Cover Page

Signed Declaration

Waste License Registration Number: W0201-03

Licensee: **Bord na Mona Resource Recovery Ltd**

Reporting year: 2015

I Declare that;

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

Signature

EHS Compliance Officer

2015 ANNUAL ENVIRONMENTAL REPORT

Bord na Móna Resource Recovery
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
Attention:	Office of Environmental Enforcement, EPA Headquarters, PO Box 3000, Johnstown Castle Estate, Co. Wexford
Prepared by:	Bord Na Móna Plc Drehid Waste Management Facility

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1. INTRODUCTION

The following document is the 2015 Annual Environmental Report (AER) for Bord na Móna Waste Management Facility at Drehid, County Kildare. It covers the period from 1st January 2015 to 31st December 2015. 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 360,000 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 license, 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.

Drehid Waste Management Facility has a Management System onsite which is fully integrated to include ISO: 9001, ISO:14001, OHSAS: 18001. The management system is audited on a yearly basis by NSAI.

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 fifteen 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 that has been subject to adequate pre-treatment is permitted to be accepted for disposal at the landfill facility. 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 385,000 tonnes of non-hazardous municipal, commercial and industrial waste can be accepted annually at the landfill and compost facility until the 1st December 2015, after which the annual intake reduces to a maximum of 145,000 tonnes per annum. An unlimited amount of suitable engineering material can be accepted for recovery in on-site engineering.

2.3 Waste Activities

The facility is a full containment landfill, which is designed to accept pre-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 2015 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 2015

Waste Type to Landfill Facility	**Description**	**Tonnes**
Municipal	Mixed Commercial and Domestic	207544.88
	Street Cleansing and Local Authority Clean ups	48079.44
	Ash	2297.54
	Medical Waste	42.05
	Biostabilised Waste	67346.71
	Fly-tipped Material	1155.48
Industrial	Non Hazardous Industrial Solid Waste	896.76
	Medical waste	4.38
Sludges & Filter cake	Non Hazardous Municipal &Industrial	4749.59
C&D	Dredgings	3526.3
	Non Hazardous Soils and Stone (inc. Japanese Knotweed)	218.9
Total Disposed to Landfill Facility		**335,862**
Municipal	Glass	9802.7
	Biostabilised Waste	40318.65
Industrial	Sawdust, shavings, cuttings & wood	427.64
	Particulates and Dust	16.08
	Ash	1343.64
Sludges & Filter cake	Screenings (sand like material)	1878.14
C & D	C&D Rubble	71729.5
	Soils and fines material	307784.91
	Shredded Timber	22164.37
Total Recovered on-site from Landfill Facility		**455,466**
Total Accepted to Landfill Facility including Inert Waste		**791,328**

Soils & fines material includes Greenfield soils received for the final capping works at the facility. In addition to the quantities recovered onsite during 2015, an estimated 50,000 tonnes of soil and 2,000 tonnes of glass deemed suitable for engineering purposes remained in storage at the end of 2015 for later use.

Waste Type to Composting Facility	Description	Tonnes
Organic Fines	Screenings (<70mm) from trommelling of municipal Waste	31,625.58
Waste from mechanical treatment of waste & woodchip amendment material.	Oversize Amendment Material	1,589.96
	Total Accepted to Composting Facility	**33,215.54**

Table 2.2 Waste Consigned 2015

Waste Description	Tonnes
Engine, Gear and Lubricant Oils	92.92
Landfill Leachate & Foul Water	40038.41
Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	0.08
Oil Filters	0.24
Metals	77.72
Total Consigned:	**40,209.37**

2.5 Landfill Capacity

The most recent topographic survey of landfill cell footprint is included in Appendix 1. The projected closure date of the facility is 2028.

- The total capacity of the entire landfill facility is estimated to be **5,040,000m^3**.
- The current constructed unused void space at the end of 2015 is approximately **92,063 tonnes of disposal**
- **3,089,885m^3** of void space has been used up to the end of 2015.

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, data 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 at existing groundwater monitoring wells during 2015. Additional groundwater monitoring wells (GW-11S, GW-11D, GW-12S, GW-12D, GW-13S and GW-13D) were installed during March 2014 as requested by the EPA to provide additional down gradient monitoring locations. 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 during previous years, with naturally elevated 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

Rainfall from the landfill cap and hard stand areas of the landfill discharges firstly into two regulated settlement lagoons to remove the suspended solids and then into the Integrated Constructed Wetland (ICW) to remove the naturally elevated ammonia. The first ICW was constructed in 2014 with a second constructed in 2015 adjacent to the first to build on the successes achieved. The discharge from this ICW is monitored on a weekly basis (SW6). Since the second ICW has been fully operational in the second half of 2015 there have been no further ELV exceedances at SW6.

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 large 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.

BOD, Ammonia and Total Suspended Solids (TSS) levels were compared to their relevant emission limit values (ELV's). The ELV for ammonia was exceeded on a total of 2 no. occasions at SW6 which is located at the outlet for the Integrated Constructed Wetland (ICW). The ICW was constructed in 2013/2014 to actively manage naturally occurring elevated ammonia in groundwater which has elevated emissions at SW-6 from the pumping of groundwater. Under instruction from the EPA a second ICW was constructed in 2015 adjacent to the first and since it became fully operational in the second half of 2015 no further ELV exceedances have been recorded at SW6.

The ELV for ammonia was exceeded on a total 20 no. occasions at SW-5 during 2015 which is located downstream of the settlement lagoons before surface waters discharge into the Cushaling River. The ELV for ammonia was exceeded on a total 7 no. occasions at SW-4 during 2015 which is located at Dillons Bridge on the Cushaling River.

The elevations were due to natural influence from the surrounding peat i.e. the release of naturally occurring elevated ammonia in the peat and not form onsite waste activities.

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 36 external wells (LG-01 – LG-36), 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 exceeded on four occasions at the following landfill gas well locations– January LG-18 (1.4% v/v) , February LG-03 (1.1% v/v), March LG-21 (2.2% v/v) and April LG-21 (1.2% v/v).

The concentration limit for carbon dioxide (1.5% v/v) was exceeded on the following occasions.

January exceedances were detected at the following wells, LG-01 (1.7% v/v), LG-02 (3.0% v/v), LG-08 (2.1% v/v), LG-10 (1.6% v/v), LG-11 (2.1% v/v), LG-13 (2.2% v/v), LG-14 (4.5% v/v), LG-15 (3.4% v/v), LG-16 (1.9% v/v), LG-23 (2.3% v/v), LG-26 (2.0% v/v), LG-27 (1.8% v/v) and LG-28 (2.1% v/v).

February exceedances were detected at the following wells, LG-01 (2.1% v/v), LG-02 (2.4% v/v), LG-04 (1.7% v/v), LG-05 (2.1% v/v), LG-11 (1.7% v/v), LG-14 (2.2% v/v), LG-15 (2.5% v/v) and LG-16 (2.0% v/v).

March exceedances were detected at the following wells, LG-13 (3.6% v/v), LG-15 (2.1% v/v), LG-21 (2.0% v/v) and LG-27 (3.3% v/v).

April exceedances were detected at the following wells, LG-02 (2.0% v/v), LG-10 (1.8% v/v), LG-21 (2.0% v/v), LG-27 (2.9% v/v), LG-30 (2.5% v/v) and LG-36 (1.7% v/v).

May two exceedances were detected at LG-02 (2.2% v/v) and LG-16 (2.0% v/v).

June one exceedance was detected at LG-02 (1.9% v/v).

July exceedances were detected at the following wells, LG-02 (2.7% v/v), LG-07 (3.6% v/v), LG-25 (1.8% v/v) and LG-30 (1.7% v/v).

August exceedances were detected at the following wells, LG-02 (2.5% v/v), LG-06 (1.8% v/v), LG-07 (3.7% v/v), LG-16 (2.0% v/v), LG-25 (1.9% v/v) and LG-30 (2.3% v/v).

September exceedances were detected at the following wells, LG-06 (2.3% v/v), LG-09 (3.9% v/v), LG-16 (5.8% v/v), LG-25 (1.9% v/v) and LG-30 (2.3% v/v).

October exceedances were detected at the following wells, LG-07 (3.2% v/v), LG-08 (1.7% v/v), LG-11 (3.2% v/v), LG-14 (2.2% v/v), LG-16 (8.7% v/v), LG-30 (2.7% v/v) and LG-33 (3.6% v/v).

November exceedances were detected at the following wells, LG-06 (3.6% v/v), LG-07 (3.4% v/v), LG-09 (2.6% v/v), LG-11 (2.2% v/v), LG-12 (3.1% v/v), LG-14 (3.4% v/v), LG-15 (3.9% v/v) and LG-16 (4.7% v/v).

December exceedances were detected at the following wells, LG-07 (3.1% v/v), LG-09 (3.1% v/v), LG-13 (2.4% v/v), LG-14 (5.6% v/v), LG-15 (5.6% v/v) and LG-16 (4.6% v/v).

It must be noted that the exceedances of methane and carbon dioxide from the perimeter wells is not deemed to be as a result of the landfill activities, such fluctuations are more likely to be as a result of the peat environment at the site and in particular the drainage of the area which has left naturally occurring organic material susceptible to a more rapid breakdown.

3.4.2 Inside the Waste Body

Methane levels varied from 0.6 to 63.9 %v/v, carbon dioxide levels varied from 0.4 to 49.1 %v/v, while oxygen levels varied from 0 to 21.3 %v/v. These levels are typical of those in an operational non-hazardous waste landfill.

3.5 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 2015 included both daytime and night time monitoring. The noise sensitive location (NSL) recorded daytime LAeq levels of 35-37 dB(A) and night-time LAeq levels of 31-30 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 35-37 dB(A) at N1 (NSL) to 64-68 dB(A) at N4. The elevated noise level at N4 was attributed to event noise such as waste trucks/cars entering and exiting 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.

3.6 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 one result at D2 and four results at D6) were less than the deposition limit set in the licence (350 mg/m^2/day).

One elevated reading was recorded at D2 (488mg/m2/day) in September 2015. Site observations state that there were insects present in the gauge which could not be removed as they had decomposed along with some solids.

Elevated readings were recorded at D6, an internal site monitoring location in July (723mg/m3/day), September (1,606mg/m3/day), October (2,840mg/m3/day) and December (1,402mg/m3/day). These reading were attributed to high levels of bird faeces in the dust gauge in July, October and December and to dissolved matter (possibly cardboard) in the dust gauge in September which was felt had been deposited into the gauge by birds.

3.7 Meteorological Monitoring

Average rainfall and temperature 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 – 2015

Rainfall	
Total Annual (2015)	836.5mm
Maximum monthly (December)	206.3mm
Minimum monthly (June)	17.4mm
Temperature	
Mean (2015)	9.5°C
Mean Maximum (July)	14.3°C
Mean Minimum (February)	3.8°C

Total rainfall in millimetres for Casement

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2015	63.4	30.5	56.4	56.2	96.4	17.4	62.5	67.5	26.2	39.4	114.3	206.3	836.5
2014	110.7	122.0	56.7	39.3	98.4	31.7	42.6	142.2	12.8	89.1	138.9	64.1	948.5
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
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
2015	4.6	3.8	5.8	8.1	9.8	13.3	14.3	14.2	12.0	10.3	8.5	8.5	9.5
2014	5.5	5.6	6.8	9.5	11.6	13.9	16.3	13.9	13.7	11.1	7.5	5.3	10.1
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
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

3.8 Biological Monitoring

The annual biological assessment of the Cushaling River was carried out by ANUA Environmental in accordance with Condition 8.11 of the License on 4th September 2015.

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 8th December 2014 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 biological quality of the Cushaling River.

4. SITE DEVELOPMENT WORKS

4.1 Tank, Pipeline and Bund Testing

Integrity testing was required on the Diesel Oil Bund and the Diesel Bowser in 2015. These were carried out and both passed inspection. The foul lines of the compost plant were also assessed in August 2015 and passed inspection. The reports from these assessments are on file at the Drehid Waste Management Facility and are available to the Agency for inspection at any time.

4.2 Summary of Resource & Energy Consumption

Table 4.1 presents an estimate of the resources used on-site in 2015. 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)	495,649 Litres
Kerosene	6,575 Litres
Electricity (Landfill and Composting activity)	2,342,663kWhr
Electricity (Gas Plant)	9,427kWhr

4.3 Site Developments

4.3.1 Landfill Construction

The construction of Phases 9 & 10 to the east of the existing footprint of the landfill began in 2014. Phase 9 was completed in 2015. It is envisaged that Phase 10 will be completed by the end of April 2016.

During the calendar year of 2015, the final capping programme continued on site. During this period, all of Phase 2, and the majority of Phase 3 and Phase 4 were covered with the geo-membrane landfill cap. Due to adverse weather conditions, it was not possible to complete the placement of inert soils on the geo-membrane landfill cap on all of Phase 2, Phase 3 and Phase 4. Every effort continues to be made to source reclaimed inert soils for the final capping works to avoid the unnecessary exploitation of virgin soils. The seeding of the side slopes of Phase 1 was undertaken in September 2015 in order to establish grass growth before Winter.

4.3.2 Landfill Gas Cleaning Plant

In 2015, a landfill gas cleaning plant was installed at Drehid. The plant is designed to remove hydrogen sulphide, other organo-sulphur compounds and siloxanes from the landfill gas stream thereby increasing gas engine availability by extending the engine service and overhaul intervals.

The landfill gas cleaning plant comprises three stages. The first stage involves the biological scrubbing of the gas stream to remove hydrogen sulphide. The second stage involves the chilling/de-watering of the landfill gas in order to condition the gas for the third stage of the process. In addition, the removal of moisture from the gas reduces the potential for corrosion in the gas engines. The third stage of the process involves moving the gas through vessels which are filled with activated carbon in order to remove siloxanes. The presence of siloxanes in the landfill gas results in silica deposits in the engines' internal moving parts and components. The silica deposits are abrasive leading to engine down time, and increased operating costs. Following the completion of its installation in the last quarter of 2015, a commissioning phase commenced which continued beyond the end of 2015. It is expected that the commissioning phase will conclude by the middle of 2016.

4.3.3 Reverse Osmosis Plant

Following an initial setup and commissioning phase, Bord na Móna commenced the use of a Reverse Osmosis plant, on a trial basis, for the treatment of landfill leachate on the 29th of June 2015. The RO plant facilitated the diversion of leachate volumes to a number of licenced treatment facilities.

Permeate produced by the RO plant is used as replacement water in the landfill gas biological scrubbing system which has avoided the generation of additional volumes of effluent at Drehid. The innovative approach of using permeate in the landfill gas cleaning plant is a significant benefit of the use of RO at Drehid, demonstrating the synergies between the two processes.

4.3.4 Technical Assessment Report

In November 2015 a Tier 3 Technical Assessment Report was completed and submitted to the Agency for review. The assessment was completed in accordance with the Guidance on the Authorisation of Discharges to Groundwater (2011) issued by the Environmental Protection Agency. The Tier 3 Assessment described the landfill design and construction, including remedial measures, the type and age of the waste, the geological and hydrogeological conditions (soils and subsoil classification, aquifer status, yield, groundwater flow rates, recharge rates and groundwater quality and sensitive receptors (water supply wells, designated sites e.g. groundwater dependent ecosystems). It assessed the risks presented by the landfill and where relevant made recommendations in relation to the establishment of groundwater compliance points and values.

The Assessment found that the site was compliant with the "prevent" or "limit" objectives of the WFD and GWD. It found that the current groundwater monitoring network was adequate to meet the aims of the groundwater compliance monitoring required under the Groundwater Regulations and that there was no need for amendments. Monitoring wells GW-9, GW-10, GW-3s and GW-3d were selected for compliance monitoring for Contaminates of Potential Concern.

4.4 Stability Assessment

The Drehid Facility is currently within Phase 10 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.

A Stability Assessment Report was commissioned by Tobin Consulting Engineers and completed on 12th March 2016. This report is available at the Drehid Waste Management Facility for inspection by the Agency.

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 3401 M3/ hour of landfill gas is produced, which equates to a 2015 total for methane production of 8,006,613 kgs. The total landfill gas flared from the site was calculated to be 2,124,236 kgs.

In addition, 5,498,547 kgs of methane was utilised to generate green electricity onsite.

Gas Sim	8,006,613 kg/year
Flared	2,124,236 kg/year
Utilised	5,498,547 kg/year
Fugitive Loss	383,830 kg/year

5.2 Surface Water

Rainfall from the landfill cap and hard stand areas of the landfill discharges firstly into a regulated settlement lagoon before entering the Integrated Constructed Wetland (ICW) the outlet of which (SW-6) is frequently 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 Cushaling River.

5.3 Leachate

The tonnage of leachate and foul water taken offsite in 2015 was 40,038.41 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 34 no. incidents on-site during the reporting period. The majority (20 no.) related to exceedance of the ammonia limit of 0.5mg/l NH_4 set in the Licence at SW-5. 2 no. related to exceedances of the ammonia limit of 0.5mg/l NH_4 at SW6 and 7 no. related to the exceedance of the ammonia limit of 0.5mg/l NH_4 at SW4.

There was 1 no. incident relating to the exceedance of the trigger value (1.5%v/v) for carbon dioxide (CO_2) and 1 no. related to the exceedance of the trigger value (1.5%v/v) for methane (CH_4) in the perimeter landfill gas monitoring wells during the Quarter 1 monitoring events. 2 no. incidents related to fire at the facility. One was a small fire detected in the landfill on 23rd January and the other was a localised fire on the access road which was caused by a punctured tyre of a waste truck arriving to the site on 13th November 2015. The remaining Incident related to a spill of non-hazardous printing toner (EWC 08 03 18) being delivered to the Drehid Waste Management Facility for disposal on 09th September 2015.

