

2013 ANNUAL ENVIRONMENTAL REPORT

Bord na Móna Resource Recovery
Drehid Waste Management Facility



Drehid Waste Management Facility

License Registration Number:	W0201-03
Licensee:	Bord Na Móna Plc Drehid Waste Management Facility
Location of Activity:	Killinagh Upper, Carbury, Co. Kildare
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1. INTRODUCTION

The following document is the 2013 Annual Environmental Report (AER) for Bord Na Móna Waste Management Facility at Drehid, County Kildare. It covers the period from 1st January 2013 to 31st December 2013. The Integrated Waste Management Facility comprises of a non-hazardous, fully engineered landfill, a composting plant and a landfill gas utilisation plant.

The Environmental Protection Agency (Agency) granted the Waste Licence (W0201-01) in August 2005 and construction works began in August 2006. Phase 1 was completed in 2007 and the facility began accepting waste in February 2008. In April 2009, the Agency issued a revised Waste Licence (W0201-02), which increased the annual waste acceptance limit to 350,000 tonnes for a seven year period or until the end of 2015, whichever is sooner. In March 2010, the Agency issued a revised Waste Licence (W0201-03), which was primarily aimed at ensuring that landfill operations are undertaken in compliance with all relevant requirements of the Landfill Directive (1999/31/EC) including the need to divert biodegradable municipal waste from landfill. In December of 2013, the Agency issued a notice of amendment of the licence, to bring it into conformity with the European Union (Industrial Emissions) Regulations 2013. The content of this AER is based on Schedule F of the licence.

2. SITE DESCRIPTION

2.1 Site Location and Layout

The facility is located approximately 9km south of Enfield in County Kildare and is within the confines of the Bord Na Móna owned Timahoe bog. The site encompasses a total area of approximately 179 hectares (ha), which includes the site access road, clay borrow area, landfill footprint, sand and gravel borrow area and associated infrastructure.

The landfill, when complete, will encompass approximately 39 ha. It will be developed in eight distinct phases, each having duration of between 2 to 3 years. Waste deposition will only take place in the active phase and each phase will occupy between 2.2ha and 2.6 ha in area. The initial construction phase was completed in January 2008 and waste acceptance began in February of that year.

Subsequent phases will involve the construction of additional engineered cells, the provision of additional leachate storage capacity required, landfill gas management infrastructure including an utilisation plant that will generate electricity, and the development of a composting facility.

2.2 Waste Types & Volumes

Only non-hazardous, solid, residual waste is accepted for disposal. Hazardous and liquid wastes are not accepted. All wastes deliveries are subject to Waste Acceptance Procedures that have been approved by the Agency, as specified in Condition 8.1.10 of the Licence.

A maximum of 360,000 tonnes of non hazardous municipal, commercial and industrial waste can be accepted annually for disposal until the 1st December 2015, after which the annual intake reduces to a maximum of 120,000 tonnes per annum. A maximum of 25,000 tonnes of compostable wastes can be accepted in the composting facility. An unlimited amount of suitable inert waste can be accepted for use in on-site engineering.

2.3 Waste Activities

The facility is a full containment landfill, which is designed to accept treated waste for final disposal. The waste activities carried out during the reporting period were: -

- Disposal (landfilling) of wastes,
- Recovery of wastes for removal off-site for recycling,
- Recovery of certain inert wastes on-site for use in engineering works and as daily cover, and
- Capture and utilisation of the landfill gas for the generation of electricity for supply to the national grid.

The Compost Plant comprises a waste reception area, 12 composting tunnels and 1 hygenisation unit, a screening area and product storage bay.

2.4 Waste Received, Recovered & Consigned

The types and quantities of wastes received, disposed, recovered and consigned from the facility in 2013 are shown in Tables 2.1 and 2.2. The consigned wastes are those generated by daily operations and which were not suitable for recovery or disposal on-site.

Table 2.1 Waste Received 2013

Waste Type to Landfill Facility	Description	Tonnes
Municipal	Mixed Commercial and Domestic	301,141
	Composted Waste	2,500
Industrial	Non Hazardous Industrial Solid Waste	3,521
Sludges & Filter cake	Non Hazardous Municipal & Industrial	2738
Construction & Demolition	Mixed Non Hazardous Waste	1,000
Total Disposed at Landfill Facility		310,900
Construction & Demolition	Soil and Fines Material ^{Note 1}	89,638
	Shredded Timber	14,131
	Mix of C&D concrete, brick, tiles and ceramic	42,737
Municipal & Agricultural	Composted Waste	13,191
Total Recovered at Landfill Facility		159,697

Note 1:

In addition to the quantities recovered onsite during 2013, 27,885 tonnes of soil deemed suitable for engineering purposes remains in storage at the end of 2013 for later use.

Waste Type to Composting Facility	Description	Tonnes
Biodegradable kitchen and canteen waste	Brown Bin Biowaste	19,238
Waste from mechanical treatment of waste & woodchip amendment material.	Oversize Amendment Material ^{Note 2}	2,210
Total Accepted to Composting Facility		21,447

Note 2: 1,820 tonnes of finished compost was consigned for use in agriculture in-line with from the composting facility. This figure is not included in outgoing waste figures as the finished compost is considered a product and not a waste. In addition, 2,223 tonnes of compost product is/will be used for recovery as a landscaping material onsite.

Table 2.2 Waste Consigned 2013

Waste Description	Tonnes
Fuel Oil and Diesel	5
Landfill Leachate & Foul Water	51,978
Paper & cardboard	1
Metals	16
Total Consigned:	52,000

2.5 Landfill Capacity

The most recent topographic survey of landfill cell footprint is included in Appendix 1. The total capacity of the entire landfill facility is estimated to be 5,040,000m³. The current constructed void space at the end of 2013 is calculated to be approximately 250,000m³. 2,071,270m³ of void space has been used up to the end of 2013. The projected closure date of the facility is 2028.

2.6 Method of Deposition of Wastes

2.6.1 Waste Acceptance

Waste accepted for disposal is residual waste from household, commercial and industrial sources. All of the waste collectors that deliver the waste have systems in place whereby the recyclable fraction is either collected separately, or else separation is carried out at their recovery/transfer facilities.

Wastes are delivered in Heavy Goods Vehicles (HGV) provided with the appropriate covers to prevent loss of load. Each vehicle first proceeds to the incoming weighbridge where it is weighed. The weighbridge operator and/or the Facility Manager may, at their own discretion, request the load to be tipped in the Waste Inspection Area to ensure it is suitable for acceptance.

The vehicles then proceed to the active fill area, where it is deposited under the direction of a banksman. Each landfill cell is divided into a number of 'grids', which are used to identify the areas where waste is deposited. Each load is assigned the relevant grid number. The vehicles weigh out at the outgoing weighbridge and receive an individual weighbridge docket before exiting the site.

2.6.2 *Working Face*

Waste is deposited close to and above the advancing tipping face. Site operatives inspect the deposited waste for items that are not acceptable under the Licence, such as tyres, gas bottles, batteries etc. These are removed and stored in appropriate areas for later removal from the site.

The deposited waste is then spread in shallow layers on the inclined surface and compacted. Steel-wheeled compactors operate on the gradient of the more shallow face, pushing and compacting thin layers of waste. Each day's waste input forms a 'block', which is compacted and covered. The following day a new 'block' of waste is deposited adjacent to this block. This allows areas that have been filled and are to be left for a period, to be progressively restored over the site life, minimising the areas of active waste deposition.

3. ENVIRONMENTAL MONITORING

Bord na Móna implements a comprehensive environmental monitoring programme to assess the significance of emissions from site activities. The programme, which is specified in Schedule C of the Licence, includes groundwater, surface water, leachate, landfill gas, noise, dust and particulate monitoring and a biological assessment of the Cushaling River. The monitoring locations are shown in Appendix 2.

The monitoring results, including the full laboratory reports, were submitted to the Agency at quarterly intervals in the reporting period. This section presents a summary of the monitoring, with summary graphs showing trends included in Appendix 3.

3.1 Groundwater Monitoring

3.1.1 Baseline Groundwater Conditions

The site is underlain by the Carboniferous Kildare Shelf, which comprises the Waulsortian, Boston Hill and Allenwood limestone Formations. The majority of the site is underlain by Waulsortian limestone, which comprises pale grey, fine grained limestone. The subsoil comprises basin peat deposits, which are underlain by thick (10 to 35m) undifferentiated till.

The groundwater monitoring carried out before the start of the construction works established naturally occurring elevated ammonia, iron, manganese and electrical conductivity levels. The hydrochemistry in the upgradient and downgradient wells is similar and characteristic of the limestone rocks in confined conditions.

3.1.2 Groundwater Quality

Groundwater quality was monitored at monthly intervals. The sampling was carried out in accordance with internationally accepted techniques and control procedures and the analyses were completed by a laboratory using standard and internationally accepted procedures. Samples obtained were analysed for the monthly and annual parameters specified in Schedule C.3 of the Licence.

The results were generally consistent with those obtained previously, with naturally high levels of ammonia detected at all monitoring wells. The monitoring programme confirmed that the site activities are not impacting on groundwater quality.

3.2 Surface Water Monitoring

The site is located in the catchment of the River Barrow and a divide between the Barrow and the River Boyne catchments is more than 500m to the north. There is an extensive man made drainage network across the Bord na Móna landholding and the site is divided into a number of discrete areas, referred to as 'peat fields' formed by the surface water drains.

The drains connect to a central culvert, which flows towards the south, where it passes through settlement ponds, before discharging to the Cushaling River. Rainfall on roof and paved areas of the landfill discharge to the underground culvert and are directed to the settlement ponds prior to discharge to the Cushaling. The Cushaling supports salmonid and cyprinid fish, the latter being dominant in the slower flowing upper reaches.

The Cushaling is a tributary of River Figile, which is a sub-catchment of the River Barrow. Biological monitoring in the Figile downstream of the site before site development works began established that the surface water quality had been impacted by the peat extraction activities. The Barrow is a candidate Special Area of Conservation (cSAC), and a nationally important river for fisheries.

3.2.1 Visual Assessment

Bord na Móna carries out weekly inspections of the surface water drainage system. The inspections completed in the reporting period did not identify the presence of any impact on the drainage system associated with site activities.

3.2.2 Chemical Assessment

The surface water monitoring was conducted weekly at the three locations specified in the Licence. The sampling was carried out in accordance with internationally accepted techniques and control procedures, the analyses were completed by a laboratory using standard and internationally accepted procedures.

The ELV for ammonia was frequently exceeded at SW6 (Settlement Lagoon). Ammonia levels have been historically elevated at SW6 due to the pumping of groundwater, which contains naturally occurring high ammonia, into the settlement lagoons to regulate their levels. The ELV for Suspended Solids was exceeded on 4 occasions at SW-6 during the reporting period.

BOD, Ammonia and Total Suspended Solids (TSS) levels were compared to their relevant emission limit values (ELV's). The ELV for ammonia was exceeded at SW6 (Settlement Lagoon). The likely cause is due to the pumping of groundwater, which contains naturally occurring high ammonia, into the settlement lagoons to regulate their levels.

3.3 Leachate

Leachate samples are analysed quarterly for BOD and COD at one monitoring location (LT1). The samples are also analysed annually for the range of parameters specified in the Licence. The results are typical of those of a leachate from a relatively young municipal solid waste landfill and are detailed in Appendix 2.

3.4 Landfill Gas (LFG)

The gas monitoring programme includes monthly measurements of methane, carbon dioxide, oxygen and atmospheric pressure in wells located both outside and inside the waste body. The wells are at 50m intervals around the landfill footprint and two per hectare within the cells. The locations of the 17 external wells (LG-01 – LG-17), which were agreed in advance with the Agency, are shown on the monitoring location map included in Appendix 2.

3.4.1 Outside the Waste Body

The concentration limit for methane (1% v/v) was not exceeded in any of the monitoring wells in 2013.

3.4.2 Inside the Waste Body

Methane levels varied from 9.1 to 69.5 %v/v, carbon dioxide levels varied from 1.2 to 53.5 %v/v, while oxygen levels varied from 0 to 20.3 %v/v. These levels are typical of those in an operational non-hazardous waste landfill

3.5 Fugitive Emissions Survey

During 2013, Bord na Móna commissioned Odour Monitoring Ireland to perform a series of landfill gas surveys of the Drehid landfill in order to ascertain any likely sources of landfill gas surface emissions from the operating landfill. Three rounds of surveys were undertaken by Odour Monitoring Ireland on 4th February, 17th May and 25th November 2013 respectively.

During each of the surface emission surveys, the following tasks were performed onsite:

- Surface emissions monitoring in accordance with AG6 requirements;
- Identification of the key mechanisms that may lead to the release of landfill gas surface emissions from the site;
- Identify, geographically on a site map, the locations of landfill gas surface emissions in order to perform remediation of the identified surface emissions areas (if any).

3.6 Noise Survey

Noise monitoring is carried out annually at five monitoring locations (N2, N3, N4, N5 and noise sensitive location N1) in accordance with International Standards Organisation 1996: Acoustics-description and Measurement of Environmental Noise (Parts 1, 2 and 3).

Noise monitoring undertaken in 2013 included both daytime and night time monitoring. The noise sensitive location (NSL) recorded daytime LAeq levels of 37-39 dB(A) and night-time LAeq levels of 31-35 dB(A), all of which are within their respective licence limits.

Tonal noise was not detected at any of the boundary locations or at the NSL during any of the daytime or night-time monitoring events.

The daytime site boundary LAeq levels ranged from 40-45 dB(A) at N3 to 53-56dB(A) at N4. The elevated noise level at N4 was attributed to event noise such as waste trucks/cars entering and existing the waste management facility in close proximity to the noise meter.

The monitoring results confirmed that the noise emissions from the Drehid facility are in compliance with conditions of licence W0201-03. See monitoring location map in Appendix 2.

3.7 Dust Monitoring

Dust deposition is monitored monthly at five monitoring locations (D1, D2, D5, D6 and D8) as shown on the monitoring location map in Appendix 2. All of the monitoring results (with the exception of three results at D6) were less than the deposition limit set in the licence (350 mg/m²/day). As mentioned, two elevated readings were recorded at D6, an internal site monitoring location in August (1,082) and in September (584); these readings were attributed to the associated traffic movement past the dust gauge location along with ongoing construction works.

3.8 Meteorological Monitoring

Average rainfall, temperature, humidity and wind speed and direction for the monitoring period were obtained from the Meteorological Station at Casement Aerodrome, which is located approximately 40 km from the facility, is presented in Table 3.1.

Table 3.1 Meteorological Data: Casement Aerodrome – 2013

Rainfall	
Total Annual (2013)	688.5mm
Maximum monthly (December)	104.7mm
Minimum monthly (November)	21.2mm
Temperature	
Mean (2013)	9.6°C
Mean Maximum (July)	17.8°C
Mean Minimum (March)	3.1°C
Wind	
Prevailing direction	South West
Prevailing sector	South West

Total rainfall in millimetres for Casement

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2013	69.5	45.2	63.3	47.5	52.8	43.2	42.7	62.9	35.1	100.4	21.2	104.7	688.5
2012	63.2	19.8	27.5	94.7	64	178.5	102.7	74.9	89.6	84.2	79.8	46.8	925.7
2011	34.1	76.2	15	30	51.5	65.1	53.3	51.6	76.3	165.9	54.8	53	726.8
mean	63.8	48.5	50.7	51.9	59.1	62.5	54.2	72.3	60.3	81.6	73.7	75.7	754.3

Mean temperature in degrees Celsius for Casement

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2013	5.1	4.3	3.1	6.9	10	13.5	17.8	15.9	13.2	11.8	6.2	6.8	9.6
2012	6	6.6	8.5	6.6	10.2	13.1	14.3	15.6	11.9	8.5	6.1	5.2	9.4
2011	3.6	7	6.3	10.9	11.4	12.4	14.1	13.6	14	11.7	9.9	5.7	10.1
mean	5.1	5.1	6.8	8.2	10.9	13.6	15.7	15.4	13.3	10.3	7.2	5.4	9.8

3.9 Biological Monitoring

The annual biological assessment of the Cushaling River was carried out by ANUA Environmental in accordance with Condition 8.11 of the Licence on 5th of September 2013.

Sampling was undertaken at one monitoring location downstream of the facility. As the river rises on-site there is no upstream sampling location. The assessment used the EPA Q-rating system for the evaluation of rivers and streams. Benthic macro-invertebrates were sampled qualitatively using kick-sampling and the results indicated that the Q value to be Q3-4, which is slightly polluted.

The results reflect the findings of the previous assessment undertaken on 19th September 2012 and that of the 2008 assessment, which was carried out prior to waste acceptance. The assessment indicates that the facility is not impacting upon the Cushaling River.

4. SITE DEVELOPMENT WORKS

4.1 Tank, Pipeline and Bund Testing

An inspection and integrity testing of the bunds at the facility was carried out by Fehily Timoney and Co in 2011; consequently, testing was not required for the reporting period.

