Cover Page

Signed Declaration

Waste License Registration Number: W0201-03

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

Reporting year: 2017

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

Phoebe Dillane

EHS Compliance Officer

Date: 28th March 2018

2017 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 2017 Annual Environmental Report (AER) for the Bord na Móna Waste Management Facility at Drehid, County Kildare. It covers the period from 1st January 2017 to 31st December 2017. 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.

In February 2016, Bord na Móna requested the Agency to technically amend the Licence to facilitate the continued acceptance of 360,000 tonnes per annum for disposal in the landfill up until the end of 2017. In March 2016, this request was approved by the Agency.

The 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.

The content of this AER is based on Schedule F of the licence.

2. SITE DESCRIPTION

2.1 Site Location and Layout

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

The landfill, when complete, will encompass approximately 39 ha. It will be developed in fifteen distinct phases, each having duration of up to 3 years depending on the rate of waste acceptance. 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 construction projects have involved the construction of additional engineered cells, landfill gas management infrastructure including a utilisation plant for the generation of 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 31st December 2017, after which the annual intake reduces to a maximum of 145,000 tonnes per annum. An unlimited amount of inert 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 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, 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 2016 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.

The information in Table 2.1 below has been complied and is presented in accordance with the instructions of the EPA set out in compliance instructions (CI001383) issued on 1st November 2016 and 21st December 2016.

Table 2.1 Waste Received 2017

Waste Type to Landfill Facility	**Description**	**Tonnes**
Municipal	Mixed Commercial and Domestic	213444.9
	Street Cleansing and Local Authority Clean ups	52957.19
	Biostabilised Waste	49357.97
Industrial	Non Hazardous Industrial Solid Waste	614.16
Sludges & Filter cake	Non Hazardous Municipal & Industrial	2971.08
C&D	Mixed Construction & Demolition Waste	379.62
	Non Hazardous Soils and Stone (inc. Japanese Knotweed)	18
	Fines for Disposal	2336.27
	Non-Hazardous Dredging Spoil	5807.01
Total Disposed to Landfill Facility		**327,886.2**
Industrial	Ash	5490.23
Sludges & Filter cake	Waste from desanding	414.84
C&D	Soil & Stones	23022.81
	Shredded Timber	2591.8
	Bituminous Mixtures	13.52
Total Non-Inert Recovered at Landfill Facility		**31,533.2**
C&D	C&D Rubble	52,801.54
	Soil & Stones	56,620.57
	C&D Fines	111,383.18
	Dredging Spoil	604.54

Municipal	Glass	5881.68
Total Inert Recovered at Landfill Facility		**227,291.51**

Soils & fines material includes Greenfield soils received for the final capping works at the facility. In addition to the quantities recovered onsite during 2017, an estimated 6,114 tonnes of inert soil, 10,994 tonnes of non-hazardous soil and 543 tonnes of crushed glass deemed suitable for engineering purposes remained in storage at the end of 2017 for later use.

Waste Type to Composting Facility	Description	Tonnes
Organic Fines	Screenings from trommelling of municipal Waste	24,998.6
	Total Accepted to Composting Facility	**24,998.6**

Table 2.2 Waste Consigned 2017

Waste Description	Tonnes
Engine, Gear and Lubricant Oils	108.46
Oil Filters	0.26
Landfill Leachate & Foul Water	40,188.99
Metals	21.1
Total Consigned:	**40,318.81**

2.5 Landfill Capacity

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

- The total disposal capacity of the entire landfill facility is estimated to be **5,040,000m^3**.
- The current constructed unused void space at the end of 2017 is approximately **236,031 tonnes of disposal**.
- **4,129,923m^3** of void space has been used up to the end of 2017.

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 (HGVs) 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. 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, WEEE 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 2017. 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 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). SW6 is located at the outlet of the Integrated Constructed Wetland (ICW) and there were no ELV exceedances at this discharge location during 2016. The ICW was constructed in 2013/2014 to actively manage naturally occurring elevated ammonia in 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.