Naturally occurring ammonia in groundwaters is perhaps the most challenging aspect of managing surface waters at Drehid. The ammonia levels recorded 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, in 2015 Bord na Móna were actively seeking to reduce ammonia levels in surface waters as in evidence from the monitoring results provided. In 2012, Drehid reported 40 no. ELV exceedances for ammonia at SW6, in 2013 this number was reduced to 36, in 2014 to 10 no. ELV exceedances and finally in 2015 to 2 no. ELV exceedances. In order to build on the successes in 2014 a second wetland pond adjacent to the first was constructed in 2015 and the two wetlands were integrated by phasing the flow from the first primary pond to the second pond and out to the SW6 discharge point. This was fully operational by the second half of 2015 and there have been no further ELV exceedances at SW6 since that date.

During 2015, Bord na Móna continued to maintain the following control measures, in addition to those outlined above, to reduce the level of naturally occurring ammonia in surface waters leaving the site:

1. 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.

2. Stone weirs were installed that involved the placement of stone in the swale at a slope, thus facilitating the riffling 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 9 no. complaints were received in the reporting period relating to odour (6 no.), litter (2 no.) and traffic (1 no.). All of the complaints were addressed by facility staff.

8. ENVIRONMENTAL MANAGEMENT SYSTEM

8.1 Management Structure

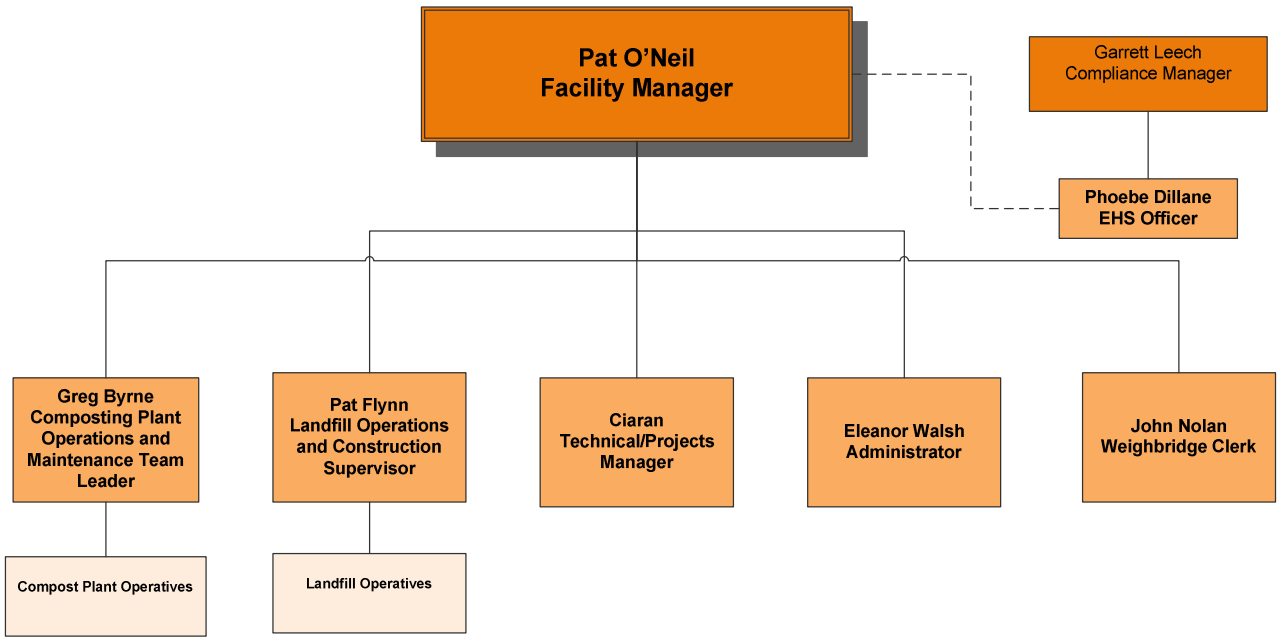
The Management Structure as required by Condition 2.2.2.1 of the licence was submitted to the Agency on 26th May 2006, as part of the EMS. An amended version is included below.

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 2015 is shown below.

BORD NA MÓNA
Naturally Driven

DREHID FACILITY MANAGEMENT STRUCTURE



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 2015

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

8.2.2 Schedule of Objectives 2016

Bord Na Móna has set a schedule of targets and objectives for 2016. 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 2015

Ref No	Objective	Target	Timescale	Responsible Person	Status
1	Final Capping	Continue installation of final capping across Phase 3	June 2015	CG/PF	Ongoing – Due for completion June 2016. Phase 1 seeded in Sept 2015
2	Leachate Management	Commissioning of full scale Reverse Osmosis Leachate treatment plant in 2015	March 2015	CG/PF	Trial ongoing in 2016
3	Waste Minimisation	Re-use where possible materials used on site.	Ongoing	Team	Ongoing
4	Environmental Training and Awareness	Continue internal training programme and assessment of training needs for all operational staff during 2015	Ongoing	Environmental Team	Ongoing
5	Environmental Compliance	Review license conditions outlined within W0201-03 to ensure continued compliance with the license conditions.	Ongoing	Environmental team	Ongoing
6	Reduction in energy consumption and use of fossil fuels within the Compost Facility	Assess recommendations and introduce where possible. Establish monitoring matrices for the consumption of diesel, kerosene etc.	Dec-2015	MS	Ongoing by Greg Byrne
7	Odour Management Plan	Maintain Odour Management Plan, including installation of intermediate liner and gas infrastructure as required. Commission full scale Landfill Gas Cleaning plant to cleanse landfill gas utilised by the on-site Landfill Gas Engines.	Ongoing	CG/PF	Odour Plan ongoing. Gas Cleaning Plant commissioned in 2015
8	Environmental Auditing	Maintaining waste inspections during 2015 of waste coming on to site to ensure compliance with W0201-03 for waste acceptance.	Ongoing	Team	Ongoing

Table 8.2 Schedule of Objectives and Targets for 2016

Ref No	Objective	Target	Timescale	Responsible Person	Status
1	Final Capping	Continue installation of final capping across Phase 5 and 6	End of 2016	CG/PF	Phase 1 seeded and completed.
2	Leachate Management	Continuation of Reverse Osmosis Leachate treatment plant trial	March 2015	CG/PF	Trial Ongoing in 2016
3	Waste Minimisation	Re-use where possible materials used on site.	Ongoing	Team	Ongoing
4	Environmental Training and Awareness	Continue internal training programme and assessment of training needs for all operational staff during 2016	Ongoing	Environmental Team	Ongoing
5	Environmental Compliance	Review license conditions outlined within W0201-03 to ensure continued compliance with the license conditions.	Ongoing	Environmental team	Ongoing
6	Reduction in energy consumption and use of fossil fuels within the Compost Facility	Assess recommendations and introduce where possible. Establish monitoring matrices for the consumption of diesel, kerosene etc.	Dec-2015	GB	Ongoing
7	Odour Management Plan	Maintain Odour Management Plan, including installation of intermediate liner and gas infrastructure as required. Finish commissioning of full scale Landfill Gas Cleaning plant to cleanse landfill gas utilised by the on-site Landfill Gas Engines.	Ongoing	CG/PF	Odour Plan on going. LGC Plant due to be fully commissioned by Mid 2016
8	Environmental Auditing	Maintaining waste inspections during 2016 of waste coming on to site to ensure compliance with W0201-03 for waste acceptance.	Ongoing	Team	Ongoing

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) was submitted to the Agency in December 2015. 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 €426,545 is to be made to the community fund for 2015 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.

The Drehid Waste Management Facility is required to submit a Section 53A Statement annually in line with a legal requirement under Section 53A of the Waste Management Act 1996 (as amended) and Condition 12.4 of Drehid Waste License (Reg. No. W0201-03). This is completed by Bord na Mona plc at the end of its financial year which is the end of March 2016. Therefore, it is not possible to submit the Section 53A Statement as part of the 2015 AER. Following the finalisation of its financial year end accounts, Bord na Móna will submit a S53A statement to the Agency via Eden. It is envisaged that the S53A statement will be submitted via Eden in July 2016.

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: -

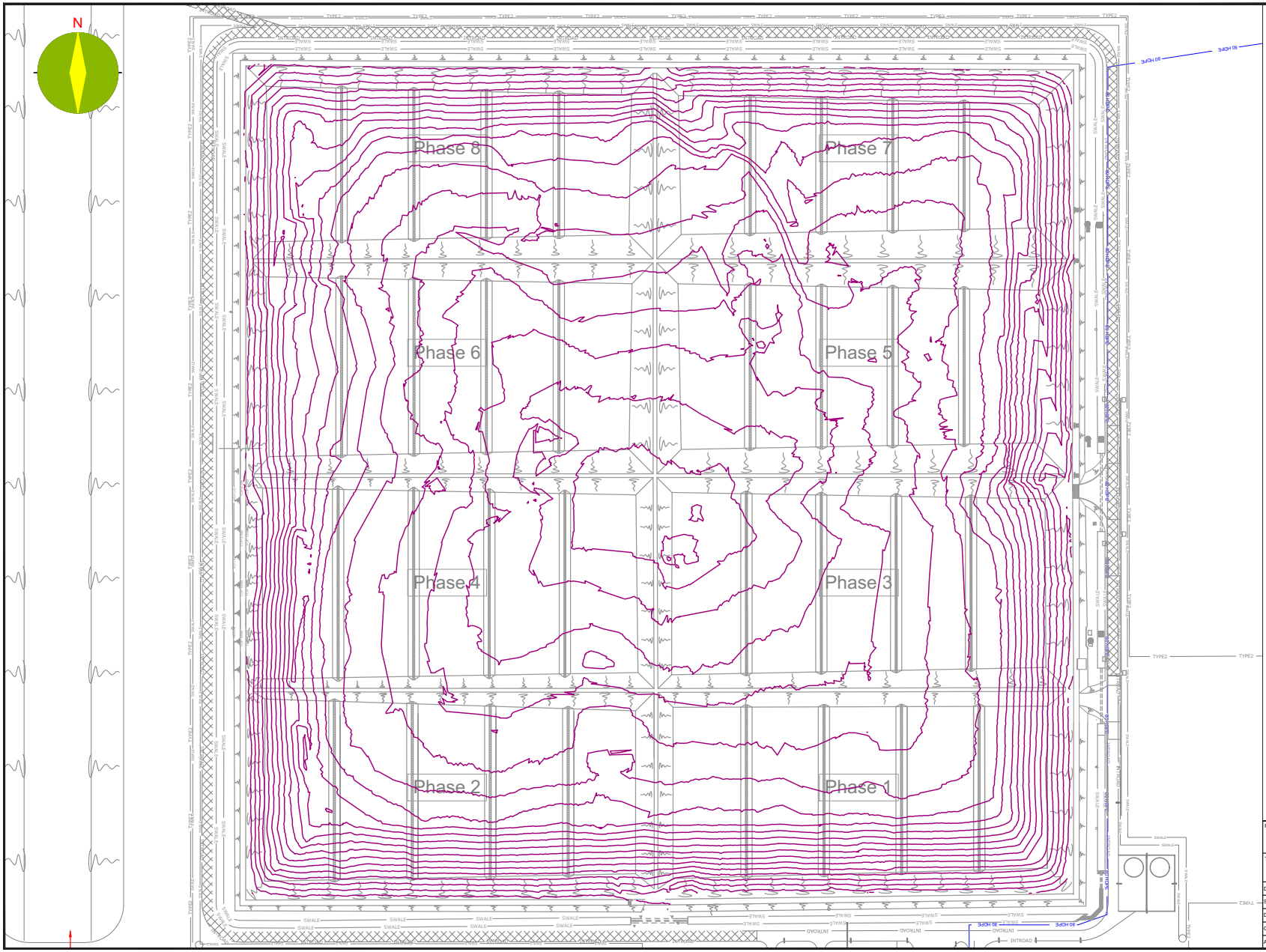
- Prevention,
- Minimisation,

- 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.

APPENDIX 1

Topographic Survey



LEGEND

1M Contours January 2016 Waste Survey

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

1000m 0 1000m 2000m 3000m

Revision:	Details:	By:	Date:	Chk'd:
A	Annual Drawing	M.H.	31.03.13	
B	Annual Drawing	M.H.	07.05.14	
C	Annual Drawing	M.H.	31.03.15	

Project: Drehid Waste Management Facility

Title: Waste Deposition January 2015

Dimensions in.	M		
Scale.	1/2000		
Drawn By.	M.H	31/03/16	
Checked By.			
Approved By.			

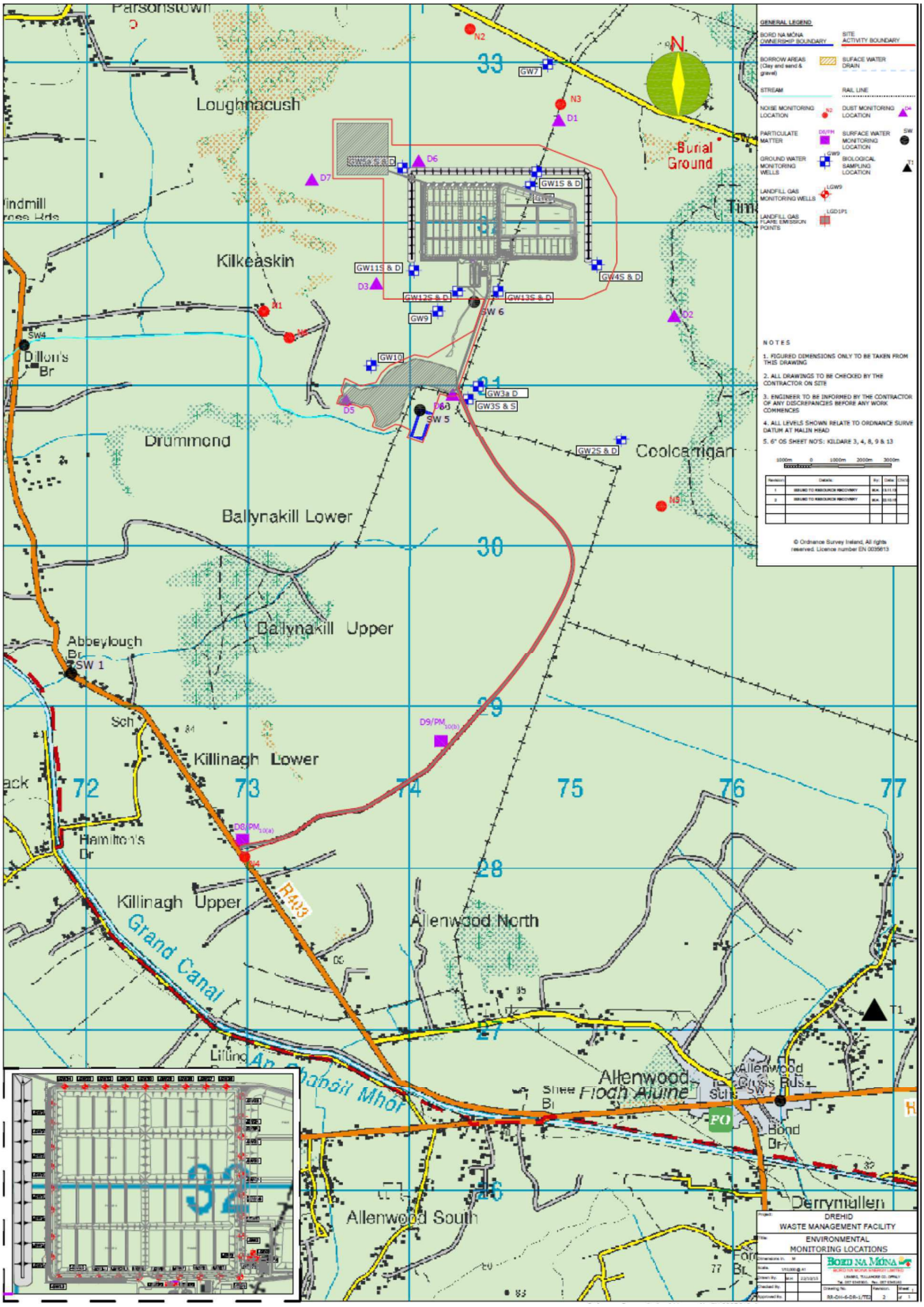
BORD NA MÓNA
BORD NA MONA ENERGY LIMITED
LEABEG, TULLAMORE CO. OFFALY
Tel. 057 9345900. Fax. 057 9345160