4.2 Summary of Resource & Energy Consumption

Table 4.1 presents an estimate of the resources used on-site in 2013. Bord Na Móna completed an Energy Efficiency Audit of the facility in compliance with Conditions 7.1 and 7.2 of the Licence in January 2009. The audit was carried out in accordance with the Agency's "Guidance Note on Energy Efficiency Auditing" (2003). The Audit report recommended the development of a documented energy policy statement, as this is considered fundamental to the successful implementation of any management system as it provides the framework for the introduction and maintenance of energy efficiency and conservation measures in the day to day operation of the facility.

During 2013, Bord Na Móna commissioned the installation of a 5MW landfill gas utilisation plant at the facility. This plant was commissioned in November 2013 and converts landfill gas into electricity for export to the national grid. Not only does the plant produce electricity, but it also serves to reduce the facility's carbon footprint whilst ensuring the safe capture and destruction of landfill gas. Typically, the flaring of landfill gas contributes to greenhouse gas emissions; however, the landfill gas prevents this occurrence.

Table 4.1 Resources Used On-Site

Resources	Quantities
Diesel (green)	502,641 litres
Kerosene	3,400 litres
Electricity	2,215,595 kWh

4.3 Site Developments

Phase 7 construction began in 2013 with the completion of 2 cells before year end. The Compost Facility construction was completed in 2012 after which it underwent a commissioning and validation phase; the compost facility was operational during 2013 and accepted biodegradable waste for treatment.

Landfill Gas Utilisation infrastructure was installed in 2013 which consisted of 4 No. landfill gas engines, 2 No flares gas blower station, Grid connection and substation. Commissioning began in October.

Preparations began for the final capping of the landfill which will begin in 2014. The capping works scheduled for 2014 will necessitate the sourcing of significant quantities of suitably inert soils. Where possible, every effort will be made to reuse soils and to avoid unnecessary exploitation of virgin soils.

4.4 Stability Assessment

The Drehid Facility is currently within Phase 7 of construction works, which as per other phases are subject to a stringent Construction Quality Assurance (CQA) programme. This programme ensures the side slopes of the retaining bunds are stable. The method of waste placement, where the active waste face is confined to a height of 2.5 metres after compaction, a width of 25 metres and a slope no greater than 1 in 3 ensures that the risk of slope failure is negligible.

5. EMISSIONS

5.1 Landfill Gas

The volume of landfill gas generated at the facility during the reporting period was estimated using predictive gas generation model GasSim Version 1.54. The model input data were site specific values, i.e. size of the site, operational period, quantity and type of waste.

The model estimates that approximately 3,504m³ / hour of landfill gas is produced, which equates to a 2013 total for methane production of 10,171,905kg. The total landfill gas flared from the site was calculated to be 8,899,057kg.

In addition, 862,465kg of methane was utilised to generate green electricity onsite.

5.2 Surface Water

Rainfall from the landfill cap and hard stand areas of the landfill discharges firstly into a regulated settlement lagoon, the outlet of which (SW-6) is continuously monitored. The discharge then flows to the extensive manmade drainage network across the Bord na Móna landholding formed by the surface water drains between areas referred to as "Peat fields". The drain connects to a central culvert, which flows towards the south, where it passes through settlement ponds, before discharging to the Cushing River.

5.3 Leachate

The tonnage of leachate and foul water taken offsite in 2013 was 51,978 tonnes. The leachate was directed off site for treatment at Kildare County Council's Waste Water Treatment Plant in Leixlip, County Kildare or to licensed/permitted facilities operated by Rilta Environmental Limited and Enva.

6. NUISANCE CONTROL

Bord na Móna is committed to operating in the best possible manner, using the best available techniques to minimise impacts to the environment and local residential neighbours. The potential sources of nuisance at the facility are odour, vermin, birds, flies, mud, dust and litter.

6.1 Odour

In addition to the gas extraction and flaring system, good operational practices on-site are the main controls to avoid odour nuisances. The handling, depositing and covering of waste at the facility is carried out in accordance with the Agency's Landfill Manual "Landfill Operational Practices". In addition, Bord na Móna have developed a site specific "Odour Management Plan".

The waste delivery trucks are unloaded at the working face and the waste is compacted within 3 to 4 minutes. The level areas of the working face are covered on a continuous basis during the day. The slope of the working face is covered completely with artificial cover sheets at the end of each working day, which can easily be removed again the following day prior to commencement of operations.

6.2 Pest Control

The methods used for vermin control are as detailed in the EMS, which is ISO 14001 accredited. These control measures have found to be successful.

Bord na Móna employs bird control specialists. The aim is to create an association of danger, so that birds choose not to fly around the area where bird control is active. To date, these measures have proven to be successful.

6.3 Dust & Litter

Bord na Móna has prepared a Dust and Litter Control Plan, a copy of which is included in Appendix 4.

Dust and mud control measures were implemented at the start of the construction phase of the site and continued into the operational phase. These measures include the use of a wheelwash, road sweeper and a water bowser to dampen access roads and stockpiles during periods of dry weather. To date these measures have proven to be successful.

Litter is controlled by fencing which was installed around the landfill footprint as specified in the Licence. Portable litter fencing is also used at the working face, which can be moved to various points around the working face depending on the wind direction. As part of operational controls all litter is collected at the end of the working day and litter has not been an issue at the facility.

7. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

7.1 Incidents

There were 38 incidents on-site during the reporting period. The majority (36) related to exceedances of the ammonia limit of 0.5mg/l NH₃ set in the Licence at SW-6. Four (4) related to exceedances of both the suspended solids and ammonia limits at SW6. One (1) incident related to a spillage outside the entrance to Drehid Waste Management Facility from an incoming waste delivery. One (1) incident related to a marginal exceedance in the level of leachate within an active cell (i.e. 1.1 metres versus 1.0 metres specified in the licence).

Naturally occurring ammonia in groundwaters is perhaps the most challenging aspect of managing surface waters at Drehid. The ammonia levels recorded at SW6 are not a result of waste activities, but are caused by the influence of elevated ammonia concentrations within the shallow groundwater due to the reducing properties of the peat environment.

Nonetheless, Bord na Móna are actively seeking to reduce ammonia levels in surface waters as in evidence from the measures outlined above, and, more importantly from the monitoring results provided. There is a significant reduction in ammonia levels from phase 6 at the northern end of site (i.e. where groundwater is abstracted from drainage blankets), throughout the surface water collection and treatment system. During 2013, Bord na Móna implemented the following control measures to reduce the level of naturally occurring ammonia in surface waters leaving the site:

1. Two (2) aeration pumps were installed at the north end of each lagoon to increase the dissolved oxygen levels within the lagoons and create a suitable environment for biological activity for degradation of ammonia before discharge. In the presence of sufficient oxygen, nitrification will readily occur; to aid this process, nitrifying bacteria was introduced into the lagoons to support biological activity and to reduce ammonia levels.
2. Bord na Mona have allowed and encouraged the growth of suitable plant species to the rear of the attenuation lagoons which behaves as a polishing filter for the discharge from the lagoons. The ICW has demonstrated very positive results, with significant ammonia reduction in evidence between the inlet and the outlet of the ICW
3. Bord na Mona planted the swale with appropriate emergent wetland vegetation (e.g. *Typha latifolia* - Bullrush; *Iris pseudacorus* - Flag Iris) to the west and south side of the landfill. Furthermore, stone weirs were installed that involved the placement of stone in the swale at a slope, thus facilitating the riffing of water across the swale. The riffle process breaks up the water surface to enhance the oxygen content. It is recognised (for rivers and streams particularly) that an effective pool and riffle system can be quite effective in aerating the water and in driving-off ammonia in the process.

7.2 Register of Complaints

Bord na Móna maintains a register of complaints in compliance with Condition 11.4. Details of all complaints received during the reporting period and the action taken by Bord na Móna are available at the facility. A total of 28 complaints were received in the reporting period relating to odour (23no.), flies (2no.), litter (1no.), vehicle movements (1no.), and visual (1no.). All of the complaints were addressed by facility staff.

8. ENVIRONMENTAL MANAGEMENT SYSTEM

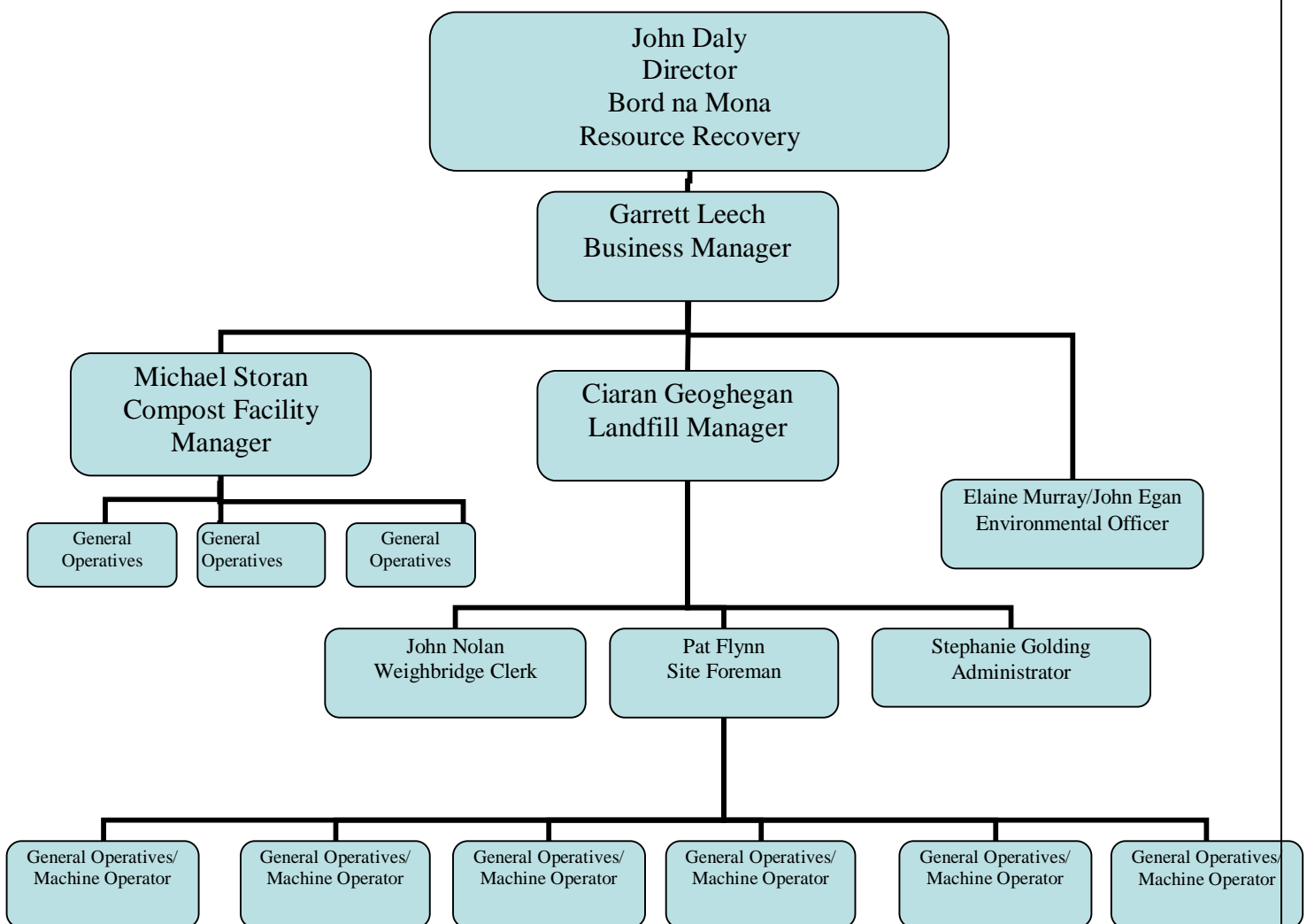
8.1 Management Structure

The Management Structure as required by Condition 2.2.2.1 of the licence was submitted to the Agency on 26th May 2006, as part of the EMS. An amended version is included below.

8.1.1 Site Management Structure

The day to day management of the facility and supervision of waste activities are the responsibility of the Environmental Manager, Landfill Manager, Facility Supervisor/Foreman and the General Operatives. The site organisational chart for 2013 is shown below.

8.1.2 Staff Training



Staff training is carried out in accordance with the Environmental Management System (EMS) training procedures for the facility which is included in Appendix 5.

8.2 EMP

In compliance with Condition 2.2.1 an Environmental Management System (EMS) has been documented and implemented at the Facility. As part of the EMS an Environmental Management Programme (EMP) was developed.

8.2.1 Schedule of Objectives 2013

Table 8.1 describes the implementation of the objectives and targets in the reporting period.

8.2.2 Schedule of Objectives 2014

Bord Na Móna has set a schedule of targets and objectives for 2014. These are presented in Table 8.2.

8.3 Communications Programme

The Communications Programme required by Condition 2.4.1 Licence, was established three months before the start of waste activities and has been submitted to the Agency.

Table 8.1 Progress Report on Schedule of Objectives and Targets for 2013

Ref No	Objective	Target	Timescale	Responsible Person	Status
1	Completion of Construction Strategy	Construction of further engineered landfill cells along with associated infrastructure in line with the phased construction management plan. (Phases 4-8)	Ongoing	CG	Ongoing
2	Waste Minimisation ongoing target (2020)	Re-use where possible materials used on site.	Ongoing	CG	Ongoing
		Minimise import of materials from unrecoverable sources.	Ongoing	Team	Ongoing
3	Upkeep of Environmental Management System	Maintain EMS to ISO 14001 standard/certification	Ongoing	Team	Ongoing
		Implement ISO 16001 at the Facility	Dec-13	Team	Ongoing
		Roll out of the Environmental Management System at the Composting Plant. Integrated Management System (IMS) to be rolled-out in 2014.	Aug-13	SG/EM/MS	50% complete
		Roll out of ISO 9001	Dec-13	Team	Complete
		Maintain Policy for control of the office waste	Ongoing	SG/EM/CG	Ongoing
4	Raise awareness with contractors of Environmental Policy of the site	Contractors Induction	Ongoing	JN	Ongoing
5	Environmental Monitoring	Noise, Weekly surface water, Annual & Monthly Groundwater, Monthly Landfill Gas and Dust Monitoring	Ongoing	Technical Services/EM	Ongoing
6	Environmental Training and Awareness	Continue internal training programme and assessment of training needs for all operational staff during 2013	Ongoing	CG	Ongoing
7	Review effectiveness of Nuisance Control measures	For: Litter dust, birds and vermin	Ongoing	Team	Ongoing
8	Meteorological monitoring	Maintain log of Meteorological data- <i>Continuous</i>	Ongoing	CG	Ongoing
9	Landfill Gas Utilisation	Installation of landfill gas engines on-site for power generation.	Dec-13	CG/GL	Complete
10	BMW conversion rate (in line with EU Landfill Directive)	<i>Condition 8.1.2 of Licence W0201-03</i> 'From 1st July 2010 to 30th June 2013 inclusive, a maximum of 47% by weight of municipal solid waste (MSW) accepted for disposal to the body of the landfill shall comprise biodegradable municipal waste (BMW), measured on a calendar year basis or, in 2010 and 2013, part thereof'	Ongoing	EM	Complete

11	Review outstanding Energy Efficiency Audit recommendations	Assess recommendations and introduce where possible. Investigate and implement possible measures for the reduction of diesel consumption. Fixed cable to power generator at landfill installed in 2013.	Ongoing	CG	Complete
12	Review Aspects Register to reflect Composting Plant and Construction Phases 4-8.	Assess risks associated with new construction phases	Ongoing	Team	Ongoing
13	Intermediate Liner Installation	Installation of an intermediate liner to minimise leachate generation and fugitive emissions from the landfill. Installed where appropriate during 2013.	Ongoing	CG	Ongoing
14	Environmental Compliance	Review licence conditions outlined within W0201-03	Ongoing	EM/CG	Ongoing
15	Environmental Auditing	Carrying out audits of customers to establish environmental compliance	Ongoing	EM/CG/SG	Ongoing

Table 8.2 Schedule of Objectives and Targets for 2014

Ref No	Objective	Target	Timescale	Responsible Person	Status
1	Completion of Construction Strategy	Construction of further engineered landfill cells along with associated infrastructure in line with the phased construction management plan (Phase 7).	Dec-14	CG	
2	Final Capping	Progress installation of final capping (Phases 1&3).	Ongoing	CG	
3	Leachate	Bord na Mona to continue to investigate and to trial proven technologies to treat landfill leachate onsite.	Dec-14	CG/JE	
4	Surface Water	Continue to evaluate the effectiveness of ICW (integrated constructed wetland) and other proven treatment solutions to reduce naturally occurring ammonia levels in surface waters.	Dec-14	CG/JE	
5	Waste Minimisation	Re-use where possible materials used on site.	Ongoing	CG	
6	Upkeep of Environmental Management System	Maintain EMS to ISO 14001 standard/certification.	Ongoing	Team	
		Implement Energy standard at the Facility.	Dec-14	Team	
		Integrated Management System (IMS) to be rolled-out in 2014.	Dec-14	SG/JE/MS	
		Maintain Policy for control of waste generated onsite.	Ongoing	SG/JE/PF	
7	Environmental Training and Awareness	Continue internal training programme and assessment of training needs for all operational staff during 2013	Ongoing	CG	
8	BMW conversion rate (in line with EU Landfill Directive)	<i>Condition 8.1.2 of Licence W0201-03</i> 'From 1st July 2010 to 30th June 2013 inclusive, a maximum of 47% by weight of municipal solid waste (MSW) accepted for disposal to the body of the landfill shall comprise biodegradable municipal waste (BMW), measured on a calendar year basis or, in 2010 and 2013, part thereof'	Ongoing	CG/JE	
9	Reduction in energy consumption and use of fossil fuels	Assess recommendations and introduce where possible. Establish monitoring matrices for the consumption of diesel, kerosene etc.	Ongoing	CG/JE	
10	Odour Management Plan	Maintain Odour Management Plan, including installation of intermediate liner and gas infrastructure as required.	Ongoing	CG/PF	
11	Environmental Compliance	Review licence conditions outlined within W0201-03	Jul-14	CG/JE	
12	Landfill Gas Cleaning	Continue to trial solutions and refine design to cleanse LFG.	Dec-14	CG/GL	
13	Environmental Auditing	Carrying out audits of customers to establish environmental compliance	Ongoing	CG/JE/SG	

9. OTHER REPORTS

9.1 Financial Provision

An Environmental Liability Risk Assessment (ELRA) was submitted as part of 2007 AER. A revised ELRA and a Closure, Restoration and Aftercare Management Plan (CRAMP) were recently submitted to the Agency. The ELRA outlines:

- Estimated costs that may arise from accidents and unplanned events;
- Estimated costs associated with the closure, restoration and aftercare measures, including unexpected closure.