There were no ELV exceedances recorded at SW-5 during 2017 which is located downstream of the settlement lagoons before surface waters discharge into the Cushaling River. There were also no ELV exceedances recorded at SW-4 during 2017 which is located at Dillon's Bridge on the Cushaling River.

3.3 Leachate

Leachate samples are analysed quarterly for BOD and COD at one monitoring location (TK2). 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 approximately two per hectare within the cells. The locations of the 48 external wells (LG-01 – LG-48), 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) and the concentration limit for carbon dioxide (1.5% v/v) were not exceeded outside the waste body during 2017.

3.4.2 Inside the Waste Body

Methane levels varied from 18.1 to 67.7 %v/v, carbon dioxide levels varied from 13.0 to 57.3 %v/v, while oxygen levels varied from 0 to 9.7 %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 2017 included both daytime and night time monitoring. The noise sensitive location (NSL) recorded daytime LAeq levels of 38-42 dB(A) and night-time LAeq levels of 33-35 dB(A), all of which are within their respective licence limits.

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

The daytime site boundary LAeq levels ranged from 43-48 dB(A) at N5 to 59-62 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 D1 in September 2017) were less than the deposition limit set in the licence (350 mg/m^2/day).

One elevated reading was recorded at D1 (1,179mg/m2/day) in September 2017. It was noted on the field sheets that faecal waste was present in the dust gauge which had dissolved into the solution on return to the laboratory.

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 – 2017

Rainfall	
Total Annual (2017)	703.5mm
Maximum monthly (June)	91.8mm
Minimum monthly (April)	8.8mm
Temperature	
Mean (2017)	10.1°C
Mean Maximum (July)	15.3°C
Mean Minimum (December)	5.2°C

Total rainfall in millimetres for Casement

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2017	26.1	63.6	65.9	8.8	67.1	91.8	42.9	65.4	70.5	57.2	79.5	64.7	703.5
2016	83.2	68.3	38.7	59.7	62.6	111.3	36.6	63.8	74.9	45.4	38.0	49.2	731.7
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	31.8	42.3	142.0	12.9	87.8	138.9	64.1	946.9
mean	70.9	71.1	54.4	41.0	81.1	63.1	46.1	84.7	46.1	57.5	92.7	96.1	804.7

Mean temperature in degrees Celsius for Casement

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2017	5.8	6.4	8.0	8.3	12.4	14.4	15.3	14.7	12.5	11.2	6.2	5.2	10.1
2016	5.9	4.5	5.9	6.6	11.4	14.2	15.7	15.6	14.3	10.5	5.4	6.7	9.7
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	9.4
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
mean	5.5	5.1	6.6	8.1	11.3	13.9	15.4	14.6	13.1	10.8	6.9	6.4	9.8

3.8 Biological Monitoring

The annual biological assessment of the Cushaling River was carried out by ANUA Environmental in accordance with Schedule C.3 of the License on 22nd August 2017.

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, which is moderately polluted.

The results reflect the findings of the previous assessment undertaken in September 2016 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 carried out on the surface water and foul water underground lines in Drehid in 2017. A number of defects were identified on the surface water line which required remediation. A summary of these defects was submitted to the Agency in December 2017 via Eden. There were no defects noted on the foul line. The repair of the defects is scheduled to occur in Quarter 1 2018.

The Underground Line Reports are on file at the Drehid Waste Management Facility and will be made available to the Agency for inspection at any time.

4.2 Summary of Resource & Energy Consumption

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.

At the beginning of 2016 there were 3 no. electricity connections into the Drehid Waste Management Facility:

1. the Road Entrance connection which serves the entrance lighting and electric gate
2. the connection which served the electrical requirements of the landfill and composting plant
3. the connection into the Landfill Gas Utilisation Plant to primarily facilitate the export of electricity

The electricity generation capacity of the Landfill Gas Utilisation Plant is greater than the maximum export capacity of the grid connection. On 12th September 2016 the site commenced the usage of excess electricity, generated by the Landfill Gas Utilisation Plant, in the landfill, composting plant and service buildings. These facilities are now primarily powered by electricity generated on the site. The connection which previously served the electrical requirements of the landfill and composting plant was made redundant (Item 2 above).