Drawing No.	Revision.	Sheet
RR-DR-12-DR-01-C	C	of

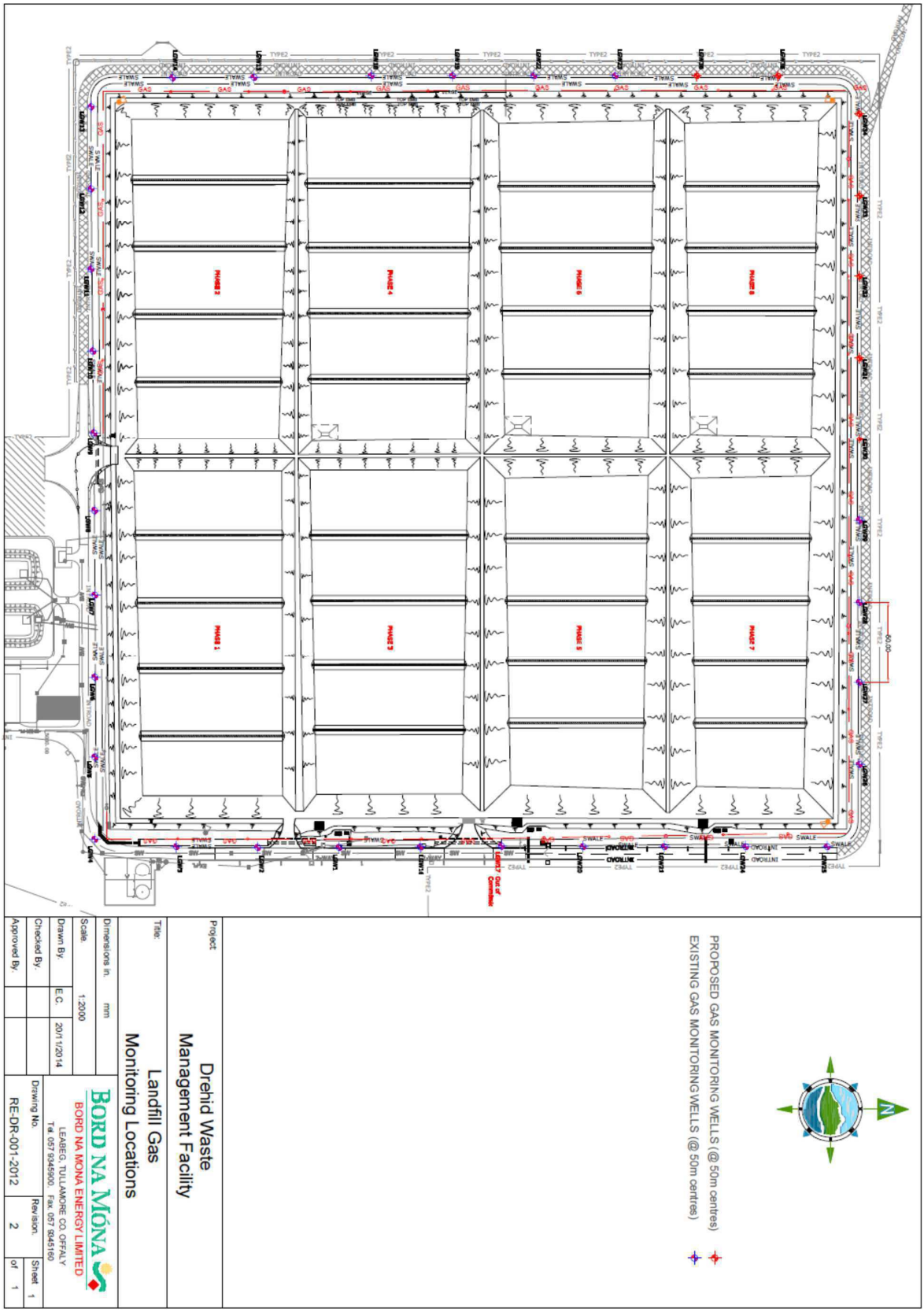
APPENDIX 2

Monitoring Location Maps / Monitoring Results 2015

Surface Water & Groundwater Monitoring Locations



Landfill Gas Monitoring Wells



Surface Water Monitoring Results

Location reference	Location relative to site activities	PRTR Parameter	Licenced Parameter	Monitoring date	ELV or trigger level in licence or any revision thereof	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Comments
SW6	onsite		BOD	quarterly	25	All values < ELV	3.33	mg/L	yes	
SW6	onsite		COD	quarterly		N/A	47	mg/L	yes	
SW6	onsite		Ammonia (as N)	weekly	0.5	All values < ELV	0.14	mg/L	no	An Ammonia level greater than 0.5 mg/l was recorded at SW6 during Weeks 3 and 10
SW6	onsite		Suspended Solids	weekly	35	All values < ELV	9	mg/L	yes	
SW6	onsite		pH	weekly		N/A	7.6	pH units	yes	
SW6	onsite		Conductivity	weekly		N/A	556	µS/cm@25oC	yes	
SW6	onsite	Chlorides (as Cl)		weekly		N/A	26	mg/L		
SW6	onsite		Ortho-phosphate (as PO4)	Annual		N/A	0.01	mg/L		
SW6	onsite	Total phosphorus		Annual		N/A	<0.05	mg/L		
SW6	onsite		Nitrate (as N)	Annual		N/A	1.3	µg/L		
SW6	onsite		Sulphate	Annual		N/A	72	mg/L		
SW6	onsite		Sodium	Annual		N/A	40	mg/L		
SW6	onsite		Magnesium	Annual		N/A	9.4	mg/L		
SW6	onsite		Potassium	Annual		N/A	5	mg/L		
SW6	onsite		Calcium	Annual		N/A	191	mg/L		
SW6	onsite		Boron	Annual		N/A	45	µg/L		
SW6	onsite	Chromium and compounds (as Cr)		Annual		N/A	9	µg/L		
SW6	onsite		Manganese (as Mn)	Annual		N/A	15	µg/L		
SW6	onsite	Nickel and compounds (as Ni)		Annual		N/A	<2	µg/L		
SW6	onsite	Copper and compounds (as Cu)		Annual		N/A	2	µg/L		
SW6	onsite	Zinc and compounds (as Zn)		Annual		N/A	37	µg/L		

SW6	onsite	Cadmium and compounds (as Cd)		Annual		N/A	<2	µg/L		
SW6	onsite	Lead and compounds (as Pb)		Annual		N/A	<2	µg/L		
SW6	onsite		Iron	Annual		N/A	<0.1	mg/L		
SW6	onsite	Mercury and compounds (as Hg)		Annual		N/A	<1	µg/L		
SW6	onsite		Pesticides	Annual		N/A	<0.01	µg/L		
SW6	onsite		Semi-volatiles	Annual		N/A	<1	µg/L		
SW6	onsite		Volatile organic compounds (as TOC)	Annual		N/A	<1	µg/L		
SW5	downstream		Ammonia (as N)	weekly		N/A	0.63	mg/L	no	An Ammonia level greater than 0.5 mg/l was recorded at SW5 during Weeks 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 17, 20, 21, 48, 49, 50 and 52
SW5	downstream		BOD	quarterly	25	All values < ELV	5.0	mg/L	yes	
SW5	downstream		COD	quarterly		N/A	62	mg/L	yes	
SW5	downstream		Suspended Solids	weekly	35	All values < ELV	12	mg/L	yes	
SW5	downstream	Chlorides (as Cl)		weekly		N/A	14	mg/L	yes	
SW5	downstream		Conductivity	weekly		N/A	426	µS/cm@25oC	yes	
SW5	downstream		pH	weekly		N/A	7.6	pH units	yes	
SW5	downstream		Ortho-phosphate (as PO4)	Annual		N/A	0.09	mg/L		
SW5	downstream	Total phosphorus		Annual		N/A	0.12	mg/L		
SW5	downstream		Nitrate (as N)	Annual		N/A	<0.2	µg/L		
SW5	downstream		Sulphate	Annual		N/A	16	mg/L		
SW5	downstream		Sodium	Annual		N/A	16	mg/L		
SW5	downstream		Magnesium	Annual		N/A	8	mg/L		
SW5	downstream		Potassium	Annual		N/A	1.3	mg/L		
SW5	downstream		Calcium	Annual		N/A	104	mg/L		
SW5	downstream		Boron	Annual		N/A	19	µg/L		
SW5	downstream	Chromium and compounds (as Cr)		Annual		N/A	10	µg/L		

SW5	downstream		Manganese (as Mn)	Annual		N/A	85	µg/L		
SW5	downstream	Nickel and compounds (as Ni)		Annual		N/A	<2	µg/L		
SW5	downstream	Copper and compounds (as Cu)		Annual		N/A	<2	µg/L		
SW5	downstream	Zinc and compounds (as Zn)		Annual		N/A	31	µg/L		
SW5	downstream	Cadmium and compounds (as Cd)		Annual		N/A	<2	µg/L		
SW5	downstream	Lead and compounds (as Pb)		Annual		N/A	<2	µg/L		
SW5	downstream		Iron	Annual		N/A	3.3	mg/L		
SW5	downstream	Mercury and compounds (as Hg)		Annual		N/A	<1	µg/L		
SW5	downstream		Pesticides	Annual		N/A	<0.01	µg/L		
SW5	downstream		Semi-volatiles	Annual		N/A	<1	µg/L		
SW5	downstream		Volatile organic compounds (as TOC)	Annual		N/A	<1	µg/L		
SW4	downstream		Ammonia (as N)	weekly		N/A	0.23	mg/L	no	An Ammonia level greater than 0.5 mg/l was recorded at SW4 during Weeks 4, 6, 7, 10, 11, 12 and 13
SW4	downstream		BOD	quarterly		N/A	3.0	mg/L	yes	
SW4	downstream		COD	quarterly		N/A	39	mg/L	yes	
SW4	downstream		Suspended Solids	weekly		N/A	12.0	mg/L	yes	
SW4	downstream	Chlorides (as Cl)		weekly		N/A	14	mg/L	yes	
SW4	downstream		Conductivity	weekly		N/A	543	µS/cm@25oC	yes	
SW4	downstream		pH	weekly		N/A	7.7	pH units	yes	
SW4	downstream		Ortho-phosphate (as PO4)	Annual		N/A	0.03	mg/L		
SW4	downstream	Total phosphorus		Annual		N/A	0.07	mg/L		
SW4	downstream		Nitrate (as N)	Annual		N/A	0.87	µg/L		
SW4	downstream		Sulphate	Annual		N/A	8.5	mg/L		
SW4	downstream		Sodium	Annual		N/A	18	mg/L		
SW4	downstream		Magnesium	Annual		N/A	10	mg/L		

SW4	downstream		Potassium	Annual		N/A	3.5	mg/L		
SW4	downstream		Calcium	Annual		N/A	172	mg/L		
SW4	downstream		Boron	Annual		N/A	15	µg/L		
SW4	downstream	Chromium and compounds (as Cr)		Annual		N/A	11	µg/L		
SW4	downstream		Manganese (as Mn)	Annual		N/A	121	µg/L		
SW4	downstream	Nickel and compounds (as Ni)		Annual		N/A	<2	µg/L		
SW4	downstream	Copper and compounds (as Cu)		Annual		N/A	2	µg/L		
SW4	downstream	Zinc and compounds (as Zn)		Annual		N/A	2	µg/L		
SW4	downstream	Cadmium and compounds (as Cd)		Annual		N/A	<2	µg/L		
SW4	downstream	Lead and compounds (as Pb)		Annual		N/A	<2	µg/L		
SW4	downstream		Iron	Annual		N/A	0.5	mg/L		
SW4	downstream	Mercury and compounds (as Hg)		Annual		N/A	<1	µg/L		
SW4	downstream		Pesticides	Annual		N/A	<0.01	µg/L		
SW4	downstream		Semi-volatiles	Annual		N/A	<1	µg/L		
SW4	downstream		Volatile organic compounds (as TOC)	Annual		N/A	<1	µg/L		

Dust Monitoring Results

Emission reference no:	Parameter/ Substance	Frequency of Monitoring	ELV in licence or any revision therof	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence limit	Method of analysis	Comments -reason for change in % mass load from previous year if applicable
D1	Total Particulates	Monthly	350	Daily average < ELV	60	mg/m2/day	yes	OTH Based on VDI 2119 Blatt 2	
D2	Total Particulates	Monthly	350	Daily average < ELV	104	mg/m2/day	no	OTH Based on VDI 2119 Blatt 2	Exceedance of licence limit of 350mg/m2/day with a result of 488mg/m2/day,
D5	Total Particulates	Monthly	350	Daily average < ELV	86	mg/m2/day	yes	OTH Based on VDI 2119 Blatt 2	
D6	Total Particulates	Monthly	350	Daily average < ELV	645	mg/m2/day	no	OTH Based on VDI 2119 Blatt 2	4 Exceedances of licence limit of 350mg/m2/day with a results of 723mg/m2/day, 1606mg/m2/day, 2840mg/m2/day and 1402mg/m2/day.
D8	Total Particulates	Monthly	350	Daily average < ELV	127	mg/m2/day	yes	OTH Based on VDI 2119 Blatt 2	

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

Up-gradient Groundwater Monitoring Results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration++	Average Concentration+	unit	GTV's*	IGV	Upward trend in pollutant concentration over last 5 years of monitoring data
Monthly	GW1s	pH	APHA 2012 4500 H&B	Monthly	7.1	6.9	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW1s	Conductivity	APHA 2012 2510B	Monthly	1227	1074	µS/cm	800 – 1875	1000	yes
Monthly	GW1s	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	14.0	13.4	mg/l	0.065-0.175	0.15	no
Monthly	GW1s	Ammonium	via inhouse calculation	Monthly	6.9	6.5	mg/l		0.2	no
Monthly	GW1s	Chloride	APHA 2012 4500-CL–E	Monthly	9	8	mg/l	187.5	30	yes
03/09/2015	GW1s	Sulphate	APHA 2012 4110B	Annually	2.0		mg/l	187.5	200	no
03/09/2015	GW1s	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW1s	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW1s	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW1s	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	136.0		mg/l	-	200	no
03/09/2015	GW1s	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.6		mg/l	-	50	yes
03/09/2015	GW1s	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.1		mg/l	-	5	yes
03/09/2015	GW1s	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.3		mg/l	150	150	yes
03/09/2015	GW1s	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW1s	Boron - dissolved	ICP-MS	Annually	9.0		ug/l	0.75	1	no
03/09/2015	GW1s	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.0		ug/l	7.5	0.01	no
03/09/2015	GW1s	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	277.0		ug/l	-	0.1	no
03/09/2015	GW1s	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW1s	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

03/09/2015	GW1s	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW1s	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW1s	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW1s	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.05	yes
03/09/2015	GW1s	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1s	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	15.0		ug/l	15	0.02	no
03/09/2015	GW1s	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW1s	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1s	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1s	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1s	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
03/09/2015	GW1s	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1s	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW1s	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW1s	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW1s	Total Coliforms	MTM025	Annually	80.0		cfu / 100 ml	0	0	yes
Monthly	GW1d	pH	APHA 2012 4500 H&B	Monthly	7.5	7.2	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW1d	Conductivity	APHA 2012 2510B	Monthly	750	688	µS/cm	800 – 1875	1000	yes
Monthly	GW1d	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	11.0	10.2	mg/l	0.065-0.175	0.15	no
Monthly	GW1d	Ammonium	via inhouse calculation	Monthly	6.0	5.3	mg/l		0.2	no
Monthly	GW1d	Chloride	APHA 2012 4500-CL–E	Monthly	8	7	mg/l	187.5	30	no

03/09/2015	GW1d	Sulphate	APHA 2012 4110B	Annually	<0.5		mg/l	187.5	200	no
03/09/2015	GW1d	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW1d	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW1d	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW1d	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	94.0		mg/l	-	200	no
03/09/2015	GW1d	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.4		mg/l	-	50	no
03/09/2015	GW1d	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.1		mg/l	-	5	no
03/09/2015	GW1d	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.1		mg/l	150	150	no
03/09/2015	GW1d	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW1d	Boron - dissolved	ICP-MS	Annually	10.0		ug/l	0.75	1	no
03/09/2015	GW1d	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.0		ug/l	7.5	0.01	no
03/09/2015	GW1d	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	332.0		ug/l	-	0.1	no
03/09/2015	GW1d	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW1d	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1d	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	yes
03/09/2015	GW1d	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW1d	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW1d	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.05	yes
03/09/2015	GW1d	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1d	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	13.0		ug/l	15	0.02	no
03/09/2015	GW1d	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW1d	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1d	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

03/09/2015	GW1d	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1d	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
03/09/2015	GW1d	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW1d	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW1d	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW1d	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW1d	Total Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	yes
03/09/2015	GW2s	pH	APHA 2012 4500 H&B	Annually	7.1		pH Units			no
03/09/2015	GW2s	Conductivity	APHA 2012 2510B	Annually	810		µS/cm			yes
03/09/2015	GW2s	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Annually	10.4		mg/l			yes
03/09/2015	GW2s	Ammonium	via inhouse calculation	Annually	1.2		mg/l			yes
03/09/2015	GW2s	Chloride	APHA 2012 4500-CL–E	Annually	2		mg/l			no
03/09/2015	GW2s	Sulphate	APHA 2012 4110B	Annually	8.5		mg/l	187.5	200	no
03/09/2015	GW2s	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW2s	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW2s	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW2s	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	107.0		mg/l	-	200	no
03/09/2015	GW2s	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	20.0		mg/l	-	50	no
03/09/2015	GW2s	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.9		mg/l	-	5	no
03/09/2015	GW2s	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.2		mg/l	150	150	no
03/09/2015	GW2s	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no

03/09/2015	GW2s	Boron - dissolved	ICP-MS	Annually	46.0		ug/l	0.75	1	no
03/09/2015	GW2s	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	7.5	0.01	no
03/09/2015	GW2s	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	328.0		ug/l	-	0.1	no
03/09/2015	GW2s	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW2s	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2s	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	yes
03/09/2015	GW2s	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW2s	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW2s	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	102.0		ug/l	-	0.05	yes
03/09/2015	GW2s	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2s	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	12.0		ug/l	15	0.02	no
03/09/2015	GW2s	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW2s	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2s	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2s	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2s	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
03/09/2015	GW2s	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2s	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW2s	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW2s	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW2s	Total Coliforms	MTM025	Annually	16.0		cfu / 100 ml	0	0	yes