Condition 12.2.2 of W0201-03 requires the preparation of a fully costed Environmental Liabilities Risk Assessment (ELRA), together with a proposal for Financial Provision arising from the carrying out the activities to which the licence relates. The assessment shall include those liabilities and costs identified in Condition 10 for the execution of the Closure Restoration and Aftercare Management Plan (CRAMP).

Condition 10 of W0201-03 requires the provision of a closure, restoration and aftercare management plan (CRAMP) by the licensee *“to make provision for the proper closure of the activity ensuring protection of the environment”*.

9.2 Contributions to Community fund

A contribution of €394,254 is to be made to the community fund for 2013 in compliance with planning condition 17 of PL09.212059.

9.3 Statement on Costs of Landfill

The costs in the setting up, operation of, and provision of financial security and closure and after-care for a period of at least 30 years, are covered by the price charged for the disposal of waste at the facility.

9.4 European Pollutant Release and Transfer Register

Under the European Pollutant Release and Transfer Register Regulation (EC) No. 166/2006 Bord na Móna are required to submit information annually to the Agency. A copy of the information submitted to the Agency via the web-based data reporting system is included in Appendix 6.

9.5 Waste Recovery Report

National and regional policy on waste management is based on the Department of the Environment and Local Government's policy statement of September 1998, "Changing Our Ways", in which the Government affirmed its commitment to the EU hierarchy of waste management. In order of preference this is: -

- Prevention,
- Minimisation,
- Reuse,
- Recycling,
- Energy Recovery,
- Disposal.

The policy statement was based on, and is supported by, EU legislation (Landfill Directive 99/339/EC) that requires the diversion of organic wastes, including green waste, from landfill to alternative waste treatment facilities.

In 2013, Bord na Móna accepted 161,920 tonnes of material suitable for recovery, which was used in on-site engineering works at the facility.

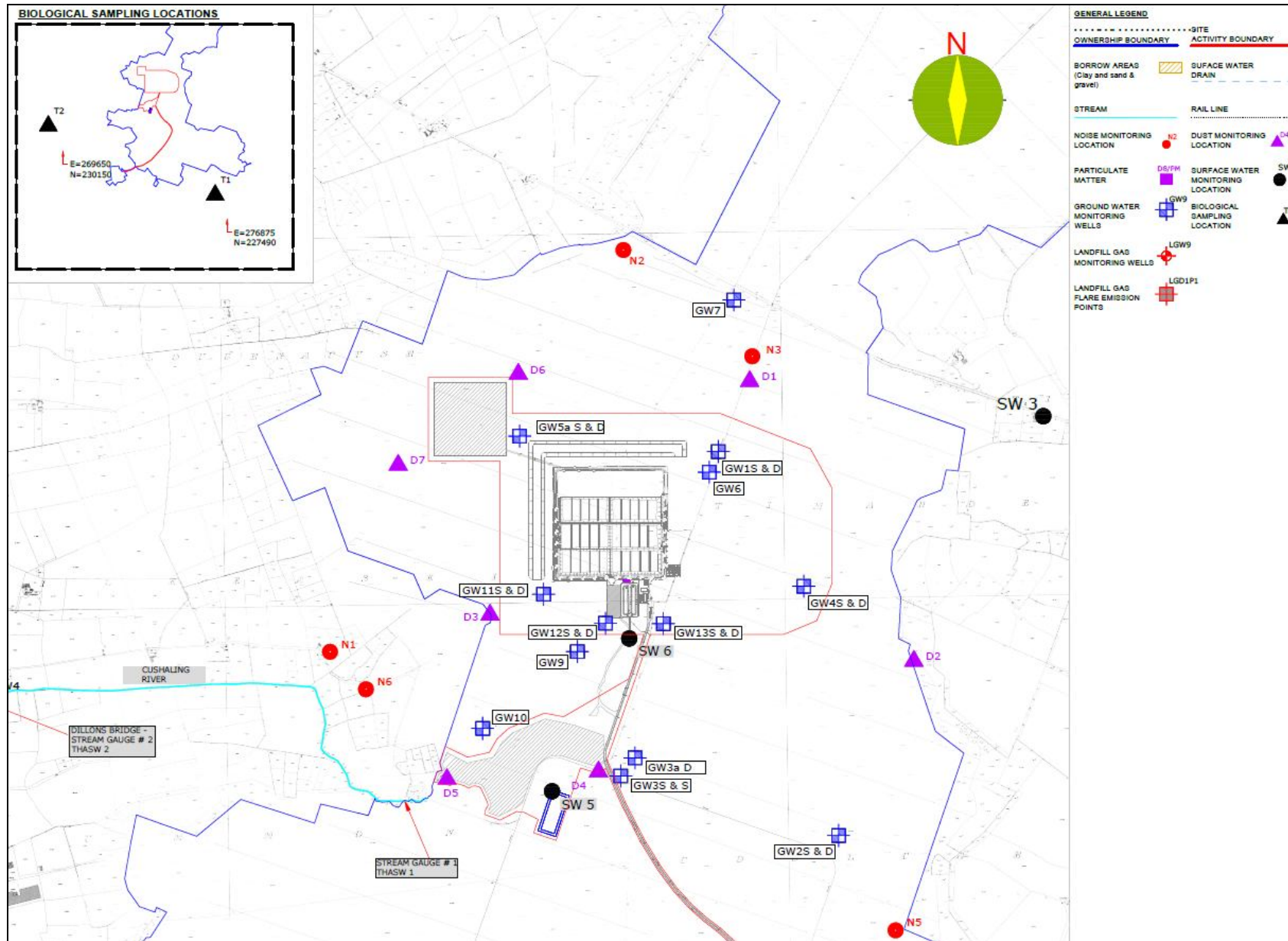
APPENDIX 1

Topographic Survey

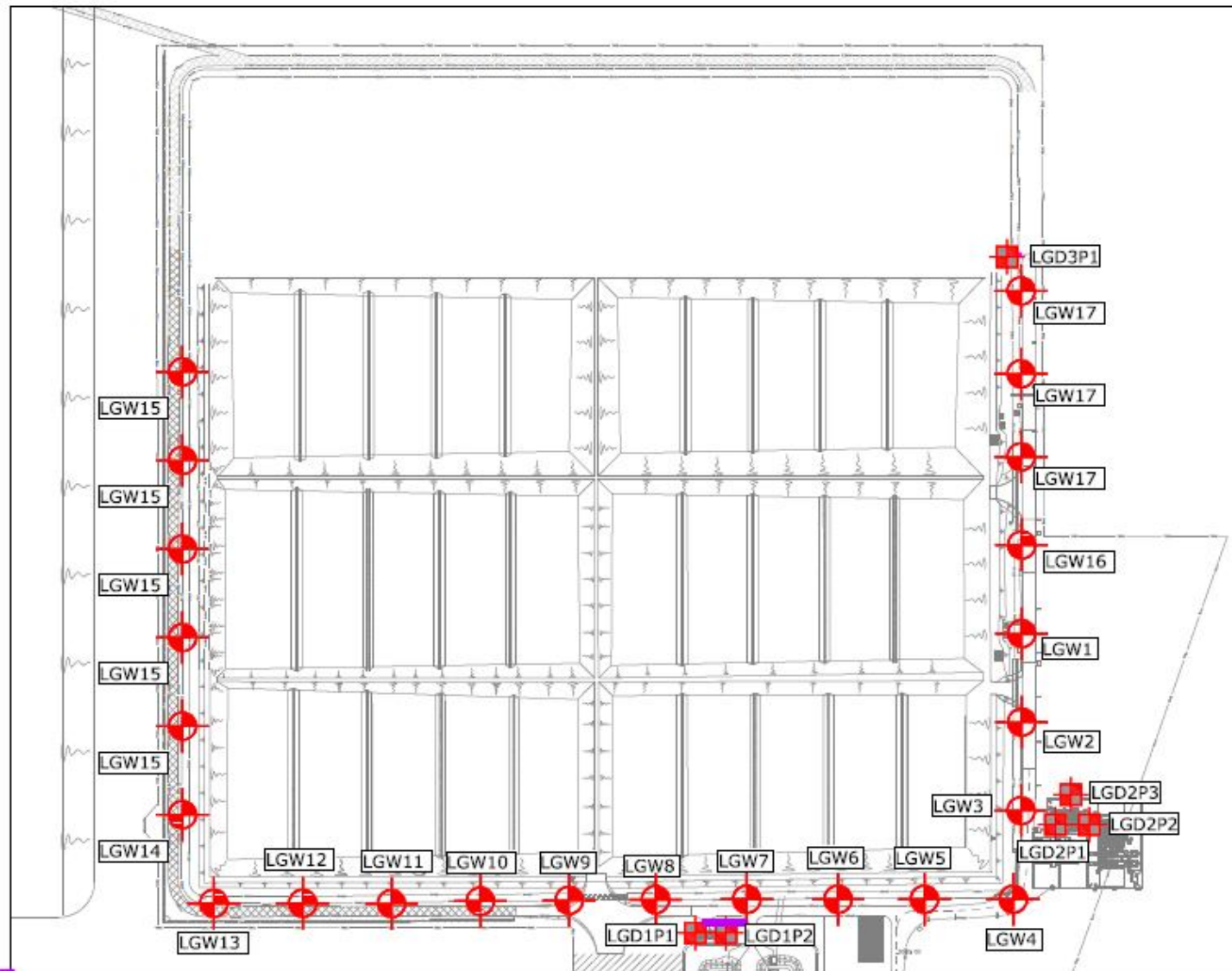


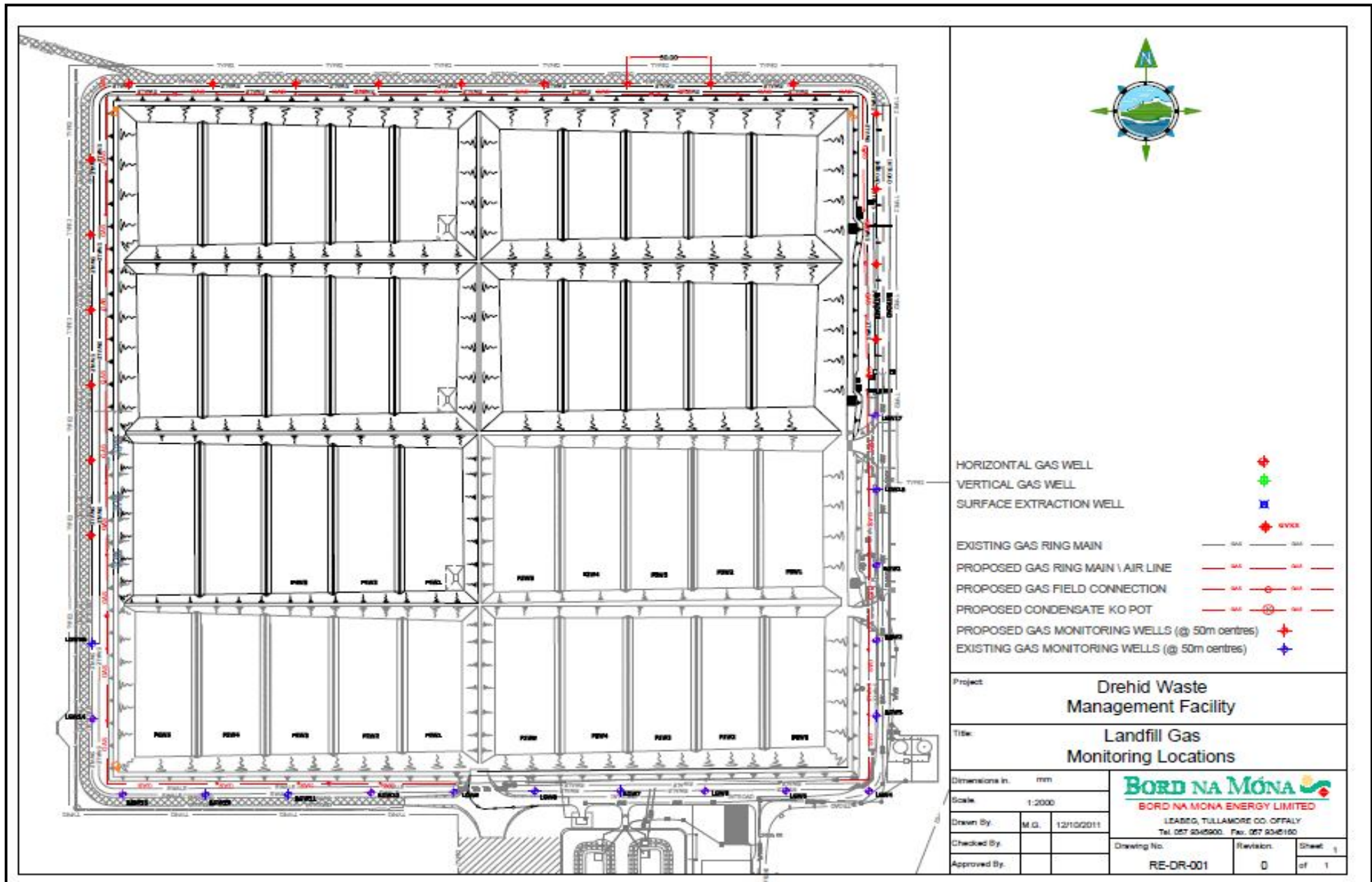
APPENDIX 2

Monitoring Location Maps / Monitoring Results



Landfill Gas Monitoring Wells





Groundwater Results

Field Readings													
GW-1S Grid Coordinates (ITM) 0674707 0732319	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Total Depth	m	9.43	9.43	9.43	9.43	9.43	9.43	9.38	9.38	9.43	9.43	9.27	9.27
Surface Water Level	m	1.55	1.49	2.1	1.81	2.07	2.33	2.38	2.41	2.33	2.22	1.94	2.2
Temperature	°C										10.4	10.6	10.5
pH	ph units											6.68	
Conductivity	µS/cm										801	1264	697
Colour	-	Cloudy	Clear	Cloudy Gray	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Pale Yellow	Clear	Clear	Cloudy/ Gray
Silt content	-	Some SS	Few SS	Some S.S	No SS	Few SS	Few S.S	No SS	No Solids	No SS		No SS	Some SS
Odour	-	Foul Odour	Foul Odour	No Odour	Slight Odour	Slight Odour	No Odour	Slight Odour	Faint Odour	No Odour		Slight chemical odour	None
Recharge Rate	-	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant
Chemical Scan													
pH	ph units	7	7	6.9	7.1	7	7	6.9	6.9	7.1	7.2	7	7
Conductivity	µS/cm	1000	980	1195	837	914	885	1143	1028	805	838	1119	995
Ammonia as NH3	mg/l	6.5	6.7	6.2	6.9	7.1	7.2	6.7	6.6	6.8	7.3	6.5	6.9
Ammonium	mg/l	8.4	8.6	8.0	8.9	9.1	9.3	8.6	8.5	8.7	9.4	8.4	8.9
Chloride	mg/l	13	13	13	13	14	13	14	13	14	13	13	14
Sulphate	mg/l									<0.5			
Nitrate as NO3	mg/l									<0.2			
Nitrite as NO2	mg/l									<0.02			
Orthophosphate	mg/l									<0.01			
Total Phosphours	mg/l									<0.05			
Metal Scan													
Calcium - dissolved	mg/l									131			
Magnesium - dissolved	mg/l									12			
Potassium - dissolved	mg/l									1.4			

