- Seasonal public informational campaigns to encourage reusing, reduction and recycling.
- Deliver national waste programmes at local level e.g. Race Against Waste.
- Public Information File kept at Landfill Site Office for public viewing which contains Monitoring Results, Waste Licence, Complaints and Environmental Incidents.
- Regular Monitoring Committee Meetings with local residents.

Budget for 2010:

Reduction in Capital Balances	€340,000
Loan Charges/Transfer Capital	€254,000
Aftercare/reinstatement Fund	€15,000

26. Report on Training of Staff:

Details of training undertaken in 2009 are given in *Table 27.0*. All operatives hold Safepass cards.

Table 26.0 Training of Staff

Name	Grade	Course Description	Start	Finish
Brenda Cuddy	Executive Engineer	Safe Pass	Nov 2009	
Ken Farrell	Technician	Safe Pass	June 2009	
Edward Farrell	General Services Supervisor	Safe pass	Dec 2009	
Liam Dunne	Ganger	Safe pass	Nov 2009	
David O'Rourke	General Operative	Safe Pass	June 2009	
Marc Chawke	Technician	FAS Waste Management Training Programme	2009	

27. Certification:

The Annual Environmental Report for the monitoring period 2009 has been certified by the undersigned.

Ms. Brenda Cuddy
Landfill Manager

Mr. Ken Farrell
Facility Manager

Mr. Brendan Condron
S.E.E. - Waste Management

Appendix I:
Monitoring Locations

Kyletalesha Landfill Site,			
Monitoring Point Co-ordinates. December, 2008.			
Monitoring Point and Location	Easting	Northing	Elevation
G001 Coillte Bog	245276.297	202051.548	83.160
G002 Bog Opposite M. Delaney	245493.769	202652.424	83.700
G008 Forestry on Kyle Road	245830.707	202293.324	82.600
G012 North of Cell 14	244914.829	203750.783	83.220
G013 C. Delaney Road	245143.274	203758.123	81.150
L002 Car Area	245349.146	202481.016	87.780
L003 West Cell 1/2	245224.700	202576.797	89.490
L004 East Cell1/2	245302.633	202656.523	87.770
L026 Cell 3	245164.459	202809.927	90.920
L025 Cell 1/2	245250.818	202820.125	90.280
L021 Cell 4	245133.942	202908.157	89.450
L014 Cell 5	245374.306	202968.346	84.730
L016 Cell 12	245043.862	203352.234	80.440
L017 Lined Lagoon	244996.000	203758.000	N/A
L018 Cell 13	245088.552	203579.564	N/A
L019 Cell 14	245087.719	203699.593	N/A
LT50 Unlined Lagoon	245354.525	202706.213	N/A
L028 New Storage Tank	245407.940	202681.259	N/A
M001 East boundary at Entrance Gate	245285.054	202154.880	85.930
M002 East boundary at Civic Amenity Site	245344.234	202233.743	85.560
M003 East boundary opposite Inspection Area	245412.795	202311.501	84.270
M004 Old Treatment Plant	245431.280	202641.448	81.470
M005 West boundary opposite cell 1/2	245129.299	202613.733	87.780
M006 West boundary opposite cell 3	245115.839	202736.261	87.260
M007 South boundary at N80 junction	245173.954	202119.558	84.350
M008 West boundary along N80	245176.566	202332.268	84.670
M009 West boundary along N80	245191.119	202381.412	84.670
M012 North boundary opposite Cell 14	244914.829	203750.783	83.220
M013 North boundary on C. Delaney road	245143.274	203758.123	81.150
M014 West boundary opposite Cell 12	245096.519	203456.821	80.990
M015 Road to trial Cell	244871.945	203662.372	84.880
M016 Trial Cell car park.	244832.730	203772.661	84.330
M017 Delaneys' Road.	245119.237	203656.902	80.710
M018 (M007)	245175.707	202121.219	83.570
S001 Tip Stream inside Landfill	245453.400	202776.186	80.340
S002 Tip Stream inside Landfill	245488.317	202588.450	78.790
S003 Tip Stream at AES	245587.877	202468.201	78.000
S004 N80 Junction	245207.622	202057.848	81.970
S007 Tip Stream in Finns Field	246216.612	202046.316	77.280
S008 Triouge at leachate discharge point	246286.558	202035.313	76.250
S009 Triouge downstream of discharge point	246299.190	202084.446	75.580
S010	247830.300	197111.400	N/A
S011	246377.100	200609.100	N/A
S012	247471.400	204177.600	N/A
S025 Triouge upstream of discharge point	246270.206	201971.565	76.490

S030 North of Cell 14	245082.117	203791.502	78.780
V001	245565.937	202466.326	83.280
V002	245243.256	202069.332	85.190
V003	245188.327	202023.141	84.810
V004	245020.419	202752.557	86.300
V005	244997.180	202874.102	86.000
V006	244916.769	203234.828	87.090
V007	244864.027	203477.183	87.860
V008	244821.238	203668.547	87.590
BA1 Broughlone Stream	246216.612	202046.316	N/A
BA2 Kyle Bridge	246380.572	200610.343	N/A
BA3 Two-Mile Bridge	247340.617	203600.149	N/A
D1 Old Treatment Plant	245416.139	202706.222	N/A
D2 Beside Civic Amenity Site	245406.201	202305.031	N/A
D3 Beside N80 Opposite Cell5	245052.436	202704.550	N/A
D4 Bog between Cell5 and Cell 12	245091.845	203063.692	N/A
N1 Old Treatment Plant	245416.139	202706.222	N/A
N2 Beside Civic Amenity Site	245406.201	202305.031	N/A
N3 Beside N80 Opposite Cell 5	245052.436	202704.550	N/A
N4 Bog between Cell 5 and Cell 12	245091.845	203063.692	N/A

Appendix II:
Volumetric Survey



· tom hannon b.eng. MIEI
· o'briens bridge, co clare
· ph 061 372797 fax 061 372802
· mob 086 3141076
· email: tomghannon@gmail.com
· web: www.thengineering.ie

TH engineering & planning consultants

18th March 2010

Ms Brenda Cuddy,
Laois Co Co,
Kyltaleesha Landfill,
Co Laois

Re: Volumetric Survey – Kyltaleesha Landfill Cell 14

Dear Brenda,

Further to the GPS survey carried out at the above site on 27th January 2010 the following are our findings:

Calculated volume of waste contained in cell 14 on 27th January 2010 equals 162,116m³, with a deviation of +/-3%.

