BALLEALY LANDFILL, BALLEALY, LUSK, CO.DUBLIN

ANNUAL ENVIRONMENTAL REPORT 2014

WASTE LICENCE REF. NO. W0009-03

ORIGINAL

MARCH 2015

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BALLEALY LANDFILL, BALLEALY, LUSK, CO.DUBLIN

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Abstract: This report represents the monitoring results for Balleally landfill, Balleally, Lusk, Co. Dublin. This report covers the annual reporting period of 2014 in accordance with Waste Licence Reg. No. W0009-03.

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1 INTRODUCTION

1.1 Reporting Period

The reporting period for the AER is 1st January to 31st December 2014.

1.2 Waste Licence

In 2000 Fingal County Council was granted a Waste Licence (Reg. 9-1) to continue operating Balleally Landfill. In July 2001 Fingal County Council applied for a review of this licence. Waste Licence W0009-02 was issued on the 8th January 2003. On the 21st December 2009 the Environmental Protection Agency (EPA) issued Fingal County Council a third revision of the waste licence for Balleally Landfill: Waste Licence W0009-03. The licence was subsequently brought into conformity with the provisions and requirements of the Council Directive 2010/75/EU on the 20th December 2013, becoming an Industrial Emissions (IE) Licence.

This licence permits the operation of a non-hazardous landfill. In accordance with the requirements of Condition 11.6 of the Waste Licence, an Annual Environmental Report (AER) for the facility must be submitted to the EPA.

1.3 Facility Location

Fingal County Council has responsibility for the management and operation of the facility. The facility is located at:

Balleally Landfill
Balleally Lane
Lusk
Co. Dublin
Tel./Fax. (01) 8431600

National Grid reference E322500 N252200.

Drawing DE07-164-03-001 (Figure 1) in Appendix I is a map of the facility and the monitoring locations.

1.4 Licensed Waste Activities at the Facility

Balleally Landfill is situated in Lusk, Co. Dublin. It has been in operation since 1971. Waste activities at the facility include landfill, special handling, a construction and demolition (C&D) recycling facility (which ceased in August 2005 due to capping commitments) and a civic amenity site (which ceased in December 2008 due to capping/operational commitments). Balleally Landfill closed to waste on 11th May 2012.

On January 8th 2003 Fingal County Council was licensed to carry out the following waste activities at Balleally Landfill, Lusk, Co. Dublin subject to twelve conditions.

The licensed activities under the IE amendment are:

11.5 Landfills, within the meaning of Section 5 (amended by Regulations 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.

11.1 The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.

During 2014 Balleally Landfill continued to receive C&D for restoration purposes. Landfill gas is collected and converted to electricity.

E39 is the appropriate NACE code to describe activities undertaken in Balleally during 2014 – "Remediation activities and other waste management activities."

1.5 Local Environmental Conditions

The landfill site covers approx. 50 ha in total. The east face of the landfill is bordered by the Dublin-Belfast railway line and to the south by Rogerstown Estuary. See Figure DE07-164-03-001, Appendix I.

The former landfill facility was approx. 40ha. The extension to this facility to the north west of the site in consists of 6 new engineered lined cells (approx. 10 Ha) which were filled between 2004 and 2012.

1.6 Environmental Monitoring

All original monitoring results certificates issued by Alcontrol Laboratories Ltd., for surface water, groundwater, leachate results and from Southern Scientific Services Ltd. for dust have been already included and submitted to the EPA in the four quarterly reports submitted during the reporting period. The original results certificates are not included again in this report. This report only presents summary data.

1.7 EPA Updated Reporting Requirements

Fingal County Council has prepared the annual environmental report in line with the new EPA 2013 draft reporting requirements "AER Draft Guidance Document: Annual Environmental Report: Standardised Reporting Guidance for all IPPC (Excluding Intensive Agriculture) and Waste Licences". To this end a text document is being employed whereby the 2014 AER follows the same format as the summary template structure, where currently possible, and include only information as required under the templates. In some instances individual tabs from the AER Workbook are filled out and included as appendices to the text document. This allows Fingal County Council to streamline the AER process prior to the summary templates becoming mandatory in the coming years.

2 AIR EMISSIONS MONITORING

2.1 Landfill Gas Management – Stack Emissions

As per Schedule D.7.1 of Waste Licence W0009-03 the licensee is required to carry out annual or periodic environmental monitoring of the Gas Combustion Plant/Enclosed Flare. Odour monitoring Ireland personnel conducted the emissions testing and all of the stack emission results were compliant with the licence. The results are in Table 2.1.

Table 2.1: Stack Emissions Results

Emission reference no:	Parameter / Substance	Frequency of Monitoring	ELV in licence or any revision thereof	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence limit	Method of analysis	Annual mass load (kg)
Flare 1	CO	Annual	50	No 30min mean can exceed the ELV	31.45	mg/m3	Yes	EN15058:2006	2.03
Flare 1	NOX	Annual	150	No 30min mean can exceed the ELV	52.85	mg/m3	Yes	EN14792:2006	3.44
Flare 1	Total volatile organic carbon	Annual	10	No 30min mean can exceed the ELV	0.39	mg/m3	Yes	EN12619:2013	
Flare 1	HCL	Annual	50	No 30min mean can exceed the ELV	0.34	mg/m3	Yes	EN1911:2010	
Flare 1	HF	Annual	5	No 30min mean can exceed the ELV	0.31	mg/m3	Yes	EN15713:2006	
Flare 1	SO2	Annual		No 30min mean can exceed the ELV	34.59	mg/m3	Yes	TGN21	2.25
BY01	Total particulate matter	Annual	130	No 30min mean can exceed the ELV	1.74	mg/m3	Yes	EN13284-1:2002	10.64
BY01	CO	Annual	1400	No 30min mean can exceed the ELV	1386.2	mg/m3	Yes	EN15058:2006	8,526.57
BY01	NOX	Annual	500	No 30min mean can exceed the ELV	421.05	mg/m3	Yes	EN14792:2006	2,615.94
BY01	Total VOCs	Annual		No 30min mean can exceed the ELV	840.4	mg/m3	Yes	EN12619:2013	12.95
BY01	HCL	Annual	50	No 30min mean can exceed the ELV	1.19	mg/m3	Yes	EN1911:2010	8.78
BY01	HF	Annual	5	No 30min mean can exceed the ELV	0.23	mg/m3	Yes	EN15713:2006	1.70
BY01	TA Luft organics	Annual	20	No 30min mean can exceed the ELV	2.1	mg/m3	Yes	EN13649:2002	15.49

Emission reference no:	Parameter / Substance	Frequency of Monitoring	ELV in licence or any revision thereof	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence limit	Method of analysis	Annual mass load (kg)
BY01	SO2	Annual		No 30min mean can exceed the ELV	382.71	mg/m3	Yes	TGN21	2,373.50
BY01	Volumetric flow	Annual	4500	No 30min mean can exceed the ELV	1820	m3/hr	yes	EN16911:2013	
BY03	Total particulate matter	Annual	130	No 30min mean can exceed the ELV	4.66	mg/m3	Yes	EN13284-1:2002	351.55
BY03	CO	Annual	1400	No 30min mean can exceed the ELV	1380.66	mg/m3	Yes	EN15058:2006	12,752.96
BY03	NOX	Annual	500	No 30min mean can exceed the ELV	399.07	mg/m3	Yes	EN14792:2006	3,723.44
BY03	Total VOCs	Annual		No 30min mean can exceed the ELV	437.37	mg/m3	Yes	EN12619:2013	10.00
BY03	HCL	Annual	50	No 30min mean can exceed the ELV	0.15	mg/m3	Yes	EN1911:2010	1.67
BY03	HF	Annual	5	No 30min mean can exceed the ELV	0.3	mg/m3	Yes	EN15713:2006	3.35
BY03	TA Luft organics	Annual	20	No 30min mean can exceed the ELV	1.77	mg/m3	Yes	EN13649:2002	19.76
BY03	SO2	Annual		No 30min mean can exceed the ELV	381.31	mg/m3	Yes	TGN21	3,555.72
BY03	Volumetric flow	Annual	4500	No 30min mean can exceed the ELV	1900	m3/hr	yes	EN16911:2013	

2.1.1 Interpretation of results

All parameters measured at BY01, BY03 were within ELV and licence limits for the monitoring period.

2.2 Dust Monitoring

Dust monitoring was carried out at 4 locations in accordance with Schedule D of the licence. The locations of these monitoring points are shown on Figure DE07-164-03-001 Appendix I

Bergerhoff style gauges were used to determine total dust deposition levels at the site. Four gauges were set up so that the dust jars were at a height of at least 1.5 m above the ground and the jars were set in place during the monthly monitoring events. The samples were submitted to Southern Scientific Ltd. for analysis of total dust contents.

2.2.1 Dust Monitoring Results

The annual results for total dust deposition are presented in Table 2.2. Results for organic and inorganic dust were included along with total dust results in the quarterly reports.

Table 2.2: Total Dust Deposition Results (mg/m²/day)

Monitoring Locations	May-June 2014	June-July 2014	Sept-Oct 2014
D1	29.2	45.2	71.7
D2	29.7	71.4	62.8
D3	23.5	38.1	21.7
D4	30.7	**906**	35.6

2.2.2 Interpretation of Results

An organic and inorganic analysis of dust was performed in addition to the total dust deposition analysis to give a greater understanding of the results.

The results indicate that during the monitoring period all results were under the licence limit of 350 mg/m^3/day except at monitoring location D4. Results at DM4 were above the limit (906 mg/m2/day) during the July monitoring round (INCI005452). Inorganic dust made up the majority of this result, 736 mg/m2/day and may be attributable to ploughing in the adjacent fields and due to construction activity at the entrance to the landfill (at less than 200m). Results from the September round show that dust levels were below the licence limit again.

3 LANDFILL GAS MONITORING

The licence requires monthly monitoring of perimeter gas boreholes/vents/wells. The location of the 13 no. monitoring positions is shown on Figure DE07-164-03-001-B, Appendix I.

In addition to the perimeter landfill gas perimeter monitoring wells, two leachate monitoring wells (chosen at random) from each of the southern and eastern boundaries LMW1-LMW18 and two manholes MHL33 and MHL40 along Balleally Lane were also monitored. LMW1 – LMW18 boreholes are located on the landfill side of the vertical barrier wall.

It should be noted that boreholes LMW1-18 are leachate sampling wells and not specifically designed for monitoring landfill gas.

In accordance with Table D.2.1 of the Waste Licence, gas wells were monitored for Methane (CH_4), Carbon Dioxide (CO_2), Oxygen (O_2) and atmospheric pressure. It is noted that the boreholes along the estuary were designed and constructed to sample leachate and groundwater and not specifically landfill gas.

3.1 Monitoring Results

The gas (LFG) monitoring results were included in the 2014 quarterly reports submitted to the agency.

3.2 Interpretation of Results

For results where exceedances occurred in carbon dioxide levels or methane levels trigger levels, please refer to the Complaints-Incidents Tab of the AER.

Methane results for the 2014 monitoring period were generally below the 1% trigger level. However, levels above the trigger level for methane at location GA3 were noted in September and November 2014. GA3 is situated along the northern side of the landfill. Results at GA3 were below the trigger level for all other months during 2014.

It was seen on a number of occasions across the monitoring locations that carbon dioxide level results were elevated above the 1.5% trigger level. Elevated concentrations of carbon dioxide can occur naturally at shallow depths of up to 2 m due to microbial activity associated with the roots of many types of vegetation.

No methane was recorded above the trigger levels at the gas well (GA10) adjacent to offsite receptors.

3.3 Conclusion

Apart from two occasions at GA3, methane levels were below the trigger level throughout the rest of the monitoring period.

Carbon dioxide levels were measured in wells during monitoring events in 2014.

The results of monitoring perimeter monitoring wells in 2014 was similar to previous year's data.

4 SURFACE WATER & WASTE WATER MONITORING

This section of the Annual Environmental Report presents the:

- Surface water monitoring results.
- Leachate monitoring results.
- Sewer Gas monitoring results.

Leachate was previously tankered off-site. As of April 2014, Fingal County Council commenced the discharge of leachate to sewer, which is currently pumped to Portrane Waste Water Treatment Plant. Relevant information is therefore included on water/wastewater tab of the AER summary sheet.

4.1 Surface Water

Schedule D of the waste licence requires the monitoring of surface water. The surface water monitoring locations are predominantly downstream of the landfill footprint. S3 and S7 are upstream.

There are an additional 4 no. surface water monitoring locations.

Results are discussed in body of text here and results are presented as annual mean in the water/waste water tabs are in the AER. The individual results are reported in the Quarterly Reports.

4.2 Surface Water Monitoring

The sample locations can be seen in Drawing DE07-164-03-001-B Appendix 1.There are 9 no. surface water monitoring locations.

SWFD
Discharges to an open drain immediately west of the entrance to the wastewater treatment plant.

SWV1
The surface water discharge at the Western Point Surface Water Outfall – The samples are collected in the open channel immediately upstream of the discharge pipe/cut-off flap. Since 2012 they are been monitored. 2 upstream SWMH7, MHP2, finish

S3
This sampling point is located on a stream to the north east edge of the landfill site prior to its discharge to the estuary.

S7
This sampling point is located upstream of the site on the stream to the north of the landfill site.

SW20a
This sampling point is located at a drainage ditch to the east of Rogerstown Lane, close to the north-eastern tip of the landfill. It is currently bunged and does not discharge to the estuary.

OF1-OF4
These outfalls are located along the Southern boundary of the site.

4.3 Surface Water Monitoring Results

The visual assessment results and the full surface water analysis datasets as issued by the Laboratory have been previously submitted in the individual quarterly reports during the reporting period.