Sodium - dissolved	mg/l										12		
Grid Coordinates (ITM) 0674707 0732319	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Iron - dissolved	mg/l									<0.1			
Boron - dissolved	ug/l									12			
Arsenic - dissolved	ug/l									8			
Barium - dissolved	ug/l									315			
Cadmium - dissolved	ug/l									<2			
Cobalt - dissolved	ug/l									<2			
Chromium - dissolved	ug/l									<2			
Copper - dissolved	ug/l									<2			
Mercury - dissolved	ug/l									<1			
Manganese - dissolved	ug/l									229			
Beryllium - dissolved	ug/l									<2			
Nickel - dissolved	ug/l									17			
Lead - dissolved	ug/l									<2			
Antimony - dissolved	ug/l									<2			
Selenium - dissolved	ug/l									<2			
Silver - dissolved	ug/l									<2			
Aluminium - dissolved	ug/l									3			
Tin - dissolved	ug/l									<2			
Zinc - dissolved	ug/l									<2			
Chromium - total	ug/l									<2			
Organics Scan													
USEPA	ug/l									<1			
Dichloromethane (ug/l)	ug/l									<3			
Bacterial Scan													
Faecal Coli	MPN/100mls									0			
Total Coliforms	MPN/100mls									6			

Field Redings												
GW-1D Grid Coordinates (ITM) 0674701 0732320	Jan-13	Feb-13	Mar-12	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Total Depth	24.17	24.17	24.17	24.17	24.17	24.17	24.17	24.25	24.17	24.14	24.14	24.14
Surface Water Level	1.77	1.67	1.91	1.61	2.43	2.79	1.61	2.9	2.35	2.52	2.27	2.49
Temperature										11	10.5	10.4
pH											7.62	
Conductivity										648	711	697
Colour	Cloudy/Light Brown	Light Brown	Cloudy, Some S.S,	Cloudy/Grey	Light Brown	Cloudy/grey	Cloudy	pale yellow/Cloudy	Cloudy/grey		Clear	Cloudy
Silt content	Few SS	Some SS		Few SS	Few SS	Few S.S	No SS	No SS	Some SS		Some SS	Some SS
Odour	Slight Odour	Slight Odour	Slight odour	No Odour	Slight Odour	No Odour	Slight Odour	No Odour	Slight Odour		None	None
Recharge Rate	Instant	Instant	Instant	Instant	Instant	Instant	5sec/cm	5sec/cm	Instant	Instant	Instant	Instant
Chemical Scan												
pH	7.3	7.2	7.3	7.3	7.3	7.2	7.2	7.3	7.3	7.3	7.2	7.2
Conductivity	693	697	721	699	681	692	694	698	674	679	679	683
Ammonia as NH3	5.4	5.4	5.7	1.9	5.7	6	5.9	5.6	5.2	5.3	5	5
Ammonium	6.9	6.9	7.3	2.4	7.3	7.7	7.6	7.2	6.7	6.8	6.4	6.4
Chloride	9.8	10	10	10	10	11	10	10	12	9.8	9.9	9.6
Sulphate									<0.5			
Nitrate as NO3									<0.2			
Nitrite as NO2									<0.02			
Orthophosphate									<0.01			
Total Phosphours									<0.05			
Metal Scan												
Calcium - dissolved									110			
GW-1D continued Grid Coordinates (ITM)	Jan-13	Feb-13	Mar-12	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13

0674701 0732320													
Magnesium - dissolved										4.1			
Potassium - dissolved										0.94			
Sodium - dissolved										8.5			
Iron - dissolved										<0.1			
Boron - dissolved										7			
Arsenic - dissolved										5			
Barium - dissolved										329			
Cadmium - dissolved										<2			
Cobalt - dissolved										3			
Chromium - dissolved										22			
Copper - dissolved										4			
Mercury - dissolved										<1			
Manganese - dissolved										144			
Beryllium - dissolved										<2			
Nickel - dissolved										23			
Lead - dissolved										<2			
Antimony - dissolved										<2			
Selenium - dissolved										<2			
Silver - dissolved										<2			
Aluminium - dissolved										2			
Tin - dissolved										<2			
Zinc - dissolved										<2			
Chromium - total										22			
Organics Scan													
USEPA										<1			
Dichloromethane (ug/l)										<3			
Bacterial Scan													
Faecal Coli										0			
Total Coliforms										3			

Field Redings													
GW-2D Grid Coordinates (ITM) 0675239 0730667	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Total Depth	m	27.78	27.96		27.96		27.96		28.06				
Surface Water Level	m	2.5	2.89		2.63	-	3.36	-	3.9	-	4.08		3.33
Temperature	°C										11.9		10.3
Conductivity	µS/cm										701		788
Colour	-	Cloudy	Cloudy/Light Brown		Cloudy /Light Brown	-	Cloudy	-	Cloudy	-			Cloudy
Silt content	-	Few SS	Few SS		Few SS		Few SS		Few SS				Few SS
Odour	-	No Odour	No odour		No odour		No odour		No Odour				None
Recharge Rate	-	2cm/5sec	2cm/4sec		1cm/10sec	-	2cm/4sec	-	5cm/2sec	-	4cm/5sec		1cm/2sec
Chemical Scan													
pH	ph units	7.6	7.3		7.3		7.2		7.3		7.5		7.3
Conductivity	µS/cm	762	755		768		753		706		747		770
Ammonia as NH3	mg/l	1.9	1.9		5.1		1.9		1.8		1.8		1.9
Ammonium	mg/l	2.4	2.4		6.6		2.4		2.3		2.3		2.4
Chloride	mg/l	15	16		16		15		15		15		15

Field Redings													
GW-3S Grid Coordinates (ITM) 0674288 0730934	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Total Depth	m	12.25	12.25	12.25	12.25	12.25	12.25	12.25	12	12.25		12.03	
Surface Water Level	m	2.42	2.39	2.51	2.56	2.62	2.73	2.91	3.06	3.16	2.9	2.58	2.66
Temperature	°C			9.1							11.6	10.9	10.7
pH	ph units											6.81	
Conductivity	µS/cm										834	772	827
Colour	-	Brown	Light Brown		Cloudy	Pale yellow	Cloudy	Cloudy	Pale yellow	Cloudy/Gray		Pale Yellow	light brown
Silt content	-	High SS	Some SS		Some SS	Few SS	Some SS	Some SS	V.Few SS	Some SS		Some SS	few SS
Odour	-	Foul odour	no odour		Foul odour	Foul odour	Foul odour	No odour	Foul odour	Foul odour		Faint odour	Foul odour
Recharge Rate	-	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant
Chemical Scan													
pH	ph units	7.2	7	7	7	7	7	7	7	7	7	7.1	7
Conductivity	µS/cm	888	866	813	859	835	855	873	873.5	891	902	784	821
Ammonia as NH3	mg/l	2.6	3.1	2.8	4.4	4.5	4.8	4.8	4.9	4.8	5	3.8	4.3
Ammonium	mg/l	3.3	4.0	3.6	5.7	5.8	6.2	6.2	6.3	6.2	6.4	4.9	5.5
Chloride	mg/l	14	16	14	14	13	15	14	13	15	13	13	13
Sulphate	mg/l									<0.5			
Nitrate as NO3	mg/l									<0.2			
Nitrite as NO2	mg/l									<0.02			
Orthophosphate	mg/l									<0.01			
Total Phosphours	mg/l									0.08			
Metal Scan													
Calcium - dissolved	mg/l									142			
Magnesium - dissolved	mg/l									11			
Potassium - dissolved	mg/l									1.7			

GW-3S continued Grid Coordinates (ITM) 0674288 0730934	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Boron - dissolved	ug/l									19			
Arsenic - dissolved	ug/l									2			
Barium - dissolved	ug/l									<2			
Cadmium - dissolved	ug/l									<2			
Cobalt - dissolved	ug/l									<2			
Chromium - dissolved	ug/l									<2			
Copper - dissolved	ug/l									<2			
Mercury - dissolved	ug/l									<1			
Manganese - dissolved	ug/l									189			
Beryllium - dissolved	ug/l									<2			
Nickel - dissolved	ug/l									5			
Lead - dissolved	ug/l									<2			
Antimony - dissolved	ug/l									<2			
Selenium - dissolved	ug/l									<2			
Silver - dissolved	ug/l									<2			
Aluminium - dissolved	ug/l									<2			
Tin - dissolved	ug/l									<2			
Zinc - dissolved	ug/l									<2			
Chromium - total	ug/l									<2			
Organics Scan													
USEPA	ug/l									<1			
Dichloromethane	ug/l									<3			
Bacterial Scan													
Faecal Coli	MPN/100mls									<1			
Total Coliforms	MPN/100mls									<1			

Field Redings						
GW-4S Grid Coordinates (ITM) 0675093 0731767	Units	Mar-13	May-13	Jul-13	Sep-13	Nov-13
Total Depth	m	12.34	12.34	12.34	12.34	12.35
Surface Water Level	m	1.15	1.28	1.38	1.28	1.23
Temperature	°C	10.6				10.2
pH	ph units					6.95
Conductivity	µS/cm					823
Colour	-	Grey/Brown	Light brown	Light brown	Cloudy/gray	Brown
Silt content	-	Some SS	Some SS	Some SS	Few SS	Slit present
Odour	-	No Odour	No Odour	No Odour	No odour	None
Recharge Rate	-	Instant	Instant	Instant		Instant
Chemical Scan						
pH	ph units	7.5	7.5	7.6	7.5	7.8
Conductivity	µS/cm	793	775.5	776	803	807
Ammonia as NH3	mg/l	6.9	6.9	7.4	5.2	6.8
Ammonium	mg/l	8.9	8.9	9.5	6.7	8.7
Chloride	mg/l	13	13	13	15	22
Sulphate	mg/l				<0.5	
Nitrate as NO3	mg/l				<0.2	
Nitrite as NO2	mg/l				<0.02	
Orthophosphate	mg/l				0.01	
Total Phosphours	mg/l				<0.05	
Metal Scan						
Calcium - dissolved	mg/l				122	
Magnesium - dissolved	mg/l				18	
Potassium - dissolved	mg/l				2	

GW-4S continued Grid Coordinates (ITM) 0675093 0731767	Units	Mar-13	May-13	Jul-13	Sep-13	Nov-13
Boron - dissolved	ug/l				16	
Arsenic - dissolved	ug/l				2	
Barium - dissolved	ug/l				172	
Cadmium - dissolved	ug/l				<2	
Cobalt - dissolved	ug/l				<2	
Chromium - dissolved	ug/l				<2	
Copper - dissolved	ug/l				<2	
Mercury - dissolved	ug/l				<1	
Manganese - dissolved	ug/l				370	
Beryllium - dissolved	ug/l				<2	
Nickel - dissolved	ug/l				4	
Lead - dissolved	ug/l				<2	
Antimony - dissolved	ug/l				<2	
Selenium - dissolved	ug/l				<2	
Silver - dissolved	ug/l				<2	
Aluminium - dissolved	ug/l				<2	
Tin - dissolved	ug/l				<2	
Zinc - dissolved	ug/l				<2	
Chromium - total	ug/l				9	
Organics Scan						
USEPA	ug/l				<1	
Dichloromethane	ug/l				<3	
Bacterial Scan						
Faecal Coli	MPN/100mls				<1	
Total Coliforms	MPN/100mls				<1	

Field Redings						
GW-4D Grid Coordinates (ITM) 0675087 0731783	Units	Mar-13	May-13	Jul-13	Sep-13	Nov-13
Total Depth	m	27.9	27.9	27.9	27.9	28.16
Surface Water Level	m	1.46	1.67	1.38	1.51	1.59
Temperature	°C	10.6				10.8
pH	ph units					7.06
Conductivity	µS/cm					501
Colour	-	Cloudy	Clear	Clear	Cloudy	Cloudy
Silt content	-	Few SS	Few SS	Few SS	No SS	V.Few ss
Odour	-	No Odour	No Odour	No Odour	No Odour	None
Recharge Rate	-	Instant	Instant	Instant	Instant	Instant
Chemical Scan						
pH	ph units	7.8	7.7	7.7	7.7	7.7
Conductivity	µS/cm	490	475	480	888	520
Ammonia as NH3	mg/l	0.07	0.6	0.62	0.28	0.66
Ammonium	mg/l	0.1	0.8	0.8	0.4	0.8
Chloride	mg/l	11	11	11	13	21
Sulphate	mg/l				<0.5	
Nitrate as NO3	mg/l				<0.2	
Nitrite as NO2	mg/l				<0.02	
Orthophosphate	mg/l				0.01	
Total Phosphours	mg/l				<0.05	
Metal Scan						
Calcium - dissolved	mg/l				61	
Magnesium - dissolved	mg/l				14	
Potassium - dissolved	mg/l				1.1	
Sodium - dissolved	mg/l				13	

GW-4D continued Grid Coordinates (ITM) 0675087 0731783	Units	Mar-13	May-13	Jul-13	Sep-13	Nov-13
Iron - dissolved	mg/l				<0.1	
Boron - dissolved	ug/l				14	
Arsenic - dissolved	ug/l				8	
Barium - dissolved	ug/l				86	
Cadmium - dissolved	ug/l				<2	
Cobalt - dissolved	ug/l				<2	
Chromium - dissolved	ug/l				<2	
Copper - dissolved	ug/l				<2	
Mercury - dissolved	ug/l				<1	
Manganese - dissolved	ug/l				90	
Beryllium - dissolved	ug/l				<2	
Nickel - dissolved	ug/l				3	
Lead - dissolved	ug/l				<2	
Antimony - dissolved	ug/l				<2	
Selenium - dissolved	ug/l				<2	
Silver - dissolved	ug/l				<2	
Aluminium - dissolved	ug/l				<2	
Tin - dissolved	ug/l				<2	
Zinc - dissolved	ug/l				<2	
Chromium - total	ug/l				<2	
Organics Scan						
USEPA	ug/l				<1	
Dichloromethane	ug/l				<3	
Bacterial Scan						
Faecal Coli	MPN/100mls				12	
Total Coliforms	MPN/100mls				12	

Field Readings													
GW-6 Grid Coordinates (ITM) 0674699 0732305	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Temperature	°C										16		
Conductivity	µS/cm										476		
Colour	-	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Silt content	-	no S.S	no S.S	no S.S	no S.S	no S.S	no S.S	no S.S	no S.S	no S.S	no SS	no SS	no SS
Odour	-	no odour	no odour	no odour	no odour	no odour	no odour	no odour	no odour	no odour	None	None	None
Recharge Rate	-	-	-	-		Instant			Instant				
Chemical Scan													
pH	ph units	7.6	7.6	7.6	7.6	6.1	7.6	7.6	7.7	7.6	7.6	7.6	7.6
Conductivity	µS/cm	513	512	515	512	506	514	514	507	514	505	505	514
Ammonia as NH3	mg/l	6.1	6.1	6.2	5.9	6.1	6.1	6.2	6	6	6	5.9	5.7
Ammonium	mg/l	7.8	7.8	8.0	7.6	7.8	7.8	8.0	7.7	7.7	7.7	7.6	7.3
Chloride	mg/l	11	11	11	12	11	11	11	11	13	11	11	11
Sulphate	mg/l									<0.5			
Nitrate as NO3	mg/l									<0.2			
Nitrite as NO2	mg/l									<0.02			
Orthophosphate	mg/l									0.01			
Total Phosphours	mg/l									<0.05			
Metal Scan													
Calcium - dissolved	mg/l									68			
Magnesium - dissolved	mg/l									9			
Potassium - dissolved	mg/l									1.6			
Sodium - dissolved	mg/l									11			
Iron - dissolved	mg/l									<0.1			
Boron - dissolved	ug/l									12			
Arsenic - dissolved	ug/l									66			
Barium - dissolved	ug/l									123			

GW-6 continued Grid Coordinates (ITM) 0674699 0732305	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Cadmium - dissolved	ug/l									<2			
Cobalt - dissolved	ug/l									8			
Chromium - dissolved	ug/l									<2			
Copper - dissolved	ug/l									<2			
Mercury - dissolved	ug/l									<1			
Manganese - dissolved	ug/l									31			
Beryllium - dissolved	ug/l									<2			
Nickel - dissolved	ug/l									20			
Lead - dissolved	ug/l									<2			
Antimony - dissolved	ug/l									<2			
Selenium - dissolved	ug/l									<2			
Silver - dissolved	ug/l									<2			
Aluminium - dissolved	ug/l									3			
Tin - dissolved	ug/l									<2			
Zinc - dissolved	ug/l									7			
Chromium - total	ug/l									<2			
Organics Scan													
USEPA	ug/l									<1			
Dichloromethane	ug/l									<3			
Bacterial Scan													
Faecal Coli	MPN/100mls									<1			
Total Coliforms	MPN/100mls									<1			