A calculation sheet and survey drawing will be sent to you under separate cover.

Yours sincerely,

Tom Hannon, B Eng MIEI
Managing Director,
for and on behalf of
TH Engineering & Planning Consultants Ltd

Appendix III:

Weather Data

2009 rainfall in millimeters for JOHNSTOWN CASTLE

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2009	129.5	49	29.1	114	64.1	77.8	222	162.7	56.8	154.2	230.8	163	1452.6
mean	108	79	75	63	67	58	70	86	93	103	110	111	1022

Mean temperature in degrees Celsius for JOHNSTOWN CASTLE

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2009	5	5.6	6.7	8.9	11.2	14.4	15.1	14.9	13.3	12.1	8.5	4.6	10
mean	5.3	5.2	6.4	7.9	10.3	13.1	14.8	14.8	13	10.8	7.5	6.1	9.6

2009 rainfall in millimeters for Birr

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2009	124.8	15.6	49.3	106	69.8	67.6	135	98.2	29.4				
mean	76	53.9	60.7	52.8	61.2	55.6	58.7	78	70.6	84.1	74.2	78.3	804.2

Mean temperature in degrees Celsius for Birr

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2009	4.3	5.2	7.2	9	11.2	15	15	15.1	12.8	10.7	9.1		10.5
mean	4.6	4.8	6.1	7.9	10.4	13.2	14.9	14.6	12.6	10.1	6.4	5.4	9.3

2009 rainfall in millimeters for Mullingar

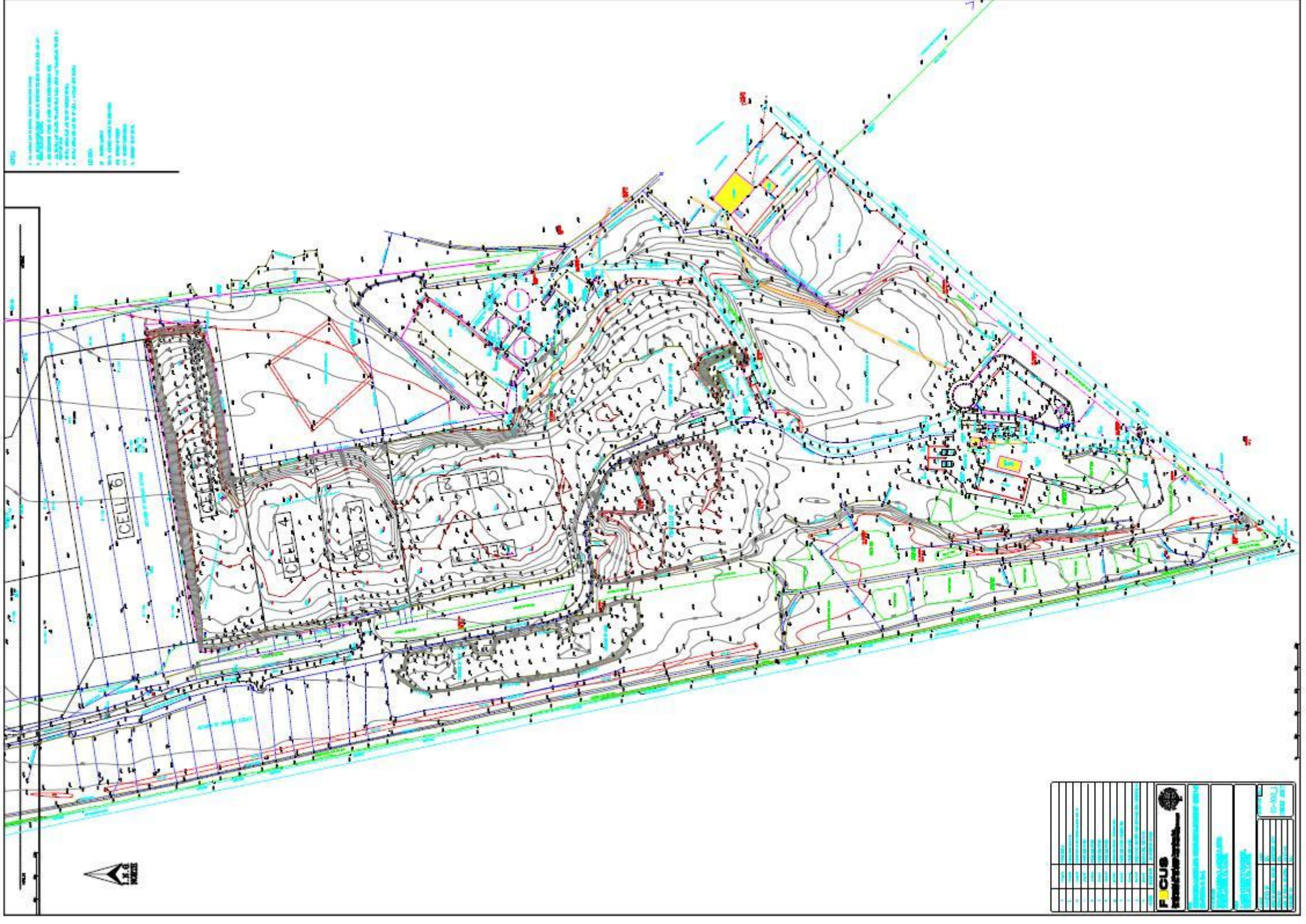
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2009	104.6	25.7	40.6	103	75	86.6	191	135.2	38.1	89.7	213.6	74.2	1177.5
mean	92.4	66.3	72.6	59	70.9	67	61.2	82.9	85.1	94.1	87.9	92.2	931.5