A mains electricity supply remains in place into the Landfill Gas Utilisation Plant (Item 3 above) to facilitate the export of electricity and to provide for the importation of electricity when the Landfill Gas Utilisation Plant is offline for maintenance and therefore not generating electricity.

During 2017 the site imported 159,415 kWhr of electricity when the Landfill Gas Utilisation Plant was offline for maintenance and therefore not generating electricity. Table 4.2 presents the total electricity usage by the site in 2017.

Bord na Móna engaged with the SEAI and took part in their Energy Management Scheme in 2016-2017. Bord na Móna have an objective to implement Energy Management Systems across the entire group in each Business Unit. Resource Recovery's compliance team have been working on the Energy Review since early 2017. Initial stage 1 Assessment was completed by the end of January 2018 with full accreditation being obtained by the end of 2018. Preliminary data shows the Significant Energy Users for the Resource Recovery Unit are Road Diesel and Green Diesel.

Table 4.1 Resources Used On-Site

Resources	Quantities
Diesel (green)	340,285 Litres
Kerosene	4,501 Litres

Table 4.2 Electricity Consumption On-Site

Resources	Quantities
Road Entrance	4,006 kWhr
Electricity (Landfill and Composting activity)	1,927,224 kWhr
Electricity (Gas Plant)	2,192,772 kWhr

4.3 Site Developments

4.3.1 Landfill Construction

The construction of Phase 12 to the east of the existing footprint of the landfill was completed in early February 2017 and as per other phases were subject to a stringent Construction Quality Assurance (CQA) programme. Construction of Phase 13 began in September 2017 and works are ongoing.

During the calendar year of 2017, the final capping programme continued on site. During this period, the placement of the geo-membrane landfill cap and the final layer of soil was substantially partially completed in Phase 5 and Phase 5.

The installation of the permanent landfill gas pipework (excluding well heads) was partially completed on Phase 4 and 5 along with the installation of the permanent landfill gas manifolds for each of these Phases.

The placement of temporary plastic membrane commenced on Phase 9, 10 and 11 during 2017. This temporary plastic membrane will reduce the infiltration of rainwater and thereby contribute towards reduced leachate generation.

4.3.2 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.

In July 2016, Bord na Móna submitted a Specified Engineering Works (SEW) Report in relation to the permanent use of Reverse Osmosis (RO) for the treatment of leachate at the Drehid Waste Management Facility. The SEW detailed the proposed permanent use of an already installed RO Leachate Treatment Plant.

During 2016 and 2017 the Agency requested further information relating to the submitted SEW Report. This further information was submitted in February, August and November 2017. Approval was obtained from the Agency in December 2017 for the permanent use of a Reverse Osmosis Plant in Drehid.

4.3.3 Energy Usage

The electricity generation capacity of the Landfill Gas Utilisation Plant is greater than the maximum export capacity of the grid connection. On 12th September 2016, the site commenced the usage of excess electricity, generated by the Landfill Gas Utilisation Plant, in the landfill, compost facility and service buildings. These facilities are now primarily powered by electricity generated on the site.

A mains electricity supply remains in place into the Landfill Gas Utilisation Plant to facilitate the export of electricity and to provide for the importation of electricity when the Landfill Gas Utilisation Plant is offline for maintenance and therefore not generating electricity.

During 2017 the site imported 159,415 kWhr of electricity when the Landfill Gas Utilisation Plant was not generating electricity.

4.4 Stability Assessment

Phase 12 of construction works were completed in early February 2017, which as per other phases were 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 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 5th December 2017. 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 3089 m^3/ hour of landfill gas is produced, which equates to a 2017 total for methane production of 8,270,992 kgs. The total landfill gas flared from the site was calculated to be 2,203,753.5 kgs.

In addition, 5,761,089.7 kgs of methane was utilised to generate green electricity onsite.