Annualised data for each of the 5 surface water monitoring locations is included in the water/wastewater tab of the AER summary sheet.

4.4 Interpretation of Surface Water Results

The surface water results have been compared to maximum admissible concentrations (MAC) as outlined in the Surface Water Regulations, 1989. It can be seen from the results that over the course of the year, several parameters were elevated above the MAC

The parameters examined were chosen because they are likely indicators of leachate impact, but they also may demonstrate impact by other sources, such as sewage or the nearby estuary.

Historic monitoring of the surface water at Balleally indicates evidence of contamination by leachate. Fingal County Council has been implementing mitigation measures, see following section for more detail.

As previously communicated to the Agency in the quarterly reports, on 30 April, contamination was detected at SWV1; Ammoniacal Nitrogen, BOD, COD, TSS, Chloride and Electrical Conductivity were all recorded at levels above the MAC. These elevated results were attributed to cross contamination of a surface water line by leachate from an adjacent and blocked leachate line and was notified to the EPA (INCI004152). It was also the topic of a subsequent report submitted through EDEN on the 8th of May 2014.

For the monthly S3 sample analysis, COD results were recorded above the MAC on 4 occasions in April, September, October, November. BOD and Cl were recorded above the MAC in September. Ammoniacal N was above the MAC for A1 waters at S3 throughout the year. Results are similar to 2013.

S7 is an upstream site. Electrical conductivity levels varied throughout the monitoring period below the MAC for the year. BOD was elevated above MAC in Q3. COD was elevated for Q2. Ammonical N was elevated above MAC in Q1, Q2. As it is upstream of the site, it is likely that agri pollution may contribute to these elevated readings.

SW20A electrical conductivity was above the MAC in Q1, Q2, Q4 but below MAC in Q3. Ammonical nitrogen was elevated during each quarterly sampling, as was BOD.

At SWFD, Ammoniacal Nitrogen was above the MAC in Q1 and Q4 however it dropped below the MAC for the period Q2 and Q3. Electrical Conductivity in SWV1 was elevated above the MAC for all 4 quarters.

In summary, Ammoniacal nitrogen levels were elevated across all sites at most sampling times during the monitoring period, ranging between <0.2 mg/l to 14.5 mg/l, suggesting potential landfill impact. The other results on sites SWV1, SW20a, SWFD as discussed above also suggest potential leachate influence.

Control and Trigger levels have been submitted to The Agency for approval through EDEN for Ammoniacal nitrogen at SWV1 and at the four surface water outfalls to the estuary (OF1-OF4).

All outfalls OF1-OF4 were compliant in all quarters except OF1 and OF2 in Q4, which were above trigger levels for Ammoniacal N. This subsequently fell back to previous levels in Q3 monitoring.

4.4.1 Additional Surface Water Monitoring

Additional surface water monitoring was carried out on-site in 2014 as in 2013 at SWV1, SWMH7 and MHP2. Additional monitoring of two locations named 6" pump chamber and the leachate sump are also included in the 'additional surface water monitoring'.

The results of additional monitoring conducted during 2014 were included in each of the quarterly reports submitted to the Agency.

A flow meter was installed adjacent to SWMH7 during the first quarter of 2013. This data assisted in the investigation of contamination at SWV1.

Interpretation of additional surface water monitoring results

Two incidents were reported to the Agency regarding quarterly additional surface water monitoring. The first was reference INCI004152, about leachate contamination at SWV1 on 30/04/2013. Additional sampling on the 7th May, 28th May and 18th June confirm a return to background surface water quality for SWV1. The second was reference INCI005455, about contamination at P2 and SWMH7 on 23/07/2014. Monitoring during August in Q3 showed a slight further rise in contaminants (Ammonical Nitrogen and Chloride), before monitoring in Q4 at these locations shows a reduction in contaminant levels. Monitoring upstream at SWMH7 and MHP2 indicate the source of contamination at SWV1 was centred around P2.

4.4.2 Surface Water Improvements

A review of surface water contamination at the site is ongoing since August 2011. Fingal County Council committed to continuing additional monitoring at P2, SWV1, MHSW7 and at surface water outfalls OF1-OF4 and submitted two reports to the Agency entitled *"WOO-09-03-SWV1-010.pdf, SWV1 Trigger Level Proposal and Loading Report"* and *"Report OF1-OF4-009.pdf, Trigger Level and Nutrient Loading From OF1 to OF4 off Southern Boundary"* respectively. The former proposal was rejected by the Agency pending further investigations and the latter was accepted.

The ongoing capping programme and final restoration of the landfill may help alleviate surface water contamination which occasionally occurs near the entrance of the site. This is evident particularly at additional surface water monitoring locations P2 and SWMH7. The proposed shallow vertical barrier surrounding the facility will be completed at the entrance as part of the closure plan which will contain any breakouts that may occur and may alleviate surface water contamination at SWV1. A detailed programme of works relating to remedial measures to address contamination of surface water in this will be sent to the Agency through Eden in Quarter 1 2015.

Remedial works were first undertaken during Q2, 2009 and again in Q1, 2012 to protect the surface water drain/ditch in the vicinity of SW20A. A 50 m length of the drain/ditch was excavated and cleaned prior to lining with low-permeability clay and a HDPE liner pinned and stabilised to the underlying clay bank. These two layers of impermeable material serve to minimise inputs into the drainage ditch. The ditch adjacent to SW20a was re-graded with stone fill, which allows the movement of water through the gravel. A manhole access point was built to facilitate visual assessment and the required periodic environmental sampling. Consequently there is no flow into the estuary from SW20a as the outfall point is bunged.

The shallow vertical barrier proposed at SW20a, site entrance is in the process of planning, design. It is scheduled to begin construction in the summer of 2015.

4.4.3 Conclusions

Surface water results indicate that water quality is impacted by both the landfill (which is both a dilute and disperse landfill and an engineered designed landfill) and the nearby estuary, in terms of salinity sources from the estuary.

Some improvements in surface water quality have been noted through the monitoring period although results over MAC levels are also noted.

Fingal County Council has and continues to undertake additional measures in relation to monitoring and on-site works to mitigate the impact in consultation with the EPA.

4.5 Leachate Monitoring

4.5.1 Bund / Pipeline Testing

Condition 3.11 of W0009-03 governs Tank and Drum Storage Areas and the need for testing of same. All tanks are rendered impervious to the materials stored therein as per condition 3.11.1. Condition 3.11.2 stipulates that all tank and drum storage areas are to be bunded either locally or remotely, to a volume not less than the greater of the following:

(a) 110% of the capacity of the largest tank or drum within the bunded area; or
(b) 25% of the total volume of substance which could be stored within the bunded area.

There are two areas within the landfill (Landfill Gas Utilisation Plant & Leachate Treatment Plant) that are remotely bunded in the sense that as per Condition 3.11.3 the drainage from these bunded areas can be diverted for collection and safe disposal – back through the leachate treatment plant and through the leachate storage and treatment tanks.

The Leachate storage and treatment tanks are inspected by Irish Industrial Tanks Limited. As per condition 3.11.5 The Leachate and Storage Tanks are inspected at least once every three years. They were last tested in 2013 and the results were included with the 2013 AER. The next integrity assessment is scheduled for Quarter 2, 2015.

There are mobile bunds on site but they are not in use or intended for future use.

4.5.2 Leachate Treatment Plant

Operation of the leachate treatment plant was suspended during Q2, 2009. During 2009, FCC applied for a full waste licence review for the site. The waste licence review was seeking to remove Chemical Oxygen Demand (COD) as a leachate treatment plant parameter and to raise the ELV levels for some of the other leachate treatment plant parameters. This application was withdrawn and a technical amendment was sought to facilitate discharge to sewer. Technical Amendment B to Industrial Emissions Licence provides for the discharge of leachate to a sewer on Rogerstown Lane 14/3/2015 and this commenced early in April 2014.

4.5.3 Water Balance and Leachate Transfers

A water balance for the reporting period has been prepared and is included as Table 4.1. The water balance calculation is derived from EPA Landfill Manuals “Landfill Site Design” (EPA, 2000; p59) and indicates that there was 23,893 m^3 of leachate produced at the landfill. Infiltration rate used was 5% for capped areas and 25% for temporary capped areas.

7,715 m3 of leachate was tankered off-site. 17,386 m3 of leachate was pumped to sewer. The combined total of leachate removed from site was 25,101m^3. The volume of leachate tankered off-site was greater than that estimated as generated in the water balance, but some contaminated water pumped to plant may account for this.

Table 4.1: Water Balance Calculation for Balleally Landfill 2014

Month	Leachate Tankered Offsite	Water Balance Calculation	Rainfall	Rainfall	Old landfill	Capped	IR	Temp	IR	New landfill	Capped
	m^3	m^3	mm	m	m^2	m^2	%	m^2	%	m^2	m^2
January[1]	3,281	2,618	101.6	0.1016	345028	332,528	5	12,500	25	120,359	120,359
February[1]	2,994	2,281	88.5	0.0885	345,028	332,528	5	12,500	25	120,359	120,359
March[1]	1,440	1,384	53.7	0.0537	345028	332,528	5	12,500	25	120,359	120,359
April[2]	484	881	34.2	0.0342	345,028	332,528	5	12,500	25	120,,359	120,,359
May[2]	1,466	2,358	91.5	0.0915	345,028	332,528	5	12,500	25	120,359	120,359
June[2]	1,598	933	36.2	0.0362	345028	332,528	5	12,500	25	120,359	120,359
July[2]	1,334	902	35	0.035	345,028	332,528	5	12,500	25	120,359	120,359
August[2]	1,914	4,458	173	0.173	345028	332,528	5	12,500	25	120,359	120,359
September[2]	3,597	683	26.5	0.0265	345,028	332,528	5	12,500	25	120,359	120,359
October[2]	1,846	2,324	90.2	0.0902	345,028	332,528	5	12,500	25	120,359	120,359
November[2]	2,752	3,631	140.9	0.1409	345,028	332,528	5	12,500	25	120,359	120,359
December[2]	2,395	1,441	55.9	0.0559	345,028	332,528	5	12,500	25	120,359	120,359
	2,5101	23,893	**927.2**	0.9272							

Old Landfill Capped + New Landfill Capped + Old Landfill Temp Cap.

Leachate Produced Landfill = {(.9272 * 345028 *.05) + (.9272 * 120359*.05) + (.9272 * 12500 * .25)

Leachate Produced Landfill m3	**23,893**
Produced Jan - March	6,283
Produced April - Dec	17,610
Leachate Tankered [1] and Pumped[2] Off-Site	**25,101**
Tankered to Ringsend Jan – March 2014	7,715
Pumped to Portraine April – December 2014	17,368

4.5.4 Leachate levels

A trigger level of 5.5 meters above ordnance datum (m AOD) for wells between LMW1 to LMW18 and LMW30 to LMW34 has been established to indicate an elevated head of liquid in the landfill. Leachate was recorded above the trigger level at a number of locations, highlighted in Figure 4.1.

Leachate levels in LMW5, LMW6 and LMW32 were above the trigger level for the year. Leachate levels in LMW31, LMW33 and LMW9 were above the trigger level for the majority of months of the year.

All of the wells (LMW30, LMW31, LMW5, LMW6, LMW32, LMW33 and LMW9) which exceed the trigger are located beside one another on the southern boundary of the site.

There were no exceedances of the trigger level in leachate monitoring wells LMW1, LMW10, LMW12, LMW13, LMW14, LMW34, LMW16 and LMW18. There was one exceedance of the leachate trigger level in LMW30 in December.

The level of the vertical barrier is 6m and this level was exceeded at a number of wells along the southern boundary. LMW5, LMW6 and LMW9 are set back from the vertical barrier by approximately 20 m. LMW30, 31, and 32, which are adjacent to the vertical barrier are recorded leachate levels above 6 m during the YEAR. No leachate breakouts were evident along the southern boundary. These incidences were reported to the Agency through EDEN (INCI006448, INCI003999, INCI004705, INCI005449).

It is observed that interface boundary valves and the Southern boundary are typically fully open and thus the northern and southern leachate lines are fully open. Therefore leachate should not be building up in the body of the landfill.