temperature in degrees Celsius for MULLINGAR

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2009	3.5	4.9	6.5	8.7	10.8	14.4	14.7	14.5	12.5	10.9	6.5	2.2	9.2
mean	4	4.2	5.7	7.6	10.1	13	14.7	14.2	12.3	9.7	5.9	4.8	8.8

Appendix IV

Site Survey



- NOTES
1. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
 2. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
 3. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
 4. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
 5. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
 6. ALL UTILITIES SHOWN ARE BASED ON THE RECORD DRAWINGS AND FIELD SURVEY.
- DATE: 10/10/2010
- BY: [Signature]
- CHECKED BY: [Signature]
- SCALE: AS SHOWN

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	10/10/2010
2	ISSUED FOR CONSTRUCTION	10/10/2010
3	ISSUED FOR AS-BUILT	10/10/2010
4	ISSUED FOR RECORD	10/10/2010
5	ISSUED FOR FINAL	10/10/2010
6	ISSUED FOR ARCHIVE	10/10/2010
7	ISSUED FOR DESTRUCTION	10/10/2010
8	ISSUED FOR REMOVAL	10/10/2010
9	ISSUED FOR REPAIR	10/10/2010
10	ISSUED FOR REPLACEMENT	10/10/2010
11	ISSUED FOR MODIFICATION	10/10/2010
12	ISSUED FOR ADDITION	10/10/2010
13	ISSUED FOR DELETION	10/10/2010
14	ISSUED FOR CANCELLATION	10/10/2010
15	ISSUED FOR SUSPENSION	10/10/2010
16	ISSUED FOR RESUMPTION	10/10/2010
17	ISSUED FOR RENEWAL	10/10/2010
18	ISSUED FOR EXTENSION	10/10/2010
19	ISSUED FOR AMENDMENT	10/10/2010
20	ISSUED FOR CLOSURE	10/10/2010

F CUS
 Infrastructure

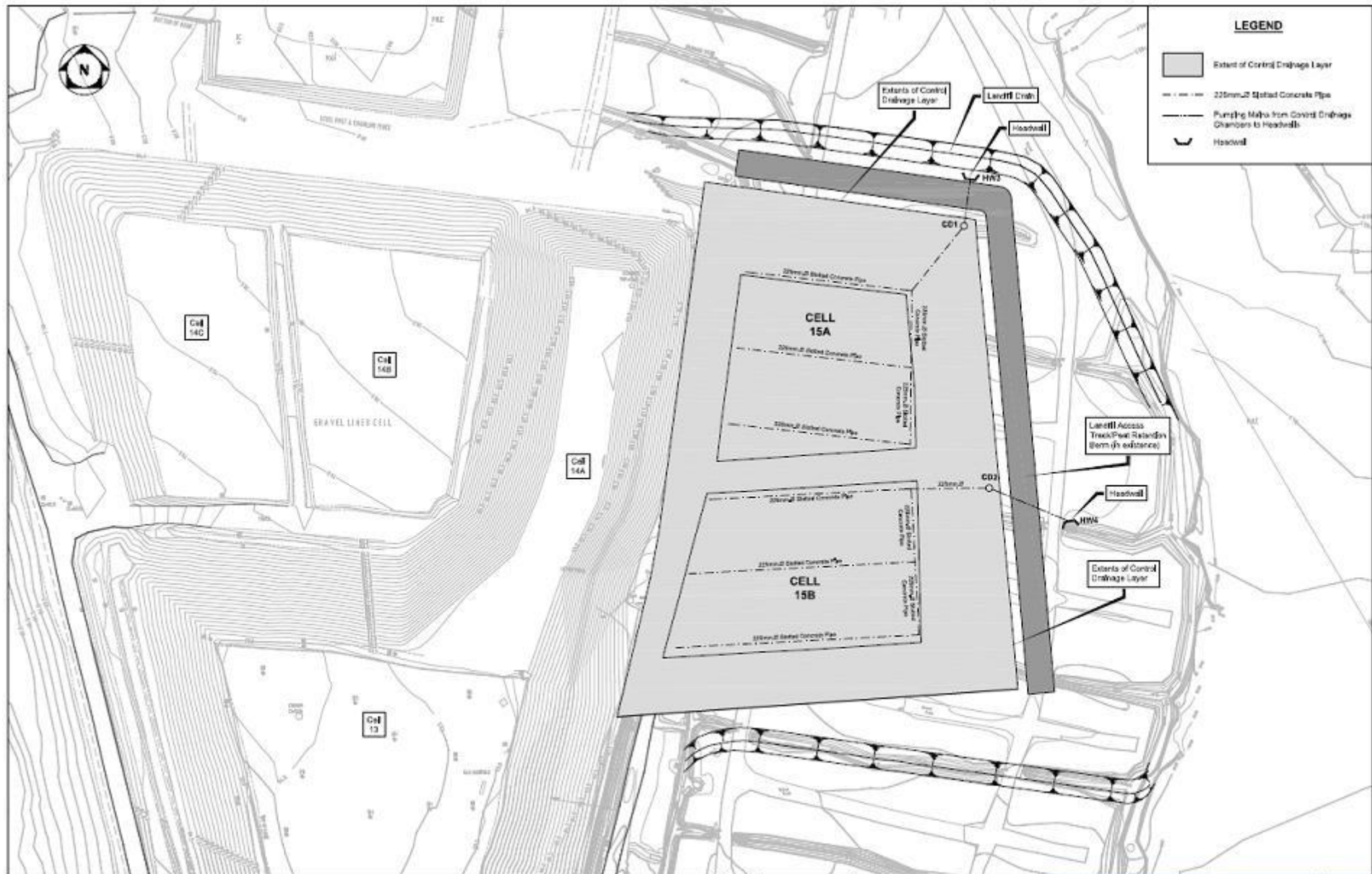
- 1. 2024.01.15 - 100% DESIGN
- 2. 2024.01.15 - 100% DESIGN
- 3. 2024.01.15 - 100% DESIGN
- 4. 2024.01.15 - 100% DESIGN
- 5. 2024.01.15 - 100% DESIGN
- 6. 2024.01.15 - 100% DESIGN
- 7. 2024.01.15 - 100% DESIGN
- 8. 2024.01.15 - 100% DESIGN
- 9. 2024.01.15 - 100% DESIGN
- 10. 2024.01.15 - 100% DESIGN
- 11. 2024.01.15 - 100% DESIGN
- 12. 2024.01.15 - 100% DESIGN
- 13. 2024.01.15 - 100% DESIGN
- 14. 2024.01.15 - 100% DESIGN
- 15. 2024.01.15 - 100% DESIGN
- 16. 2024.01.15 - 100% DESIGN
- 17. 2024.01.15 - 100% DESIGN
- 18. 2024.01.15 - 100% DESIGN
- 19. 2024.01.15 - 100% DESIGN
- 20. 2024.01.15 - 100% DESIGN