03/09/2015	GW2d	pH	APHA 2012 4500 H&B	Annually	7.2		pH Units			no
03/09/2015	GW2d	Conductivity	APHA 2012 2510B	Annually	763		µS/cm			yes
03/09/2015	GW2d	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Annually	14.0		mg/l			yes
03/09/2015	GW2d	Ammonium	via inhouse calculation	Annually	1.6		mg/l			yes
03/09/2015	GW2d	Chloride	APHA 2012 4500-CL–E	Annually	2		mg/l			no
03/09/2015	GW2d	Sulphate	APHA 2012 4110B	Annually	3.4		mg/l	187.5	200	no
03/09/2015	GW2d	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW2d	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW2d	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.1		mg/l	-	-	no
03/09/2015	GW2d	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	118.0		mg/l	-	200	no
03/09/2015	GW2d	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.2		mg/l	-	50	no
03/09/2015	GW2d	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.3		mg/l	-	5	no
03/09/2015	GW2d	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	19.0		mg/l	150	150	no
03/09/2015	GW2d	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW2d	Boron - dissolved	ICP-MS	Annually	14.0		ug/l	0.75	1	no
03/09/2015	GW2d	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	7.5	0.01	no
03/09/2015	GW2d	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	286.0		ug/l	-	0.1	no
03/09/2015	GW2d	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW2d	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2d	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	yes
03/09/2015	GW2d	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW2d	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW2d	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	21.0		ug/l	-	0.05	yes

03/09/2015	GW2d	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2d	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.0		ug/l	15	0.02	no
03/09/2015	GW2d	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW2d	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2d	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2d	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2d	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.0		ug/l	-	200	no
03/09/2015	GW2d	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW2d	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW2d	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW2d	Faecal Coliforms	MTM025	Annually	3000		cfu / 100 ml	0	0	no
03/09/2015	GW2d	Total Coliforms	MTM025	Annually	3000		cfu / 100 ml	0	0	yes
Monthly	GW3s	pH	APHA 2012 4500 H&B	Monthly	7.3	7.1	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW3s	Conductivity	APHA 2012 2510B	Monthly	891	836	µS/cm	800 – 1875	1000	yes
Monthly	GW3s	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	14.0	13.8	mg/l	0.065-0.175	0.15	yes
Monthly	GW3s	Ammonium	via inhouse calculation	Monthly	5.1	3.6	mg/l		0.2	yes
Monthly	GW3s	Chloride	APHA 2012 4500-CL–E	Monthly	7	5	mg/l	187.5	30	no
03/09/2015	GW3s	Sulphate	APHA 2012 4110B	Annually	0.7		mg/l	187.5	200	no
03/09/2015	GW3s	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW3s	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW3s	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.1		mg/l	-	-	no

03/09/2015	GW3s	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	166.0		mg/l	-	200	no
03/09/2015	GW3s	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	13.0		mg/l	-	50	no
03/09/2015	GW3s	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.7		mg/l	-	5	yes
03/09/2015	GW3s	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	14.0		mg/l	150	150	no
03/09/2015	GW3s	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW3s	Boron - dissolved	ICP-MS	Annually	22.0		ug/l	0.75	1	no
03/09/2015	GW3s	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	7.5	0.01	yes
03/09/2015	GW3s	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	409.0		ug/l	-	0.1	no
03/09/2015	GW3s	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW3s	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW3s	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW3s	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW3s	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW3s	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	104.0		ug/l	-	0.05	no
03/09/2015	GW3s	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW3s	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.0		ug/l	15	0.02	no
03/09/2015	GW3s	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW3s	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW3s	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW3s	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW3s	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
03/09/2015	GW3s	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

03/09/2015	GW3s	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW3s	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW3s	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW3s	Total Coliforms	MTM025	Annually	220		cfu / 100 ml	0	0	no
Monthly	GW6	pH	APHA 2012 4500 H&B	Monthly	7.8	7.6	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW6	Conductivity	APHA 2012 2510B	Monthly	511	483	µS/cm	800 – 1875	1000	no
Monthly	GW6	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	12.0	11.6	mg/l	0.065-0.175	0.15	no
Monthly	GW6	Ammonium	via inhouse calculation	Monthly	5.9	5.8	mg/l		0.2	no
Monthly	GW6	Chloride	APHA 2012 4500-CL–E	Monthly	8	7	mg/l	187.5	30	no
03/09/2015	GW6	Sulphate	APHA 2012 4110B	Annually	<0.5		mg/l	187.5	200	no
03/09/2015	GW6	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	0.1		mg/l	37.5	25	no
03/09/2015	GW6	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.2		mg/l	-	0.03	no
03/09/2015	GW6	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.01		mg/l	-	-	no
03/09/2015	GW6	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	80.0		mg/l	-	200	no
03/09/2015	GW6	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.9		mg/l	-	50	yes
03/09/2015	GW6	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.4		mg/l	-	5	yes
03/09/2015	GW6	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.3		mg/l	150	150	yes
03/09/2015	GW6	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW6	Boron - dissolved	ICP-MS	Annually	11.0		ug/l	0.75	1	no
03/09/2015	GW6	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	22.0		ug/l	7.5	0.01	no
03/09/2015	GW6	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	122.0		ug/l	-	0.1	no

03/09/2015	GW6	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW6	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.0		ug/l	-	-	yes
03/09/2015	GW6	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW6	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW6	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW6	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	18.0		ug/l	-	0.05	no
03/09/2015	GW6	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW6	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	13.0		ug/l	15	0.02	yes
03/09/2015	GW6	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW6	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.0		ug/l	-	-	no
03/09/2015	GW6	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW6	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW6	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW6	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW6	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW6	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW6	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW6	Total Coliforms	MTM025	Annually	2.0		cfu / 100 ml	0	0	yes
										SELECT
Bi-monthly	GW-3D[New]	pH	APHA 2012 4500 H&B	Bi-monthly	7.8	7.3	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-3D[New]	Conductivity	APHA 2012 2510B	Bi-monthly	656	553	µS/cm	800 – 1875	1000	no

Bi-monthly	GW-3D[New]	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-monthly	14.0	12.8	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-3D[New]	Ammonium	via inhouse calculation	Bi-monthly	3.7	2.8	mg/l		0.2	no
Bi-monthly	GW-3D[New]	Chloride	APHA 2012 4500-CL–E	Bi-monthly	5	4	mg/l	187.5	30	no
03/09/2015	GW-3D[New]	Sulphate	APHA 2012 4110B	Annually	2.2		mg/l	187.5	200	no
03/09/2015	GW-3D[New]	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-3D[New]	Orthophosphate	APHA 2012 4500-P.E	Annually	0.0		mg/l	-	0.03	no
03/09/2015	GW-3D[New]	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.2		mg/l	-	-	no
03/09/2015	GW-3D[New]	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	72.0		mg/l	-	200	no
03/09/2015	GW-3D[New]	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.4		mg/l	-	50	yes
03/09/2015	GW-3D[New]	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.3		mg/l	-	5	yes
03/09/2015	GW-3D[New]	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	11.0		mg/l	150	150	yes
03/09/2015	GW-3D[New]	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.2		mg/l	-	0.2	no
03/09/2015	GW-3D[New]	Boron - dissolved	ICP-MS	Annually	12.0		ug/l	0.75	1	no
03/09/2015	GW-3D[New]	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	18.0		ug/l	7.5	0.01	no
03/09/2015	GW-3D[New]	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	135.0		ug/l	-	0.1	no
03/09/2015	GW-3D[New]	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-3D[New]	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-3D[New]	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-3D[New]	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-3D[New]	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-3D[New]	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	277.0		ug/l	-	0.05	no
03/09/2015	GW-3D[New]	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

03/09/2015	GW-3D[New]	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.0		ug/l	15	0.02	yes
03/09/2015	GW-3D[New]	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-3D[New]	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-3D[New]	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-3D[New]	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-3D[New]	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-3D[New]	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-3D[New]	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-3D[New]	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-3D[New]	Faecal Coliforms	MTM025	Annually	82		cfu / 100 ml	0	0	no
03/09/2015	GW-3D[New]	Total Coliforms	MTM025	Annually	82		cfu / 100 ml	0	0	yes
Bi-monthly	GW-5AS	pH	APHA 2012 4500 H&B	Bi-monthly	7.2	7.2	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-5AS	Conductivity	APHA 2012 2510B	Bi-monthly	1136	935	µS/cm	800 – 1875	1000	no
Bi-monthly	GW-5AS	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-monthly	32.0	17.6	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-5AS	Ammonium	via inhouse calculation	Bi-monthly	6.8	6.5	mg/l		0.2	no
Bi-monthly	GW-5AS	Chloride	APHA 2012 4500-CL–E	Bi-monthly	9	8	mg/l	187.5	30	no
03/09/2015	GW-5AS	Sulphate	APHA 2012 4110B	Annually	8.0		mg/l	187.5	200	no
03/09/2015	GW-5AS	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	0.2		mg/l	37.5	25	no
03/09/2015	GW-5AS	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.2		mg/l	-	0.03	no
03/09/2015	GW-5AS	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.01		mg/l	-	-	no
03/09/2015	GW-5AS	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	104.0		mg/l	-	200	no

03/09/2015	GW-5AS	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.5		mg/l	-	50	yes
03/09/2015	GW-5AS	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.9		mg/l	-	5	yes
03/09/2015	GW-5AS	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	29.0		mg/l	150	150	yes
03/09/2015	GW-5AS	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW-5AS	Boron - dissolved	ICP-MS	Annually	20.0		ug/l	0.75	1	no
03/09/2015	GW-5AS	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	7.5	0.01	no
03/09/2015	GW-5AS	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	397.0		ug/l	-	0.1	no
03/09/2015	GW-5AS	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-5AS	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-5AS	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-5AS	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-5AS	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-5AS	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	36.0		ug/l	-	0.05	no
03/09/2015	GW-5AS	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AS	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	16.0		ug/l	15	0.02	yes
03/09/2015	GW-5AS	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-5AS	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AS	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AS	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AS	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-5AS	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AS	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no

03/09/2015	GW-5AS	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-5AS	Faecal Coliforms	MTM025	Annually	28		cfu / 100 ml	0	0	no
03/09/2015	GW-5AS	Total Coliforms	MTM025	Annually	34		cfu / 100 ml	0	0	yes
										SELECT
Bi-monthly	GW-5AD	pH	APHA 2012 4500 H&B	Bi-monthly	7.4	7.3	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-5AD	Conductivity	APHA 2012 2510B	Bi-monthly	743	680	µS/cm	800 – 1875	1000	no
Bi-monthly	GW-5AD	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-monthly	11.0	10.6	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-5AD	Ammonium	via inhouse calculation	Bi-monthly	7.5	7.4	mg/l		0.2	no
Bi-monthly	GW-5AD	Chloride	APHA 2012 4500-CL–E	Bi-monthly	10	9	mg/l	187.5	30	no
03/09/2015	GW-5AD	Sulphate	APHA 2012 4110B	Annually	0.8		mg/l	187.5	200	no
03/09/2015	GW-5AD	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.05		mg/l	37.5	25	no
03/09/2015	GW-5AD	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.2		mg/l	-	0.03	no
03/09/2015	GW-5AD	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.01		mg/l	-	-	no
03/09/2015	GW-5AD	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	99.0		mg/l	-	200	no
03/09/2015	GW-5AD	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.8		mg/l	-	50	yes
03/09/2015	GW-5AD	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.2		mg/l	-	5	yes
03/09/2015	GW-5AD	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	90.0		mg/l	150	150	yes
03/09/2015	GW-5AD	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW-5AD	Boron - dissolved	ICP-MS	Annually	9.0		ug/l	0.75	1	no
03/09/2015	GW-5AD	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.0		ug/l	7.5	0.01	no
03/09/2015	GW-5AD	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	820.0		ug/l	-	0.1	no
03/09/2015	GW-5AD	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no

03/09/2015	GW-5AD	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-5AD	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-5AD	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-5AD	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-5AD	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.05	no
03/09/2015	GW-5AD	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AD	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	18.0		ug/l	15	0.02	yes
03/09/2015	GW-5AD	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-5AD	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AD	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AD	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AD	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-5AD	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-5AD	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-5AD	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-5AD	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW-5AD	Total Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	yes
Bi-monthly	GW-13S	pH	APHA 2012 4500 H&B	Bi-monthly	7.6	7.5	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-13S	Conductivity	APHA 2012 2510B	Bi-monthly	464	420	µS/cm	800 – 1875	1000	no
Bi-monthly	GW-13S	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-monthly	14.0	12.0	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-13S	Ammonium	via inhouse calculation	Bi-monthly	0.9	0.8	mg/l		0.2	no

Bi-monthly	GW-13S	Chloride	APHA 2012 4500-CL–E	Bi-monthly	1.2	1	mg/l	187.5	30	no
03/09/2015	GW-13S	Sulphate	APHA 2012 4110B	Annually	9.7		mg/l	187.5	200	no
03/09/2015	GW-13S	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-13S	Orthophosphate	APHA 2012 4500-P.E	Annually	0.07		mg/l	-	0.03	no
03/09/2015	GW-13S	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.12		mg/l	-	-	no
03/09/2015	GW-13S	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	59.0		mg/l	-	200	no
03/09/2015	GW-13S	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.1		mg/l	-	50	yes
03/09/2015	GW-13S	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.7		mg/l	-	5	yes
03/09/2015	GW-13S	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.8		mg/l	150	150	yes
03/09/2015	GW-13S	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.7		mg/l	-	0.2	no
03/09/2015	GW-13S	Boron - dissolved	ICP-MS	Annually	10.0		ug/l	0.75	1	no
03/09/2015	GW-13S	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.0		ug/l	7.5	0.01	no
03/09/2015	GW-13S	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	70.0		ug/l	-	0.1	no
03/09/2015	GW-13S	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-13S	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-13S	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-13S	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-13S	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-13S	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	148		ug/l	-	0.05	no
03/09/2015	GW-13S	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13S	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	15	0.02	yes
03/09/2015	GW-13S	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.0		ug/l	18.75	0.01	no
03/09/2015	GW-13S	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

03/09/2015	GW-13S	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13S	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13S	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.0		ug/l	-	200	yes
03/09/2015	GW-13S	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13S	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-13S	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-13S	Faecal Coliforms	MTM025	Annually	0		cfu / 100 ml	0	0	no
03/09/2015	GW-13S	Total Coliforms	MTM025	Annually	5		cfu / 100 ml	0	0	yes
Bi-monthly	GW-13D	pH	APHA 2012 4500 H&B	Bi-monthly	8.1	8.0	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-13D	Conductivity	APHA 2012 2510B	Bi-monthly	286.0	248	µS/cm	800 – 1875	1000	no
Bi-monthly	GW-13D	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-monthly	14.0	11.8	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-13D	Ammonium	via inhouse calculation	Bi-monthly	0.7	0.5	mg/l		0.2	no
Bi-monthly	GW-13D	Chloride	APHA 2012 4500-CL–E	Bi-monthly	0.9	1	mg/l	187.5	30	no
03/09/2015	GW-13D	Sulphate	APHA 2012 4110B	Annually	<0.5		mg/l	187.5	200	no
03/09/2015	GW-13D	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-13D	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW-13D	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW-13D	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	29.0		mg/l	-	200	no
03/09/2015	GW-13D	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.3		mg/l	-	50	yes
03/09/2015	GW-13D	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.0		mg/l	-	5	yes
03/09/2015	GW-13D	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.7		mg/l	150	150	yes

03/09/2015	GW-13D	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW-13D	Boron - dissolved	ICP-MS	Annually	10.0		ug/l	0.75	1	no
03/09/2015	GW-13D	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.0		ug/l	7.5	0.01	no
03/09/2015	GW-13D	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	37.0		ug/l	-	0.1	no
03/09/2015	GW-13D	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-13D	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-13D	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-13D	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-13D	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-13D	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	324.0		ug/l	-	0.05	no
03/09/2015	GW-13D	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13D	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	15	0.02	yes
03/09/2015	GW-13D	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-13D	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13D	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13D	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13D	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-13D	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-13D	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-13D	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-13D	Faecal Coliforms	MTM025	Annually	4.0		cfu / 100 ml	0	0	no
03/09/2015	GW-13D	Total Coliforms	MTM025	Annually	16		cfu / 100 ml	0	0	yes

Down-gradient Groundwater Monitoring Results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit	GTV's*	IGV	Upward trend in yearly average pollutant concentration over last 5 years of monitoring data
Monthly	GW9	pH	APHA 2012 4500 H&B	Monthly	7.6	7.4	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW9	Conductivity	APHA 2012 2510B	Monthly	585	496	µS/cm	800 – 1875	1000	yes
Monthly	GW9	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	12.0	10.1	mg/l	0.065-0.175	0.15	yes
Monthly	GW9	Ammonium	via inhouse calculation	Monthly	2.5	2.2	mg/l		0.2	yes
Monthly	GW9	Chloride	APHA 2012 4500-CL–E	Monthly	3	3	mg/l	187.5	30	yes
03/09/2015	GW9	Sulphate	APHA 2012 4110B	Annually	<0.5		mg/l	187.5	200	yes
03/09/2015	GW9	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	0.2		mg/l	37.5	25	no
03/09/2015	GW9	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.2		mg/l	-	0.03	yes
03/09/2015	GW9	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.1		mg/l	-	-	no
03/09/2015	GW9	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	66.0		mg/l	-	200	no
03/09/2015	GW9	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.2		mg/l	-	50	no
03/09/2015	GW9	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.9		mg/l	-	5	yes
03/09/2015	GW9	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.9		mg/l	150	150	no
03/09/2015	GW9	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.4		mg/l	-	0.2	no
03/09/2015	GW9	Boron - dissolved	ICP-MS	Annually	9.0		ug/l	0.75	1	yes
03/09/2015	GW9	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.0		ug/l	7.5	0.01	no
03/09/2015	GW9	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	187.0		ug/l	-	0.1	no
03/09/2015	GW9	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no