Field Redings													
GW-9 Grid Coordinates (ITM) 0674305 0731531	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Total Depth	m		13.02	13.02	13.02	13.02	13.02	13.02	11.9	13.02		11.77	
Surface Water Level	m		1.42	1.74	1.8	1.93	2	2.1	2.17	2.15	2	1.77	1.66
Temperature	°C										11.9	10.9	10.8
pH	ph units										536	7.38	
Conductivity	µS/cm											508	578
Colour	-		Light Brown	Brown	Cloudy / Grey	Pale yellow	Light brown	Pale Yellow	Pale yellow	Cloudy Pale gray		Cloudy/Pale gray	Light Brown
Silt content	-		Some SS	High SS	High SS	Some SS	Some SS	No Solids	V.Few SS	Few SS		Some SS	Some SS
Odour	-		No Odour	No Odour	Foul Odour	Slight Odour	No Odour	Faint Odour	No odour	Foul Odour		None	Slight
Recharge Rate	-		Instant	instant	Instant	instant	Instant	Instant	instant	Instant		Instant	Instant
Chemical Scan													
pH	ph units	7.5	7.3	7.6	7.4	7.4	7.3	7.5	7.6	7.4	7.5	7.2	7.4
Conductivity	µS/cm	584	604	476	613	588	599	558	535	576	588	492.5	588
Ammonia as NH3	mg/l	1.7	1.6	1.8	1.6	2	2	2	2	1.9	1.9	2.6	2.2
Ammonium	mg/l	2.2	2.1	2.3	2.1	2.6	2.6	2.6	2.6	2.4	2.4	3.3	2.8
Chloride	mg/l	14	14	10	14	15	16	14	14	16	16	11	14
Sulphate	mg/l									0.79			
Nitrate as NO3	mg/l									<0.2			
Nitrite as NO2	mg/l									<0.02			
Orthophosphate	mg/l									0.07			
Total Phosphours	mg/l									0.1			
Metal Scan													
Calcium - dissolved	mg/l									94			
Magnesium - dissolved	mg/l									7.1			

GW-9 continued Grid Coordinates (ITM) 0674305 0731531	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Potassium - dissolved	mg/l									1.1			
Sodium - dissolved	mg/l									14			
Iron - dissolved	mg/l									1.4			
Boron - dissolved	ug/l									12			
Arsenic - dissolved	ug/l									10			
Barium - dissolved	ug/l									156			
Cadmium - dissolved	ug/l									<2			
Cobalt - dissolved	ug/l									<2			
Chromium - dissolved	ug/l									<2			
Copper - dissolved	ug/l									<2			
Mercury - dissolved	ug/l									<1			
Manganese - dissolved	ug/l									225			
Beryllium - dissolved	ug/l									<2			
Nickel - dissolved	ug/l									8			
Lead - dissolved	ug/l									2			
Antimony - dissolved	ug/l									<2			
Selenium - dissolved	ug/l									<2			
Silver - dissolved	ug/l									<2			
Aluminium - dissolved	ug/l									19			
Tin - dissolved	ug/l									<2			
Zinc - dissolved	ug/l									3			
Chromium - total	ug/l									5			
Organics Scan													
USEPA	ug/l									<1			
Dichloromethane	ug/l									<3			
Bacterial Scan													
Faecal Coli	MPN/100mls									<1			
Total Coliforms	MPN/100mls									<1			

Field Redings													
GW-10 Grid Coordinates (ITM) 0673770 0731019	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Total Depth	m	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.03	7.61		7.02	
Surface Water Level	m	2.05	1.89	2.08	2.28	2.35	2.5	262	2.71	2.75		2.16	2.26
Temperature	°C										11.8	11.1	10.6
pH	ph units											7.19	
Conductivity	µS/cm										587	673	673
Colour	-	Brown	Cloudy	light Brown	Cloudy / pale yellow	Pale yellow	Yellow / light Brown	Pale yellow	Pale Yellow	Pale yellow		Pale yellow	Cloudy
Silt content	-	High SS	Few SS	Few SS	Few SS	Some SS	Few SS	Some SS	V.Few SS	Few SS		Some SS	Few SS
Odour	-	No Odour	Slight Odour	No Odour	Slight Odour	Faint Odour	No Odour	Faint Odour	Faint Chemical odour	Faint Odour		Faint Odour	Slight Odour
Recharge Rate	-	Instant	Instant	instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant	Instant
Chemical Scan													
pH	ph units	7.5	7.2	7.4	7.3	7.2	7.2	7.4	7.3	7.2	7.3	7.6	7.3
Conductivity	µS/cm	669	682	663	678	660	661	651	651	650	645	650	665
Ammonia as NH3	mg/l	3.5	4.2	3.8	4.1	4.2	4.2	1.9	4.1	4	4.1	4.2	4.1
Ammonium	mg/l	4.5	5.4	4.9	5.3	5.4	5.4	2.4	5.3	5.1	5.3	5.4	5.3
Chloride	mg/l	9.9	10	10	11	10	10	11	11	12	11	10	10
Sulphate	mg/l									<0.5			
Nitrate as NO3	mg/l									<0.2			
Nitrite as NO2	mg/l									<0.02			
Orthophosphate	mg/l									0.08			
Total Phosphours	mg/l									0.09			
Metal Scan													

GW-10 continued Grid Coordinates (ITM) 0673770 0731019	Units	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Calcium - dissolved	mg/l									104			
Magnesium - dissolved	mg/l									8.9			
Potassium - dissolved	mg/l									0.61			
Sodium - dissolved	mg/l									7.6			
Iron - dissolved	mg/l									2.5			
Boron - dissolved	ug/l									5			
Arsenic - dissolved	ug/l									5			
Barium - dissolved	ug/l									114			
Cadmium - dissolved	ug/l									<2			
Cobalt - dissolved	ug/l									<2			
Chromium - dissolved	ug/l									3			
Copper - dissolved	ug/l									<2			
Mercury - dissolved	ug/l									<1			
Manganese - dissolved	ug/l									184			
Beryllium - dissolved	ug/l									<2			
Nickel - dissolved	ug/l									3			
Lead - dissolved	ug/l									<2			
Antimony - dissolved	ug/l									<2			
Selenium - dissolved	ug/l									<2			
Silver - dissolved	ug/l									<2			
Aluminium - dissolved	ug/l									19			
Tin - dissolved	ug/l									<2			
Zinc - dissolved	ug/l									<2			
Chromium - total	ug/l									8			
Organics Scan													
USEPA	ug/l									<1			
Dichloromethane	ug/l									<3			
Bacterial Scan													
Faecal Coli	MPN/100mls									0			
Total Coliforms	MPN/100mls									85			

Surface Water Results

Surface Water Results

	Quarter 1 of 2013												
SW4	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk12	Wk13
pH Units	7.6	7.7	7.4	7.5	7.4	7.5	7.4	7.6	7.6	7.7	7.6	7.7	7.6
Conductivity (µS/cm)	503	511.5	341	487	466	470	448	490	542	544.5	532	588	338
BOD (mg/l)	<2	<2	<2	-	-	-	-	-	-	-	-	-	-
Chloride(mg/l)	11	11	11	12	14	14	15	14	13	13	13	13	13
COD(mg/l)	79	82	83	-	-	-	-	-	-	-	-	-	-
TSS(mg/l)	<5	10	22	9	11	6	18	6	8	13	9	11	7
NH3(mg/l)	0.24	0.12	0.8	0.24	0.13	0.15	0.12	0.19	0.23	0.24	0.21	0.19	0.33
NH4(mg/l)	0.31	0.15	1.03	0.31	0.17	0.19	0.15	0.24	0.30	0.31	0.27	0.24	0.42
SW5	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk12	Wk13
pH Units	7.4	7.4	7.4	7.2	7.4	7.5	7.3	7.4	7.4	7.5	7.4	7.5	7.7
Conductivity (µS/cm)	305	292.9	446	305	287.9	283	269.4	331	391	422	385.5	409	497
BOD (mg/l)	<2	<2	<2	-	-	-	-	-	-	-	-	-	-
Chloride(mg/l)	10	9.6	10	10	13	13	12	14	13	12	12	13	13
COD(mg/l)	100	109	83	-	-	-	-	-	-	-	-	-	-
TSS(mg/l)	<5	5	115	<5	19	6	20	6	7	6	<5	10	8
NH3(mg/l)	0.52	0.2	0.17	0.36	0.25	0.27	0.19	0.39	0.62	0.66	0.48	0.63	0.16
NH4(mg/l)	0.67	0.26	0.22	0.46	0.32	0.35	0.24	0.50	0.80	0.85	0.62	0.81	0.21
SW6	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk12	Wk13
pH Units	8	7.8	7.9	7.6	8	7.9	7.1	7.8	7.8	7.9	8	8	8.1
Conductivity (µS/cm)	588	571	460	516	426	467	209.4	448	461	490	484	541	567
BOD (mg/l)	<2	<2	<2										
Chloride(mg/l)	19	15	12	17	21	22	11	12	15	14	14	17	18
COD(mg/l)	77	32	37										
TSS(mg/l)	21	12	12	22	65	39	25	12	27	9	12	15	15
NH3(mg/l)	5	3.6	2.3	2.8	1.8	2	0.03	1.7	1.6	1.9	1.6	2.1	2.2
NH4(mg/l)	6.43	4.63	2.96	3.60	2.31	2.57	0.04	2.19	2.06	2.44	2.06	2.70	2.83

	Quarter 2 of 2013												
SW4	Wk14	Wk15	Wk16	Wk17	Wk18	Wk19	Wk20	Wk21	Wk22	Wk23	Wk24	Wk25	Wk26
pH Units	7.7	7.7	7.8	7.6	7.7	7.7	7.8	8	7.8	7.8	7.6	7.7	7.7
Conductivity (µS/cm)	536	543.5	500	465.5	493	521	524	533	508	544	481	512	530
BOD (mg/l)								<2	3			<2	
Chloride(mg/l)	13	14	14	14	12	13	13	13	13	12	12	12	11
COD(mg/l)								48	41			68	
TSS(mg/l)	10	10	11	13	5	6	8	6	<5	6	7	<5	<5
NH3(mg/l)	0.14	0.2	0.15	0.11	0.08	0.08	0.09	0.06	0.07	0.04	0.1	0.04	<0.02
NH4(mg/l)	0.18	0.26	0.19	0.14	0.10	0.10	0.12	0.08	0.09	0.05	0.13	0.05	<0.03
SW5	Wk14	Wk15	Wk16	Wk17	Wk18	Wk19	Wk20	Wk21	Wk22	Wk23	Wk24	Wk25	Wk26
pH Units	7.7	7.6	7.8	7.3	7.6	7.7	7.8	8.1	7.8	7.7	7.7	7.6	7.7
Conductivity (µS/cm)	383	411	370	317	362	405	403	441	402	433	438	389	426
BOD (mg/l)								<2	3			<2	
Chloride(mg/l)	12	13	14	13	12	13	15	15	13	13	12	12	12
COD(mg/l)								58	62			78	
TSS(mg/l)	7	12	15	24	<5	5	<5	<5	5	<5	7	<5	<5
NH3(mg/l)	0.36	0.51	0.38	0.17	0.26	0.32	0.38	0.41	0.28	0.1	0.08	0.22	0.14
NH4(mg/l)	0.46	0.66	0.49	0.22	0.33	0.41	0.49	0.53	0.36	0.13	0.10	0.28	0.18
SW6	Wk14	Wk15	Wk16	Wk17	Wk18	Wk19	Wk20	Wk21	Wk22	Wk23	Wk24	Wk25	Wk26
pH Units	8.1	8.1	8.2	8.2	8.1	8.2	8.2	8.2	8.2	7.7	7.6	7.7	7.8
Conductivity (µS/cm)	579	586	535	522	547	552	543	482	455	532	510	521	545.5
BOD (mg/l)								<2	<2			<2	
Chloride(mg/l)	19	18	18	16	15	16	15	19	16	15	13	13	14
COD(mg/l)								15	12			29	
TSS(mg/l)	15	6	11	26	8	10	5	24	37	<5	8	<5	<5
NH3(mg/l)	2.1	2.1	2	2	2.1	2.1	2.3	1.4	1.3	1.2	1	1.3	1.5
NH4(mg/l)	2.70	2.70	2.57	2.57	2.70	2.70	2.96	1.80	1.67	1.54	1.29	1.67	1.93

Quarter 3 of 2013													
SW4	Wk27	Wk28	Wk29	Wk30	Wk31	Wk32	Wk33	Wk34	Wk35	Wk36	Wk37	Wk38	Wk39
pH Units	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.9	7.9	7.9	7.9	7.7	7.8
Conductivity (µS/cm)	533	552	548	542	507.5	494	502	511	512.5	520	505	492	513
BOD (mg/l)										<2			
Chloride(mg/l)	12	11	11	12	12	11	12	11	10	10	12	13	11
COD(mg/l)										48			
TSS(mg/l)	<5	<5	27	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
NH3(mg/l)	0.02	0.08	0.02	0.04	0.05	0.04	0.06	0.02	0.02	0.04	0.03	0.02	0.03
NH4(mg/l)	0.03	0.10	0.03	0.05	0.06	0.05	0.08	0.03	0.03	0.05	0.04	0.03	0.04
SW5	Wk27	Wk28	Wk29	Wk30	Wk31	Wk32	Wk33	Wk34	Wk35	Wk36	Wk37	Wk38	Wk39
pH Units	7.8	7.8	7.7	7.8	7.8	7.9	7.6	7.9	8	8	8	8	7.6
Conductivity (µS/cm)	454	478	504	496	414	422	430	432	446	456	443	468	465
BOD (mg/l)										2			
Chloride(mg/l)	12	13	14	14	13	12	12	12	12	12	16	15	14
COD(mg/l)										41			
TSS(mg/l)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
NH3(mg/l)	0.09	0.07	0.02	0.06	0.06	0.05	0.07	0.04	0.02	0.02	0.02	0.02	0.1
NH4(mg/l)	0.12	0.09	0.03	0.08	0.08	0.06	0.09	0.05	0.03	0.03	0.03	0.03	0.13
SW6	Wk27	Wk28	Wk29	Wk30	Wk31	Wk32	Wk33	Wk34	Wk35	Wk36	Wk37	Wk38	Wk39
pH Units	7.8	7.6	7.5	7.6	7.5	7.6	7.2	7.7	7.6	7.6			
Conductivity (µS/cm)	540	544	487	415	443	444	429	463	457	474			
BOD (mg/l)										3			
Chloride(mg/l)	13	14	14	14	12	10	11	12	10	21			
COD(mg/l)										43			
TSS(mg/l)	<5	<5	<5	7	5	6	<5	<5	6	<5			
NH3(mg/l)	1.1	0.66	0.13	0.02	0.08	0.02	0.03	0.02	0.02	0.04			
NH4(mg/l)	1.41	0.85	0.17	0.03	0.10	0.03	0.04	0.03	0.03	0.05			

	Quarter 4 of 2013												
SW4	Wk40	Wk41	Wk42	Wk43	Wk44	Wk45	Wk46	Wk47	Wk48	Wk49	Wk50	Wk51	Wk52
pH Units	7.7	7.6	7.6	7.4	7.5	7.5	7.5	7.5	7.6	7.9	7.7		7.2
Conductivity (µS/cm)	523	445.5	416	427	475	492	501	524	532	541.5	538		427
BOD (mg/l)							<2						
Chloride(mg/l)	13	14	13	13	13	12	13	14	13	13	13		26
COD(mg/l)							<10						
TSS(mg/l)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		15
NH3(mg/l)	0.09	0.02	0.06	0.05	0.03	0.08	0.02	0.06	0.04	0.02	0.02		0.08
NH4(mg/l)	0.12	0.03	0.08	0.06	0.04	0.10	0.03	0.08	0.05	0.03	0.03	0.00	0.10
SW5	Wk40	Wk41	Wk42	Wk43	Wk44	Wk45	Wk46	Wk47	Wk48	Wk49	Wk50	Wk51	Wk52
pH Units	7.7	7.5	7.4	7.2	7.3	7.3	7.4	7.3	7.5	7.8	7.7		7.2
Conductivity (µS/cm)	476	412	312	296.4	309	338	382	364	421	410	424		297
BOD (mg/l)							<2						
Chloride(mg/l)	14	14	12	12	12	12	12	13	14	13	13		15
COD(mg/l)							103						
TSS(mg/l)	<5	<5	10	5	<5	<5	<5	<5	<5	<5	<5		7
NH3(mg/l)	0.05	0.31	0.36	0.18	0.14	0.14	0.19	0.18	0.41	0.33	0.27		0.12
NH4(mg/l)	0.06	0.40	0.46	0.23	0.18	0.18	0.24	0.23	0.53	0.42	0.35	0.00	0.15
SW6	Wk40	Wk41	Wk42	Wk43	Wk44	Wk45	Wk46	Wk47	Wk48	Wk49	Wk50	Wk51	Wk52
pH Units	7.4	7.6	7.4	7.8	7.7	7.7	7.7	7.6	7.9	8	7.9		7.8
Conductivity (µS/cm)	480	528	467	492	512	548	586	509	576	571	570		459
BOD (mg/l)							<2						
Chloride(mg/l)	<5	16	14	13	12	14	14	14	15	16	15		16
COD(mg/l)							13						
TSS(mg/l)	<5	6	49	25	13	12	8	5	8	9	6		15
NH3(mg/l)	0.05	0.7	0.78	0.54	0.24	0.67	0.57	0.1	1.1	0.86	0.84		0.72
NH4(mg/l)	0.06	0.90	1.00	0.69	0.31	0.86	0.73	0.13	1.41	1.11	1.08	0.00	0.93

Leachate Results

The location of the leachate (LT1) sampling point is the leachate storage tank to the south east of the landfill body.