NO	DESCRIPTION	DATE	BY	CHECKED
1	100% DESIGN	2024.01.15		
2	100% DESIGN	2024.01.15		
3	100% DESIGN	2024.01.15		
4	100% DESIGN	2024.01.15		
5	100% DESIGN	2024.01.15		
6	100% DESIGN	2024.01.15		
7	100% DESIGN	2024.01.15		
8	100% DESIGN	2024.01.15		
9	100% DESIGN	2024.01.15		
10	100% DESIGN	2024.01.15		
11	100% DESIGN	2024.01.15		
12	100% DESIGN	2024.01.15		
13	100% DESIGN	2024.01.15		
14	100% DESIGN	2024.01.15		
15	100% DESIGN	2024.01.15		
16	100% DESIGN	2024.01.15		
17	100% DESIGN	2024.01.15		
18	100% DESIGN	2024.01.15		
19	100% DESIGN	2024.01.15		
20	100% DESIGN	2024.01.15		



FOCUS
 CONSULTANTS
 100% DESIGN



<p>NOTES</p> <p>1. All work shall be in accordance with the relevant standards and specifications.</p> <p>2. All work shall be in accordance with the relevant standards and specifications.</p> <p>3. All work shall be in accordance with the relevant standards and specifications.</p> <p>4. All work shall be in accordance with the relevant standards and specifications.</p>		<p>Scale</p> <p>1:1000</p>	<p>Project</p> <p>Kylealesha Landfill Cells 15A & 15B</p>	<p>Client</p> <p>RPS</p>	<p>Drawing Number</p> <p>MOR0628/DG0305</p>	<p>Page</p> <p>101</p>
<p>Drawn By</p> <p>RD</p>	<p>Checked By</p> <p>MJS</p>	<p>Approved By</p> <p>LOT</p>	<p>Date</p> <p>18-10-13</p>	<p>Drawing Status</p> <p>Final</p>	<p>Scale</p> <p>1:1000 @ A1</p>	<p>Notes</p> <p>NTS @ A3</p>

CONTROL DRAINAGE LAYER

Appendix V

Pollutant Release & Transfer Register



Environmental Protection Agency

(PRTR# : W0025 | Facility Name : Kyleshaheen Landfill | Filename : W0025_2009_R01.xls | Return Year : 2009)

AER Returns Worksheet

Version 1.1.10

REFERENCE YEAR	2009
-----------------------	------

1 FACILITY IDENTIFICATION

Parent Company Name	Laois County Council
Facility Name	Kyleshaheen Landfill
PRTR Identification Number	W0025
Licence Number	W0025-02

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 one another and the environment.
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	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.11	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.
4.13	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.2	Recycling or reclamation of metals and metal compounds.
4.3	Recycling or reclamation of other inorganic materials.
4.4	Use of any waste principally as a fuel or other means to generate energy.

Address 1	Clonsoughy
Address 2	NylenonRobert
Address 3	Co. Laois
Address 4	test
Country	Ireland
Coordinates of Location	-7.32522 53.0734
River Basin District	IESE
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Brenda Cuddy
AER Returns Contact Email Address	bcuddy@kacoisccc.ie
AER Returns Contact Position	Landfill Manager
AER Returns Contact Telephone Number	
AER Returns Contact Mobile Phone Number	0876295555
AER Returns Contact Fax Number	
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. 643 of 2002)

Is it applicable?	
Have you been granted an exemption?	

If applicable which activity class applies (as per	
Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being	
used ?	