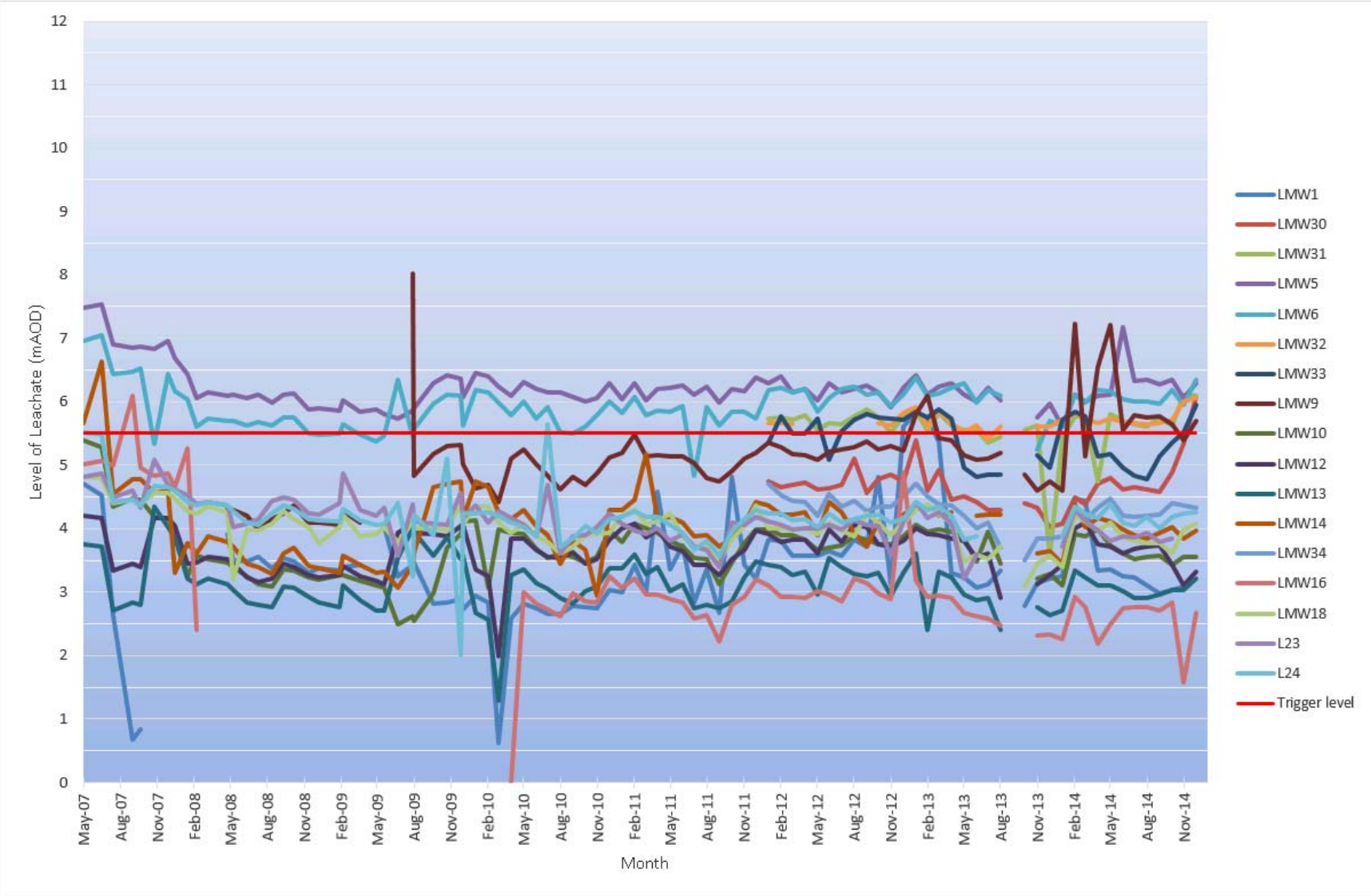


Figure 4.1: Monthly Leachate level l 2007-2014

4.5.5 Leachate Quality

This section presents a summary of the chemical results. The results for leachate monitoring were included in the quarter 3 report to the Agency. The pumping chamber receives leachate from a number of different locations on-site. As it collects leachate from a number of different areas over the site it is representative of general leachate quality over a greater time period than the individual grab samples from each of the leachate wells. The pumping chamber collects leachate from:

- Pipe 1A – New cells
- Pipe 1B – Old northern boundary
- Pipe 1C – Southern boundary

The results of leachate sampled from the pumping chamber are comparable with the results obtained from the individual wells on the landfill.

It is noted that the results for the southern boundary are slightly more concentrated, than the results along the eastern boundary. In general, the reported concentrations for the leachate sampled are consistent with that of leachate sampled from large landfills and in line with the levels presented in the Environmental Protection Agency (EPA) Landfill Manual on Landfill Site Design (2000).

4.6 Sewer Gas Monitoring

Sewer gas monitoring commenced in 2014 when Fingal County Council was granted permission to pump leachate to sewer, as per Technical Amendment B of the Industrial Emissions Licence, approved by the Agency on 12/03/2014.

The monitoring location is on Rogerstown Lane, near the entrance to a decommissioned waste water treatment plant.

The annualised results for monthly monitoring of the wastewater discharge are included in the Water_Wastewater tab in the AER Summary Sheet (Appendix II).

The sewer gas was compliant on all monitoring occasions, below the Methane daily mean concentration limit of 0.5%v/v.

5 GROUNDWATER MONITORING

This section of the Annual Environmental Report presents the findings of groundwater monitoring. Please also refer to the GW/Soil tab of the AER summary sheet. Balleally Landfill, unlike other landfills e.g. Dunsink Landfill (Reg. No; W0127-01) did not receive a Technical Amendment to its licence relating to the provisions of Article 12 of the European Communities Environmental Objectives (Groundwater) Regulation 2010. The landfill is located in an estuarine setting and not currently mapped as overlaying a groundwater body. The downgradient groundwater monitoring borehole is in an estuarine setting.

5.1 Monitoring Locations

Groundwater monitoring was carried out at the locations shown on Drawing DE07-164-03-001-B, Appendix I. As part of a previous extension to the landfill a number of the boreholes stipulated in W0009-03 are no longer accessible. During July 2004 a revised monitoring schedule was agreed with the Environmental Protection Agency (EPA) on which the present monitoring is based. Details of the groundwater locations now monitored are presented in the table 5.1.

Monitoring location MB18 is located up-gradient, approximately 535 m north of the landfill on private agricultural land. Access to the monitoring location was not granted during the monitoring period.

Table 5.1: Groundwater Monitoring Locations

Station	Classification	Easting	Northing
MB18	Eastern Up gradient	323 245	252 783
RC3	Western Up gradient	321 906	252 729
MB35	South western Down gradient	322 029	251 906
CD1	Control Drain N/W of Cell 1	322 008	252 356

Location Description

Borehole MB35
This borehole is situated approximately 190 m south of the landfill on the edge of the Inner Rogerstown Estuary, downgradient of the landfill.

Location CD1
The control drain sampling location CD1 is situated approximately 30 m south of Balleally Lane west of the landfill extension. This drain collects groundwater from underneath the newly constructed lined cells.

MB18
This is an upgradient private well of Rogerstown House which lies to the north east of the landfill site along the estuary. No access permitted.

RC3
This upgradient borehole is situated approximately 535 m north of the landfill on private agricultural land.

5.1.1 Monitoring Parameters

Groundwater levels were monitored and a visual assessment was performed on a monthly basis at all groundwater wells.

Groundwater monitoring location CD1 is sampled monthly and analysed for quarterly groundwater parameters, listed in Table D.5.1 of the Waste Licence and the results are presented as required the GW_Soil tab of the AER. MB35 and RC3 are sampled quarterly and analysed for quarterly groundwater parameters, listed in Table D.5.1 of the Waste Licence.

The results of quarterly groundwater monitoring undertaken for CD1, MB35 and RC3 were included in each of the quarterly reports to the Agency. Annualised and maximum results are presented in the GW-Soil tab of the AER summary templates. (Appendix II).

5.2 Interpretation of Results

The groundwater results have been compared to the relevant Interim Guideline Value (IGV) set out in the EPA report '*Towards Setting Guideline Values for the Protection of Groundwater in Ireland'.* It should be noted that the groundwater beneath the landfill is likely to be estuarine in nature and would not generally be considered to be potable water. The water at MB35 is both influenced by saline water from the estuary and landfill. This has a large influence on sampling and results.

The groundwater quality at RC3 upgradient of the landfill does not meet the MAC for ammonical nitrogen, chloride and total suspended solids and this is true of the past 5 years of data. Ammoniacal N in particular shows an increasing trend in this well.

The groundwater quality in CD1, which monitors the quality of groundwater from underneath the lined cells shows that the groundwater is influenced both by saltwater and leachate from the unlined portion of the site. Ammoniacal N levels and chloride levels are elevated above the MAC. The 5 year trend shows that the levels of all parameters are decreasing with the exception of chloride.

The groundwater quality at MB35 has shown very gradually rising trend in Chloride levels in the last 5 year trends. Ammonical Nitrogen has also risen gradually. Suspended Solids has fallen and conductivity has also fallen.

5.3 Conclusion

Groundwater results indicate that groundwater quality upgradient of the landfill is impacted by local activities and quality on and downgradient of the landfill is impacted by both the landfill (which is both dilute and disperse landfill and an engineered designed landfill) and the nearby estuary (saline intrusion from the estuary).

6 FINANCIAL PROVISIONS

Condition 12.2 of the licence requires the establishment of a fund to implement the Restoration and Aftercare Plan. Fingal County Council has provided in its accounts a reserve for the restoration of the site which amounted to €7,059,420 on 02/02/2015.

See the ELRA tab from AER summary templates in Appendix II.

7 ENVIRONMENTAL MANAGEMENT PROGRAMME

7.1 Environmental Objectives and Targets for 2014

See EMP tab from AER summary templates.doc in Appendix II.

7.2 Environmental Objectives and Targets for 2015

See EMP tab from AER summary templates.doc in Appendix II.

7.3 Summary of written procedures

There were no new written procedures during the reporting period. The application process for applying for clay tickets was put up online at:

http://www.fingalcoco.ie/environment/rubbish-and-recycling/landfills/

7.4 Communications Programme for Public Information

The Communications Programme for Fingal County Council contains information on Balleally Landfill. The information can roughly be divided into two areas. Background information prior to granting of waste licence, and information concerning the waste licence (W009-02 & 03). There is also a register of correspondence to and from the Agency, along with the various correspondences relevant to the Licence. This information was updated on a continuous basis. During Q1 2013, a change came about in that correspondence with The Agency was almost exclusively sent through a new online web based system called EDEN. Most correspondence between the Agency and the Licensee must now be accessed through this system.

Environmental Information can be viewed at the following locations:

- At the Council's Headquarters between 9.30 a.m. and 12.45 p.m. and 2.00 p.m. and 4.00 p.m. Monday to Friday (excluding public holidays), unless otherwise arranged by prior appointment.
- Permanent facilities for viewing information including a computer to be provided at Balleally Landfill.
- At Balleally Landfill by prior appointment with the Landfill Manager.
- Since March 2013, Licence Reports have been submitted through, stored on and available through the Environmental Protection Agency's Website; www.epa.ie or reporting portal, EDEN.

Site Visits

- Site visits to Balleally Landfill can be arranged by writing to the Landfill Manager requesting the date and time of the proposed visit and indicating the number of visitors and the purpose of such a visit and whether any presentation is required. The use of cameras and video equipment during the visit must be agreed in advance with Fingal County Council.
- Such requests will be accommodated where possible.

Balleally Landfill Liaison Committee

Information relating to the restoration and aftercare of Balleally Landfill is presented to the Liaison Committee for comment and adoption. Members of the committee during 2014 were comprised of:

- Two members of Balleally Residents and Farmers Association.
- Two elected members of Fingal County Council representing Balbriggan area.
- Four Fingal County Council officials.

The Committee met twice during 2014; 23/4/2014 and 17/6/2014. Agendas were set and minutes kept.

7.5 Management Structure

The facility is owned and operated by Fingal County Council. The Environmental Services Department of Fingal County Council manage the landfill facility. A description of the current management structure was sent to the agency through Eden in 2014 and is available for inspection at site offices and in County Hall.

8 NOISE MONITORING

Noise surveys were undertaken during every quarter of the monitoring period (2014) in order to assess the existing noise emissions from the site and to establish the existing noise environment at potentially sensitive receptors near the site in accordance with Schedule D of Waste Licence W0009-03. Noise monitoring was carried out during daytime hours. The location of noise monitoring points can be seen in Figure DE07-164-03-001-B, Appendix I.

Noise measurements were taken for 30 minutes at each location.

8.1 Monitoring Results

Quarterly noise reports were submitted to the Agency on a quarterly basis in 2014. The results of one of those events is included on the Noise tab from AER summary templates.doc in Appendix II.

Table 8.1: Noise Monitoring Results 2014

Location	LAeq			
	Q1	Q2	Q3	Q4
NM1	53.6	**66**	**62.61**	**56.8**
NM2	52.2	**67**	**71.33**	**63.15**
NM3	51.1	**65**	**63.86**	**58.59**
NM4	49.6	55	52.75	47.68
NM5	50.8	45	48.28	44.53
Noise Emission Limit Value	**55db**			

8.1.2 Interpretation of Results

There were nine instances during the year during which the EPA limit of 55 dB (A) for daytime noise was breached.

Traffic movements on Balleally local road are the main contributors to noise levels in the area, as well as some trucks moving on the haul road of the site. Noise from site does not have as much impact as traffic movements; however the noise of a tractor and bowser on site on 2 occasions (Q2, Q3) accounted for on site noise at NM1 for roughly 50% of the monitoring time.

The influence of vehicle movements on the noise results can be seen from the correlation between the L_{Aeq} and the L_{AF10} results. In all cases the L_{Aeg} is closer to the L_{AF10} results than the L_{AF90} results. The L_{AF90} results for all locations are under 55 dB licence limits, while the L_{AF10} results range from 46.5 to 69.53 dB(A). This suggests that sound occurring for 10% of the monitoring period, which is greatly influenced by traffic, train, overhead airplane movements (and for this site this would also include bird-scare devices), had a large influence over the final L_{Aeg} levels recorded over the monitoring period. The background noise, represented by the L_{AF90} is less noisy. The L_{AF10} and L_{AF90} results were presented in each of the quarterly reports.

Noise levels at NM1, NM2, NM3 during Q2 and Q3 and Q4 were mostly reflective of L_{AF10} levels, to which off-site noises are the main contributory sources.

9 RESOURCE USAGE

See Resource-Energy tab from AER summary templates.doc in Appendix II.

Resources consumed at Balleally Landfill include diesel fuel, electricity, hydraulic oil and lubricating oil. Table 9.1 presents a summary of the quantities of each used on site for the period of this report. Electricity consumed on site was used for the purpose of heating, lighting, the operation of office equipment and the leachate treatment plant. The largest consumer of electricity was the leachate treatment plant until it was mothballed during 2009. There was a sustained and significant drop in energy usage since 2008 peak, with an increase through 2013 and 2014 associated with new pumping arrangements from the Leachate Treatment Plant.