Table 2.0 : Results of the Annual Chemical Analysis of Leachate Sample LT 1 taken on the 17th of December 2013		
Sample ID		LT-1 17/12/13
Received Date & Time		17/12/2013 15:10:55
Sample Type		Leachate
pH		7.9
Conductivity @ 25°C		33600 ***
NH3-N		2818
NH4-N		3623.14
BOD		912
COD		7450
Suspended solids		160
Chloride		18
PO4-P		21
Total Phosphorous		21
NO3-N		0.05
Sulphate		47
Boron (total)		5684
Beryllium (total)		<20
Aluminium (total)		2307
Chromium (total)		683
Manganese (total)		-
Cobalt (total)		33
Nickel (total)		310
Copper (total)		309
Zinc (total)		226
Arsenic (total)		230
Selenium (total)		<20
Silver (total)		<20
Cadmium (total)		<20
Tin (total)		40
Antimony (total)		81
Barium (total)		149
Lead (total)		28
Iron (total)		1.9
Mercury (total)		<10
Comb Pesticide Suite		
	Dichlorvos**	<0.01
	Mevinphos**	<0.01
	alpha-HCH/Lindane**	<0.01
	Diazinon**	<0.01
	gamma-HCH/Lindane**	<0.01
	Heptachlor**	<0.01

Table 2.0 : Results of the Annual Chemical Analysis of Leachate Sample LT 1 taken on the 17 th of December 2013 (continued)		
	Aldrin**	<0.01
	beta-HCH/Lindane**	<0.01
	Methyl Parathion**	<0.01
	Malathion**	<0.02
	Fenitrothion**	<0.01
	Heptachlor Epoxide**	<0.01
	Parathion**	<0.01
	o,p-DDE**	<0.01
	Endosulfan I**	<0.01
	p,p-DDE**	<0.01
	Dieldrin**	<0.01
	o,p-TDE**	<0.01
	Endrin**	<0.01
	o,p-DDT**	<0.01
	p,p-TDE**	<0.01
	Ethion**	<0.01
	Endosulfan II**	<0.01
	p,p-DDT**	<0.01
	o,p-Methoxychlor**	<0.01
	p,p-Methoxychlor**	<0.01
	Endosulfan Sulphate**	<0.01
	Azinphos Methyl**	<0.01
SVOC's		
	1,2,4-Trichlorobenzene**	<16
	1,2-Dichlorobenzene**	<16
	1,3-Dichlorobenzene**	<16
	1,4-Dichlorobenzene**	<16
	2,4,5-Trichlorophenol**	<16
	2,4,6-Trichlorophenol**	<16
	2,4-Dichlorophenol**	<16
	2,4-Dimethylphenol**	<16
	2,4-Dinitrotoluene**	<16
	2,6-Dinitrotoluene**	33.3
	2-Chloronaphthalene**	<16
	2-Chlorophenol**	<16
	2-Methylnaphthalene**	<16
	2-Methylphenol**	72.9
	2-Nitroaniline**	<16
	2-Nitrophenol**	<16
	3-Nitroaniline**	<16
	4-Bromophenylphenylether**	<16
	4-Chloro-3-methylphenol**	<16
	4-Chloroaniline**	<16
	4-Chlorophenylphenylether**	<16
	4-Methylphenol**	110
	4-Nitrophenol**	18.2
	4-Nitroaniline**	<16
	Azobenzene**	<16
	Acenaphthylene**	<16
	Acenaphthene**	<16
	Anthracene**	<16

Table 2.0 : Results of the Annual Chemical Analysis of Leachate Sample LT 1 taken on the 17 th of December 2013 (continued)		
	Bis(2-Chloroethyl)ether**	<16
	Bis(2-chloroethoxy)methane**	<16
	Bis(2-ethylhexyl)phthalate**	92.3
	Benzo(a)anthracene**	<16
	Butylbenzylphthalate**	<16
	Benzo(a)pyrene**	<16
	Benzo(ghi)perylene**	<16
	Carbazole**	<16
	Chrysene**	<16
	Dibenzofuran**	<16
	n-Di-butylphthalate**	<16
	Diethyl phthalate**	<16
	Dibenzo(a,h)anthracene**	<16
	Dimethyl phthalate**	<16
	n-Di octyl phthalate**	<80
	Fluoranthene**	<16
	Flourene**	<16
	Hexachlorobenzene**	<16
	hexachlorobutadiene**	<16
	Pentachlorophenol**	<16
	Phenol**	55.7
	N-nitrosodi-n-propylamine**	<16
	Hexachloroethane**	<16
	Nitrobenzene**	20
	Naphthalene**	<16
	Isophorone**	<16
	Hexachlorocyclopentadiene**	<16
	Phenanthrene**	<16
	Indenol(1,2,3-cd)pyrene**	<16
	Pyrene**	<16
VOC's		
	Dichlorodifluoromethane**	<1
	Chloromethane**	<1
	Vinyl chloride**	<1
	Bromomethane**	<1
	Chloroethane**	<1
	Trichlorofluoromethane**	<1
	1,1-Dichloroethene**	<1
	Dichloromethane**	<3
	trans-1,2-Dichloroethene**	<1
	1,1-Dichloroethane**	<1
	2,2-Dichloropropane**	<1
	cis-1,2-Dichloroethene**	2.47
	Bromochloromethane**	<1
	Chloroform**	<1
	1,1,1-Trichloroethane**	<1
	Carbon Tetrachloride**	<1
	1,1-Dichloropropene**	<1
	Benzene**	4.42
	1,2-Dichloroethane**	<1
	Trichloroethene**	<1

Table 2.0 : Results of the Annual Chemical Analysis of Leachate Sample LT 1 taken on the 7 th of June 2013 (continued)		
	1,2-Dichloropropane**	<1
	Dibromomethane**	<1
	Bromodichloromethane**	<1
	Toluene**	32.5
	1,1,2-Trichloroethane**	<1
	1,2-Dibromoethane**	<1
	1,1,1,2-Tetrachloroethane**	<1
	m,p-Xylene**	26.3
	Styrene**	<1
	Isopropylbenzene**	<1
	n-propylbenzene**	<1
	2-Chlorotoluene**	<1
	4-Chlorotoluene**	<1
	1,2,4-Trimethylbenzene**	9.48
	4-Isopropyltoluene**	27.6
	1,3-Dichloropropane**	<1
	cis-1,3-Dichloropropene**	<1
	trans-1,3-Dichloropropene**	<1
	Dibromochloromethane**	<1
	Chlorobenzene**	<1
	Ethyl Benzene**	14
	o-Xylene**	13.4
	Bromoform**	<1
	1,2,3-Trichloropropane**	<1
	Bromobenzene**	<1
	Tert-Butylbenzene**	<1
	Sec-Butylbenzene**	<1
	1,3,5-Trimethylbenzene**	2.08
	1,2- Dibromo-3-chloropropane**	<1
	Hexachlorobutadiene**	<1
	1,2,3-Trichlorobenzene**	<1
	Tetrachloroethene**	<1
	n-butylbenzene**	<1

Notes

< Less than Lab limit of Detection

- Subcontracted Analysis

Dust Results

2013 Dust Deposition Results (mg/m²/day)

Monitoring Location	Deposition Limit (mg/m ² /day)	Q1 of 2013			Q2 of 2013			Q3 of 2013			Q4 of 2013		
		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
D1	350	<18	98	16	46	38	18	326	141	37	54	94	27
D2	350	<18	74	21	52	51	37	43	55	55	38	56	27
D5	350	<18	<18	<16	46	<19	37	117	92	61	59	56	38
D6	350	123	129	256	115	57	191	117	1082	584	339	261	27
D8	350	43	80	63	109	134	74	203	166	123	108	78	48

Noise Results

TABLE 4.2: NOISE MEASUREMENT RESULTS - NOVEMBER 2013 (DAY TIME)

Map Ref	Date	Start Time	Duration	LA _{eq} dB(A)	LA ₁₀ dB(A)	LA ₉₀ dB(A)	LAF _{Max} dB(A)	Comments/Observations Summary
N1 (NSL)	6-11-13	09:38	30 min	37	34	29	69	Site: Very faint reverse alarms. Engines of heavy plant machinery occasionally faintly audible. Background: Distant traffic on road. Birdsong.
	6-11-13	14:05	30 min	39	37	33	68	
	8-11-13	11:55	30 min	37	39	33	51	
N2	6-11-13	10:28	30 min	46	47	33	68	Site: Heavy plant machinery working on landfill – roller. Reverse alarms. Background: Birdsong. Passing road traffic on nearby external road.
	6-11-13	14:50	30 min	45	45	35	77	
	8-11-13	12:41	30 min	41	43	34	62	
N3	6-11-13	11:02	30 min	42	44	35	72	Site: Reverse alarms in distance. Heavy plant machinery operating on landfill. Background: Traffic on regional road – occasionally faintly audible.
	6-11-13	15:24	30 min	45	45	36	72	
	8-11-13	14:11	30 min	40	42	36	65	
N4	6-11-13	08:58	30 min	53	57	37	75	Site: Cars and trucks entering/exiting site on landfill entrance/exit road. Lorries with engines idling at entrance (30m). Background: Passing road traffic on R403.
	6-11-13	12:37	30 min	56	55	40	78	
	8-11-13	11:16	30 min	56	58	42	83	
N5	6-11-13	12:12	30 min	43	46	30	74	Site: Heavy plant machinery faintly audible – including reverse alarms. Trucks entering on site road. Background: Faint road traffic occasional audible. Birdsong.
	6-11-13	16:06	30 min	43	45	31	68	
	8-11-13	10:31	30 min	42	45	31	63	

Note: Results in red **bold text** represent an exceedance of the Waste Facility Licence Limit.

TABLE 4.3: NOISE MEASUREMENT RESULTS - NOVEMBER 2012 (NIGHT TIME)

Map Ref	Date	Start Time	Duration	LA _{eq} dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	L _{AFMax} dB(A)	Comments / Site Observations Summary
N1 (NSL)	7-11-13	00:49	30 min	35	35	28	62	Site: No site noise audible. Background: Distant traffic on road.
	7-11-13	03:47	30 min	31	33	28	54	
N2	7-11-13	01:24	30 min	35	35	31	65	Site: Very faint hum of operations from facility. Heavy plant machine could be faintly heard in the distance. Background: Passing car on nearby road.
	7-11-13	04:24	30 min	34	35	32	43	
N3	7-11-13	01:55	30 min	35	38	32	49	Site: Slight hum of operations from facility. Heavy plant machine could be heard in the distance. Background: No cars passed on external road.
	7-11-13	04:58	30 min	35	36	33	44	
N4	7-11-13	00:08	30 min	44	44	25	63	Site: Security gates opening & closing. Background: Occasional passing road traffic on the R403.
	7-11-13	03:05	30 min	41	41	24	62	
N5	6-11-13	23:22	30 min	31	32	28	44	Site: No site noise audible. Background: Road traffic was barely audible in the distance.
	7-11-13	02:27	30 min	32	34	29	51	

Landfill Gas Results

Quarter 1 of 2013

Operator:	E.Murray		Date:	24/01/2013 @10:00am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (4°C)		Barometric Pressure:	990mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	0.2	19.8	
LG - 02	0.1	0.2	20.1	
LG - 03	0	0.1	19.7	
LG - 04	0.2	0.3	18	
LG - 05	0	0.6	19.6	
LG - 06	0	0.2	18.9	
LG - 07	0.2	0.5	17.3	
LG - 08	-	-	-	Note 1.
LG - 09	0.3	1.1	16.9	
LG - 10	0.3	0.9	17.8	
LG - 11	0.1	0.7	19.4	
LG - 12	0.2	0.6	20.4	
LG - 13	0.5	0.8	18.3	
LG - 14	0.4	0.8	19.2	
LG - 15	0.1	1.1	18.1	
LG - 16	0.3	0.8	20.1	
LG - 17	-	-	-	Note 2.
LG - 18	0.4	1	19.7	
LG - 19	-	-	-	Note 2.
LFG - 1	46.5	31.1	0.3	
PH1-V1	59.6	42.3	0.2	
PH1-V2	61.8	42.3	0	

Operator:	E.Murray		Date:	28/02/2013
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry, Cold (5°C)		Barometric Pressure:	995mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0.1	0.2	20.1	
LG - 02	0	0.2	19.8	
LG - 03	0.1	0.5	18.1	
LG - 04	0	0.6	20.2	
LG - 05	0.1	0.4	19.6	
LG - 06	0.3	1.1	17.3	
LG - 07	0.2	0.9	16.9	
LG - 08	-	-	-	Note 1.
LG - 09	0.2	0.6	18.5	
LG - 10	0.1	0.6	19.9	
LG - 11	0	1.2	20.3	
LG - 12	0.3	0.7	19.5	
LG - 13	0.2	0.6	20.3	
LG - 14	0.4	0.7	19.1	
LG - 15	0.2	1.2	18.4	
LG - 16	0.1	0.5	20.2	
LG - 17	-	-	-	Note 2.
LG - 18	0.2	0.9	18.1	
LG - 19	-	-	-	Note 2.
LFG - 1	55.1	31.4	0.4	
PH1-V1	51.8	36.5	2	
PH1-V2	56.9	38.1	1.8	

Operator:	E.Murray		Date:	27/03/2013 @ 11:00am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (7°C)		Barometric Pressure:	994mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	0.3	20.4	
LG - 02	0.1	1.4	19.1	
LG - 03	0.1	0.2	20.8	
LG - 04	0.2	0.5	19.1	
LG - 05	0	0.9	19.3	
LG - 06	0	0.5	18.7	
LG - 07	0.2	0.7	19.1	
LG - 08	-	-	-	Note 1.
LG - 09	0.1	1	18	
LG - 10	0.1	0.9	20.4	
LG - 11	0.2	0.6	20.4	
LG - 12	0.1	0.4	20.1	
LG - 13	0.3	0.8	19.2	
LG - 14	0.2	0.5	20.3	
LG - 15	0.1	1.3	20.1	
LG - 16	0.1	0.3	20.5	
LG - 17	-	-	-	Note 2.
LG - 18	0.1	0.5	20	
LG - 19	-	-	-	
LFG - 1	52.8	31	0	
PH1-V1	59.8	37.9	0.5	
PH1-V2	69.5	37.8	0.2	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V3	60.3	36.4	0.3	
PH1-V4	56.8	38.1	0.4	
PH1-V5	46.3	34.6	1.7	
PH2-V1	25.2	20.8	5.1	
PH2-V2	38.4	29.7	1.8	
PH2-V3	59.1	40.2	0.5	
PH2-V4	46.8	30.8	3.1	
PH2-V5	-	-	-	Note 2.
PH3-V1	43.8	28.7	1.6	
PH3-V2	35.8	30.1	2.4	
PH3-V3	59.3	41.5	0.7	
PH3-V4	50.4	33.5	1	
PH3-V5	-	-	-	Note 2.
PH4-V1	61.8	45.3	0	
PH4-V2	53.2	30.2	1	
PH4-V3	49.7	30.4	0.9	
PH4-V4	58.7	37.6	0	
PH4-V5	50.4	31.6	0.7	
PH5-V1	60.2	43.4	0	
PH5-V2	57.3	39.7	0.1	
PH5-V3	41.8	34.2	4	
PH5-V4	29.5	37.1	3.4	

Note 1.: Well damaged.

Note 2.: Sample port not accessible.