4.4 RELEASES TO LAND

SECTION A : PRTR POLLUTANTS

POLLUTANT		RELEASES TO LAND
No. Annex II	Name	

* Select a row by double-clicking on the Pollutant Name (Column B)

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

POLLUTANT		RELEASES TO LAND
Pollutant No.	Name	

* Select a row by double-clicking on the Pollutant Name (Column B)

[PRTR# : W0026 | Facility Name : Kyletalesha Landfill | Filename : W0026_2009_F01.xls | Return Year : 2009]

METHOD			
M/Q/E	Method Code	Designation or Description	Emission Point 1
			0.0

) then click the delete button

METHOD			
M/Q/E	Method Code	Designation or Description	Emission Point 1
			0.0

) then click the delete button

QUANTITY	
T (Total) KG/Year	A (Accidental) KG/Year
0.0	0.0

QUANTITY	
T (Total) KG/Year	A (Accidental) KG/Year
0.0	0.0

Transfer Date/Time	Supplier/Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operator	Method Used		Location of Treatment	2018/19 Approved Capacity (Tonnes per Year)	2018/19 Approved Volume (Litres)	2018/19 Approved Weight (Tonnes)	2018/19 Approved Weight (Tonnes)	2018/19 Approved Weight (Tonnes)
						W/C	W/C						
White the County 15/01/01		No	10.00	Cardboard Packaging	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/01		No	46.60	Cardboard Packaging	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/01		No	207.64	Newspaper & Magazines	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/01		No	30.24	Newspaper & Magazines	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/02		No	102.50	Class non packaging	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/02		No	70.70	Class non packaging	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/04		No	27.40	Aluminium cans (Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/04		No	6.00	Aluminium cans (Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/40		No	200.00	Other metals (Non Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/40		No	40.04	Other metals (Non Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/05		No	101.40	Plastic (Non Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/05		No	40.14	Plastic (Non Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/06		No	30.00	Textile (Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/05		No	21.24	Textile (Packaging)	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/02/04		No	0.00	Other batteries & accumulators	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/02/04		Yes	10.00	Oil (Hazardous)	R10	W	Wepplad	Onsite in Ireland	Site Ireland Ltd W0104-1	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/02/04		Yes	0.00	Oil (Hazardous)	R10	W	Wepplad	Onsite in Ireland	Site Ireland Ltd W0104-1	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/02		No	10.00	Tyres	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-01	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 15/01/02		No	0.00	Tyres	R10	W	Wepplad	Onsite in Ireland	General Recycling W0355-03	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick
White the County 28/01/10		Yes	12.00	Hazardous Waste (Packaging)	R10	W	Wepplad	Onsite in Ireland	Site Ireland Ltd W0104-1	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick	Clonnam Industrial Estate, Lanes, Wick

* Figures may vary slightly due to rounding of tonnes to the nearest tonne.

Appendix VI

Biological Monitoring Report



Laois County Council Landfill Site
Waste Licence Register No. W026-02

Biological Monitoring Report

Compiled by: Mr. Marc Chawke BSc MScEng
Environmental Technician, Laois County Council

Monitoring Date: 10th of June 2009

1.0 Summary

In accordance with Condition 8.12 of Waste Licence Register No. W026-02, Laois County Council are required to conduct an annual biological assessment at Kyle Bridge (S-2) and Two Mile Bridge (S-3) located along the River Triogue. These locations are situated upstream and downstream respectively of the Tip Stream discharge point which is adjacent to the now terminated leachate discharge point. A third additional location was agreed with the Agency at Boughlone Stream (S-1) which is a tributary of the River Triogue. Environmental Technicians Mr Mark Rochford and Mr Marc Chawke from Laois County Council conducted a biological survey on 10th June 2009. The results of in-situ physico-chemical determinations (pH,

conductivity, dissolved oxygen and temperature) indicated favourable chemical water quality along the stretch of the Triogue River sampled and one of its tributaries. The overall bio-diversity of macroinvertebrate samples collected was poor both upstream and downstream of the discharge point from Kyletalesha Landfill. The upstream monitoring location at Kyle Bridge (S-2) received a rating of Q1-2 and the downstream location at Two Mile Bridge (S-3) received a rating of Q1. Both S-2 and S-3 were dominated by organisms from Group E, which are species that are classed as most tolerant to organic pollution. The sampling location on the Boughlone Stream (S-1) received a rating of Q2-3. It had a better diversity of species and organisms from Group E were absent at this location. No organisms considered sensitive to organic pollution (Group A) were identified at any of the three sampling locations.

2.0 Introduction

In accordance with the monitoring requirements of Waste Licence Register No. W026-02, an annual biological assessment is to be carried out on the River Triogue and Boughlone Stream. Environmental personnel from Laois County Council visited the river stretch on the 10th June 2009 for the purpose of conducting a benthic macroinvertebrate survey. In addition to macroinvertebrate identification physio-chemical parameters were measured in-situ namely temperature, pH, dissolved oxygen and conductivity. in coherence with AWWA Standard Methods for the Examination of Water and Wastewater (1989). Biological assessment was performed based on the EPA Q-Rating system for the assessment of streams and rivers. This report details the sampling methodologies and subsequent taxonomic procedures followed. Results are related to established numerical scales of values (Biological Indices) and are discussed.

3.0 Methodology

Sample Locations

A sampling protocol was designed in order to assess the impact of surface water discharge from Kyletalesha landfill on the surrounding catchment. In order to give a representative indication of surface water quality of the main surface water body in the vicinity of the discharge three sampling locations are regularly monitored. Table 1 describes the sampling locations and the map overleaf illustrates their geographical relationship.