Diesel and petrol consumption in 2014 was down on 2013 due to the fact that a number of items of plant were off-hired for longer periods than in previous years. Additionally, the area of operation for the excavator and Dozer has reduced.

Water Consumption in Balleally was significantly higher in 2014 than 2013. This may have been due to filling of leachate tanks SBR1 & 2 with water during commissioning tests of the new leachate pipeline to sewer on Rogerstown Lane.

Table 9.1: Summary of resources used on site 2014

Resource	FCC	BPS
Electricity	79,256 KWh	2,115 KWh
Diesel *	83,297 litres	0 litres
Petrol*	250 litres	0 litres
Lube Oil	1000 litres (Estimate)	14,795 litres
Water	5,960 m3	
Off-site Leachate Transport	See Section 9.1.2	

*Estimates based on average weekly usage

9.1.2 Off-Site transfer of Leachate

One of the main energy requirements over the lifetime of the facility has been in the treatment and management of leachate. During 2014, a large volume of diesel was used in transporting 7,715 tonnes of leachate 21 km off-site from Balleally Landfill to Ringsend Waste Water Treatment Plant. Previously before the leachate treatment plant was mothballed over 200,000 kwHr of electricity were consumed (2008).

There will be an opportunity to increase energy efficiency when leachate is delivered to Portrane Waste Water Treatment Plant. Electricity usage has increased again, through additional pumping required since the technical amendment for delivery to Portrane Waste Water Treatment Plant was secured.

Table 9.2: Electricity consumption on site for the period January 2000 to December 2014

Year	Site	Site	Leachate Treatment Plant	KWHr Total
2014	Ceased	50,170	29,086	79,256
2013	Ceased	67,450	7.457	74,906
2012	Ceased	58,075	7 ,423	65,498*
2011	Ceased	59,100*	5,109*	64,209*
2010	Ceased	71,575*	6,460*	78,035*
2009	Ceased	82,950*	101,367*	184,317*
2008	1,832*	91,350*	202,739*	295,921*
2007	1,726*	84,900*	202,669*	289,295*
2006	2,109*	97,600*	73,420*	173,129*
2005	1,033*	115,050*	N/R	15,050*
2004	NR	66,250*	N/R	66,250*
2003	NR	NR	N/R	89,155 @
2002	NR	NR	N/R	76,529 @
2001	NR	NR	N/R	55,453 @
2000	NR	NR	N/R	49,016 @

- * Data derived from Website for three accounts registered to Balleally.
- N/R: Accounts not set up at these times.
- @ Data sourced from AER 2006.

Note:

1) There was a significant increase in electricity consumption in the period 2006 – 2008, from previous years as can be observed from Table. This was attributable to the operation of site leachate treatment plant. The decrease in 2009 was attributable to the mothballing of the leachate treatment plant. The leachate treatment plant remained closed during 2011 and 2012.

2) The electricity consumption increased each year from 2000 (exception 2004) to 2008 and decreased through to 2011. 2011 decrease may in part be due to milder winter (less heating), direr conditions (less pumping) and the move from an automated to manual wheel wash. Electricity consumption was stable during 2012. There was an increase during 2013 and a further increase in 2014, associated with pumping from the Leachate Treatment plant.

See Resource tab from AER summary templates.doc in Appendix II.

Table 9.3: Equipment and Plant list at Balleally Landfill and quantities 2014

Type of Item	Item	Quantity
Transport	05 D 81788 Isuzu 4X4*	1
	02D76224 mazda	1
	04 D 68456 Ford Fiesta Van*	1

Type of Item	Item	Quantity
	01 D 72074 Renault Twin Cab Pick Up*	1
	Minidigger	1
Plant	04 D 64948 John Deere 4X4 Tractor*	1
	07 D 7332 Same Tractor*	1
Heavy Plant		1
	Cat excavator 330* / Dozer Package	1
	30 Ton Vibrating Roller*	1
	Diesel H/P power washer and Bowser*	1
Auxiliary Plant	CONSAW*	1
	6 inch pump*	1
	6.5 KVA diesel generator*	1
Equipment	Extrusion welder*	1
	Wedger Seam Welder*	1
	Lyster heater / welder*	1
Survey	Sokkisna level and tripod*	1
	Sokkisna theodolite & Tripod*	1
	NIKON auto level*	1
	Garmen GPS*	1
	GMI gas monitor*	1
	GAS DATA LMSXi	1
	GMI FI 2000*	1
	30 Metre steel Tape*	1
	30m dip meter*	1
	Various P.C.s and printers*	1

9.2 Landfill gas utilisation

See Table 7 on the Waste tab from AER summary templates.doc in Appendix II.

Landfill gas is actively extracted by means of a series of wells and a collection pipe network in the waste body. The gas is pumped through two main lines to the site utilisation plant. The utilisation plant comprises three generators grouped into two operating units AER1 and AER3. To achieve maximum design power output from the station the inlet gas should contain 50% methane and the minimum available gas volume should be 3,340 m^3/hr. At present the methane gas concentration is cited at 45%.

The power station/utilisation plant operators, Bioverda Power Systems Limited, regulate the inflow of gas to the station in order to achieve the 45% methane. The total power output from the station for the period is shown in tables 9.4 & table 9.5. Currently sufficient gas is being extracted to run 2 of the 3 engines on a continuous basis.

Table 9.4: Electricity output (MWhr) from the on-site power station at Balleally Landfill per year 2003-2014

YEAR	ELECTRICITY OUTPUT (MWhr)
2003	30,194
2004	21,636
2005	21,234*
2006	20,529*
2007	23,762
2008	27,117
2009	25,429
2010	21,909
2011	20,534
2012	20,928
2013	16,693
2014	13,679

* Corrected data for 2005-2006 reported by Bioverda Power Systems.

Table 9.5: Electricity output (MW) from the on-site power station at Balleally Landfill 2014

Month	Combined BY01-BY03 (MWhrs)
January	1132.15
February	1005.17
March	1111.52
April	1272.96
May	1265.09
June	1165.67
July	1176.24
August	1167.22
September	1132.57
October	1147.13
November	1066.74
December	1036.31
Total	**13678.77**

10 ENVIRONMENTAL INCIDENTS & COMPLAINTS

Please See Complaints and Incidents tab from AER summary templates.doc in Appendix II.

11 WASTE SUMMARY

Please refer to the Waste tab of the AER summary sheet (Appendix II).

The landfill closed to waste acceptance in 2012.

A total of 103,965 t of Soil & Stones (EWC 17-05-04) material was accepted at the site in 2014 for the capping programme. The majority of this was soil and stone, with a small amount of C&D material (EWC 17-01-07) for use in repair and preparation of haul roads on site.

25,101 m3 of leachate was transferred off-site.

15,458,020 of landfill gas was captured on site for utilisation in the landfill gas engines.

11.1 Remaining Landfill Capacity

The landfill is closed to waste acceptance. There is no remaining landfill capacity.

12 METEOROLOGICAL MONITORING

Condition 8 and Schedule D.6.1 of Waste Licence W0009-03 require daily monitoring of precipitation volume, temperature (max. /min.), wind force and direction, and atmospheric pressure.

July and August were warmest with the highest maximum mean monthly temperatures. Monthly Rainfall was highest during August and November when highest volumes of rainfall were registered. The site was predominantly affected by south westerly winds. Evaporation and potential evapo-transpiration were highest in May and June.

Condition 8 and Schedule D.6.1 of Waste Licence W0009-03 require daily monitoring of precipitation volume, temperature (max. /min.), wind force and direction, and atmospheric pressure, Evaporation and Atmospheric humidity.

Meteorological data is obtained from Met Eireann for Dublin Airport's Met. Station. Please see table 12.1 below for monthly averages of this data. Other meteorological parameters and daily data are available to view in Fingal County Hall and on site.

Table 12.1: Mean Monthly Data for meteorological parameters: Dublin Airport (Source Met Eireann)

Year	Month	Mean Temperature (C)	Total Rainfall (mm)	Mean MSL Pressure (hpa)	Mean Wind Speed (Knots)	Mean Evaporation mm	Mean Atmospheric Humidity %
2014	1	5.7	101.6	994	15.86	0.8	84.01
2014	2	5.6	88.5	989	11.54	1.2	82.78
2014	3	6.8	53.7	1013	10.53	1.7	83.53
2014	4	8.9	34.2	1013	11.19	2.8	80.81
2014	5	11.3	91.5	1013	10.81	3.2	77.79
2014	6	13.6	36.2	1019	9.33	4.0	80.00
2014	7	15.8	35.0	1015	8.89	4.0	81.23
2014	8	13.9	173.0	1009	9.55	3.3	80.24
2014	9	13.1	26.5	1015	10.82	2.1	82.50
2014	10	10.9	90.2	1009	10.68	1.4	84.63
2014	11	7.7	140.9	1020	11.03	0.6	87.12
2014	12	5.4	55.9	1007	9.82	0.5	89.65

13 SITE DEVELOPMENT WORKS

13.1 Work carried out in the reporting period 2014

Table 13.1: Work carried out during 2014

Objective / Target	Description	Timescale
Objective 1	**To minimise environmental impact on the immediate environment**	
Target 1	To determine mitigation measures to deal with surface water contamination at SW20a. Some work completed on ditch by SW20a to separate contaminated water from local drainage. Ongoing tankering of liquid from this point.	Ongoing
Target 2	To continue to monitor Ammonical Nitrogen levels at OF1-OF4 in line with agreed trigger levels.	Ongoing.
Target 3	To investigate sources of SW contamination in landfill and propose mitigation measures to The Agency. Continue monthly monitoring of catchment of SWV1.	Ongoing.
Target 4	Apply for Technical Amendment for leachate treatment plant for connection to sewer.	Complete
Target 5	Apply for approval to increase Emission Limit Value for CO emissions from engine stacks.	Complete
Objective 2	**Restoration of the facility.**	
Target 1	Grass seeding of capped areas ongoing;	**Ongoing**
Target 2	Completion of a vertical barrier at the northern boundary for implementation during restoration of site.	**Ongoing**
Target 3	Address Flooding Issue at Entrance. On and Off sets for pumps at P2 changed and laying of new drainage levels opposite entrance partially dealt with this.	Following closure of the landfill for clay.
Target 4	To provide for Leachate Recirculation in Cells 5 & 6 and Piggybacked area. Infrastructure installed.	**2016**
Target 5	Fencing along Southern and Eastern Boundary	Complete

Works for next reporting period (2015).

Table 13.2: Works to be carried out during 2015

Objective / Target	Description	Timescale
Objective 1	**To minimise environmental impact on the immediate environment**	
Target 1	To Commence Leachate Recirculation in Cells 5 & 6.	2016.
Target 3	To prepare final contours, capping and surface water plan for former Civic Amenity Area, offices and entrance area. Specified Engineering Works to be installed in this regard.	2015
Target 4	To complete GCL Capping in remaining areas of Phase 6, 8, 9 & 12.	2015
Target 5	To determine final mitigation measures to deal with surface water contamination at SW20a and propose Specified Engineering Works if required.	2015
Target 6	To continue to monitor surface water outfalls and leachate levels along the southern boundary of the landfill to determine if leachate breakout is prevalent and further proposals required.	Ongoing.
Target 7	Plans to decommission some foul lines to be decommissioned around Gas Utilisation Plant	2015
Objective 2	**Restoration of the facility**	
Target 1	Examine the completion of a shallow vertical barrier at the northern boundary for implementation during restoration of site.	2015
Target 2	Address remaining flooding issue at Entrance.	2015/6

13.2 Progress on Site Restoration

The Restoration and Aftercare Plan for the landfill was submitted in July 2003 as per condition 4.1. This plan sets out a framework to successfully restore Balleally Landfill to a condition suitable for use as an amenity for the general public. The plan has been prepared in accordance with the EPA Landfill manual 'Landfill Restoration and Aftercare' (1999), the Council Directive (1999/31/EC) on the Landfill of Waste and Waste Licence W0009-02 & -03. Restoration is being undertaken at Balleally Landfill using a phased approach due to the size of the site and seasonal constraints. On completion of restoration in each phase, the aftercare plan to establish and maintain the after use of the site shall be implemented.

Capping of the site is as per Condition 4.3. The geotextile alternative was investigated and agreed in early 2004 with the EPA. This decreased the number of vehicle movements required for importing soil for the final cap.

Figure 2, Appendix 1, indicates the agreed phases for the capping and restoration of Balleally Landfill. The phasing provides for the restoration of the original landfill initially, and then the landfill extension area.

The total area for capping is 46.5 Hectares approx.

Between 2004 and December 2013, approx. 43 Hectares were capped. During 2014, an additional 2.25 Hectares approx. (GCL) were capped – Some of this included necessary overlap between LLDPE and GCL. The majority of the "Old Landfill" and the new landfill is now 100% capped. A total of 45.25 Hectares is now capped. This equates to 93% of the entire landfill area to be capped. The remaining capping area is the around the site entrance and offices (1.25ha approx.).

13.2.2 Inert waste to be used for cover/restoration material at the facility

An estimate of soils required for the final capping of the landfill is as follows:

- Expected subsoil tonnages for restoration = 1,180,000 tonnes
- Expected topsoil tonnages for restoration = 580,000 tonnes

This estimate does not take into account any soil requirements for levelling off the contours prior to the placement of the final capping. However, it is expected that material on the landfill site (berms etc.) will be used which will limit the importation of soil/clay.

See below statistics of capping programme:

Start Date of Capping Programme: May 2004
Progress as of 31st December 2014: 45.25 ha approx.