03/09/2015	GW9	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW9	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW9	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW9	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW9	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	103.0		ug/l	-	0.05	no
03/09/2015	GW9	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW9	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.0		ug/l	15	0.02	no
03/09/2015	GW9	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW9	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW9	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW9	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW9	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.0		ug/l	-	200	no
03/09/2015	GW9	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW9	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW9	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW9	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW9	Total Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	yes
Bi-Monthly	GW10	pH	APHA 2012 4500 H&B	Bi-Monthly	8.0	7.3	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW10	Conductivity	APHA 2012 2510B	Bi-Monthly	674	642	µS/cm	800 – 1875	1000	yes
Bi-Monthly	GW10	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-Monthly	13.0	10.6	mg/l	0.065-0.175	0.15	no

Bi-Monthly	GW10	Ammonium	via inhouse calculation	Bi-Monthly	4.4	4.0	mg/l		0.2	no
Bi-Monthly	GW10	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	6	5	mg/l	187.5	30	no
03/09/2015	GW10	Sulphate	APHA 2012 4110B	Annually	0.7		mg/l	187.5	200	yes
03/09/2015	GW10	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW10	Orthophosphate	APHA 2012 4500-P.E	Annually	0.06		mg/l	-	0.03	no
03/09/2015	GW10	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.14		mg/l	-	-	no
03/09/2015	GW10	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	96.0		mg/l	-	200	no
03/09/2015	GW10	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.5		mg/l	-	50	yes
03/09/2015	GW10	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.5		mg/l	-	5	yes
03/09/2015	GW10	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.8		mg/l	150	150	yes
03/09/2015	GW10	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	yes
03/09/2015	GW10	Boron - dissolved	ICP-MS	Annually	6.0		ug/l	0.75	1	no
03/09/2015	GW10	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	7.5	0.01	no
03/09/2015	GW10	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	80.0		ug/l	-	0.1	no
03/09/2015	GW10	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW10	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW10	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW10	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW10	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW10	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	33.0		ug/l	-	0.05	no
03/09/2015	GW10	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW10	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	15	0.02	no
03/09/2015	GW10	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no

03/09/2015	GW10	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW10	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW10	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW10	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
03/09/2015	GW10	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW10	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW10	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW10	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW10	Total Coliforms	MTM025	Annually	6.0		cfu / 100 ml	0	0	no
Bi-Monthly	GW-11S	pH	APHA 2012 4500 H&B	Bi-Monthly	7.9	7.4	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-11S	Conductivity	APHA 2012 2510B	Bi-Monthly	826	714	µS/cm	800 – 1875	1000	no
Bi-Monthly	GW-11S	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-Monthly	18.0	13.3	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-11S	Ammonium	via inhouse calculation	Bi-Monthly	9.0	8.5	mg/l		0.2	no
Bi-Monthly	GW-11S	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	12	11	mg/l	187.5	30	no
03/09/2015	GW-11S	Sulphate	APHA 2012 4110B	Annually	3.4		mg/l	187.5	200	no
03/09/2015	GW-11S	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-11S	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW-11S	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW-11S	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	115.0		mg/l	-	200	no
03/09/2015	GW-11S	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.5		mg/l	-	50	yes
03/09/2015	GW-11S	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.8		mg/l	-	5	yes

03/09/2015	GW-11S	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	13.0		mg/l	150	150	yes
03/09/2015	GW-11S	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW-11S	Boron - dissolved	ICP-MS	Annually	15.0		ug/l	0.75	1	no
03/09/2015	GW-11S	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	7.5	0.01	no
03/09/2015	GW-11S	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	484.0		ug/l	-	0.1	no
03/09/2015	GW-11S	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-11S	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-11S	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-11S	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-11S	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-11S	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	36.0		ug/l	-	0.05	no
03/09/2015	GW-11S	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11S	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	19.0		ug/l	15	0.02	yes
03/09/2015	GW-11S	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-11S	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11S	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11S	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11S	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-11S	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11S	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-11S	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-11S	Faecal Coliforms	MTM025	Annually	3.0		cfu / 100 ml	0	0	no

03/09/2015	GW-11S	Total Coliforms	MTM025	Annually	4.0		cfu / 100 ml	0	0	yes
Bi-Monthly	GW-11D	pH	APHA 2012 4500 H&B	Bi-Monthly	8.0	7.5	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-11D	Conductivity	APHA 2012 2510B	Bi-Monthly	824	659	µS/cm	800 – 1875	1000	no
Bi-Monthly	GW-11D	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-Monthly	16.0	12.5	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-11D	Ammonium	via inhouse calculation	Bi-Monthly	8.3	6.8	mg/l		0.2	no
Bi-Monthly	GW-11D	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	11	9	mg/l	187.5	30	no
03/09/2015	GW-11D	Sulphate	APHA 2012 4110B	Annually	1.9		mg/l	187.5	200	no
03/09/2015	GW-11D	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-11D	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW-11D	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW-11D	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	53.0		mg/l	-	200	no
03/09/2015	GW-11D	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.5		mg/l	-	50	yes
03/09/2015	GW-11D	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.7		mg/l	-	5	yes
03/09/2015	GW-11D	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	14.0		mg/l	150	150	yes
03/09/2015	GW-11D	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW-11D	Boron - dissolved	ICP-MS	Annually	20.0		ug/l	0.75	1	no
03/09/2015	GW-11D	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.0		ug/l	7.5	0.01	no
03/09/2015	GW-11D	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	415.0		ug/l	-	0.1	no
03/09/2015	GW-11D	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-11D	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-11D	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no

03/09/2015	GW-11D	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-11D	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-11D	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	40.0		ug/l	-	0.05	no
03/09/2015	GW-11D	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11D	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	23.0		ug/l	15	0.02	yes
03/09/2015	GW-11D	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-11D	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11D	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11D	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11D	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-11D	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-11D	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-11D	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-11D	Faecal Coliforms	MTM025	Annually	1.0		cfu / 100 ml	0	0	no
03/09/2015	GW-11D	Total Coliforms	MTM025	Annually	1.0		cfu / 100 ml	0	0	yes
Bi-Monthly	GW-12S	pH	APHA 2012 4500 H&B	Bi-Monthly	7.9	7.7	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-12S	Conductivity	APHA 2012 2510B	Bi-Monthly	644	488	µS/cm	800 – 1875	1000	no
Bi-Monthly	GW-12S	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-Monthly	12.0	10.8	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-12S	Ammonium	via inhouse calculation	Bi-Monthly	7.7	7.0	mg/l		0.2	no
Bi-Monthly	GW-12S	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	10	9	mg/l	187.5	30	no
03/09/2015	GW-12S	Sulphate	APHA 2012 4110B	Annually	0.9		mg/l	187.5	200	no

03/09/2015	GW-12S	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-12S	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
03/09/2015	GW-12S	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
03/09/2015	GW-12S	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	84.0		mg/l	-	200	no
03/09/2015	GW-12S	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.8		mg/l	-	50	yes
03/09/2015	GW-12S	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.4		mg/l	-	5	yes
03/09/2015	GW-12S	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	16.0		mg/l	150	150	yes
03/09/2015	GW-12S	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
03/09/2015	GW-12S	Boron - dissolved	ICP-MS	Annually	17.0		ug/l	0.75	1	no
03/09/2015	GW-12S	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	23.0		ug/l	7.5	0.01	no
03/09/2015	GW-12S	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	169.0		ug/l	-	0.1	no
03/09/2015	GW-12S	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-12S	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-12S	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-12S	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-12S	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-12S	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.0		ug/l	-	0.05	no
03/09/2015	GW-12S	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12S	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.0		ug/l	15	0.02	yes
03/09/2015	GW-12S	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-12S	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.0		ug/l	-	-	no
03/09/2015	GW-12S	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

03/09/2015	GW-12S	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12S	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-12S	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12S	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-12S	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-12S	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW-12S	Total Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	yes
Bi-Monthly	GW-12D	pH	APHA 2012 4500 H&B	Bi-Monthly	8.1	7.9	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-12D	Conductivity	APHA 2012 2510B	Bi-Monthly	660	369	µS/cm	800 – 1875	1000	no
Bi-Monthly	GW-12D	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-Monthly	12.0	10.3	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-12D	Ammonium	via inhouse calculation	Bi-Monthly	7.7	3.2	mg/l		0.2	no
Bi-Monthly	GW-12D	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	10	4	mg/l	187.5	30	no
03/09/2015	GW-12D	Sulphate	APHA 2012 4110B	Annually	0.7		mg/l	187.5	200	no
03/09/2015	GW-12D	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
03/09/2015	GW-12D	Orthophosphate	APHA 2012 4500-P.E	Annually	0.0		mg/l	-	0.03	no
03/09/2015	GW-12D	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.1		mg/l	-	-	no
03/09/2015	GW-12D	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	33.0		mg/l	-	200	no
03/09/2015	GW-12D	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.1		mg/l	-	50	yes
03/09/2015	GW-12D	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.0		mg/l	-	5	yes
03/09/2015	GW-12D	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	16.0		mg/l	150	150	yes
03/09/2015	GW-12D	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no

03/09/2015	GW-12D	Boron - dissolved	ICP-MS	Annually	13.0		ug/l	0.75	1	no
03/09/2015	GW-12D	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.0		ug/l	7.5	0.01	no
03/09/2015	GW-12D	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	68.0		ug/l	-	0.1	no
03/09/2015	GW-12D	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
03/09/2015	GW-12D	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	yes
03/09/2015	GW-12D	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
03/09/2015	GW-12D	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
03/09/2015	GW-12D	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
03/09/2015	GW-12D	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	25.0		ug/l	-	0.05	no
03/09/2015	GW-12D	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12D	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.0		ug/l	15	0.02	yes
03/09/2015	GW-12D	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
03/09/2015	GW-12D	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12D	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12D	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12D	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	yes
03/09/2015	GW-12D	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
03/09/2015	GW-12D	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
03/09/2015	GW-12D	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
03/09/2015	GW-12D	Faecal Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	no
03/09/2015	GW-12D	Total Coliforms	MTM025	Annually	0.0		cfu / 100 ml	0	0	yes

Noise Monitoring Results

Date of monitoring	Time period	Noise location (on site)	Noise sensitive location -NSL (if applicable)	LA_{eq}	LA_{90}	LA_{10}	LA_{max}	Tonal or Impulsive noise* (Y/N)	Comments (ex. main noise sources on site, & extraneous noise ex. road traffic)	Is site compliant with noise limits (day/evening/night)?
Oct/Nov 2015	30 Mins	N1 (NSL)	yes	35-37	36-39	25-31	54-63	No	Site: Very faint reverse alarms. Engines of heavy plant machinery occasionally faintly audible. Background: Distant traffic on road. Birdsong. Dogs barking in dwelling 100 meters away.	Yes
Oct/Nov 2015	30 Mins	N2	No	47-54	46-55	24-35	54-70	No	Site: Machinery faintly audible from site. Background: Birdsong. Passing road traffic on external road – averaging 10 vehicles - Dominant Source- Lmax. Hedge cutting in progress 250-300 meters down the road	Yes
Oct/Nov 2015	30 Mins	N3	No	38-46	41-49	29-33	53-65	No	Site: Reverse alarms in distance. Heavy plant machinery operating on landfill. Background: Traffic on regional road – occasionally faintly audible. Hedge cutting on road audible.	Yes
Oct/Nov 2015	30 Mins	N4	No	64-68	65-68	37-42	87-93	No	Site: Cars and trucks entering/exiting the landfill. Lorry's with engines idling at entrance (30m) Dominant Source- Lmax. Background: Passing road traffic on R403 Dominant Source- Lmax. Bird songs	No
Oct/Nov 2015	30 Mins	N5	No	36-38	38-42	27-30	57-63	No	Site: Trucks entering on site road. Background: Faint road traffic occasional audible. Birdsong.	Yes
Oct/Nov 2015	30 Mins	N1 (NSL)	yes	31-30	31-33	26-28	53-54	No	Site: No site noise audible. Background: Distant traffic on road. Animal calls (barking dogs)	Yes
Oct/Nov 2015	30 Mins	N2	No	27-50	30-52	25-34	56-71	No	Site: Very faint hum of operations from facility. Background: Road traffic - dominant noise source in round 2	No
Oct/Nov 2015	30 Mins	N3	No	33-52	32-52	26-41	55-70	No	Site: Very faint hum of operations from facility. Background: Occasional passing traffic on the L5025 road (100m). Idling van on road dominant source of noise during round 2	No
Oct/Nov 2015	30 Mins	N4	No	46-53	43-59	25-32	72-75	No	Site: No audible site activity. Background; passing road traffic on the R403 dominate noise source.	No
Oct/Nov 2015	30 Mins	N5	No	30-32	29	22-23	63-68	No	Site: Low noise audible from site. Background: Road traffic was barely audible in the distance. Dominate source bird and other animal calls.	Yes

Leachate Monitoring Results

Quarter 1

Results of the Quarterly Chemical Analysis of Leachate Sample LT 1 taken on the 12th of February 2015		
Sample ID	Units	TK-1 12/02/15
Received Date & Time		12/02/2015 16:23:25
Sample Type		Leachate
pH	pH units	7.7
Conductivity @ 25°C	µS/cm	2970
NH3-N	mg/l	2634
NH4-N	mg/l	3387
BOD	mg/l O2	738
COD	mg/l O2	7385
Chloride	mg/l	3481
Suspended Solids	mg/l	120

Quarter 2

Results of the Quarterly Chemical Analysis of Leachate Sample LT 1 taken on the 23rd of April 2015		
Sample ID	Units	TK-1 23/04/15
Received Date & Time		23/04/2015
Sample Type		Leachate
pH	pH units	7.3
Conductivity @ 25°C	µS/cm	10750
NH3-N	mg/l	904
NH4-N	mg/l	1162
Sulphate	mg/l	68
COD	mg/l O2	1735
Copper	µg/l	228
Zinc	µg/l	1307
Suspended Solids	mg/l	13
Total Phosphorus	Mg/l	7.12

Quarter 3

Results of the Quarterly Chemical Analysis of Leachate Sample TK 1 taken on the 29th of September 2015		
Sample ID	Units	TK-1
Received Date & Time		29/09/15
Sample Type		Leachate
BOD	mg/l O_2	1,194
COD	mg/l O_2	10,320

Quarter 4

Results of the Annual Chemical Analysis of Leachate Sample TK-2 taken on the 19th of November 2015		
Sample ID	Units	TK-2
Received Date & Time		19/11/15
Sample Type		Leachate
pH	pH Units	7.1
Conductivity	µS/cm	16260
BOD	mg/l O_2	2356
COD	mg/l O_2	10600
Chloride	mg/l	1894
Fluoride	mg/l	<0.5
PO_4-P	mg/l	1.8
Total Phosphorous	mg/l	5.99
NH_4-N	mg/l	1197
Sulphate	mg/l	112
Sodium (total)	mg/l	535
Magnesium(total)	mg/l	99
Potassium (total)	mg/l	402
Calcium (total)	mg/l	480
Boron (total)	µg/l	31840
Chromium (total)	µg/l	273
Manganese (total)	µg/l	952
Nickel (total)	µg/l	86
Copper (total)	µg/l	<20
Zinc (total)	µg/l	<20
Cadmium (total)	µg/l	<20
Lead (total)	µg/l	<20
Iron (total)	mg/l	<1
Mercury (total)	µg/l	<10
Cyanide	mg/l	<1
TON	mg/l	<0.2

Results of the Annual Chemical Analysis of Leachate Sample TK-1 taken on the 19th of November 2015			
Comb Pesticide Suite	Dichlorvos**	µg/l	<0.05
	Mevinphos**	µg/l	<0.05
	alpha-HCH/Lindane**	µg/l	<0.05
	Diazinon**	µg/l	<0.05
	gamma-HCH/Lindane**	µg/l	<0.05
	Heptachlor**	µg/l	<0.05
	Aldrin**	µg/l	<0.05
	beta-HCH/Lindane**	µg/l	<0.05
	Methyl Parathion**	µg/l	<0.05
	Malathion**	µg/l	<0.05
	Fenitrothion**	µg/l	<0.05
	Heptachlor Epoxide**	µg/l	<0.05
	Parathion**	µg/l	<0.05
	o,p-DDE**	µg/l	<0.05
	Endosulfan I**	µg/l	<0.05
	p,p-DDE**	µg/l	<0.05

	Dieldrin**	µg/l	<0.05
	o,p-TDE**	µg/l	<0.05
	Endrin**	µg/l	<0.05
	o,p-DDT**	µg/l	<0.05
	p,p-TDE**	µg/l	<0.05
	Ethion**	µg/l	<0.05
	Endosulfan II**	µg/l	<0.05
	p,p-DDT**	µg/l	<0.05
	o,p-Methoxychlor**	µg/l	<0.05
	p,p-Methoxychlor**	µg/l	<0.05
	Endosulfan Sulphate**	µg/l	<0.05
	Azinphos Methyl**	µg/l	<0.05
	1,2,4-Trichlorobenzene**	µg/l	<8
SVOC's	1,2-Dichlorobenzene**	µg/l	<8
	1,3-Dichlorobenzene**	µg/l	<8
	1,4-Dichlorobenzene**	µg/l	<8