Sample Point	Location	Justification
S-1	Boughlone Stream, Tributary of Triogue River	CONTROL (location which is representative of the background surface water quality of surrounding catchment).
S-2	Triogue River Kyle Bridge	To assess quality of watercourse prior to Tip Steam discharge
S-3	Triogue River Two-Mile Bridge	To assess quality of watercourse post landfill discharge on the River

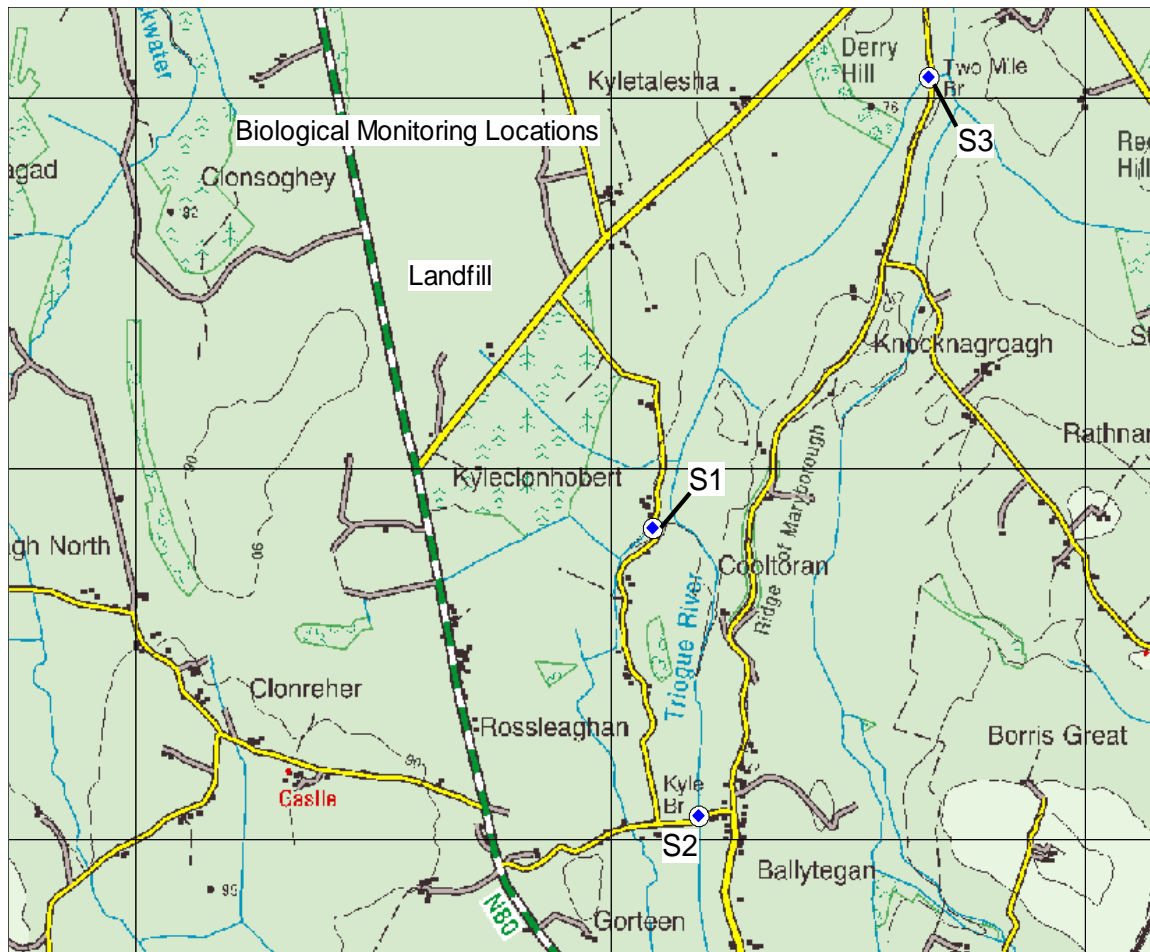


Fig 1 Biological Monitoring stations

In-situ Physio-Chemical Assessments

In-situ measurements of pH, conductivity, and temperature were taken with a WTW portable Schott multi-meter. Dissolved oxygen was measured using a WTW portable Oxi 330 meter. All measurements were in coherence with AWWA Standard Methods for the Examination of Water and Wastewater (1989).

Biological Field Sampling Procedures

Field sampling procedures were conducted in accordance with the USEPA 'Revision to Rapid Bioassessment Protocols for Use in Streams and Rivers (1997)' in addition to procedures detailed in S.I No. 258 of 1998, an amendment to the Local Government (Water Pollution) Act, 1977. A D-frame dip net was used to sample benthic macroinvertebrates at the three sampling locations. Dimensions of the frame were 0.3 m square and shaped as a "D" where the frame attaches to a long pole. The net has a cone shape for capture of organisms. A kick sample was taken at each location for a two-minute period. Each collected sample was assessed after collection. Habitat, as structured by in-stream and surrounding topographical features, is a major determinant of aquatic community potential. Both the quality and quantity of available habitat affect the structure and composition of resident biological communities. As such, on site habitat characteristics were recorded and referenced to results obtained from the individual sampling locations.