The final capping profile is made up of:

1. Topsoil layer of 300 mm thickness.
2. Subsoil layer of 700 mm thickness.
3. Geocomposite Drainage Layer (GDL).
4. Geosynthetic Clay Liner (GCL) / LLDPE membrane liner on New Cells.
5. Geocomposite Gas Collection (GGCL).

A map showing the current extent of capping is included in Appendix 1.

13.3 Annual Topographical Survey

Condition 8.5.1 of WL W0009-03 requires an annual Topographical Survey to be undertaken in Balleally Landfill. The last full topographic survey was completed on November and December 2014, issued on 11/12/2014 and is available to view on site or in County Hall.

13.4 Slope Stability

As required under Licence Condition 8.8.1. A slope stability survey was undertaken in Balleally Landfill in 12th December 2014 and was submitted to The Agency through EDEN. .

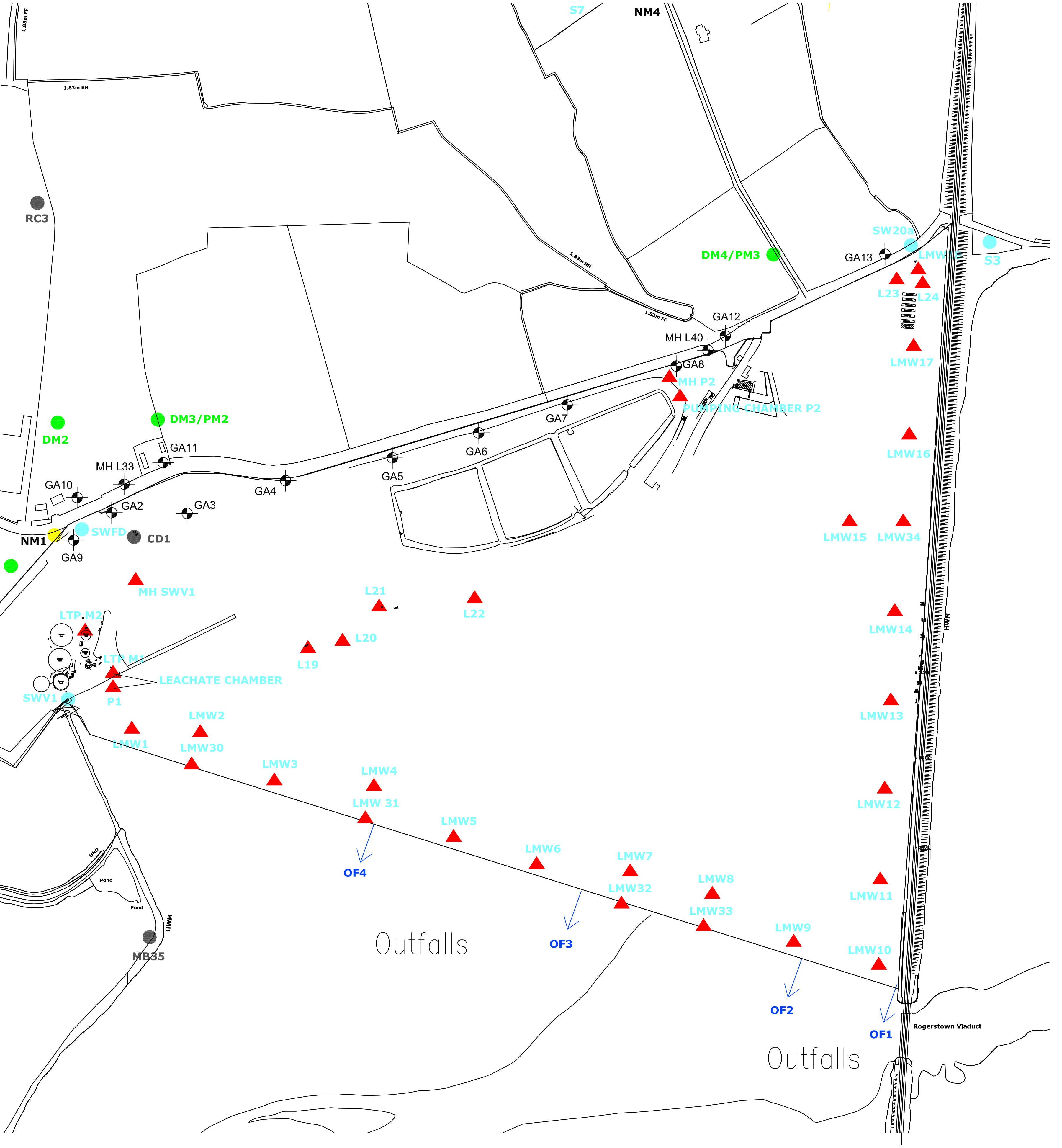
The conclusions and recommendations in the survey report are noted and will be implemented. It is available to view on site or in County Hall.

APPENDIX 1

DRAWINGS

Sheet FTC-A1-2000 rev. K (template filed in O:Acad\Templates\Autocad) (July 2006) - template externally referenced

NOT FOR CONSTRUCTION UNLESS SPECIFICALLY STATED OTHERWISE



KEY

NSL1	Noise Monitoring Location
AD1	Dust Monitoring Location
OF1	Outfall Location
3d	Groundwater Monitoring Location
SW1	Surface Water Monitoring
MG1	Gas Well Monitoring Locations
LM1	Leachate Monitoring Locations

ID	Easting	Northing
GA1	321767	252159
GA2	321986	252383
GA3	322070	252383
GA4	322170	252415
GA5	322291	252440
GA6	322389	252467
GA7	322490	252498
GA8	322614	252542
GA9	321942	252347
GA10	321942	252393
GA11	322039	252433
GA12	322669	252575
GA13	322848	252666
MH L33	322001	252416
MH L40	322654	252566
P1	321983	252190
LMW1	322006	252143
LMW2	322077	252115
LMW3	322169	252084
LMW4	322271	252053
LMW5	322368	252022
LMW6	322461	251991
LMW7	322559	251958
LMW8	322651	251933
LMW9	322749	251903
LMW10	322844	251877
LMW11	322846	251974
LMW12	322853	252074
LMW13	322859	252175
LMW14	322863	252274
LMW15	322873	252375
LMW16	322880	252473
LMW17	322885	252572
LMW18	322890	252657
L19	322203	252227
L20	322240	252235
L21	322281	252272
L22	322388	252283
L23	322862	252640
L24	322887	252648
LTP M1	321984	252199
LTP M2	321952	252247

ID	Easting	Northing
NM1	321919	252357
NM2	321779	252415
NM3	321459	252383
NM4	322604	252962
NM5	322970	254004
OF1	322862	251849
OF2	322755	251876
OF3	322506	251953
OF4	322276	252028
MB 18	323344	252832
MB 35	322029	251906
RC 3	321906	252729
CD 1	322006	252356
SWV 1	321980	252187
SWFD	321952	252366
S3	322966	252678
S7	322607	253279
SW20a	322878	252676
DM1/PM1	321874	252321
DM2	321927	252482
DM3/PM2	322038	252484
DM4/PM3	322728	252671

Rev.	Drawn	Chk'd	App'd	Date	Description
B	MMcC TM	DD	BG	10.01.08	ISSUE FOR INFORMATION
A	MMcC	DD	BG	05.07.07	ISSUE FOR INFORMATION

Name of Client: Fingal County Council

Name of Job: ENVIRONMENTAL MONITORING BALLEALLY

Title of Drawing: ENVIRONMENTAL MONITORING LOCATIONS

Scales Used: 1:2500 A1 / 1:5000 A3

Dwg. No.: DE07-164-03-001 | Rev.: B | Dublin

J:\Dublin-CAD\2007\DE-7\164\03\DE07_164_03_001

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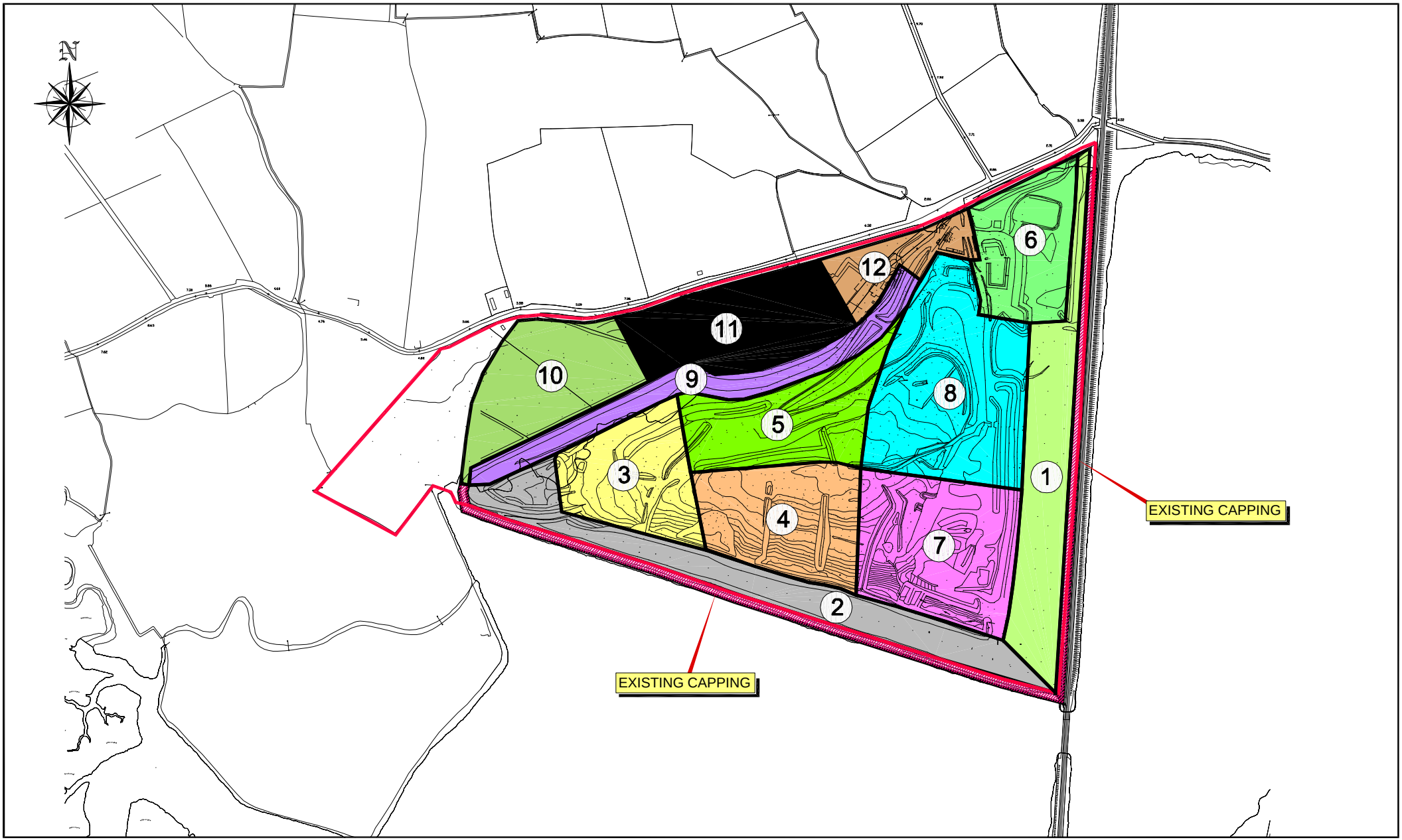
ORIGINAL DRAWING SIZE A1 - (841 x 594)

NATURAL SCALE



Comhairle Chontae Fhine Gall
FINGAL COUNTY COUNCIL
Mr.P.J.Howell,
Director of Service
Phone: (01) 890 5000

mcos COWI
Carnegie House,
Library Road,
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Phone 01 - 2020870
Fax 01 - 2020707

No.	Date	By	Amendments
A04	May'03	HF	RE-ISSUED FOR APPROVAL
A03	Apr'03	RH	RE-ISSUED FOR APPROVAL
A02	Nov'02	GDB	RE-ISSUED FOR APPROVAL
A01	Oct'02	SBG	ISSUED FOR APPROVAL

Job: BALLEALLY LANDFILL RESTORATION AND AFTERCARE PLAN

Title: RESTORATION PHASING

Drawn:	HF
Checked:	HD
Approved:	CB
Scale:	1:7500
Date:	Oct'02

File Ref.: 149507002FG0300

Drawing No.: FIG 3.0

Rev.: A04

APPENDIX 2

AER SUMMARY TEMPLATES

Facility Information Summary	
AER Reporting Year	2014
Licence Register Number	W0009-03
Name of site	Balleally Landfill
Site Location	Balleally, Lusk, County Dublin.
NACE Code	E39
Class/Classes of Activity	11.1, 11.5
National Grid Reference (6E, 6 N)	E322500 N252200.
A description of the activities/processes at the site for the reporting year. This should include information such as production increases or decreases on site, any infrastructural changes, environmental performance which was measured during the reporting year **and an overview of compliance with your licence** listing all exceedances of licence limits (where applicable) and what they relate to e.g. air, water, noise.	Activity during 2014 was mostly linked to landfill restoration. Capping with Geosynthetic Clay Liner and imported clay and C&D materials (EWC 17 01 07 and 17 05 04). Leachate was transported to Ringsend Waste Water Treatment Plant until 31/3/2014 and pumped to Portraine Waste Water Treatment Plant thereafter. Landfill Gas was collected and converted to electricity.

Declaration:

All the data and information presented in this report has been checked and certified as being accurate. The quality of the information is assured to meet licence requirements.