Results of the Annual Chemical Analysis of Leachate Sample TK-1 taken on the 19th of November 2015			
	2,4,5-Trichlorophenol**	µg/l	<8
	2,4,6-Trichlorophenol**	µg/l	<8
	2,4-Dichlorophenol**	µg/l	<8
	2,4-Dimethylphenol**	µg/l	<8
	2,4-Dinitrotoluene**	µg/l	<8
	2,6-Dinitrotoluene**	µg/l	<8
	2-Chloronaphthalene**	µg/l	<8
	2-Chlorophenol**	µg/l	<8
	2-Methylnaphthalene**	µg/l	<8
	2-Methylphenol**	µg/l	36.9
	2-Nitroaniline**	µg/l	<8
	2-Nitrophenol**	µg/l	<8
	3-Nitroaniline**	µg/l	<8
	4-Bromophenylphenylether**	µg/l	<8
	4-Chloro-3-methylphenol**	µg/l	<8
	4-Chloroaniline**	µg/l	<8
SVOC's	4-Chlorophenylphenylether**	µg/l	<8
	4-Methylphenol**	µg/l	6700
	4-Nitrophenol**	µg/l	<8
	4-Nitroaniline**	µg/l	<8
	Azobenzene**	µg/l	<8
	Acenaphthylene**	µg/l	<8
	Acenaphthene**	µg/l	<8
	Anthracene**	µg/l	<8
	Bis(2-Chloroethyl)ether**	µg/l	<8
	Bis(2-chloroethoxy)methane**	µg/l	<8
	Bis(2-ethylhexyl)phthalate**	µg/l	<16
	Benzo(a)anthracene**	µg/l	<8
	Butylbenzylphthalate**	µg/l	<8
	Benzo(a)pyrene**	µg/l	<8
	Benzo(ghi)perylene**	µg/l	<8
	Carbazole**	µg/l	<8
	Chrysene**	µg/l	<8
	Dibenzofuran**	µg/l	<8
	n-Di-butylphthalate**	µg/l	<8
SVOC's	Diethyl phthalate**	µg/l	<8
	Dibenzo(a,h)anthracene**	µg/l	<8
	Dimethyl phthalate**	µg/l	<8
	n-Di octyl phthalate**	µg/l	<40

	Fluoranthene**	µg/l	<8
	Flourene**	µg/l	<8
	Hexachlorobenzene**	µg/l	<8
	hexachlorobutadiene**	µg/l	<8
	Pentachlorophenol**	µg/l	<8
	Phenol**	µg/l	3080
	N-nitrosodi-n-propylamine**	µg/l	<8
	Hexachloroethane**	µg/l	<8
	Nitrobenzene**	µg/l	<8
	Naphthalene**	µg/l	<8
	Isophorone**	µg/l	<8
	Hexachlorocyclopentadiene**	µg/l	<8
	Phenanthrene**	µg/l	<8
	Indenol(1,2,3-cd)pyrene**	µg/l	<8
	Pyrene**	µg/l	<8
VOC's			
	Dichlorodifluoromethane**	µg/l	<1
	Chloromethane**	µg/l	<1
	Vinyl chloride**	µg/l	<1
	Bromomethane**	µg/l	<1

Results of the Annual Chemical Analysis of Leachate Sample TK-1 taken on the 19th of November 2015			
VOC's	Chloroethane**	µg/l	<1
	Trichlorofluoromethane**	µg/l	<1
	1,1-Dichloroethene**	µg/l	<1
	Dichloromethane**	µg/l	<3
	trans-1,2-Dichloroethene**	µg/l	<1
	1,1-Dichloroethane**	µg/l	<1
	2,2-Dichloropropane**	µg/l	<1
	cis-1,2-Dichloroethene**	µg/l	8.14
	Bromochloromethane**	µg/l	<1
	Chloroform**	µg/l	<1
	1,1,1-Trichloroethane**	µg/l	<1
	Carbon Tetrachloride**	µg/l	<1
	1,1-Dichloropropene**	µg/l	<1
	Benzene**	µg/l	18.2
	1,2-Dichloroethane**	µg/l	22.9
	Trichloroethene**	µg/l	<1
	1,2-Dichloropropane**	µg/l	<1
	Dibromomethane**	µg/l	<1
	Bromodichloromethane**	µg/l	<1
	Toluene**	µg/l	92.9
	1,1,2-Trichloroethane**	µg/l	<1
	1,2-Dibromoethane**	µg/l	<1
	1,1,1,2-Tetrachloroethane**	µg/l	<1
	m,p-Xylene**	µg/l	46.6
	Styrene**	µg/l	<1
	Isopropylbenzene**	µg/l	<1
	n-propylbenzene**	µg/l	<1
	2-Chlorotoluene**	µg/l	<1
	4-Chlorotoluene**	µg/l	<1
	1,2,4-Trimethylbenzene	µg/l	5
	4-Isopropyltoluene**	µg/l	5.69
	1,3-Dichloropropane**	µg/l	<1

	cis-1,3-Dichloropropene**	µg/l	<1
	trans-1,3-Dichloropropene**	µg/l	<1
	Dibromochloromethane**	µg/l	<1
	Chlorobenzene**	µg/l	<1
	Ethyl Benzene**	µg/l	24.5
	o-Xylene**	µg/l	24.7
	Bromoform**	µg/l	<1
	1,2,3-Trichloropropane**	µg/l	<1
	Bromobenzene**	µg/l	<1
	Tert-Butylbenzene**	µg/l	<1
	Sec-Butylbenzene**	µg/l	<1
	1,3,5-Trimethylbenzene**	µg/l	1.54
	1,2- Dibromo-3-chloropropane**	µg/l	<1
	Hexachlorobutadiene**	µg/l	<1
	1,2,3-Trichlorobenzene**	µg/l	<1
	Tetrachloroethene**	µg/l	<1
	n-butylbenzene**	µg/l	<1

Landfill Gas Monitoring Results

January 2015

Drehid Facility (W0201-03)		
Operator: J. Dunn	**Date:** 29th Jan 2015	**Time:** 15:00
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Overcast	**Barometric pressure:** 996 mbar	
	Ambient Temp: 6°C	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.3	**1.7**	17.8	996	
LG – 02	0.1	**3.0**	17.6	996	
LG – 03	0.2	0.4	18.2	996	
LG - 04	0.4	0.7	17.8	996	
LG – 05	0.1	1.2	18.2	996	Unable to locate
LG – 06					Well Inaccessible
LG – 07					Well Inaccessible
LG – 08	0.4	**2.1**	16.8	996	
LG – 09	0.2	1.1	18.0	996	
LG – 10	0.1	**1.6**	18.2	996	
LG – 11	0.0	**2.1**	19.2	996	
LG – 12	0.0	0.2	19.0	996	
LG – 13	0.3	**2.2**	16.5	996	
LG – 14	0.0	**4.5**	18.1	996	
LG – 15	0.2	**3.4**	17.8	996	
LG – 16	0.2	**1.9**	19.0	996	
LG - 17					Well inaccessible
LG – 18	**1.4**	0.9	19.4	996	
LG - 19	0.1	1.4	18.4	996	

LG – 20	0.2	0.7	18.2	996	
LG – 21	0.5	1.2	18.4	996	
LG – 22	0.1	0.1	18.9	996	
LG – 23	0.4	**2.3**	19.2	996	
LG – 24	0.0	0.1	19.8	996	
LG - 25	0.1	0.2	19.5	996	
LG - 26	0.2	**2.0**	19.3	996	
LG - 27	0.9	**1.8**	17.7	996	
LG-28	0.3	**2.1**	16.7	996	
LG-29	0.4	1.0	18.7	996	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 5					
P5W002	33.3	29.3	2.9	996	
P5W006	59.1	42.3	0.3	996	
P5W012	49.0	36.2	1.9	996	
P5W014	48.9	40.6	0.2	996	
PHASE 4					
P4W002	56.6	37.0	0	996	
P4W006	37.8	36.4	0.8	996	
P4W015	34.7	34.8	1.6	996	
P4W016	62.8	41.1	0	996	
PHASE 2					
P2W002	49.9	38.7	1.1	996	
P2W003	36.9	34.8	0.3	996	

P2W005	25.9	30.2	1.3	996	
P2W009	48.9	38.8	2.0	996	
P2W014	25.7	29.7	2.0	996	
PHASE 3					
P3W003	32.5	25.4	0.2	996	
P3W004	54.4	32.6	0.8	996	
P3W005	34.6	41.2	0.7	996	
P3W017	49.2	38.6	0.1	996	
P3W022	42.1	36.7	0.1	996	
Phase 7					
P7W002	49.7	41.2	0.3	996	
P7W003	48.5	41.4	0.5	996	
P7W006	29.7	22.4	0.6	996	
P7W007	45.6	41.1	1.5	996	
Phase 6					
P6W001	40.5	37.3	0.8	996	
P6W002	39.1	34.5	0.3	996	
P6W003	22.7	30.3	1.2	996	
P6W004	44.6	39.8	0.1	996	

February 2015

Drehid Facility (W0201-03)		
Operator: J. Dunn	**Date:** 12th Feb 2015	**Time: 10:00**
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Clear, dry	**Barometric pressure: 1001**mbar	
	Ambient Temp: 8°C	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.4	**2.1**	18.2	1001	
LG – 02	0.2	**2.4**	18.2	1001	
LG – 03	**1.1**	0.7	17.8	1001	
LG - 04	0.2	**1.7**	18.2	1001	
LG – 05	0.4	**2.1**	17.5	1001	
LG – 06					Well Inaccessible
LG – 07					Well Inaccessible
LG – 08	0.6	1.2	17.8	1001	
LG – 09	0.1	1.5	17.7	1001	
LG – 10	0.2	1.3	18.6	1001	
LG – 11	0.2	**1.7**	17.8	1001	
LG – 12	0.2	0.4	18.9	1001	
LG – 13	0.4	1.1	18.3	1001	
LG – 14	0.1	**2.2**	18.3	1001	
LG – 15	0.4	**2.5**	18.2	1001	
LG – 16	0.3	**2.0**	18.7	1001	
LG - 17					Well inaccessible
LG – 18	0.4	0.5	18.9	1001	
LG - 19	0.2	0.8	19.2	1001	

LG – 20	0.4	0.9	18.5	1001	
LG – 21	0.1	0.8	18.2	1001	
LG – 22	0.1	0.1	19.2	1001	
LG – 23	0.2	0.9	19.4	1001	
LG – 24	0.1	0.1	19.2	1001	
LG - 25	0.1	0.1	19.1	1001	
LG - 26	0.0	0.2	19.2	1001	
LG - 27	0.1	0.2	18.6	1001	
LG-28	0.1	0.4	18.5	1001	
LG-29	0.1	0.1	18.2	1001	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 5					
P5W002	39.9	32.3	1.9	1001	
P5W006	48.2	32.4	0.1	1001	
P5W012	43.5	34.5	1.0	1001	
P5W014	43.5	39.8	0.2	1001	
PHASE 4					
P4W003	48.3	32.4	0.2	1001	
P4W006	43.2	35.4	0.4	1001	
P4W014	32.1	30.8	0.8	1001	
P4W016	54.6	34.2	0.1	1001	
PHASE 2					
P2W002	49.9	38.7	1.1	1001	
P2W003	36.9	34.8	0.3	1001	

P2W005	25.9	30.2	1.3	1001	
P2W009	48.9	38.8	2.0	1001	
P2W014	25.7	29.7	2.0	1001	
PHASE 3					
P3W003	29.2	30.3	0.3	1001	
P3W012	45.6	33.6	0.7	1001	
P3W015	42.3	38.2	0.2	1001	
P3W017	48.2	36.2	0.1	1001	
Phase 7					
P7W002	50.1	43.2	0.4	1001	
P7W003	45.6	38.2	0.2	1001	
P7W009	30.4	25.4	0.3	1001	
P7W011	38.9	40.1	1.0	1001	
Phase 6					
P6W002	39.0	40.2	1.0	1001	
P6W006	34.5	29.0	0.1	1001	
P6W009	25.0	25.6	0.9	1001	
P6W010	42.5	34.6	0.1	1001	

March 2015

Drehid Facility (W0201-03)		
Operator: J. Dunn	**Date:** 25th March 2015	**Time:** 13:00
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Overcast	**Barometric pressure:** 1005 mbar	
	Ambient Temp: 9°C	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.5	19.7	1005	
LG – 02	0.1	0.9	18.2	1005	
LG – 03					Well Inaccessible
LG - 04					Well Inaccessible
LG – 05					Well Inaccessible
LG – 06					Well Inaccessible
LG – 07	0.1	0.9	20.6	1005	
LG – 08	0.1	1.2	18.2	1005	
LG – 09	0.1	0.6	21.1	1005	
LG – 10	0.3	1.2	17.0	1005	
LG – 11	0.1	0.3	21.3	1005	
LG – 12	0.1	0.6	20.3	1005	
LG – 13	1.0	**3.6**	3.7	1005	
LG – 14	0.1	0.4	21.0	1005	
LG – 15	0.1	**2.1**	20.1	1005	
LG – 16	0.1	0.9	19.4	1005	
LG - 17					Well inaccessible
LG – 18	0.1	0.1	21.2	1005	
LG - 19	0.9	0.6	20.5	1005	

LG – 20	0.2	0.5	21.1	1005	
LG – 21	**2.2**	**2.0**	17.6	1005	
LG – 22					Well inaccessible
LG – 23	0.1	0.1	20.2	1005	
LG – 24	0.1	0.0	21.7	1005	
LG - 25	0.1	0.6	20.1	1005	
LG - 26	0.1	0.2	20.9	1005	
LG - 27	0.1	**3.3**	14.5	1005	
LG-28	0.1	0.0	21.5	1005	
LG-29	0.2	1.3	18.1	1005	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W016	42.6	31.8	2.2	1005	
P1W017	61.4	38.9	0.5	1005	
P1W011	62.7	37.9	0.3	1005	
P1W012	51.4	36.1	2.3	1005	
PHASE 3					
P3W007	21.2	16.5	10.9	1005	
P3W003	57.7	36.3	2.9	1005	
P3W013	36.2	31.1	0.8	1005	
P3W014	60.1	39.6	0.5	1005	
PHASE 5					
P5W002	49.7	35.9	2.1	1005	
P5W005	60.8	40.7	0.8	1005	

P5W010	63.8	37.7	0.7	1005	
P5W013	51.5	38.9	0.8	1005	
PHASE 7					
P7W004	46.2	39.7	2.7	1005	
P7W010	44.8	38.3	4.6	1005	
Phase 6					
P6W016	29.6	30.8	2.7	1005	
P6W012	12.5	24.6	0.7	1005	
P6W011	39.8	35.0	1.2	1005	
P6W010	56.7	41.4	1.0	1005	
Phase 4					
P4W014	35.0	35.8	0.3	1005	
P4W013	43.5	37.7	0.4	1005	
P4W011	37.9	31.9	5.0	1005	
P4W009	27.5	29.7	0.4	1005	
Phase 2					
P2W009	29.5	25.1	5.4	1005	
P2W002	54.4	36.2	4.0	1005	
P2W013	62.3	37.9	0.8	1005	

April 2015

Drehid Facility (W0201-03)		
Operator: D Keane	**Date:** 30.4.15	**Time:** 10:00hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Dry and Sunny	**Barometric pressure:** 1007	
	Ambient Temp: 12°C	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.5	1.2	17.0	1007	
LG – 02	0.1	**2.0**	17.3	1007	
LG – 03	0.1	0.2	19.8	1007	
LG - 04					Well Inaccessible
LG – 05					Unable to locate
LG – 06	0.01	0.0	21.2	1007	
LG – 07	0.01	1.4	16.9	1007	
LG – 08	0.1	0.9	19.6	1007	
LG – 09	0.1	0.8	18.5	1007	
LG – 10	0.2	**1.8**	14.8	1007	
LG – 11	0.1	0.9	20.3	1007	
LG – 12	0.1	1.1	19.8	1007	
LG – 13	0.3	1.5	16.4	1007	
LG – 14	0.1	0.1	20.8	1007	
LG – 15	0.1	0.7	20.7	1007	
LG – 16	0.1	0.0	21	1007	
LG - 17					Out Of Commission
LG – 18					Damaged
LG - 19					Damaged

LG – 20	0.3	0.8	19.9	1007	
LG – 21	**1.2**	**2.0**	16.5	1007	
LG – 22					Damaged
LG – 23					Damaged
LG – 24					Damaged
LG - 25					Damaged
LG - 26	0.1	0.4	20.8	1007	
LG - 27	0.1	**2.9**	16.3	1007	
LG-28	0.1	0.5	20.2	1007	
LG-29	0.1	0.1	20.9	1007	
LG-30	0.6	**2.5**	17.7	1007	
LG-31	0.1	0	21.2	1007	
LG-32					Well inaccessible
LG-33	0.1	0.1	21.3	1007	
LG-34	0.2	0.2	21.2	1007	
LG-35	0.1	1.3	20.0	1007	
LG-36	0.1	**1.7**	18.3	1007	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W003	59.3	37	0.8	1002	
P1W002	61.3	38.7	0.3	1002	
P1W020	59.9	39.3	0.6	1002	
P1W013	42.5	32.1	0.4	1002	