Biological Quality Rating (Q-Rating)

This is a Pollution Rating Index, which has been developed to measure the response of certain key macroinvertebrate species or groups to pollution. The Q Rating system has been implemented by the Environmental Protection Agency in Ireland as the standard means to assess the quality of any part of a river based principally on the composition of macroinvertebrate communities/faunal groups present and their general sensitivity to organic pollution. The Biological Quality Rating forms part of S.I No. 258 of 1998, an amendment to the Local Government (Water Pollution) Act, 1977. The rating system recognises five macroinvertebrate groups ranging from A to E (i.e. most sensitive to most tolerant) and relates their relative abundance, from a

standard 2 minute sample, to a quality rating known as a Q Index. The part of the stream or river surveyed may subsequently assigned a Q rating from 5 to 1 (i.e. pristine, unpolluted to gross polluted). Table 2 below presents Part I of the

Table 2 Biological Quality Rating: indicator groups

Group A Sensitive	Group B Less Sensitive	Group C Tolerant	Group D Very Tolerant	Group E Most Tolerant
Perlidae	Leuctridae	Tricladida	Hirudinea	Tubificidae
Chloroperlidae	Nemouridae	Ancyliidae	Mollusca <i>excluding</i> Ancyliidae	<i>Chironomus</i>
Capniidae	Taeniopterygidae	Neritidae	Margaritiferidae	
Perlodidae	Baetidae	Unionidae	Neritidae	
Heptageniidae	Leptophlebiidae	Astacidae	Unionidae	
Siphonuridae	Ephemerellidae	<i>Gammarus</i>	<i>Asellus</i>	
Margaritiferidae	Ephemeridae	Caenidae	Chironomidae <i>excluding</i> <i>Chironomus</i> <i>Rheotanytarsus</i>	
	Potamanthidae	Limnephilidae		
	Cased Trichoptera <i>excluding</i> Limnephilidae Hydroptilidae Glossosomatidae	Hydroptilidae		
	Odonata (<i>not</i> Coenagriidae)	Glossosomatidae		
	Aphelocheirus	Uncased Trichoptera		
	<i>Rheotanytarsus</i>	Coleoptera		
		Sialidae		
		Tipulidae		
		Simuliidae		
		Hemiptera <i>excluding</i> Aphelocheirus Hydracarina		

4.0 Results

The results of physio-chemical analysis and biological assessment are detailed in Tables 3, 4 & 5 below.

Sample Location	pH (pH units)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)	Temperature (°C)
S-1	7.5	651	9.55	13.0
S-2	7.3	728	10.49	14.8
S-3	7.3	695	10.72	14.5

Invertebrate Taxa	S-1 (Stream)	S-2 (Kyle Bridge)	S-3 (Two Mile Bridge)
Coleoptera	*		
Mollusca	*	*	*
Tipulidae		*	*
Asellus	*	*	
Chironomus		*+	*+
Gammarus	*	*	
Hirudinea	*	*	*
Trichoptera	*+		
Baetidae	*		

* = present + = dominant

Monitoring Station	Biological Quality Rating (Q- Rating)
S-1 (Stream)	Q2-3
S-2 (Kyle Bridge)	Q1-2
S-3 (Two Mile Bridge)	Q1

Discussion

S-1 had the most diverse assemblage of species and received a Q-Rating of Q2-3; its dominant faunal group was Trichoptera (Group C). Group C contains indicator groups classed as a tolerant in terms of sensitivity to organic pollution. Coleoptera (Group C) was also present, both Trichoptera and Coleoptera were absent from the two monitoring points located on the River Triogue. S-1 has different physical properties from the River Triogue as it had a smaller channel width (3m) with steep banks. The stream substratum consisted of large rocks and boulders. The water was well oxygenated with a small weir was located upstream of the kick sampling location. S-2 located at Kyle Bridge received a rating of Q1-2. Faunal groups from Group D and E only were present within the macroinvertebrates collected. Organisms within Group D are classified as very tolerant to organic pollution while organisms from Group E are classified as the most tolerant to organic pollution. Group E was dominant and Group D was present in high abundances. S-3 located at Two-Mile Bridge received a rating of Q1. Group E was dominant and overall the kick sample yielded a low diversity. Group D was the only other group represented in the sample and these were in very low abundance. S-2 and S-3 had a similar river habitat. The River at each location was wide (7-10m) with a good flow. Both sampling locations had suitable riverbed substrata to support macroinvertebrates assemblages. There was evidence that each site is under strain from bank erosion caused by livestock. Bank erosion has caused siltation but is not severe in either locations. The overall bio-diversity noted within this stretch of the River Triogue was poor.

Appendix VII:

Noise Survey



Laois County Council Landfill Site
Waste Licence Register No. W026-02

Noise Monitoring Report

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Monitoring Date: 1st of April 2009

1.0 Introduction

In accordance with Waste Licence Register No. W026-02, Laois County Council are obligated to carry out an annual assessment of noise levels at four locations (i.e. N1-N4) on the landfill facility at Kyletalesha, County Laois. The waste licence requires onsite activities not to produce noise levels, at noise sensitive locations, which exceed the Leq (30 minutes) 55dB (A) during day-time hours, and 45dB (A) during night-time hours. The facility does not operate during night-time hours (taken to be from 22:00hrs to 08:00hrs as per EPA guidelines) therefore only day-time monitoring is required. A noise survey was performed on the 1st of April 2009. This report entails a description of the procedure and survey results.

2.0 Methodology

The in-situ measurements are described in Table 1 below:

Table 1 In-situ Measurements		
Parameter	Monitoring period	Equipment used
L(A) _{eq}	30 minutes	Bruel & Kjaer 2250 serial no. 2567681 Integrating Sound Pressure Meter, with selective 1/1 or 1/3 octave band measurements
L(A) ₁₀		
L(A) ₉₀		
Frequency analysis (1/3 Octave band analysis)		

The noise survey was carried out in accordance with ISO 1996/1/2/3 – Acoustics – Description and Measurement of Environmental Noise, and the Guidance note for Noise in Relation to Scheduled Activities issued by the EPA. The meter was fixed to a

tripod 1.5 meters above ground level and the microphone was protected using a windshield. The microphone cartridge type was BK4189, serial number 02560621 with open circuit sensitivity level of 51.3 mV per Pa. The meter was calibrated onsite using a Bruel & Kjaer acoustic calibrator serial no. 2564287 at 94dBA before and after the monitoring event.