M. Lehane	30 - 3 - 15
Signature	Date
~~Group/Facility manager~~ (or nominated, suitably qualified and experienced deputy)	

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER) Lic No: W0009-03 Year 2014

		Yes	Additional information
1	Does your site have licensed emissions direct to surface water or direct to sewer? If yes please complete table W2 and W3 below for the current reporting year and answer further questions. If **you do not have** licenced emissions you only need to complete table W1 and or W2 for storm water analysis and visual inspections	Yes	Some Leachate was tankered to Ringsend Treatment plant in 2014 (7517m3). The remainder (17368m3) was pumped to Portrane Wastewater Treatment Plant.
2	Was it a requirement of your licence to carry out visual inspections on any surface water discharges or watercourses on or near your site? If yes please complete table W2 below summarising only any evidence of contamination noted during visual inspections	Yes	

Table W1 Storm water monitoring

Location reference	Location relative to site activities	PRTR Parameter	Licenced Parameter	Monitoring date	ELV or trigger level in licence or any revision thereof*	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Comments
SWV1	downstream		pH	2014	5.5-8.5	SELECT	7.5	pH units	yes	Presented within text of AER
SWV1	downstream		Temperature		**No abnormal change**		16.4	degrees C	yes	Presented within text of AER
SWV1	downstream		Ammonia (as N)		0.23		13.7025	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SWV1	downstream		BOD		5		<1	mg/L	yes	Presented within text of AER
SWV1	downstream		COD		40		66.9	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SWV1	downstream		Suspended Solids		50		6	mg/L	yes	Presented within text of AER
SWV1	downstream		Dissolved Oxygen		**No abnormal change**		1.43	mg/L	yes	Presented within text of AER
SWV1	downstream		Chloride		250		294.85	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SWV1	downstream		Conductivity		1000		2620	µS/cm @20oC	no (if no please enter details in comments box)	Presented within text of AER
SWFD	downstream		pH		5.5-8.5		8.145	pH units	yes	Presented within text of AER
SWFD	downstream		Temperature		**No abnormal change**		13.05	degrees C	yes	Presented within text of AER
SWFD	downstream		Ammonia (as N)		0.23		0.539	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SWFD	downstream		BOD		5		3.975	mg/L	yes	Presented within text of AER
SWFD	downstream		COD		40		23.85	mg/L	yes	Presented within text of AER
SWFD	downstream		Suspended Solids		50		5	mg/L	yes	Presented within text of AER
SWFD	downstream		Dissolved Oxygen		**No abnormal change**		8.97	mg/L	yes	Presented within text of AER
SWFD	downstream		Chloride		250		59.825	mg/L	yes	
SWFD	downstream	SELECT	Conductivity		1000	SELECT	1080	µS/cm @20oC	no (if no please enter details in comments box)	Presented within text of AER
S3	downstream		pH		5.5-8.5		8.1	pH units	yes	Presented within text of AER
S3	downstream		Temperature		**No abnormal change**		12.77	degrees C	yes	Presented within text of AER
S3	downstream		Ammonia (as N)		0.23		2.04	mg/L	no (if no please enter details in comments box)	Presented within text of AER
S3	downstream		BOD		5		4.71	mg/L	yes	Presented within text of AER
S3	downstream		COD		40		67.63	mg/L	no (if no please enter details in comments box)	Presented within text of AER
S3	downstream		Suspended Solids		50		126.06	mg/L	no (if no please enter details in comments box)	Presented within text of AER
S3	downstream		Dissolved Oxygen		**No abnormal change**		7.645	mg/L	yes	Presented within text of AER
S3	downstream		Chloride		**250**		95.9	mg/L	yes	Presented within text of AER
S3	downstream		Conductivity		1000		738.75	µS/cm @20oC	yes	Presented within text of AER
S7	upstream		pH		5.5-8.5		8.3	pH units	yes	Presented within text of AER
S7	upstream		Temperature		**No abnormal change**		11.4	degrees C	yes	Presented within text of AER
S7	upstream		Ammonia (as N)		0.23		4.56	mg/L	no (if no please enter details in comments box)	Presented within text of AER
S7	upstream		BOD		5		6.68	mg/L	no (if no please enter details in comments box)	Presented within text of AER
S7	upstream		COD		40		67.63	mg/L	no (if no please enter details in comments box)	Presented within text of AER
S7	upstream		Suspended Solids		50		18.67	mg/L	yes	Presented within text of AER
S7	upstream		Dissolved Oxygen		**No abnormal change**		6.76	mg/L	yes	Presented within text of AER
S7	upstream		Chloride		**250**		48.125	mg/L	yes	Presented within text of AER

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER) Lic No: W0009-03 Year 2014

S7	upstream		Conductivity		1000		654.5	µS/cm @20oC	yes	Presented within text of AER
SW20a	onsite		pH		5.5-8.5		8.57	pH units	no (if no please enter details in comments box)	Presented within text of AER
SW20a	onsite		Temperature		**No abnormal change**		11.78	degrees C	yes	Presented within text of AER
SW20a	onsite		Ammonia (as N)		0.23		3.27	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SW20a	onsite		BOD		5		6.1925	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SW20a	onsite		COD		40		44.1	mg/L	no (if no please enter details in comments box)	Presented within text of AER
SW20a	onsite		Suspended Solids		50		10.25	mg/L	yes	Presented within text of AER
SW20a	onsite		Dissolved Oxygen		No abnormal change		5.32	mg/L	yes	Presented within text of AER
SW20a	onsite		Chloride		**250**		136.35	mg/L	yes	Presented within text of AER
SW20a	onsite	SELECT	Conductivity		1000	SELECT	1135	µS/cm @20oC	no (if no please enter details in comments box)	Presented within text of AER

*trigger values may be agreed by the Agency outside of licence conditions

Table W2 Visual inspections-Please only enter details where contamination was observed.

Location Reference	Date of inspection	Description of contamination	Source of contamination	Corrective action	Comments
SWV1	30/04/2014	Possible contamination from Leachate	site	Reported as reference INCI004152 to the agency	Subsequent sampling on the 7th May, 28th May and 18th June confirm a return to background surface water quality for SWV1.

Licensed Emissions to water and /or wastewater(sewer)-periodic monitoring (non-continuous)

				Additional information
3	Was there any result in breach of licence requirements? If yes please provide brief details in the comment section of Table W3 below		SELECT	
4	Was all monitoring carried out in accordance with EPA guidance and checklists for Quality of Aqueous Monitoring Data Reported to the EPA? If no please detail what areas require improvement in additional information box	External /Internal Lab Quality checklist	Assessment of results checklist Yes	

Table W3: Licensed Emissions to water and /or wastewater (sewer)-periodic monitoring (non-continuous)

Emission reference no:	Emission released to	Parameter/ SubstanceNote 1	Type of sample	Frequency of monitoring	Averaging period	ELV or trigger values in licence or any revision thereof Note 1	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Method of analysis	Procedural reference source	Procedural reference standard number	Annual mass load (kg)	Comments
T4	Wastewater/Sewer	**pH**	discrete	Monthly	Monthly	6.0-10.0	SELECT	8.14	pH units	yes	pH Meter (Electrode)	Manufacturer method			
		Temperature				42		14.98	degrees C	yes	pH Meter (Electrode)	Manufacturer method			
		Conductivity				N/A		4.07	mS/Cm		Conductivity Meter (Electrode)	Manufacturer method			
		BOD				150		9.22	mg/L	yes	d by Oxygen Meter on	UK SLA Blue Book" meter		160.05	
		COD				1100		244.53	mg/L	yes	Dr Lange Kit	ISO		4247.02	
		Ammonia (as N)				800		229.9	mg/L	yes	Kone Analyser	B.S. (British Standard		3992.88	
		Suspended Solids				800		20.23	mg/L	yes	TSS in waters	B.S. (British Standard		351.41	
		Phosphate (ortho) as PO4				10		2.03	mg/L	yes	pectrophotometric An	US EPA		35.28	
		Sulphate				1000		271.13	mg/L	yes	pectrophotometric An	US EPA		4709.04	
		Chromium (diss.filt)				0.3		0.04	µg/L	yes	vely Coupled Plasma -	APHA / AWWA Standard		631.96	
		Copper (diss.filt)				0.5		0	µg/L	yes	vely Coupled Plasma -	APHA / AWWA Standard		0.0658	
		Nickel (diss.filt)				0.5		0.04	µg/L	yes	vely Coupled Plasma -	APHA / AWWA Standard		0.71	
		Zinc (diss.filt)				1.5		0.02	µg/L	yes	vely Coupled Plasma -	APHA / AWWA Standard		0.434	
		Mineral oil >C10 C40 (aq)				10		0.06	µg/L	yes	EPH in waters	Under Licence specified	Analysis of Petroles	1.027	
		TPH / Oil & Greases				100		1.89	mg/L	yes	IR Spectroscopy	HMSO London		32.75	
		mineral oil >C10 C40 (aq)				10		5.17	mg/L	yes	EPH in waters	Under Licence specified	Analysis of Petroles	89.79	
		Surfactants, Anionic (MBAS)				N/A		0.5	mg/L		Determination of Methylene Blue	Under Licence specified	Standard Methods	8.666	
		Chloride				6000		438.26	mg/L	yes	pectrophotometric An	US EPA		7611.65	
		Methane Gas in Sewer Headspace				0.50%		0.0026	%	yes	Gas meter	Manufacturer method			

Note 1: Volumetric flow shall be included as a reportable parameter

Note 2: Where Emission Limit Values (ELV) do not apply to your licence please compare results against EQS for Surface water or relevant receptor quality standards

Continuous monitoring

			Additional Information
5	Does your site carry out continuous emissions to water/sewer monitoring?	Yes	Flow, Ph, Temperature and Dissolved Methane
6	Did continuous monitoring equipment experience downtime? **If yes please record downtime in table W4 below**	No	
7	Do you have a proactive service contract for each piece of continuous monitoring equipment on site?	Yes	The instrumentation was fitted in 2014
8	Did abatement system bypass occur during the reporting year? **If yes please complete table W5 below**	No	

If yes please summarise your continuous monitoring data below in Table W4 and compare it to its relevant Emission Limit Value (ELV)

Table W4: Summary of average emissions -continuous monitoring

Emission reference no:	Emission released to	Parameter/ Substance	ELV or trigger values in licence or any revision thereof	Averaging Period	Compliance Criteria	Units of measurement	Annual Emission for current reporting year (kg)	% change +/- from previous reporting year	Monitoring Equipment downtime (hours)	Number of ELV exceedences in reporting year	Comments
	SELECT	SELECT		SELECT	SELECT	SELECT					
	SELECT	SELECT		SELECT	SELECT	SELECT					

note 1: Volumetric flow shall be included as a reportable parameter.

Table W5: Abatement system bypass reporting table

Date	Duration (hours)	Location	Resultant emissions	Reason for bypass	Corrective action*	Was a report submitted to the EPA?	When was this report submitted?
						SELECT	

*Measures taken or proposed to reduce or limit bypass frequency

Groundwater/Soil monitoring template	Lic No:	W0009-03	Year	2014

			Comments	
1	Are you required to carry out groundwater monitoring as part of your licence requirements?	yes		Please provide an interpretation of groundwater monitoring data in the interpretation box below or if you require additional space please include a groundwater/contaminated land monitoring results interpretaion as an additional section in this AER
2	Are you required to carry out soil monitoring as part of your licence requirements?	no		
3	Do you extract groundwater for use on site? If yes please specify use in comment section	no		
4	Do monitoring results show that groundwater generic assessment criteria such as GTVs or IGVs are exceeded or is there an upward trend in results for a substance? If yes, please complete the Groundwater Monitoring Guideline Template Report (link in cell G8) and submit separately through ALDER as a licensee return AND answer questions 5-12 below. Groundwater monitoring template	no		See AER report
5	Is the contamination related to operations at the facility (either current and/or historic)	N/A	See text of AER	
6	Have actions been taken to address contamination issues?If yes please summarise remediation strategies proposed/undertaken for the site	N/A	See text of AER	
7	Please specify the proposed time frame for the remediation strategy	N/A	See text of AER	
8	Is there a licence condition to carry out/update ELRA for the site?	N/A	See text of AER	
9	Has any type of risk assesment been carried out for the site?	N/A	See text of AER	
10	Has a Conceptual Site Model been developed for the site?	N/A	See text of AER	
11	Have potential receptors been identified on and off site?	N/A	See text of AER	
12	Is there evidence that contamination is migrating offsite?	N/A	See text of AER	

Table 1: Upgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration++	Average Concentration+	unit	GTV's*	IGV	Upward trend in pollutant concentration over last 5 years of monitoring data
Aug-14	RC3	pH	all methodologies accredited and specified in quaterly reports	Quarterly	7.92	NA	SELECT		6.5 - 9.5	no
	RC3	Temperature		Quarterly	12.9	NA	mg/l		25	no
	RC3	Ammoniacal Nitrogen		Quarterly	17.7	6.0	mg/l		0.121	yes
	RC3	Dissolved Oxygen		Quarterly	8.31	7.9	mg/l		No Abnormal Change	no
	RC3	Chloride		Quarterly	32.2	27.2	mg/l		30	no
	RC3	Conductivity		Quarterly	0.859	0.8	mS/cm		1	no
	RC3	Suspended Solids		Quarterly	198	111.8	mg/l		50	yes
	RC3	TOC		Quarterly	3.42	NA	mg/l		No Abnormal Change	no

Groundwater/Soil monitoring template Lic No: W0009-03 Year 2014

.+ where average indicates arithmetic mean

.++ maximum concentration indicates the maximum measured concentration from all monitoring results produced during the reporting year