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V3	65.1	38.5	0	
PH1-V4	63.2	39.5	0.1	
PH1-V5	57.8	36.7	0.4	
PH2-V1	36.4	39.7	0.4	
PH2-V2	52.1	36.3	1.1	
PH2-V3	62.3	38.9	0.3	
PH2-V4	62.6	36.6	0	
PH2-V5	30.3	24	5.8	
PH3-V1	41.5	31.9	2	
PH3-V2	49.9	32.2	2.1	
PH3-V3	52.9	35.9	0.8	
PH3-V4	39.8	31.4	1.4	
PH3-V5	32.8	28.1	3.4	
PH4-V1	42.1	35.4	0.9	
PH4-V2	59.7	38.4	1.3	
PH4-V3	58.7	40	0	
PH4-V4	60.9	39.8	0.4	
PH4-V5	61.2	35.1	0	
PH5-V1	59.8	32.8	2.5	
PH5-V2	45.1	33.3	0.9	
PH5-V3	60.6	37.1	0.5	
PH5-V4	46.5	37.6	0.6	
PH5-V5	31.5	27.2	3.1	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V3	48.3	31.5	3.6	
PH1-V4	45.4	32.6	1	
PH1-V5	56.4	32.8	0.8	
PH2-V1	55.7	38.1	0.5	
PH2-V2	49.8	31.4	1.4	
PH2-V3	51.8	35.8	2.1	
PH2-V4	27.3	22.9	7.4	
PH2-V5	25.7	21.8	6.4	
PH3-V1	52.7	31	0.2	
PH3-V2	57.4	27.8	1.2	
PH3-V3	66.1	42.5	0	
PH3-V4	49.7	18.4	1.7	
PH3-V5	53.1	38.4	0.1	
PH4-V1	38.1	22.6	4.1	
PH4-V2	39.7	18.4	4.7	Note 2.
PH4-V3	47.7	34.5	3.4	
PH4-V4	40.4	34.4	2.5	
PH4-V5	49.8	29.6	3.2	
PH5-V1	53.5	30.4	1.4	
PH5-V2	57.8	31.8	0.1	
PH5-V3	49.5	33.4	0	
PH5-V4	60.6	44.1	0.3	
PH5-V5	49.6	31.2	0.7	

Quarter 2 of 2013

Operator:	E.Murray		Date:	09/04/2013 @11:00am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (10°C)		Barometric Pressure:	1003mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	1	20.1	
LG - 02	0	0.8	18.7	
LG - 03	0.1	0.2	20.4	
LG - 04	-	-	-	Note 2.
LG - 05	0.3	0.3	20	
LG - 06	0.2	0.7	19.2	
LG - 07	0.1	0.2	18.5	
LG - 08	-	-	-	Note 1.
LG - 09	0.2	1.3	17.6	
LG - 10	0.1	0.8	18.3	
LG - 11	0	0.6	19.7	
LG - 12	0	0.5	18.4	
LG - 13	0.2	1.1	19.6	
LG - 14	0.2	0.9	17.9	
LG - 15	0	0.3	18.1	
LG - 16	0.6	1	16.7	
LG - 17	-	-	-	Note 2.
LG - 18	0	0.5	20.3	
LG - 19	-	-	-	Note 2.
LFG - 1	53.6	35.2	0.1	
PH1-V1	62.8	40.3	0.1	
PH1-V2	60.1	29.6	0.4	
PH1-V3	57.4	30.2	0.6	
PH1-V4	62.3	41.8	0.4	

Operator:	E.Murray		Date:	30/05/2013 @10:30am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (14°C)		Barometric Pressure:	1005mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0.1	0.9	18.9	
LG - 02	0	0.2	19.3	
LG - 03	0	0.4	19	
LG - 04	-	-	-	Note 2.
LG - 05	0.1	0.5	19.4	
LG - 06	0.1	0.1	20.4	
LG - 07	0.2	0.5	19.8	
LG - 08	-	-	-	Note 1.
LG - 09	0.4	1	18.3	
LG - 10	0	0.2	19.7	
LG - 11	0.1	0.2	20	
LG - 12	0	0.3	20.3	
LG - 13	0.2	0.7	18.3	
LG - 14	0.1	0.3	19.5	
LG - 15	0	0.6	20.2	
LG - 16	0.3	1.3	17	
LG - 17	-	-	-	Note 2.
LG - 18	0.2	0.7	18.2	
LG - 19	-	-	-	Note 2.
LFG - 1	57.6	38.1	0.3	
PH1-V1	60.1	43.9	0.3	
PH1-V2	54.3	39.8	0.1	
PH1-V3	61.4	38.7	0.3	
PH1-V4	65.7	43.8	0.6	

Operator:	E.Murray		Date:	26/06/2013 @ 13:00pm
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (17°C)		Barometric Pressure:	1017mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0.1	1.8	17.8	
LG - 02	0.1	0	20.4	
LG - 03	0.1	0.4	20	
LG - 04	-	-	-	Note 2.
LG - 05	0.1	0	19.4	
LG - 06	0.1	0.3	19.4	
LG - 07	0.1	1.1	17.5	
LG - 08	-	-	-	Note 1.
LG - 09	0.1	0.9	19.4	
LG - 10	0.1	0.6	19.5	
LG - 11	0.1	0.2	20.1	
LG - 12	0.1	0.2	19.8	
LG - 13	0.1	0.6	19.8	
LG - 14	0.3	0.7	18.4	
LG - 15	0.1	0.2	20.1	
LG - 16	0.1	1.9	16.4	
LG - 17	-	-	-	Note 2.
LG - 18	0.5	1.1	18.2	
LG - 19	-	-	-	Note 2.
LFG - 1	49.8	27.1	0.3	
PH1-V1	59.7	38.3	0.5	
PH1-V2	61.4	40.3	0.1	
PH1-V3	55.3	35.3	0.2	
PH1-V4	60.4	43.1	0	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	53.8	36.1	0.1	
PH2-V1	51.6	38.3	1.4	
PH2-V2	69.1	44.4	0	
PH2-V3	63.6	41.6	0.9	
PH2-V4	69.2	43.4	0	
PH2-V5	-	-	-	Note 2.
PH3-V1	49.5	37.3	1.2	
PH3-V2	68.8	43.9	0	
PH3-V3	68.8	40.9	0	
PH3-V4	58.8	39.9	0	
PH3-V5	-	-	-	Note 2.
PH4-V1	41.4	53.5	0.2	
PH4-V2	65.5	42.1	0	
PH4-V3	66.3	42.3	0	
PH4-V4	62.1	48.6	0	
PH4-V5	56.2	40	0.4	
PH5-V1	64.2	42	1	
PH5-V2	61.4	38.5	0.1	
PH5-V3	56.7	37.5	1.1	
PH5-V4	68.8	44.8	0	

Note 1.: Well damaged.

Note 2.: Sample port not accessible.

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	59.8	41.7	1.2	
PH2-V1	60.2	41.6	0.2	
PH2-V2	58.7	37.6	0	
PH2-V3	62.4	39.9	0.2	
PH2-V4	68.1	46.2	0.1	
PH2-V5	-	-	-	Note 2.
PH3-V1	48.2	41.5	0.8	
PH3-V2	63.2	40.1	0	
PH3-V3	65.3	44.6	0	
PH3-V4	51.7	32.6	0.8	
PH3-V5	-	-	-	Note 2.
PH4-V1	49.7	38.4	1	
PH4-V2	64.8	40.3	0.1	
PH4-V3	60.4	39.8	0	
PH4-V4	59.7	41.3	0	
PH4-V5	61	37.1	0.1	
PH5-V1	58.1	44.8	0.7	
PH5-V2	62.8	41.9	0	
PH5-V3	59.7	41.3	0.5	
PH5-V4	56.1	37.2	0	
PH5-V5	50.8	30.6	0.8	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	55.9	34.2	0.3	
PH2-V1	57.1	33.2	0.9	
PH2-V2	61.2	39.4	0.3	
PH2-V3	59.8	37.3	0.2	
PH2-V4	63.2	40.6	0.1	
PH2-V5	-	-	-	Note 2.
PH3-V1	52.7	35.2	0.6	
PH3-V2	63.1	40.7	0.1	
PH3-V3	59.4	37.3	0	
PH3-V4	61.4	36.1	0.3	
PH3-V5	-	-	-	Note 2.
PH4-V1	59.4	34.6	0.9	
PH4-V2	62.7	40.6	0.1	
PH4-V3	59.4	38.6	0	
PH4-V4	60.7	37.9	0	
PH4-V5	60.3	42.6	0.2	
PH5-V1	61.8	39.7	1.1	
PH5-V2	59.1	33.8	0.5	
PH5-V3	60.4	42.8	0.4	
PH5-V4	56.2	38.1	0	

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Operator:	E.Murray		Date:	16/07/2013 @ 10:00am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (15°C)		Barometric Pressure:	1008mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	1.3	19.8	
LG - 02	0	0.6	20	
LG - 03	0	0.3	20.4	
LG - 04	-	-	-	Note 2.
LG - 05	0.1	0.5	19.3	
LG - 06	0.2	0.5	18.9	
LG - 07	0.1	0.6	20.2	
LG - 08	-	-	-	Note 1.
LG - 09	0.1	1.1	16.9	
LG - 10	0	0.5	19.7	
LG - 11	0.1	0.2	20.2	
LG - 12	0.2	0.7	19.1	
LG - 13	0.6	1.3	20.4	
LG - 14	0.1	0.7	16.8	
LG - 15	0.1	0.6	18.7	
LG - 16	0.3	1.4	17.7	
LG - 17	-	-	-	Note 2.
LG - 18	0	0.3	20.1	
LG - 19	-	-	-	Note 2.
LFG - 1	50.2	33.7	0.2	
PH1-V1	61.3	39.7	0	
PH1-V2	58.9	33.5	0	
PH1-V3	60.4	39.3	0.2	
PH1-V4	62.4	40.1	0	

Operator:	E.Murray		Date:	19/08/2013 @ 11:30am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/ Temp.:	Dry (16°C)		Barometric Pressure:	1013mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	0.5	19.3	
LG - 02	0	0.2	20.3	
LG - 03	0.1	0.6	18.7	
LG - 04	-	-	-	Note 2.
LG - 05	0	0.8	19.1	
LG - 06	0	0.3	20.2	
LG - 07	0.2	0.7	20	
LG - 08	-	-	-	Note 1.
LG - 09	0.2	1.2	17.8	
LG - 10	0	0.4	19.6	
LG - 11	0.1	0.3	20.2	
LG - 12	0	0.4	19.8	
LG - 13	0.3	1	18	
LG - 14	0	0.8	19	
LG - 15	0	0.4	20.1	
LG - 16	0.2	1.4	16.8	
LG - 17	-	-	-	Note 2.
LG - 18	0.1	1.1	18	
LG - 19	-	-	-	Note 2.
LFG - 1	59.3	36.4	0.6	
PH1-V1	60.3	45.1	0	
PH1-V2	59.8	38.2	0	
PH1-V3	61	41.2	0	
PH1-V4	60.6	37.4	0.3	

Operator:	E.Murray		Date:	25/09/2013 @ 14:00pm
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/ Temp.:	Dry (17°C)		Barometric Pressure:	1018mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	1.7	18.8	
LG - 02	0	0.1	20.7	
LG - 03	0	0.5	20.1	
LG - 04	-	-	-	Note 2.
LG - 05	0	0.2	20.7	
LG - 06	0.1	0.3	20.3	
LG - 07	0.1	1	18	
LG - 08	0	0.6	19.6	
LG - 09	0.2	1.1	18.9	
LG - 10	0.1	1.2	20.3	
LG - 11	0	0.4	19.7	
LG - 12	0.1	0.3	20.4	
LG - 13	0.1	1.3	19.7	
LG - 14	0.2	0.5	20.2	
LG - 15	0.1	0.6	20.5	
LG - 16	0	1.1	19.3	
LG - 17	-	-	-	Note 1.
LG - 18	0.3	0.7	19.6	
LG - 19	-	-	-	Note 2.
LFG - 1	55.4	36.2	0.5	
PH1-V1	63.9	38	0	
PH1-V2	63.2	39	0	
PH1-V3	63.4	37.8	0.1	
PH1-V4	44.9	33.4	0	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	60	31.4	0.2	
PH2-V1	49.3	29.9	0.1	
PH2-V2	62.1	40.3	0	
PH2-V3	60.2	39.8	0.6	
PH2-V4	58.4	30.6	0.7	
PH2-V5	-	-	-	Note 2.
PH3-V1	41.3	30.5	1	
PH3-V2	60.4	42.1	0	
PH3-V3	63.1	40.3	0.1	
PH3-V4	57.2	33	0	
PH3-V5	-	-	-	Note 2.
PH4-V1	49.8	36.4	1.4	
PH4-V2	63.7	39.6	0	
PH4-V3	60.2	43.1	0	
PH4-V4	59.8	40.2	0.1	
PH4-V5	60.3	37	0.2	
PH5-V1	61.8	40.3	0	
PH5-V2	62.4	37.2	0	
PH5-V3	59.6	33.6	0.7	
PH5-V4	40.8	28.4	1.4	
PH5-V5	46.3	20.3	2.6	

Note 2.: Sample port not accessible.

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	63.4	42.5	0.8	
PH2-V1	61.3	39.5	0	
PH2-V2	57.3	35.6	1.1	
PH2-V3	60.1	35	0.4	
PH2-V4	62.7	44.2	0	
PH2-V5	-	-	-	Note 2.
PH3-V1	44.8	30.3	0.3	
PH3-V2	60.3	43.2	0	
PH3-V3	61.8	40.6	0	
PH3-V4	60.3	39.4	0.3	
PH3-V5	-	-	-	Note 2.
PH4-V1	44.3	28.7	0.6	
PH4-V2	59.4	34.6	0.4	
PH4-V3	60.2	37.3	0	
PH4-V4	58.6	42.4	0	
PH4-V5	60.8	35.9	0.2	
PH5-V1	60.3	41.4	0	
PH5-V2	58.1	38.6	0.3	
PH5-V3	59.4	33.2	0.6	
PH5-V4	60.4	39.8	0	
PH5-V5	54.3	29.7	1.8	
PH6-V1	59.8	30.5	0.2	
PH6-V2	45.2	25.4	0.5	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	47.9	30.9	3.8	
PH2-V1	62.7	39.4	0	
PH2-V2	34.2	23.9	7.9	
PH2-V3	63.4	39.5	0	
PH2-V4	49	32.1	3.7	
PH2-V5	31.9	24.5	5.4	
PH3-V1	-	-	-	Note 2.
PH3-V2	48.6	34.7	0.8	
PH3-V3	60.9	39	0	
PH3-V4	52	37.2	0	
PH3-V5	59.9	38.2	0	
PH4-V1	56.9	38.1	0.8	
PH4-V2	59.5	39.7	0	
PH4-V3	60.8	42.1	0	
PH4-V4	63.6	40.2	0	
PH4-V5	56.8	37.8	0	
PH5-V1	-	-	-	Note 2.
PH5-V2	56.9	39.5	0	
PH5-V3	61.1	41.7	0	
PH5-V4	62.7	41.6	0	
PH6-V1	57.4	44	0	
PH6-V2	60.7	42.3	0	
PH6-V3	-	-	-	Note 2.

Quarter 4 of 2013

Operator:	E.Murray		Date:	11/10/2013 @ 11:00am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (9°C)		Barometric Pressure:	1005mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0	1.3	19.7	
LG - 02	0	0.2	20.1	
LG - 03	0	0.3	20	
LG - 04	-	-	-	Note 2.
LG - 05	0	0.3	20.1	
LG - 06	0.1	0.2	19.9	
LG - 07	0.1	0.4	20.2	
LG - 08	0	0.5	19.2	
LG - 09	-	-	-	
LG - 10	0.2	0.8	20.1	
LG - 11	0	0.2	19.4	
LG - 12	0.1	0.1	20.6	
LG - 13	0	1	20.3	
LG - 14	0.2	0.8	19.3	
LG - 15	0.1	0.4	20.1	
LG - 16	0	0.7	18.6	
LG - 17	-	-	-	Note 1.
LG - 18	0.2	0.5	20.4	
LG - 19	-	-	-	Note 2.
LFG - 1	57.9	33.6	0.8	
PH1-V1	60.9	37.9	0	
PH1-V2	65	40.6	0	
PH1-V3	60.4	38.1	0	

Operator:	E.Murray		Date:	25/11/2013 @ 10:30am
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (10°C)		Barometric Pressure:	1009mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0.1	0.3	20.6	
LG - 02	0.1	0.1	20.8	
LG - 03	0.1	1.4	19	
LG - 04	-	-	-	Note 2.
LG - 05	0.1	0.1	20.9	
LG - 06	0.1	0.2	20.4	
LG - 07	-	-	-	Note 1.
LG - 08	0.1	0.3	18.2	
LG - 09	0.1	1.7	17.6	
LG - 10	0.2	0.9	20.5	
LG - 11	0.1	1.5	20.4	
LG - 12	0.1	0.4	20.8	
LG - 13	0.2	0.6	0.5	
LG - 14	-	-	-	Note 2.
LG - 15	0.1	1.3	20.6	
LG - 16	0.1	1.4	19.6	
LG - 17	0.2	0.5	20.1	Note 2.
LG - 18	0.1	0.3	19.8	
LG - 19	0.3	0.5	19.4	Note 2.
LFG - 1	53.9	41.5	0.2	
PH1-V1	63.1	35.5	0	
PH1-V2	62	37	0	
PH1-V3	63.4	37.8	0.1	

Operator:	J. Egan		Date:	02/01/2014 (pm)
Instrument ID: Geotech GA 2000	Geotech GA 2000		Date Next Calibration:	Dec-14
Weather/Temp.:	Dry (5°C)		Barometric Pressure:	0966mbar
Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
LG - 01	0.1	0	21.3	
LG - 02	0	0	21.3	
LG - 03	0.1	0	21.1	
LG - 04	-	-	-	Note 2.
LG - 05	-	-	-	Note 1.
LG - 06	0.1	0	21.3	
LG - 07	-	-	-	Note 1.
LG - 08	0	0	21.2	
LG - 09	0	0	21.4	
LG - 10	0.1	0	21.2	
LG - 11	0.1	0	21.1	
LG - 12	0.1	0	21.2	
LG - 13	0.1	0	21.1	
LG - 14	-	-	-	Note 2.
LG - 15	0.1	0	21	
LG - 16	0.1	0	21.4	
LG - 17	0	0	21.5	
LG - 18	-	-	-	Note 2.
LG - 19	-	-	-	Note 2.
PH1-V1	17.5	18	6.2	
PH1-V2	9.1	1.2	20.3	
PH1-V3	34.2	30.1	1.6	
PH1-V4	59.3	37	0.7	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V4	57.4	34.5	0.1	
PH1-V5	46.3	29.8	0.6	
PH2-V1	60.8	38.3	0	
PH2-V2	38.5	29	1.4	
PH2-V3	59.7	36.2	0	
PH2-V4	53.2	29.7	1.6	
PH2-V5	60.1	33.8	0.4	
PH3-V1	-	-	-	Note 2.
PH3-V2	58.3	28.7	0	
PH3-V3	60.1	41.6	0	
PH3-V4	53.6	36.2	0	
PH3-V5	58.4	46	0	
PH4-V1	61.3	36.4	0.3	
PH4-V2	60.3	37.2	0.1	
PH4-V3	58.3	38.6	0	
PH4-V4	62.1	41.3	0	
PH4-V5	58.3	36.4	0	
PH5-V1	-	-	-	Note 2.
PH5-V2	51.3	27.6	0.6	
PH5-V3	52.4	33.4	0	
PH5-V4	59.3	30.7	1.2	
PH6-V1	40.6	30.8	1.7	
PH6-V2	56.7	32.9	0.9	
PH6-V3	-	-	-	Note 2.