PHASE 3					
P3W004	62.5	39.5	0.4	1002	
P3W005	42.5	31.8	4.0	1002	
P3W007	59.8	38.6	0.8	1002	
P3W013	59.6	39.4	0.6	1002	
PHASE 2					
P2W002	61.9	38.2	0.3	1002	
P2W001	63.9	38	0.1	1002	
P2W004	46.2	29.9	4.1	1002	
P2W015	41.7	33.9	1.3	1002	
PHASE 4					
P4W002	42.9	33.5	1.7	1002	
P4W004	31.3	29.8	2.5	1002	
P4W005	43.4	30.4	3.9	1002	
P4W007	44.7	36.9	1.0	1002	
PHASE 6					
P6W003	44.4	36.6	1.7	1002	
P6W006	21.0	16.4	13.9	1002	
P6W010	35.8	30.4	5.2	1002	
P6W015	26.5	29.8	0.6	1002	
PHASE 5					
P5W002	51.0	36.3	1.4	1002	
P5W004	55.6	37.6	1.6	1002	
P5W009	41.4	32	1.9	1002	
P5W010	31	19.9	9.9	1002	
PHASE 7					

P7W004	50.3	44.9	1.8	1002	
P7W008	37.7	49.1	0.5	1002	
P7W009	47.5	41.9	0.9	1002	
P7W011	56.4	46.9	0.6	1002	

May 2015

Drehid Facility (W0201-03)		
Operator: David Keane	**Date:** 27/5/15	**Time:** 10:00hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Overcast/ wet/ dry	**Barometric pressure:** 1015 mbar	
	Ambient Temp: 8.96	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.2	19.5	1015	
LG – 02	0.1	**2.2**	18.4	1015	
LG – 03	0.1	0.2	20.1	1015	
LG – 04					Well Inaccessible
LG – 05					Unable to locate
LG – 06	0.01	0.6	20.3	1015	
LG – 07	0.01	1.2	20.6	1015	
LG – 08	0.01	0.0	21.5	1015	
LG – 09	0.02	1.4	13.7	1015	
LG – 10	0.1	0.2	20.3	1015	
LG – 11	0.1	0.4	21.5	1015	
LG – 12	0.1	0.3	21.0	1015	
LG – 13	0.1	1.4	18.8	1015	
LG – 14	0.1	0.6	20.9	1015	
LG – 15	0.1	0.4	21.6	1015	
LG – 16	0.1	**2.0**	18.7	1015	
LG - 17					Out of commission
LG – 18					Damaged
LG - 19					Damaged

LG – 20	0.3	0.9	20.5	1015	
LG – 21					Damaged
LG – 22					Damaged
LG – 23					Damaged
LG – 24					Damaged
LG - 25					Damaged
LG - 26	0.1	0.3	20.7	1015	
LG - 27	0.1	0	21.6	1015	
LG-28	0.1	0.1	21.1	1015	
LG-29	0.1	0.3	21.0	1015	
LG-30	0.1	0.2	21.5	1015	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W003	37.4	23.5	7.4	1015	
P1W002	55.0	35.7	0.07	1015	
P1W008	42.8	33.4	0.4	1015	
P1W012	62.8	37.9	0.6	1015	
PHASE 3					
P3W004	62.7	39.1	0.01	1015	
P3W005	57.8	39.7	0.04	1015	
P3W007	18.2	11.4	15.2	1015	
P3W013	60.6	39.3	0.04	1015	
PHASE 2					
P2W002	0.9	0.5	21.3	1015	

P2W001	34.0	23.2	7.1	1015	
P2W016	49.9	34.4	1.0	1015	
P2W015	63.2	37.9	1.2	1015	
PHASE 4					
P4W011	45.8	36.7	0.3	1015	
P4W004	53.3	35.8	3.9	1015	
P4W005	61.9	38.8	0.2	1015	
P4W007	46.6	35.4	1.1	1015	
PHASE 6					
P6W003	53.2	40.4	0.0	1015	
P6W010	34.3	26.9	7.6	1015	
P6W011	21.8	28.9	0.0	1015	
P6W009	51.3	40.3	0.3	1015	
PHASE 5					
P5W002	54.0	37.2	1.2	1015	
P5W004	51.0	33.0	3.5	1015	
P5W003	60.7	38.7	1.9	1015	
P5W011	58.0	40.1	0.03	1015	
PHASE 7					
P7W004	54.3	44.0	1.1	1015	
P7W008	42.3	41.7	0.5	1015	
P7W009	55.4	43.2	0.7	1015	
P7W003	56.1	43.2	0.06	1015	

June 2015

Drehid Facility (W0201-03)		
Operator: David Keane	**Date:** 04/06/15	**Time:** 10:00hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Overcast/ wet/ dry	**Barometric pressure:** 1022	
	Ambient Temp: 14.2	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.0	0.9	20.0	1022	
LG – 02	0.1	**1.9**	18.2	1022	
LG – 03	0.1	0.2	20.1	1022	
LG – 04					Well Inaccessible
LG – 05					Unable to locate
LG – 06	0.0	0.4	20.1	1022	
LG – 07	0.0	1.0	20.4	1022	
LG – 08	0.0	0.0	21.2	1022	
LG – 09	0.0	1.4	16.5	1022	
LG – 10	0.1	0.2	20.3	1022	
LG – 11	0.1	1.4	18.8	1022	
LG – 12	0.1	0.4	21.6	1022	
LG – 13	0.1	1.4	18.8	1022	
LG – 14	0.1	0.4	21.5	1022	
LG – 15	0.1	0.3	21.1	1022	
LG – 16	0.1	1.4	19.5	1022	
LG - 17					Out of commission
LG – 18					Damaged
LG - 19					Damaged

LG – 20	0.1	0.8	21.5	1022	
LG – 21					Damaged
LG – 22					Damaged
LG – 23					Damaged
LG – 24					Damaged
LG - 25					Damaged
LG - 26	0.1	0.1	20.9	1022	
LG - 27	0.0	0.0	21.0	1022	
LG-28	0.1	0.0	21.1	1022	
LG-29	0.1	0.4	20.8	1022	
LG-30	0.1	0.2	21.5	1022	

Results					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W003	39.6	28.9	0.01	1022	
P1W002	52.8	35.7	0.05	1022	
P1W008	36.4	34.8	1.0	1022	
P1W012	48.0	35.1	0.7	1022	
PHASE 2					
P2W002	0.6	0.4	16.2	1022	
P2W001	32.8	21.5	8.4	1022	
P2W016	35.6	21.7	2.5	1022	
P2W015	60.6	39.3	0.04	1022	
PHASE 3					
P3W004	58.9	38.5	0.2	1022	

P3W005	34.0	23.2	7.1	1022	
P3W007	58.7	34.1	0.1	1022	
P3W013	63.2	37.9	1.2	1022	
PHASE 4					
P4W011	46.3	34.8	0.2	1022	
P4W004	64.1	32.7	2.8	1022	
P4W005	59.0	37.1	0.2	1022	
P4W007	48.7	34.4	1.8	1022	
PHASE 6					
P6W003	52.1	34.7	0.0	1022	
P6W010	33.5	24.8	6.4	1022	
P6W011	24.8	26.1	0.8	1022	
P6W009	56.1	38.7	0.2	1022	
PHASE 5					
P5W002	52.4	34.8	1.3	1022	
P5W004	49.3	37.0	2.6	1022	
P5W003	62.4	37.8	2.1	1022	
P5W011	57.2	37.4	0.0	1022	
PHASE 7					
P7W004	56.1	42.7	1.4	1022	
P7W008	42.3	42.1	0.7	1022	
P7W009	55.4	34.6	0.1	1022	
P7W003	44.0	37.7	0.06	1022	

July 2015

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 30th and 31st July 2015	**Time:** 15:00hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Overcast/ wet/ dry	**Barometric pressure:** 1014 and 1005	
	Ambient Temp: 14.0	

Results – 30/07/2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.1	20.2	1014	
LG – 02	0.1	**2.7**	17.5	1014	
LG – 03					Unable to locate
LG – 04					Well Inaccessible
LG – 05					Unable to locate
LG – 06	0.1	0.0	20.9	1014	
LG – 07	0.1	**3.6**	15.2	1014	
LG – 08	0.1	0.4	20.6	1014	
LG – 09	0.1	1.4	17.6	1014	
LG – 10	0.1	1.2	17.2	1014	
LG – 11	0.1	0.5	20.8	1014	
LG – 12	0.1	0.3	20.5	1014	
LG – 13	0.2	0.9	18.9	1014	
LG – 14	0.1	0.3	20.8	1014	
LG – 15	0.1	0.5	20.8	1014	
LG – 16	0.1	1.4	19.1	1014	
LG - 17					Out of commission
LG – 18	0.1	0.1	21.1	1014	

LG - 19	0.1	0.1	21.2	1014	
LG – 20	0.2	0.5	21.1	1014	
LG – 21	0.1	1.1	19.5	1014	
LG – 22					Damaged
LG – 23					Damaged
LG – 24					Damaged
LG - 25	0.1	**1.8**	20.2	1014	
LG - 26	0.1	0.2	21.4	1014	
LG - 27	0.1	0.0	21.5	1014	
LG - 28	0.2	1.1	20.1	1014	
LG - 29	0.4	0.8	20.0	1014	
LG - 30	0.2	**1.7**	19.4	1014	
LG - 31	0.1	1.1	20.9	1014	

Results – 31/07/2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	57.1	36.6	1	1005	
P1W008	40.7	33.3	0.7	1005	
P1W018	40.2	24.6	2.3	1005	
PHASE 2					
P2W007	26.1	20.8	8.8	1005	
P2W009	59.7	37.5	0.5	1005	
P2W012	33.8	30.6	0.6	1005	
P2W015	59.5	36.9	1.3	1005	
PHASE 3					

P3W003	41.3	34.2	0.9	1005	
P3W004	61.1	38.9	0.6	1005	
P3W007	60.1	40.0	0.5	1005	
P3W010	58.4	40.1	0.9	1005	
P3W016	59.4	41.6	0.4	1005	
P3W024	57.2	41.8	0.9	1005	
PHASE 4					
P4W005	38.1	31.2	1.8	1005	
P4W006	52.2	34.2	2.6	1005	
P4W007	58.0	37.5	1.1	1005	
P4W010	54.8	41.3	0.7	1005	
P4W011	38.8	33.1	2.0	1005	
PHASE 5					
P5W002	58.4	38.7	1.5	1005	
P5W003	48.5	31.1	4.1	1005	
P5W006	58.2	37.9	2.5	1005	
P5W011	49.7	33.9	3.7	1005	
P5W014	49.9	38.4	2.2	1005	
PHASE 6					
P6W004	46.2	35.9	1.7	1005	
P6W005	51.1	39.4	1	1005	
P6W009	47.3	36.6	3.1	1005	
P6W011	59.1	40.6	0.6	1005	
P6W012	42.0	33.9	0.9	1005	
PHASE 7					
P7W003	51.4	41.4	1.1	1005	

P7W004	51.9	46.8	1.3	1005	
P7W009	46.8	39.2	0.5	1005	
P7W010	53.3	42.8	0.6	1005	
P7W011	56.0	45.8	0.9	1005	

August 2015

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 27th & 28th August 2015	**Time:**11:00hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Dry, Bright, Windy	**Barometric pressure:** 1002 & 989	
	Ambient Temp: 15ºC	

28th August 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.2	19.5	1002	
LG – 02	0.1	**2.5**	17.5	1002	
LG – 03					Out of commission
LG – 04					Well Inaccessible
LG – 05					Out of commission
LG – 06	0.1	**1.8**	18.4	1002	
LG – 07	0.1	**3.7**	10.4	1002	
LG – 08	0.1	0.3	20.3	1002	
LG – 09	0.1	1.5	14.2	1002	
LG – 10	0.1	1.4	17.4	1002	
LG – 11	0.1	1.3	17.5	1002	
LG – 12	0.4	1.2	19.4	1002	
LG – 13	0.3	0.6	18.7	1002	
LG – 14	0.1	0.6	20.1	1002	

LG – 15	0.1	1.0	20.2	1002	
LG – 16	0.1	**2.0**	19.0	1002	
LG - 17					Out of commission
LG – 18	0.1	0.2	20.8	1002	
LG - 19	0.8	0.9	20.1	1002	
LG – 20	0.1	0.1	21.2	1002	
LG – 21	0.3	0.9	19.7	1002	
LG – 22					Damaged
LG – 23					Damaged
LG – 24					Damaged
LG - 25	0.5	**1.9**	19.3	1002	
LG - 26	0.1	1.1	19.5	1002	
LG - 27	0.1	0.0	21.1	1002	
LG - 28	0.1	0.1	21.0	1002	
LG - 29	0.1	0.2	20.8	1002	
LG - 30	0.1	**2.3**	18.5	1002	
LG - 31	0.1	0.1	20.9	1002	

27th August 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	60.9	38.9	0.5	989	
P1W011	63.4	37.9	0.2	989	
P1W016	59.1	40.1	0.6	989	
P1W017	61.2	39.2	0.4	989	
PHASE 2					
P2W001	61.1	36.7	0.9	989	

P2W009	61.2	38.8	0.4	989	
P2W012	47.2	36.7	0.8	989	
P2W015	57.3	36.3	1.7	989	
PHASE 3					
P3W003	43.4	36.0	0.7	989	
P3W004	61.2	39.0	0.5	989	
P3W015	52.0	40.6	0.6	989	
P3W019	35.6	26.0	7.9	989	
P3W022	58.7	41.6	0.5	989	
P3W025	40.0	28.6	6.4	989	
PHASE 4					
P4W002	51.0	37.1	1.0	989	
P4W005	43.1	33.9	1.3	989	
P4W006	33.6	30.3	2.3	989	
P4W007	19.7	17.9	9.7	989	
P4W013	44.0	36.4	0.2	989	
PHASE 5					
P5W002	41.4	30.5	4.8	989	
P5W003	58.1	35.8	1.5	989	
P5W011	43.5	33.6	3.8	989	
P5W012	22.1	27.9	0.4	989	
PHASE 6					
P6W006	55.1	41.4	1.4	989	
P6W009	48.2	37.5	2.6	989	
P6W010	58.6	41.2	0.2	989	
P6W012	48.5	37.5	1.0	989	

P6W014	54.5	40.8	0.3	989	
PHASE 7					
P7W002	55.5	43.3	0.6	989	
P7W003	26.7	31.1	0.6	989	
P7W004	27.0	28.5	2.4	989	
P7W005	43.8	44.0	1.2	989	
P7W011	45.7	39.2	1.0	989	

September 2015

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 25th & 29th Sept 2015	**Time:**10:00hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Dry and Bright	**Barometric pressure:** 1013 & 1028	
	Ambient Temp: 14ºC / 18ºC	

25th September 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.4	19.6	1013	
LG – 02	0.1	0.3	20.7	1013	
LG – 03					Out of commission
LG – 04					Well Inaccessible
LG – 05					Out of commission
LG – 06	0.1	**2.3**	18.1	1013	
LG – 07	0.1	0.4	20.6	1016	
LG – 08	0.1	0.8	19.8	1016	
LG – 09	0.1	**3.9**	7.2	1016	
LG – 10	0.1	0.6	17.7	1016	
LG – 11	0.1	1.4	20.2	1016	

LG – 12	0.1	0.9	20.2	1016	
LG – 13	0.2	0.7	18.5	1016	
LG – 14	0.1	0.9	19.5	1016	
LG – 15	0.1	0.9	20.6	1016	
LG – 16	0.1	**5.8**	12.9	1013	
LG - 17					Out of commission
LG – 18	0.1	0.1	21.1	1016	
LG - 19	0.1	0.2	20.5	1016	
LG – 20	0.1	0.3	20.0	1015	
LG – 21	0.1	0.1	21.3	1015	
LG – 22					Damaged
LG – 23					Damaged
LG – 24					Damaged
LG - 25	0.1	**1.9**	19.0	1015	
LG - 26	0.1	0.8	20.1	1015	
LG - 27	0.1	0.1	20.8	1015	
LG - 28	0.1	0.3	20.0	1015	
LG - 29	0.1	0.2	20.3	1015	
LG - 30	0.1	**2.3**	18.9	1015	
LG - 31	0.1	0.5	20.6	1016	

29th September 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	61.1	37.9	0.4	1028	
P1W008	59.3	38.9	0.4	1028	
P1W010	24.2	20.8	7.5	1028	
P1W016	59.7	38.7	0.5	1028	

PHASE 2					
P2W009	47.4	30.9	4.6	1028	
P2W010	54.8	36.1	1.0	1028	
P2W012	48.8	31.9	2.3	1028	
P2W015	37.2	23.8	7.9	1028	
PHASE 3					
P3W003	44.9	32.2	3.9	1028	
P3W004	57.4	36.8	1.4	1028	
P3W005	8.2	5.4	17.8	1028	
P3W013	43.9	32.6	3.3	1028	
P3W014	45.6	30.7	4.7	1028	
PHASE 4					
P4W002	35.6	23.5	8.4	1028	
P4W004	38.4	28.9	3.4	1028	
P4W005	59.2	37.1	0.8	1028	
P4W007	43.6	33.2	1.1	1028	
P4W017	32.3	28.6	2.5	1028	
PHASE 5					
P5W002	46.7	33.2	3.7	1028	
P5W003	0.7	0.7	20.3	1028	
P5W011	4.7	3.6	18.4	1028	
P5W012	42.8	27.6	5.9	1028	
PHASE 6					
P6W004	55.9	37.4	0.7	1028	
P6W005	52.7	41.4	0.8	1028	