Table 2: Downgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit	GTV's*	IGV	Upward trend in yearly average pollutant concentration over last 5 years of monitoring data
Aug-14	MB 35	pH		Quarterly	7.5	NA	SELECT		6.5 - 9.5	no
	MB 35	Temperature		Quarterly	15.8	NA	Degree Celsius		25	no
	MB 35	Ammoniacal Nitrogen		Quarterly	4.5	4.1	mg/l		0.121	yes
	MB 35	Dissolved Oxygen		Quarterly	2.8	2.0	mg/l		No abnormal change	no
	MB 35	Chloride		Quarterly	15,100.0	15,000.0	mg/l		30	yes
	MB 35	Conductivity		Quarterly	36.8	26.8	mS/cm		1	no
	MB 35	Suspended Solids		Quarterly	243.0	145.0	mg/l		50	no
	MB 35	TOC		Quarterly	6.3	6.3	mg/l		No abnormal change	yes
Aug-14	CD1	pH		Monthly	8.1	NA	SELECT		6.5 - 9.5	no
	CD1	Temperature		Monthly	17.7	NA	Degree Celsius		25	no
	CD1	Ammoniacal Nitrogen		Monthly	5.3	2.0	mg/l		0.121	no
	CD1	BOD		Monthly	11.1	NA	mg/l		5	no
	CD1	COD		Monthly	34.1	NA	mg/l		40	no
	CD1	Suspended Solids		Monthly	2.0	N/A	mg/l		50	no
	CD1	Dissolved Oxygen		Monthly	8.8	3.9	mg/l		No abnormal change	no
	CD1	Chloride		Monthly	150.0	97.2	mg/l		30	yes
	CD1	Conductivity		Monthly	1.5	1.2	mS/cm		1	no
	CD1	TOC		Monthly	8.6	5.4	mg/l		No abnormal change	no
							SELECT			

*please note exceedance of generic assessment criteria (GAC) such as a Groundwater Threshold Value (GTV) or an Interim Guideline Value (IGV) or an upward trend in results for a substance indicates that further interpretation of monitoring results is required. In addition to completing the above table, please complete the Groundwater Monitoring Guideline Template Report at the link provided and submit separately through ALDER as a licensee return or as otherwise instructed by the EPA.

Groundwater monitoring template

More information on the use of soil and groundwater standards/ generic assessment criteria (GAC) and risk assessment tools is available in the EPA published guidance (see the link in G31)

Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 2013).

Interim Guideline Values (IGV)

Groundwater/Soil monitoring template Lic No: W0009-03 Year 2014

**Depending on location of the site and proximity to other sensitive receptors alternative Receptor based Water Quality standards should be used in addition to the GTV e.g. if the site is close to surface water compare to Surface Water Environmental Quality Standards (SWEQS), If the site is close to a drinking water supply compare results to the Drinking Water Standards (DWS)

Surface water EQS | Groundwater regulations GTV's | Drinking water (private supply) standards | Drinking water (public supply) standards

Table 3: Soil results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit
							SELECT
							SELECT

Where additional detail is required please enter it here in 200 words or less

	Environmental Liabilities template	Lic No:	W0009-03
	Click here to access EPA guidance on Environmental Liabilities and Financial provision		
			See Sec 53A Response for year ending 31/12/2012 submitted last year.
1	ELRA initial agreement status	Required but not submitted	See Sec 53A Response for year ending 31/12/2012 submitted last year.
2	ELRA review status	Review required and not completed;	See Sec 53A Response for year ending 31/12/2012 submitted last year
3	Amount of Financial Provision cover required as determined by the latest ELRA	Specify	See Sec 53A Response for year ending 31/12/2012 submitted last year
4	Financial Provision for ELRA status	SELECT	Sec 53A Response for year ending 31/12/2012 submitted last year
5	Financial Provision for ELRA - amount of cover	Specify	€7,059,420
6	Financial Provision for ELRA - type	Other please specify	Fingal County Council has provided in it's accounts a reserve for the restoration of the site which amounted to €7,059,420 on 2/2/2015.
7	Financial provision for ELRA expiry date	Enter expiry date	Reserve set annually
8	Closure plan initial agreement status	Required but not submitted	
9	Closure plan review status	Review required and not completed	
10	Financial Provision for Closure status	Required but not submitted	
11	Financial Provision for Closure - amount of cover	Specify	€7,059,420
12	Financial Provision for Closure - type	Other please specify	Fingal County Council has provided in it's accounts a reserve for the restoration of the site which amounted to€7,059,420 on 2/2/2015.
13	Financial provision for Closure expiry date	Enter expiry date	See text in AER document

	Environmental Management Programme/Continuous Improvement Programme template				Lic No:	W0009-03	Year	2014
	Highlighted cells contain dropdown menu click to view				Additional Information			
1	Do you maintain an Environmental Mangement System (EMS) for the site. If yes, please detail in additional information			Yes	Schedule of Environmental Objectives and Targets			
2	Does the EMS reference the most significant environmental aspects and associated impacts on-site			Yes	2013 saw focus on switching from tankering of leachate to Ringsend to pumping to local sewer for treatment in Portrane WWTP. Complete Capping.			
3	Does the EMS maintain an Environmental Management Programme (EMP) as required in accordance with the licence requirements			Yes	See Below			
4	Do you maintain an environmental documentation/communication system to inform the public on environmental performance of the facility, as required by the licence			Yes	Documentation / Communication system held on site in Balleally and in County Hall Swords. Additionally information stored online through EDEN system.			
	Environmental Management Programme (EMP) report							
	Objective Category	Target	Status (% completed)	How target was progressed	Responsibility	Intermediate outcomes		
	Energy Efficiency/Utility conservation	Construct new leachate pipeline to transfer leachate directly to Portrane Waste Water Treatment Plant rather than tankering to Ringsend.	100	By means of construction contract following public tendering process.	Section Head	Reduced emissions		
	Reduction of emissions to Water	Complete Capping	95	Fingal County Council Staff and Construction Quality and Assurance personnel	Section Head	Reduced emissions		
	Reduction of emissions to Air	Complete Capping	95	Fingal County Council Staff and Construction Quality and Assurance personnel	Section Head	Reduced emissions		
	Additional improvements	Public Access Works	90	Fingal County Council Staff and Construction Quality and Assurance personnel	Section Head	Installation of infrastructure		

Noise monitoring summary report

Lic No: W0009-03 Year 2014

1	Was noise monitoring a licence requirement for the AER period? If yes please fill in table N1 noise summary below	Yes
2	Was noise monitoring carried out using the EPA Guidance note, including completion of the "Checklist for noise measurement report" included in the guidance note as table 6? (Noise Guidance note NG4)	No
3	Does your site have a noise reduction plan	No
4	When was the noise reduction plan last updated?	Enter date
5	Have there been changes relevant to site noise emissions (e.g. plant or operational changes) since the last noise survey?	No

Table N1: Noise monitoring summary

Date of monitoring	Time period	Noise location (on site)	Noise sensitive location -NSL (if applicable)	LA_{eq}	LA_{90}	LA_{10}	LA_{max}	Tonal or Impulsive noise* (Y/N)	If tonal /impulsive noise was identified was 5dB penalty applied?	Comments (ex. main noise sources on site, & extraneous noise ex. road traffic)	Is site compliant with noise limits (day/evening/night)?
18/06/2014	09:16-09:46	NM1		66	40	64	NA	No	SELECT	Presented within text of AER and Quarterly Reports	Yes
18/06/2014	08:39-09:09	NM2		67	40	64	NA	No		Presented within text of AER and Quarterly Reports	Yes
18/06/2014	08:06-08:36	NM3		65	41	62	NA	No		Presented within text of AER and Quarterly Reports	Yes
18/06/2014	09:55-10:25	NM4		55	34	60	NA	No		Presented within text of AER and Quarterly Reports	Yes
18/06/2014	10:29-10:59	NM5		45	35	49	NA	No		Presented within text of AER and Quarterly Reports	Yes

*Please ensure that a tonal analysis has been carried out as per guidance note NG4. These records must be maintained onsite for future inspection

If noise limits exceeded as a result of noise attributed to site activities, please choose the corrective action from the following options: SELECT

** please explain the reason for not taking action/resolution of noise issues?

z

Incidents were notified to the Agency. Exceedences were attributed to off site sources in all cases.
During Quarter 4 2012, FCC sought a derogation from the Agency from the provisions of Guidance Note NG4 and to continue noise monitoring as previously undertaken. We will make a submission to the Agency in 2015 to continue noise monitoring on an annual basis.

Resource Usage/Energy efficiency summary

Lic No: W0009-03 Year 2014

			Additional information
1	When did the site carry out the most recent energy efficiency audit? Please list the recommendations in table 3 below	Enter date of audit	2006
2	Is the site a member of any accredited programmes for reducing energy usage/water conservation such as the SEAI programme linked to the right? If yes please list them in additional information	SEAI - Large Industry Energy Network (LIEN) / No	
3	Where Fuel Oil is used in boilers on site is the sulphur content compliant with licence conditions? Please state percentage in additional information	SELECT	Not Appropriate

Table R1 Energy usage on site

Energy Use	Previous year	Current year	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*
Total Energy Used (MWHrs)				
Total Energy Generated (MWHrs)				
Total Renewable Energy Generated (MWHrs)				
Electricity Consumption (MWHrs)	75.72	79.256	5%	
Fossil Fuels Consumption:				
Heavy Fuel Oil (m3)	123.15	99.34	19%	
Light Fuel Oil (m3)				
Natural gas (m3)				
Coal/Solid fuel (metric tonnes)				
Peat (metric tonnes)				
Renewable Biomass				
Renewable energy generated on site				

* where consumption of energy can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.

** where site production information is available please enter percentage increase or decrease compared to previous year

Table R2 Water usage on site

					Water Emissions	Water Consumption	
Water use	Water extracted Previous year m3/yr.	Water extracted Current year m3/yr.	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*	Volume Discharged back to environment(m^3yr):	Volume used i.e not discharged to environment e.g. released as steam m3/yr	Unaccounted for Water:
Groundwater							
Surface water							
Public supply	3742	5960	59.27				
Recycled water							
Total							

* where consumption of water can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.

** where site production information is available please enter percentage increase or decrease compared to previous year

Table R3 Waste Stream Summary

	Total	Landfill	Incineration	Recycled	Other
Hazardous (Tonnes)					
Non-Hazardous (Tonnes)					

Resource Usage/Energy efficiency summary Lic No: W0009-03 Year 2014

Table R4: Energy Audit finding recommendations

Date of audit	Recommendations	Description of Measures proposed	Origin of measures	Predicted energy savings %	Implementation date	Responsibility	Completion date	Status and comments
2006	Set Up Sleep Mode on PCs		energy audit	560 kwhrs of 3,500,0	2008	Fingal County Council	2010	
	Monitoring Vehicle Use		energy audit	175,090 Kwhrs of 3,5	2006	Fingal County Council	2010	
	Driver Training		energy audit	203,595Kwhrs of 3,5	2006	Fingal County Council	ONGOING	
	Install inverter on Wheel wash		energy audit	17,290Kwhrs of 3,50	2010	Fingal County Council	2010	
	Replace old monitors with LCds		energy audit	N/A	2012	Fingal County Council	2012	
	Implement motor management policy		energy audit	N/A	2006	Fingal County Council	ONGONIG	
			SELECT					

Table R5: Power Generation: Where power is generated onsite (e.g. power generation facilities/food and drink industry)please complete the following information

	BY01	BY02	BY03	Unit ID	Station Total
Technology	Gas Combustion	Gas Combustion	Gas Combustion		
Primary Fuel	Landfill Gas	Landfill Gas	Landfill Gas		
Thermal Efficiency					
Unit Date of Commission	Aug-06	Aug-06	Aug-06		
Total Starts for year					
Total Running Time	4053 hours	7276 hours	5877 hours		
Total Electricity Generated (GWH)					13.679
House Load (GWH)					
KWH per Litre of Process Water					
KWH per Litre of Total Water used on Site					

Complaints and Incidents summary template

Lic No: P0xxx-01 Year 2013

Complaints

		Additional information
Have you received any environmental complaints in the current reporting year? If yes please complete summary details of complaints received on site in table 1 below	No	

Table 1 Complaints summary

Date	Category	Other type (please specify)	Brief description of complaint (Free txt <20 words)	Corrective action< 20 words	Resolution status	Resolution date	Further information
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		

Total complaints open at start of reporting year	
Total new complaints received during reporting year	
Total complaints closed during reporting year	
Balance of complaints end of reporting year	

Incidents

		Additional information
Have any incidents occurred on site in the current reporting year? Please list all incidents for current reporting year in Table 2 below	Yes	

*For information on how to report and what constitutes an incident	What is an incident