Gas Sim	8,270,992 kg/year
Flared	2,203,753.5 kg/year
Utilised	5,761,089.7 kg/year
Fugitive Loss	306,148.8 kg/year

5.2 Surface Water

Rainfall from the landfill cap and hard stand areas of the landfill discharges firstly into regulated settlement lagoons 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 2017 was 40,188.99 tonnes. The leachate was directed off site for treatment at Kildare County Council’s Waste Water Treatment Plant in Leixlip, County Kildare, Ringsend Waste Water Treatment Works in County Dublin and licensed/permitted facilities operated by 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 at the end of each working day.

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 proven 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 regularly collected and litter has not been an issue at the facility.

7. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

7.1 Incidents

There was 2 no. incidents on-site during the reporting period of 2017.

The first incident related to the elevated dust reading recorded at D1 (1,179mg/m2/day) in September 2017. Sampling sheet completed at the time of dust collection recorded that large black lumps were observed which were possibly faeces. The sampler noted to the laboratory that these disintegrated into the sample. Photograph recorded by the laboratory showed that the faeces had completely dissolved into the sample on return to the laboratory.

The second incident on 2nd December 2017 related to an exceedance of the Electrical Conductivity Trigger Action limit of 698µS/cm as set at the inlet to the onsite surface water lagoons. It was noted that there was an application of salt to the roads of the facility on Wednesday 29th November due to the cold weather experienced. Chloride analysis was carried out across the site and these results confirmed Chloride to be slightly elevated above that which is normally recorded at SW6. This indicated that the elevated Conductivity recorded at the site was due to salt application. The DO levels at the inlet did not breached either the Trigger Warning or the Trigger Action limits as set therefore confirming the conclusion reached i.e. salt application.

In 2017 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, in 2015 to 2 no. ELV exceedances and finally in 2016 and again in 2017 there were no ELV exceedances at SW6. 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.

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 8 no. complaints were received in the reporting period relating to odour (6 no.) and birds (2 no.). All of the complaints were addressed by facility staff.

8. ENVIRONMENTAL MANAGEMENT SYSTEM

8.1 Management Structure

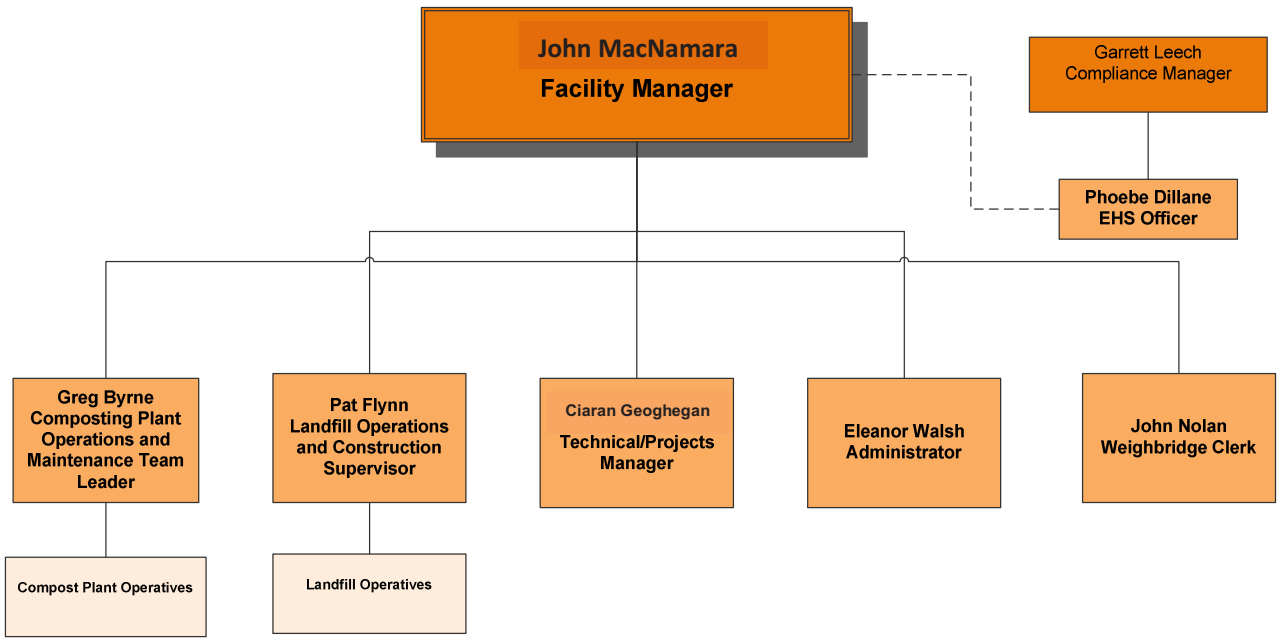
The Management Structure as required by Condition 2.2.2.1 of the licence was submitted to the Agency on 26th May 2006, as part of the EMS. An amended version is included below.