3.0 Weather

During the monitoring period the wind direction was south-westerly and there was no precipitation. The atmospheric temperature was 6°C and the wind speed was < 1 m s⁻¹.

4.0 Monitoring stations

The four noise sensitive locations for the purposes of this survey are depicted in Table 2 below and displayed on the map overleaf.

Table 2 Sampling Locations for Noise Assessment	
Sample Location	Description
N1	proximal to the civic amenity area
N2	north of cell 5
N3	western boundary, adjacent to N80
N4	adjacent to the unlined lagoon LT50

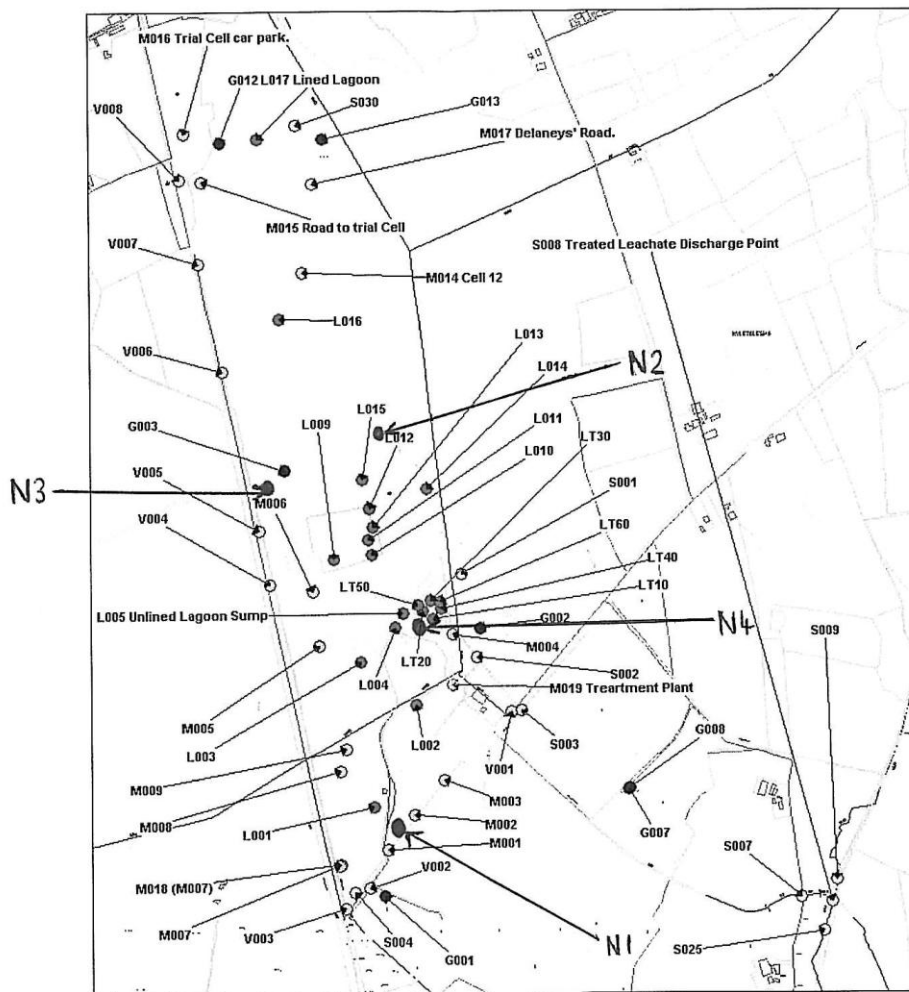


Fig 1 Noise monitoring locations (N1, N2, N3 & N4)

5.0 Results

The results of the noise assessment carried are presented below in Table 4.1 below.

Sample Location	Monitoring Period	L(A)_{eq}	L(A)₁₀	L(A)₉₀	Noise sources
N1	09:32 – 10:02	60	61	49	Vehicles entering and exiting the civic amenity site and the weighbridge area for the main landfill site. Frequent traffic from Kyletalesha Road adjoining the N80 and the landfill entrance. Glass bottles and metal being emptied into containers and white goods being dispatched. JCB and compactor operating. People conversing in the recycling area.
N2	10:26 – 11:56	62	55	40	Traffic flow on the N80 route. Trucks delivering waste to the active cell passing adjacent to N2, tractors and site machinery. HGVs operating on Cell 14 also audible.
N3	12:14 – 12:44	60	62	48	This location is within 30 meters of the N80 providing a continuous traffic flow. Farm machinery detectable in the distance. HGVs operating on Cell 14 also audible.
N4	13:05 – 13:35	52	52	45	The predominant noise source was machinery operating in the waste transfer facility (AES Ltd.). Machinery signalling from this site was recognised intermittently.

6.0 Discussion

The results of the noise survey carried out on April 1st 2009 at Kyletalesha landfill facility are exhibited in Table 3. The emission limit value postulated for noise emissions (Leq) in Waste Licence W0026-02 for Kyletalesha landfill facility is 55dB (A) during daytime hours. This limit was contravened at three of the noise sensitive locations namely N1, N2 and N3. Noise monitoring at N1 recorded a L_{eq} reading of 60 dB (A). The main noise sources recognised at this location were vehicles entering and exiting the civic amenity area and dispensing of recyclable materials. The Leq reading recorded at this N2 was 62 dB (A). The primary noise sources at N2 during the monitoring period was site traffic travelling on the access road to Cell 14, and traffic on the N80 national secondary route. At N3 a L_{eq} reading of 60 dB (A) was registered. The principal source of noise at this location was passing traffic on the N80 route, which was persistent throughout the monitoring period. The noise level recorded at N4 was compliant with the licence limit with a Leq reading of 52 dB (A). The main noise source at this location was from activities on the adjacent waste transfer facility site.