Table 2 Incidents summary

Date of occurrence	Incident nature	Location of occurrence	Incident category*please refer to guidance	Receptor	Cause of incident	Other cause(please specify)	Activity in progress at time of incident	Communication	Occurrence	Corrective action<20 words	Preventative action <20 words	Resolution status	Resolution date	Likelihood of reoccurence
22/01/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA3, 8, 12 & 13)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
13/03/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA5, 8 & 12)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
22/01/2014	Trigger level reached - 5.5mAOD	Other location (LMW31, LMW5, LMW6, LMW32, LMW33 & LMW9)	1. Minor	No Uncontrolled release	Other (add details	Leachate balance v	Normal activities	EPA	Recurring	Further Monitoring	Consult results	Ongoing	Ongoing	High
30/04/2014	Uncontrolled release	Other location (SWV1)	1. Minor	Water - Rogerstown Estua	Other (add details	Cross Contaminati	Normal activities	EPA & ERFB	New	Cease Pumping	Clear Blockage	Complete	30/04/2014	Low
30/04/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA3)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
21/05/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA3, 8 & 12)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
18/06/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA8, 12)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
30/04/2014	Trigger level reached - 5.5mAOD	Other location (LMW31, 5, 6, 32 & 9)	1. Minor	No Uncontrolled release	Other (add details	Leachate balance v	Normal activities	EPA	Recurring	Further Monitoring	Consult results	Ongoing	Ongoing	High
23/07/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA3, 4, 12 & 13)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
19/08/2014	Trigger level reached - CO2 1.5% v/v & CH4 1	Other location (GA8 & 12)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
08/09/2014	Trigger level reached - CO2 1.5% v/v & CH4 1	Other location (GA3 & GA12)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
23/07/2014	Trigger level reached - 5.5mAOD	Other location (LMW31, 32, 33, 5, 6, & 9)	1. Minor	No Uncontrolled release	Other (add details	Leachate balance v	Normal activities	EPA	Recurring	Further Monitoring	Consult results	Ongoing	Ongoing	High
23/06/2014	Breach of ELV - Dust - 350mg/m2/day	Other location (D4)	1. Minor	Air	Other (add details	Meteorological / H	Normal activities	EPA	New	Further Monitoring / R	Grass Seeding	Complete	23/07/2014	Medium
23/07/2014	Trigger level reached - 10mg/l Ammoniacal n	Other location (SWV1)	1. Minor	Water - Rogerstown Estua	Other (add details	Surface Water Con	Normal activities	EPA & ERFB	Recurring	Further Monitoring	Specified Engir	Ongoing	Ongoing	High
08/10/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA3, 4, 12 & 13)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
12/11/2014	Trigger level reached - CO2 1.5% v/v & CH4 1	Other location (GA3, 8)	1. Minor	Air	Other (add details	Meteorological / A	Normal activities	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
04/12/2014	Trigger level reached - CO2 1.5% v/v	Other location (GA3, 12)	1. Minor	Air	Other (add details	Meteorological /	Abstraction Rates	EPA	Recurring	Further Monitoring	Consult operat	Ongoing	Ongoing	High
08/10/2014	Trigger level reached - 5.5mAOD	Other location (LMW30, 31, 32, 33, 5, 6 & 0)	1. Minor	No Uncontrolled release	Other (add details	Leachate balance v	Normal activities	EPA	Recurring	Further Monitoring	Consult results	Ongoing	Ongoing	High
13/11/2014	Trigger level reached - Ammoniacal nitrogen	Other location (OF1 & OF2)	1. Minor	Water - Rogerstown Estua	Other (add details	Surface Water Con	Normal activities	EPA & ERFB	New	Further Monitoring	Review Leacha	Complete	Jan-15	Medium
08/10/2014	Trigger level reached - Ammoniacal nitrogen	Other location (SWV1)	1. Minor	Water - Rogerstown Estua	Other (add details	Surface Water Con	Normal activities	EPA & ERFB	Recurring	Further Monitoring	Specified Engir	Ongoing	Ongoing	High

Total number of incidents current year	20
Total number of incidents previous year	15
% reduction/ increase	33%

WASTE SUMMARY Lic No: W0009-03 Year 2014

SECTION A-PRTR ON SITE WASTE TREATMENT AND WASTE TRANSFERS TAB- TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES PRTR facility logon dropdown list click to see options

SECTION B- WASTE ACCEPTED ONTO SITE-TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES

			Additional Information
1	Were any wastes accepted onto your site for recovery or disposal or treatment prior to recovery or disposal within the boundaries of your facility ?; (waste generated within your boundaries is to be captured through PRTR reporting) If yes please enter details in table 1 below	Yes	Soil & Stone EWC 17 05 04 and C&D 17-01-07
2	Did your site have any rejected consignments of waste in the current reporting year? If yes please give a brief explanation in the additional information	Yes	Some C&D material brought to site was unsuitable for use in Haul Roads
3	Was waste accepted onto your site that was generated outside the Republic of Ireland? If yes please state the quantity in tonnes in additional information	No	

Table 1 Details of waste accepted onto your site for recovery, disposal or treatment (do not include wastes generated at your site, as these will have been reported in your PRTR workbook)

Licenced annual tonnage limit for your site (total tonnes/annum)	EWC code (European Waste Catalogue EWC codes)	Source of waste accepted	Description of waste accepted **Please enter an accurate and detailed description - which applies to relevant EWC code** (European Waste Catalogue EWC codes)	Quantity of waste accepted in current reporting year (tonnes)	Quantity of waste accepted in previous reporting year (tonnes)	Reduction/ Increase over previous year +/ - %	Reason for reduction/ increase from previous reporting year	Packaging Content (%)- only applies if the waste has a packaging component	Disposal/Recovery or treatment operation carried out at your site and the description of this operation	Quantity of waste remaining on site at the end of reporting year (tonnes)	Comments -
63,000	*17 05 04*	*17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)*	*Soil and Stone*	*88370.25*	*116613.5*	24% Reduction	*Facility Closed for Soil during Q1*		*R5-Recycling/reclamation or oth*	*0*	*Material used in Recovery and Capping layer and therefore exceeds limit*
63,000	*17 01 07*	*17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)*	*mixtures of concrete bricks tiles and ceramics*	*15594.75*	*19696.5*	21% Reduction	*Facility Closed for C&D during Q1*		*R5-Recycling/reclamation or oth*	*0*	*Material used in Recovery and Capping layer and therefore exceeds limit*

SECTION C-TO BE COMPLETED BY ALL WASTE FACILITIES (waste transfer stations, Composters, Material recovery facilities etc) EXCEPT LANDFILL SITES

4	Is all waste processing infrastructure as required by your licence and approved by the Agency in place? If no please list waste processing infrastructure required onsite	N/A	
5	Is all waste storage infrastructure as required by your licence and approved by the Agency in place? If no please list waste storage infrastructure required on site	N/A	
6	Does your facility have relevant nuisance controls in place?	Yes	
7	Do you have an odour management system in place for your facility? If no why?	N/A	
8	Do you maintain a sludge register on site?	N/A	

SECTION D-TO BE COMPLETED BY LANDFILL SITES ONLY

Table 2 Waste type and tonnage-landfill only

Waste types permitted for disposal	Authorised/licenced annual intake for disposal (tpa)	Actual intake for disposal in reporting year (tpa)	Remaining licensed capacity at end of reporting year (m3)	Comments
Household	152,500	0		Landfill Closed May 2012 for this waste
Commercial	200,000	0	N/A	Landfill Closed May 2012 for this waste
Sewage Sludge	30,000	0		Landfill Closed May 2012 for this waste
Construction and Demolition	63,000	103,965	N/A	Material used in Recovery and capping only

Table 3 General information-Landfill only

Area ID	Date landfilling commenced	Date landfilling ceased	Currently landfilling	Private or Public Operated	Inert or non-hazardous	Predicted date to cease landfilling	Licence permits asbestos	Is there a separate cell for asbestos?	Accepted asbestos in reporting year	Total disposal area occupied by waste (ha)	Lined disposal area occupied by waste (ha)	Unlined area (ha)	Comments on liner type
N/A	Apr-04	May-12	No	Public	Non Hazardous	May-12	No	No	No	100000	100000	0	Original Landfill Cells 1-6 and Piggybacking -HDPE

WASTE SUMMARY	Lic No:	W0009-03	Year	2014

Table 4 Environmental monitoring-landfill only

Landfill Manual-Monitoring Standards

Was meterological monitoring in compliance with Landfill Directive (LD) standard in reporting year +	Was leachate monitored in compliance with LD standard in reporting year	Was Landfill Gas monitored in compliance with LD standard in reporting year	Was SW monitored in compliance with LD standard in reporting year	Have GW trigger levels been established	Were emission limit values agreed with the Agency (ELVs)	Was topography of the site surveyed in reporting year	Has the statement under S53(A)(5) of WMA been submitted in reporting year	Comments
Yes	Yes	Yes	Yes	No	Yes	Yes	No	Landfill Gas Surface Water and Groundwater Results presented within text of AER

.+ please refer to Landfill Manual linked above for relevant Landfill Directive monitoring standards

S53(A) Comment within text of AER

Table 5 Capping-Landfill only

Area uncapped* ha	Area with temporary cap ha	Area with final cap to LD Standard m2 ha, a	Area capped other	Area with waste that should be permanently capped to date under licence	What materials are used in the cap	Comments
1.5 approx	1.5 approx	45.25 approx	n/a	n/a	Geosynthetic clay liner / HDPE	Will Be Completed during 2015

*please note this includes daily cover area

Table 6 Leachate-Landfill only

9	Is leachate from your site treated in a Waste Water Treatment Plant?	Yes
10	Is leachate released to surface water? If yes please complete leachate mass load information below	No

Volume of leachate in reporting year(m3)	Leachate (BOD) mass load (kg/annum)	Leachate (COD) mass load (kg/annum)	Leachate (NH4) mass load (kg/annum)	Leachate (Chloride) mass load kg/annum	Leachate treatment on-site	Specify type of leachate treatment	Comments
25101	169	6137	5770	9262	None - Tankered to Ringsend WWTP or pumped to portr		Calculated from monthly average

Please ensure that all information reported in the landfill gas section is consistent with the Landfill Gas Survey submitted in conjunction with PRTR returns

Table 7 Landfill Gas-Landfill only

Gas Captured&Treated by LFG System m3	Power generated (MW / KWh)	Used on-site or to national grid	Was surface emissions monitoring performed during the reporting year?	Comments
15,458,020	13687.77	National Grid	Yes	Recommendations Implemented

APPENDIX 3

PRTR

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.18

REFERENCE YEAR	2014

1. FACILITY IDENTIFICATION

Parent Company Name	Fingal County Council
Facility Name	Balleally Landfill
PRTR Identification Number	W0009
Licence Number	W0009-03

Classes of Activity

No.	**class_name**
-	Refer to PRTR class activities below

Address 1	Balleally
Address 2	Lusk
Address 3	
Address 4	
	Dublin
Country	Ireland
Coordinates of Location	-7.26329 55.2542
River Basin District	IEEA
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Mortimer Loftus
AER Returns Contact Email Address	mortimer.loftus@fingal.ie
AER Returns Contact Position	Acting executive scientist
AER Returns Contact Telephone Number	018905000
AER Returns Contact Mobile Phone Number	0876872025
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	4
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
5(d)	Landfills
50.1	General

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

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

4. WASTE IMPORTED/ACCEPTED ONTO SITE

Guidance on waste imported/accepted onto site

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	

This question is only applicable if you are an IPPC or Quarry site

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs					
POLLUTANT		METHOD						QUANTITY		
			Method Used		flare 1	BY01 (ENGINE)	BY02 (ENGINE)			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	Emission Point 3	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	C	OTH	total generated minus total captured	0.0	0.0	0.0	2051632.0	0.0	2051632.0
03	Carbon dioxide (CO2)	M	OTH	Testo 350/454 mxl flue gas analyser	3788.0	465994.0	719949.0	1189731.0	0.0	0.0
02	Carbon monoxide (CO)	M	OTH	Testo 350/454 mxl flue gas analyser	2.03	8527.0	12753.0	21282.03	0.0	0.0
08	Nitrogen oxides (NOx/NO2)	M	OTH	Testo 350/454 mxl flue gas analyser	3.44	2616.0	3723.0	6342.44	0.0	0.0
07	Non-methane volatile organic compounds (NMVOC)	M	OTH	Portable signal 3030 OM FID calibrated with Propane in accordance with EN1526:2002 non methane hydrocarbon cutter	0.0	12.95	10.06	23.01	0.0	0.0
11	Sulphur oxides (SOx/SO2)	M	OTH	Testo 350/454 mxl flue gas analyser	2.25	2374.0	3556.0	5932.25	0.0	0.0

* 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			QUANTITY			
			Method Used					
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
					0.0	0.0	0.0	0.0

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

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

RELEASES TO AIR					Please enter all quantities in this section in KGs				
POLLUTANT		METHOD						QUANTITY	
			Method Used		BY01 (ENGINE)	BY02(ENGINE)			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
244	**Total Particulates**	M	OTH	TCR Tecora isokinetic particulate sample with QMA high termperature filter in accordance with ISO9096:2003	10.64	351.54	362.18	0.0	0.0

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

Additional Data Requested from Landfill operators

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: Balleally Landfill

Please enter summary data on the quantities of methane flared and / or utilised			Method Used			
	T (Total) kg/Year	**M/C/E**	**Method Code**	**Designation or Description**	**Facility Total Capacity m3 per hour**	
Total estimated methane generation (as per site model)	6284774.0	E	OTH	Gas sim model	N/A	
Methane flared	7158.0	M	OTH	flare data	2500.0	(Total Flaring Capacity)
Methane utilised in engine/s	4225984.0	M	OTH	engine data	1865.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	2051632.0	C	OTH	calculated	N/A	

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Please enter all quantities on this sheet in Tonnes

0

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	19 07 03	No	7715.0	landfill leachate other than those mentioned in 19 07 02	D9	M	Weighed	Offsite in Ireland	Ringsend Wastewater Treatment Plant,-,Dublin,-,Ireland	Ringsend Wastewater Treatment Plant,-,Dublin,-,Ireland		
Within the Country	19 07 03	No	17386.0	landfill leachate other than those mentioned in 19 07 02	D9	M	Weighed	Offsite in Ireland	Portrane Wastewater treatment plant,.	Portrane ,Donabate ,Dublin,,,Ireland		

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

Link to previous years waste data
Link to previous years waste summary data & percentage change
Link to Waste Guidance