P6W011	58.5	41.6	1.2	1028	
P6W012	25.6	24.9	4.1	1028	
P6W019	5.8	4.5	16.8	1028	
PHASE 7					
P7W002	47.9	38.4	2.6	1028	
P7W004	38.5	37.9	0.7	1028	
P7W005	44.1	35.9	1.8	1028	
P7W008	23.3	18.9	11.6	1028	
P7W009	36.7	34.1	1.3	1028	
P7W010	28.5	29.2	1.9	1028	

October 2015

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 23rd & 27th Oct 2015	**Time:**14:00hrs and 11:00 hrs
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Dry and Overcast	**Barometric pressure:** 1007 & 999	
	Ambient Temp: 14°C and 13°C	

23rd October 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.4	19.2	1007	
LG – 02	0.1	0.1	21.5	1007	
LG – 03	_	_	_	_	Out of commission
LG – 04	_	_	_	_	Well Inaccessible
LG – 05	_	_	_	_	Out of commission
LG – 06	0.1	0.6	20.7	1007	
LG – 07	0.1	**3.2**	18.1	1007	

LG – 08	0.1	**1.7**	17.8	1007	
LG – 09	0.2	0.4	19.2	1007	
LG – 10	0.2	0.6	19.2	1007	
LG – 11	0.1	**3.2**	19.8	1007	
LG – 12	0.1	1.4	20.3	1007	
LG – 13	0.1	0.6	18.9	1007	
LG – 14	0.1	**2.2**	18.4	1007	
LG – 15	0.1	1.4	20.4	1007	
LG – 16	0.1	**8.7**	9.0	1007	
LG - 17	_	_	_	_	Out of commission
LG – 18	0.1	0.1	20.8	1007	
LG - 19	0.1	0.1	21.3	1007	
LG – 20	0.1	0.6	20.9	1007	
LG – 21	0.1	0.6	20.5	1007	
LG – 22	_	_	_	_	Damaged
LG – 23	_	_	_	_	Damaged
LG – 24	_	_	_	_	Damaged
LG - 25	0.1	1.4	20.1	1007	
LG - 26	0.1	1.3	16.7	1007	
LG - 27	0.1	1.0	20.8	1007	
LG - 28	0.1	0.8	15.3	1007	
LG - 29	0.3	1.0	19.4	1007	
LG - 30	0.1	**2.7**	18.7	1007	
LG - 31	0.1	0.1	21.2	1007	
LG - 32	_	_	_	_	Damaged
LG - 33	0.1	**3.6**	16.7	1007	

27th October 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	57.3	36.9	1.7	999	
P1W008	9.8	8.0	15.9	999	
P1W011	60.3	37.7	0.8	999	
P1W012	60.4	37.7	1.0	999	
P1W016	33.4	20.6	12.3	999	
PHASE 2					
P2W009	59.5	38.4	0.7	999	
P2W010	45.7	34.3	0.4	999	
P2W012	61.3	37.9	0.8	999	
P2W015	58.4	37.3	1.5	999	
PHASE 3					
P3W003	32.4	24.8	7.7	999	
P3W004	54.2	36.7	1.4	999	
P3W005	51.9	31.9	4.6	999	
P3W014	51.0	34.6	3.2	999	
P3W017	50.2	37.4	2.6	999	
PHASE 4					
P4W002	43.2	29.5	2.1	999	
P4W005	46.0	31.5	4.4	999	
P4W007	37.1	31.6	2.5	999	
P4W013	31.1	28.4	0.9	999	

PHASE 5					
P5W003	60.1	41.1	0.6	999	
P5W006	56.1	37.2	2.6	999	
P5W008	53.6	39.7	1.3	999	
P5W009	53.5	40.0	1.1	999	
PHASE 6					
P6W003	59.3	40.5	2.9	999	
P6W004	58.2	40.1	0.8	999	
P6W005	54.4	40.4	2.2	999	
P6W009	59.0	42.8	0.4	999	
P6W012	56.7	40.1	1.3	999	
PHASE 7					
P7W005	36.0	37.9	0.8	999	
P7W008	29.6	24.8	8.6	999	
P7W009	46.5	42.2	1.2	999	
P7W010	41.2	39.2	1.0	999	
P7W011	36.1	37.0	0.7	999	

November 2015

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 27th Nov 2015 & 30th Nov 2015	**Time:** 09:30
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Wet & Windy	**Barometric pressure:** 1003 & 1006	
	Ambient Temp: 11°C	

30th November 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.0	1.0	20.9	1006	
LG – 02	0.0	0.1	21.0	1006	
LG – 03	_	_	_	_	Out of commission
LG – 04	_	_	_	_	Well Inaccessible
LG – 05	_	_	_	_	Out of commission
LG – 06	0.0	**3.6**	16.4	1006	
LG – 07	0.0	**3.4**	12.8	1006	
LG – 08	0.0	0.4	20.7	1006	
LG – 09	0.0	**2.6**	17.5	1006	
LG – 10	0.1	0.8	19.1	1006	
LG – 11	0.0	**2.2**	20.2	1006	
LG – 12	0.1	**3.1**	19.7	1006	
LG – 13	0.2	1.0	16.7	1006	
LG – 14	0.1	**3.4**	17.2	1006	
LG – 15	0.0	**3.9**	17.6	1006	
LG – 16	0.0	**4.7**	13.7	1006	
LG - 17	_	_	_	_	Out of commission
LG – 18	0.0	0.4	20.2	1006	

LG - 19	0.0	0.2	21.6	1006	
LG – 20	0.1	0.2	19.6	1006	
LG – 21	0.0	0.2	19.8	1006	
LG – 22	_	_	_	_	Damaged
LG – 23	_	_	_	_	Damaged
LG – 24	_	_	_	_	Damaged
LG - 25	0.0	1.2	18.7	1006	
LG - 26	0.0	0.9	18.9	1006	
LG - 27	0.0	0.1	21.5	1006	
LG - 28	0.0	0.2	21.3	1006	
LG - 29	0.0	0.7	21.4	1006	
LG - 30	0.0	0.3	21.5	1006	
LG - 31	0.0	0.8	21.5	1006	
LG - 32	_	_	_	_	Damaged
LG - 33	0.0	0.2	21.6	1006	
LG – 34	0.1	0.2	21.6	1006	
LG - 35	0.0	0.2	21.4	1006	

27th November 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	58.2	36.2	1.1	1003	
P1W008	55.3	37.6	0.5	1003	
P1W011	58.2	36.3	1.0	1003	
P1W012	47.3	31.5	4.0	1003	
P1W020	55.6	35.9	2.2	1003	
PHASE 2					

P2W001	57.2	36.5	2.1	1003	
P2W007	56.2	37.3	0.03	1003	
P2W0110	58.2	37.2	1.4	1003	
P2W012	48.3	36.2	1.5	1003	
P2W015	42.5	34.5	1.4	1003	
PHASE 3					
P3W005	50.2	41.3	0.2	1003	
P3W006	60.2	37.4	0.8	1003	
P3W013	57.2	39.3	0.5	1003	
P3W015	50.3	39.2	1.3	1003	
P3W021	41.2	33.0	1.3	1003	
PHASE 4					
P4W002	57.2	39.7	0.1	1003	
P4W004	53.2	32.2	0.7	1003	
P4W006	60.7	40.2	0.2	1003	
P4W014	53.2	32.2	0.7	1003	
PHASE 5					
P5W003	51.5	36.2	1.6	1003	
P5W006	53.2	35.2	2.1	1003	
P5W008	60.2	39.0	1.2	1003	
P5W009	50.3	37.3	1.4	1003	
PHASE 6					
P6W003	58.3	41.2	0.3	1003	
P6W004	57.8	40.5	0.3	1003	
P6W005	58.9	41.4	0.7	1003	

P6W009	47.5	38.5	3.5	1003	
P6W012	52.3	39.2	1.3	1003	
PHASE 7					
P7W008	35.3	32.1	3.0	1003	
P7W009	48.6	46.6	0.2	1003	
P7W010	44.5	43.6	0.0	1003	
P7W011	36.5	38.9	0.3	1003	
P7W012	51.3	37.8	1.2	1003	

December 2015

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 22nd & 23rd Dec 2015	**Time:** 14:00
Instrument ID: Geotech GA 2000	**Date Next Calibration:** February 2016	
Weather: Dry & Bright	**Barometric pressure:** 997 & 971	
	Ambient Temp: 11°C & 13°C	

22nd December 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.0	19.2	997	
LG – 02	0.1	0.1	20.5	997	
LG – 03	–	–	–	–	Out of commission
LG – 04	–	–	–	–	Well Inaccessible
LG – 05	–	–	–	–	Out of commission
LG – 06	0.1	0.4	19.9	997	
LG – 07	0.1	**3.1**	8.1	997	
LG – 08	0.1	1.4	18.3	997	
LG – 09	0.1	**3.1**	17.0	997	

LG – 10	0.2	0.9	17.9	997	
LG – 11	0.1	1.2	19.6	997	
LG – 12	0.1	1.2	20.0	997	
LG – 13	0.5	**2.4**	12.7	997	
LG – 14	0.1	**5.6**	16.6	997	
LG – 15	0.1	**5.6**	15.7	997	
LG – 16	0.1	**4.6**	13.3	997	
LG - 17	_	_	_	_	Out of commission
LG – 18	0.1	0.2	19.4	997	
LG - 19	0.1	0.2	20.7	997	
LG – 20	0.1	0.3	20.5	997	
LG – 21	0.1	0.3	20.9	997	
LG – 22	_	_	_	_	Damaged
LG – 23	_	_	_	_	Damaged
LG – 24	_	_	_	_	Damaged
LG - 25	0.1	1.4	17.5	997	
LG - 26	0.1	1.3	8.2	997	
LG - 27	0.1	0.2	21.2	997	
LG - 28	0.1	0.2	21.1	997	
LG - 29	0.1	0.6	20.9	997	
LG - 30	0.4	1.2	19.3	997	
LG - 31	0.1	0.7	20.8	997	
LG - 32	_	_	_	_	Damaged
LG - 33	0.1	0.3	21.4	997	
LG – 34	0.1	0.2	21.3	997	
LG - 35	0.1	0.4	21.2	997	
LG - 36	0.1	0.1	21.4	997	

23rd December 2015					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	54.3	36.3	1.6	971	
P1W008	58.2	38.4	0.6	971	
P1W011	61.3	39.1	0.0	971	
P1W012	53.4	36.6	1.4	971	
P1W020	48.2	34.5	3.5	971	
PHASE 2					
P2W001	54.9	36.8	1.3	971	
P2W007	58.2	38.5	1.2	971	
P2W010	39.9	28.3	5.0	971	
P2W012	42.0	28.7	0.0	971	
P2W015	47.2	32.4	1.7	971	
PHASE 3					
P3W005	55.4	42.8	0.3	971	
P3W006	42.7	28.3	5.0	971	
P3W013	56.4	39.7	0.2	971	
P3W015	49.2	36.2	2.3	971	
P3W021	42.5	35.7	1.2	971	
PHASE 4					
P4W002	53.2	38.2	1.3	971	
P4W004	41.7	32.3	2.2	971	
P4W005	44.7	32.5	2.7	971	
P4W006	57.3	40.2	0.4	971	

P4W014	56.2	40.1	1.0	971	
PHASE 5					
P5W003	48.5	38.8	2.2	971	
P5W009	26.3	20.8	10.1	971	
P5W010	30.8	23.7	8.0	971	
P5W011	51.9	37.3	2.4	971	
P5W012	54.3	41.6	1.2	971	
PHASE 6					
P6W003	54.7	41.7	1.0	971	
P6W004	56.8	42.8	0.2	971	
P6W005	54.2	40.6	0.9	971	
P6W009	48.4	39.9	2.5	971	
P6W012	38.5	36.1	3.5	971	
PHASE 7					
P7W008	41.3	35.3	1.5	971	
P7W009	42.7	40.1	0.5	971	
P7W010	27.3	28.0	1.2	971	
P7W011	41.6	39.2	0.4	971	
P7W012	43.2	41.3	1.2	971	

APPENDIX 3

Dust & Litter Plan

Title **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.

   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

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 waste 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.

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 Waste Licence
    - Awareness of the Emergency Response Procedures
    - Supplied with a description of activities on site
    - Reporting of environmental incidents to Environmental Team

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

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

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

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

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

8. 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 Waste 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

E-PRTR (European Pollutant Release and Transfer Register

Guidance to completing the PRTR workbook

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2015

1. FACILITY IDENTIFICATION

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

Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	In the townlands of Parsonstown, Loughnacush, Kilkeaskin, Drumond
Address 2	Timahoe West, Coolcarrigan
Address 3	Killinagh Lower and Killinagh Upper, Carbury
Address 4	
	Kildare
Country	Ireland
Coordinates of Location	-9.77721 54.1523
River Basin District	IEEA
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Phoebe Dillane
AER Returns Contact Email Address	phoebe.dillane@bnm.ie
AER Returns Contact Position	EHS Compliance Officer
AER Returns Contact Telephone Number	045 439464
AER Returns Contact Mobile Phone Number	087 2794952
AER Returns Contact Fax Number	045 439489
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	15
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

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

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) ?	Not Applicable
Is the reduction scheme compliance route being used ?	Not Applicable

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) ?	No

4.1 RELEASES TO AIR Link to previous years emissions data | PRTR# : W0201 | Facility Name : Drehid Waste Management Facility | Filename : W0201_2015.xls | Return Year : 2015 | 31/03/2016 14:28

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	C	OTH	Gas Sim V2.5	0.0	383830.0	0.0	383830.0

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

SECTION B : REMAINING PRTR POLLUTANTS

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

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

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

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
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 B) then click the delete button

Additional Data Requested from Landfill operators

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

Landfill: Drehid Waste Management Facility

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)	8006613.0	E	OTH	Gassim 2.5	N/A	
Methane flared	2124236.0	C	OTH	Monthly Records	0.0	(Total Flaring Capacity)
Methane utilised in engine/s	5498547.0	M	OTH	SCADA	0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	383830.0	E	OTH	Combination of the above	N/A	

4.2 RELEASES TO WATERS

Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

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

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used					
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 B) then click the delete button

4.3 RELEASES TO WASTEWATER OR SEWER

Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

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

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
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 B) then click the delete button

4.4 RELEASES TO LAND

Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT		METHOD			QUANTITY		
			Method Used				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

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

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

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

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	13 02 08	Yes	92.92	other engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Enva,W0184-01	Clonminam Industrial Estate,.,Portlaoise,Co. Laois,Ireland	Enva,W0184-01,Clonminam Industrial Estate,.,Portlaoise,Co. Laoise,Ireland	Clonminam Industrial Estate,.,Portlaoise,Co. Laoise,Ireland
Within the Country	13 07 01	Yes	0.0	fuel oil and diesel	R9	M	Weighed	Offsite in Ireland	Enva,W0184-01	Clonminam Industrial Estate,.,Portlaoise,Co. Laois,Ireland	Enva,W0184-01	Clonminam Industrial Estate,.,Portlaoise,Co. Laois,Ireland
Within the Country	16 10 02	No	0.0	aqueous liquid wastes other than those mentioned in 16 10 01	D8	M	Weighed	Offsite in Ireland	Enva,W0196-1	JFK Road,Naas Road,Dublin 12,.,Ireland		
Within the Country	19 07 03	No	13240.15	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Leixlip WWTP Kildare County Council,D0004-01	Aras Chil Dara,Devoy Park,Naas,Kildare ,Ireland		
Within the Country	19 07 03	No	17319.65	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Enva,W0196-1	JFK Road,Naas Road,Dublin 12,.,Ireland		
Within the Country	19 07 03	No	9478.607	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Rilta Environmental,W0185-01	Site No 14A1,Greenogue Business Park,Rathcoole,Dublin,Ireland		
Within the Country	20 01 01	No	0.0	paper and cardboard	R13	M	Weighed	Offsite in Ireland	AES Tullamore,W0104-02	Cappincur Industrial Estate,Cappincur,Tullamore, County Offaly,Ireland		
Within the Country	20 01 40	No	0.0	metals	R13	M	Weighed	Offsite in Ireland	AES Tullamore,W0104-02	Cappincur Industrial Estate,Cappincur,Tullamore, County Offaly,Ireland		
Within the Country	19 12 03	No	14.24	non-ferrous metal	R4	M	Weighed	Offsite in Ireland	Wilton Waste Recycling Ltd,WFP-CN-10-0005-01	Kiffagh,Crosserlough,Ballyjamesduff,Cavan,Ireland		
Within the Country	**19 12 02**	**No**	63.48	ferrous metal	R4	M	Weighed	Offsite in Ireland	Wilton Waste Recycling Ltd,WFP-CN-10-0005-01	Kiffagh,Crosserlough,Ballyjamesduff,Cavan,Ireland		
Within the Country	15 02 02	Yes	0.08	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	D10	M	Weighed	Offsite in Ireland	Enva,W0184-01	Clonminam Industrial Estate,.,Portlaoise,Co. Laois,Ireland	Kreis Weseler Abfallgesellschaft,E1701210 0,Kamp Lintfort,.,.,.,Germany	Kamp Lintfort,.,.,.,Germany
Within the Country	16 01 07	Yes	0.24	oil filters	R4	M	Weighed	Offsite in Ireland	Enva,W0184-01	Clonminam Industrial Estate,.,Portlaoise,Co. Laois,Ireland	Enva,W0184-01,Clonminam Industrial Estate,.,Portlaoise,Co. Laoise,Ireland	Clonminam Industrial Estate,.,Portlaoise,Co. Laoise,Ireland

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