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V4	55.4	39.7	0	
PH1-V5	40.7	33.4	0.5	
PH2-V1	60.1	33.7	0	
PH2-V2	59.4	39.7	0.1	
PH2-V3	62.5	39.4	0.2	
PH2-V4	60.3	41.2	0	
PH2-V5	-	-	-	Note 2.
PH3-V1	50.4	41.6	0.1	
PH3-V2	62.4	44.6	0	
PH3-V3	61.7	41.3	0	
PH3-V4	60.1	38.4	0.2	
PH3-V5	-	-	-	Note 2.
PH4-V1	43.1	35.2	0.8	
PH4-V2	58.6	49.5	0.3	
PH4-V3	60	34.7	0.3	
PH4-V4	51.7	44.6	0	
PH4-V5	61.3	40.1	0	
PH5-V1	57.6	39.8	0	
PH5-V2	60.2	31.9	0.8	
PH5-V3	57.6	34.9	0.4	
PH5-V4	60.8	40.6	0.3	
PH5-V5	49.2	33.4	0.9	
PH6-V1	57.8	27.6	0.8	
PH6-V2	40.6	21	2.7	

Sample Station Number	CH ₄ (% v/v)	CO ₂ (% v/v)	O ₂ (% v/v)	Comments
PH1-V5	-	-	-	Note 2.
PH1-V6	60.7	40.6	0.1	Note 2.
PH2-V1A	55.6	36.8	1.7	
PH2-V2	45.5	32.6	4.7	
PH2-V3	61.5	41.2	0.5	
PH2-V4	45.9	31.8	3.9	
PH2-V5	57.8	37.9	0.8	Note 2.
PH3-V1	-	-	-	
PH3-V2	-	-	-	
PH3-V3	-	-	-	
PH3-V4	46	31.9	5.1	
PH3-V5	-	-	-	Note 2.
PH4-V2	57.4	38.7	1.1	
PH4-V6	22	15.1	11.8	
PH4-V7	60.1	43.7	0.1	
PH4-V7(1)	51.4	34.8	1.9	
PH4-V8	62	41.9	0.1	
PH4-V11	62.4	41	0	
PH4-V12	62.5	41.2	0	

Note 1.: Well damaged.

Note 2.: Sample port not accessible.

APPENDIX 3

Dust & Litter Control Plan

Procedures Manual	 <p>BORD NA MÓNA</p> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document:	EP 25.0
Document Approved by: <hr/> Landfill Manager <hr/>		Revision: 0 Issue Date: 15/6/09 Page: Page 1 of 88	
Title <i>1.1.1.1</i>		Litter and Dust Control	

Purpose: The facility licence requires that litter and dust is controlled, and, wherever possible, contained within the site boundary. However, under certain conditions it will be impossible to contain all litter. In such circumstances, litter that has left the site and contaminated other people's property must be collected as a priority.

Scope: Every day the foreman ensures that an employee checks the environs of the site and to collect any loose litter by placing it into plastic bags or similar. These are disposed of at the tip face, before the end of the working day. All litter should be collected in accordance with Licence by 10 am the following morning..

References: [WIF 5.1 Daily Site Snspection](#)
[Customer contact list](#)

Procedure

1. Permanent litter nets are erected around the lined area with an entrance for access, they consist of 6m poles with UV treated netting.
2. Semi-permanent litter nets or cages should be erected close to the active face working cell, across the front of the cell while still allowing access for vehicles to the working face.

Semi-Permanent Litter Netting is the most common type of litter prevention on site. Typically these nets are 3-4 metres in height and are suspended on mobile litter poles it is important that on a 4 meter pole you use a 5m net ensuring that in a high wind event, the additional force on the net from the litter in the net does not cause windblown litter to escape underneath. Alternatively, poles mounted in a tripod fashion may also be used.

All nets should be cleared on a routine daily basis to prevent too much litter accumulating in the nets and causing them to split or overturn.

Litter Cages are also available on site. Cages must only be used on the direction of the FM or supervisor. The cages should be positioned next to each other in lines around the tipping area to minimise windblown litter. The cages should only be moved by on-site plant.

Procedures Manual	 <p>BORD NA MÓNA</p> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document:	EP 25.0
Document Approved by:		Revision:	0
_____	Issue Date:	15/6/09	
Landfill Manager	Page:	Page 2 of 88	
Title	Litter and Dust Control		
<i>1.1.1.1</i>			

During high wind events the Landfill Manager and Site Foreman will agree if necessary to close the site.

Customers are contacted and given notice of closure from the Customer contact list.

Once working face is closed all staff will assist in litter picking and insure excessive pressure is not on the netting system.

3. **Dust minimisation** The site foreman must insure that there dust generation is minimised on the site.

With speed restrictions, wetting of haul roads, wetting of stockpiles prior to movement and grassing up exposed soil.

Adhering to site conditions, speed restrictions, and using only the designated access roads, will assist in limiting dust problems.

In dry weather, it may be necessary to damp down areas using water from bowsers, sprays or similar - this action is decided locally by the FM.

A wheelwash has been installed on site to prevent tracking of material onto the public road. All vehicles leaving the tip face must use this wheelwash.

Occasionally, due both to heavy traffic and works elsewhere on site, material may start to track past the wheelwash and along the site road. To remediate this, the metalled site roads and hard standing surfaces are swept using a road sweeper as conditions dictate. The road should be swept until the FM or his representative is satisfied that the required standard has been reached and maintained.

APPENDIX 4

Training Procedures

Procedures Manual	 <p>BORD NA MÓNA</p> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document:	EP 19.0
Document Approved by:		Revision: 2	
_____	Issue Date: 4/6/09		
Landfill Manager	Page: Page 1 of 88		
Title Training			

Purpose: To define how Bord na Móna ensures awareness of environmental issues and how environmental training is identified and conducted.

Scope: This procedure applies to employees at the Drehid Waste Management Facility

References: [EPF 19.1 Environmental Training Record](#)
[EPF 19.2 Environmental Training Summary](#)
[EPF 19.3 Training Needs Matrix](#)
[EPF 19.4 Employee Induction Training Certificate](#)

Procedure:

1. The Landfill Manager is responsible for ensuring that his reports are fully trained for their specific tasks, and are aware of the implications of licence.
2. All employees shall be made familiar with their environmental responsibilities through a comprehensive environmental training programme
 - All employees will have an individual training file created which will detail all training received.
 - Training shall be updated as the environmental responsibilities of employees develop.
3. Environmental Training Records will be maintained on file for individual employees for 7 years.
4. External training programmes conducted on Drehid Waste Management Facility premises will be documented on Environmental Training Summary EPF 19.2, and the trainee's individual Environmental Training Records EPF 19.1 should be updated with same.
5. The Landfill Manager shall request that all relevant personnel undertake training in any new environmental procedure adopted by Drehid Waste Management Facility. (or any new amendments to existing environmental procedures). This Internal training should be recorded in the Environmental Training Records EPF 19.1.

Procedures Manual	 <p>BORD NA MÓNA</p> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document:	EP 19.0
Document Approved by: <hr/> Landfill Manager		Revision: 2 Issue Date: 4/6/09 Page: Page 2 of 88	
Title Training			

6. As part of the Annual Review, the Management will review all training requirements. This environmental training review will identify the specific environmental training requirements for each operation within the company.

7. The Environmental Management Team will identify Environmental Training needs under the following headings:
 - Introduction of new materials
 - Introduction of new or altered work processes
 - Appointment of new personnel to plant
 - Transfer of personnel to new duties in plant
 - As part of Annual Review of Objectives and Targets and programmes
 - New environmental regulatory requirements
 - Updating of skills
 - Corrective and Preventive Action
 - Environmental Complaints

8. The planned environmental Training shall be documented on the Environmental Training need matrix EPF 19.3. This planned training shall be undertaken as scheduled.

9. The Landfill Manager shall ensure that all training tasks are completed by each employee identified as requiring environmental training.

10. Once an environmental training task has been completed by an employee, the Environmental Training record EPF 19.1 shall be updated.

11. All new employees will be required to undergo an environmental induction programme before commencing work at the facility. EPF 19.4 the Employee Induction Training Certificate shall be completed detailing the elements covered by the training. The induction will include the following:
 - Information with regards to the Company Structure and Environmental Responsibility
 - Environmental Policy Statement
 - Supplied with a description of the Licence
 - Awareness of the Emergency Response Procedures
 - Supplied with a description of activities on site
 - Reporting of environmental incidents to Environmental Team

Procedures Manual	 <p>BORD NA MÓNA</p> <hr/> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document: EP 19.0
Document Approved by: <hr/> <hr/> Landfill Manager		Revision: 2 Issue Date: 4/6/09 Page: Page 3 of 88
Title Training		

When induction is completed an Environmental Training Record EPF 19.1 is created for each individual. All subsequent environmental training will also be retained on this record.

12. Employees, who have potential to have an effect on the environment, should undergo a more comprehensive training programme subsequent to Environmental Induction as follows:

- Training on all Environmental Procedures specific to their roles in the EMS
- Fire Hazard Training
- Spill Kit Training

When environmental training is complete Environmental Training Record EPF 19.1 will be updated.

APPENDIX 5

Programme for Public Information

Procedures Manual	 <p>BORD NA MÓNA</p> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document:	EP 18.0
Document Approved by:		Revision: 0	
_____	Issue Date: 01/01/09		
Landfill Operations Manager	Page: Page 1 of 88		
Title Programme for Public Information			

Purpose: To define how Bord na Móna manages the communication of environmental information concerning the facility with external parties.

Scope: This procedure applies to Bord na Móna Drehid Waste Management Facility.

References: [Data Protection Act 1988 with 2003 amendment](#)

Procedure

4. All external, out-going communication of environmental issues, unless specifically outlined below, must be approved by the Landfill Operations Manager. If the Facility Manager is unavailable, then the designated Environmental Officer may approve the communication.
5. Certain environmental information, as detailed below, will be available to external parties. Only 1 copy of each document is available for view at any time.
6. It is recommended that visitors should phone or write in advance, as this will facilitate the company to arrange for the necessary staff and documents to be available. However, a prior appointment by any member of the public is not necessary.
7. Viewing time is restricted to normal office hours (9.30 to 12.50, 14.00 to 16.30). No more than 1 hour of staff time is available for assistance or queries per day.
8. Visitors may ask for the Landfill Operations Manager. They are requested to sign in at reception, giving their name, address, and reason for their visit.
9. Access is restricted to the Meeting Room, and the information will be brought to this designated room for viewing. The original documents are not to be removed, altered or damaged in any way.

Procedures Manual	 <p>BORD NA MÓNA</p> <p>Drehid Waste Management Facility</p> <p>Environmental Procedures Manual</p>	Document:	EP 18.0
Document Approved by:		Revision: 0	
_____	Issue Date: 01/01/09		
Landfill Operations Manager	Page: Page 2 of 88		
Title Programme for Public Information			

10. A copy of the following files will be kept in Document Control and are available to the public as outlined above:

- Licence
- Annual Environmental Reports
- Monthly monitoring reports
- Ground water monitoring results
- Surface water monitoring results
- Air monitoring results
- Environmental noise monitoring results

11. Every effort will be made to keep the files up-to-date. The information provided will comply with legal requirements and the requirements of the Licence, but confidential and commercially sensitive information will be restricted and Bord na Móna must comply with the [Data Protection Act 1988 with 2003 amendment](#).

APPENDIX 6

EPRTR
(European Pollutant Release and Transfer Register)



Environmental Protection Agency

[PRTR# : W0201 | Facility Name : Dredged Waste Management Facility | Filename : 2013 PRTR.xls | Return Year : 2013]

[Guidance to completing the PRTR workbook](#)

AER Returns Workbook

Version 1.1.15

REFERENCE YEAR	2013
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1. FACILITY IDENTIFICATION

Parent Company Name	Bord na Mona Public Limited Company
Facility Name	Dredged Waste Management Facility
PRTR Identification Number	W0201
Licence Number	W0201-03

Waste or IPPC Classes of Activity

No.	class_name
3.1	Deposit on, in or under land (including landfill).
11.1	#####

Address 1	In the townlands of Parsonstown, Loughnacush, Kilkeaslin, Drumond
Address 2	Timahoe West, Coolcamigan
Address 3	Killinagh Lower and Killinagh Upper, Carbury
Address 4	County Kildare
Country	Kildare
Country	Ireland
Coordinates of Location	-9.77721 54.1523
River Basin District	IIEEA
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Ciaran Geoghegan
AER Returns Contact Email Address	Ciaran.Geoghegan@bnm.ie
AER Returns Contact Position	Landfill Manager
AER Returns Contact Telephone Number	(045) 439470
AER Returns Contact Mobile Phone Number	086-3880679
AER Returns Contact Fax Number	(045) 439489
Production Volume	0.0
Production Volume Units	N/A
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	18
User Feedback/Comments	
Web Address	http://www.bordnamona.ie/

2. PRTR CLASS ACTIVITIES

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

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

Is it applicable?	No
Have you been granted an exemption?	No
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)?	Yes
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4.1 RELEASES TO AIR

[Link to previous years emissions data](#)

(PRTR : W0201 | Facility Name: Drehid Waste Management Facility | File Name : 2013 PRTR.xls | Return Year : 2013 |

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SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT		METHOD		Please enter all quantities in this section in KGs					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
01	Methane (CH4)	E	OTH	Gas Sim V2.5		0.0	410382.0	0.0	410382.0

* Select a row by double-clicking on the Pollutant Name (Column 2) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

POLLUTANT		METHOD		Please enter all quantities in this section in KGs					
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 2) then click the delete button

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

POLLUTANT		METHOD		Please enter all quantities in this section in KGs					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
						0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column 2) 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 their return 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:

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)	10171905.0	E	OTH	Gas Sim V1.54	N/A
Methane flared	8899057.0	O	OTH	Monthly Records	9000.0 (Total Flaring Capacity)
Methane utilised in engines	862465.0	M	OTH	SCADA	2500.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A above)	410382.0	E	OTH	Combination of the above	N/A

6. ON SITE TREATMENT & OFF SITE TRANSFERS OF WASTE (PRTR: W(201) Facility Name: Drehid Waste Management Facility; Filename: 2013 PRTR.xls; Return Year: 2013)

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0

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste - Name and Licence/Permit No of Recipient 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 Licence / Permit No. and Address of Rec/Recoverer/ Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination (i.e. Final Recovery/ Dispose Site (HAZARDOUS WASTE ONLY))
						M/C/E	Method Used					
Within the Country	13 07 01	Yes	4.68	fuel oil and diesel aqueous liquid wastes other than those mentioned in 15 10 01	R9	M	Weighted	Offsite in Ireland	Envs,W0184-01	Cionminam Industrial Estate, Portlaoise, Co. Laois, Ireland	Envs,W0184-01	Cionminam Industrial Estate, Portlaoise, Co. Laois, Ireland
Within the Country	16 10 02	No	75.38	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighted	Offsite in Ireland	Envs,W0196-1	Leklip WWTP Kildare	Envs,W0196-1	Leklip WWTP Kildare
Within the Country	19 07 03	No	27396.24	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighted	Offsite in Ireland	Envs,W0196-1	County Council,D0004-01	Envs,W0196-1	County Council,D0004-01
Within the Country	19 07 03	No	15988.02	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighted	Offsite in Ireland	Envs,W0196-1	JFK Road,Naas Road, Dublin 12, Ireland	Envs,W0196-1	JFK Road,Naas Road, Dublin 12, Ireland
Within the Country	19 07 03	No	8519.23	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighted	Offsite in Ireland	Rita Environmental,W0185-01	Site No 14A1,Greenogue Business Park,Rathcoole,Dublin,Ireland	Rita Environmental,W0185-01	Site No 14A1,Greenogue Business Park,Rathcoole,Dublin,Ireland
Within the Country	20 01 01	No	0.62	paper and cardboard	R13	M	Weighted	Offsite in Ireland	AES Tullamore,W0104-02	Cappincur Industrial Estate,Cappincur, Tullamore, County Offaly, Ireland	AES Tullamore,W0104-02	Cappincur Industrial Estate,Cappincur, Tullamore, County Offaly, Ireland
Within the Country	20 01 40	No	15.9	metals	R13	M	Weighted	Offsite in Ireland	AES Tullamore,W0104-02	Cappincur Industrial Estate,Cappincur, Tullamore, County Offaly, Ireland	AES Tullamore,W0104-02	Cappincur Industrial Estate,Cappincur, Tullamore, County Offaly, Ireland

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