8.1.1 Site Management Structure

The day to day management of the facility and supervision of waste activities are the responsibility of the entire management team, including the Facility Manager, Landfill Operations and Construction Supervisor, Composting Plant Operations and Maintenance Team Leader, EHS Officer and the General Operatives. The site organisational chart for 2017 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 2017

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

8.2.2 Schedule of Objectives 2018

Bord Na Móna has set a schedule of targets and objectives for 2018. These are presented in Table 8.2.

8.3 Communications Programme

The Communications Programme required by Condition 2.2.2.7 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 2017

Ref No	Objective	Target	Timescale	Responsible Person	Status
1	Final Capping	Commence installation of final cap liner and soil placement across Phase 5 & 6. Continued placement of intermediate liner (Phase 7, 8, 9 and 10). Complete final cap leachate recirculation system	End of 2017	Operations Team	Phase 5 & 6 regulated. Placement of intermediate liner commenced on Phase 7 and 8
2	Leachate Management	Continuation of use of Reverse Osmosis Leachate treatment plant if approved by Agency. Installation of leachate recirculation infrastructure as per approved SEW	2017	Operations Team	RFI submitted to Agency in Feb 2017 for continued use of RO. Approval obtained for leachate recirculation SEW Report
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 2017	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-2017	Operations Team	Ongoing
7	Odour Management Plan	Maintain Odour Management Plan, including installation of intermediate liner and gas infrastructure as required. Use of full scale Landfill Gas Cleaning plant to cleanse landfill gas utilised by the on-site Landfill Gas Engines if approval obtained from the Agency for the continued use of permeate from the RO Plant.	Ongoing	Operations Team	Odour Plan on going. LGC Plant fully commissioned
8	Environmental Auditing	Maintaining inspections during 2017 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 2018

Ref No	Objective	Target	Timescale	Responsible Person	Status
1	Final Capping	Complete installation of final cap liner and soil placement across Phase 5 & 6. Continued placement of intermediate liner (Phase 9, 10 and 11). Complete final cap leachate recirculation system	End of 2018	Operations Team	Phase 5 & 6 regulated. Placement of intermediate liner commenced on Phase 9 and 10
2	Leachate Management	Continuation of use of Reverse Osmosis Leachate treatment plant following approval by Agency in December 2017. Installation of leachate recirculation infrastructure as per approved SEW	2018	Operations Team	Approval obtained for leachate recirculation SEW Report Approval obtained for the permanent use of the RO plant in December 2017
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 2018	Ongoing	Environmental and Health & Safety 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	Implementation of the Energy Management System ISO 50001 in 2018	Completion of Initial stage 1 Assessment by the end of January 2018 with full accreditation being obtained by the end of 2018.	Dec-2018	Compliance Team	Ongoing
7	Odour Management Plan	Maintain Odour Management Plan, including installation of intermediate liner and gas infrastructure as required. Use of full scale Landfill Gas Cleaning plant to cleanse landfill gas utilised by the on-site Landfill Gas Engines following approval from the Agency for the continued use of permeate from the RO Plant.	Ongoing	Operations Team	Odour Plan on going. LGC Plant fully commissioned
8	Environmental Auditing	Maintaining inspections during 2018 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 the 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 of 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"*. A Bond for CRAMP provision was submitted to the Agency in December 2016 and the Insurance for the ELRA was submitted in September 2017.

9.2 Contributions to Community fund

A contribution of €380,570 is to be made to the community fund for 2017 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 2018. Therefore, it is not possible to submit the Section 53A Statement as part of the 2017 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 2018.

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: -

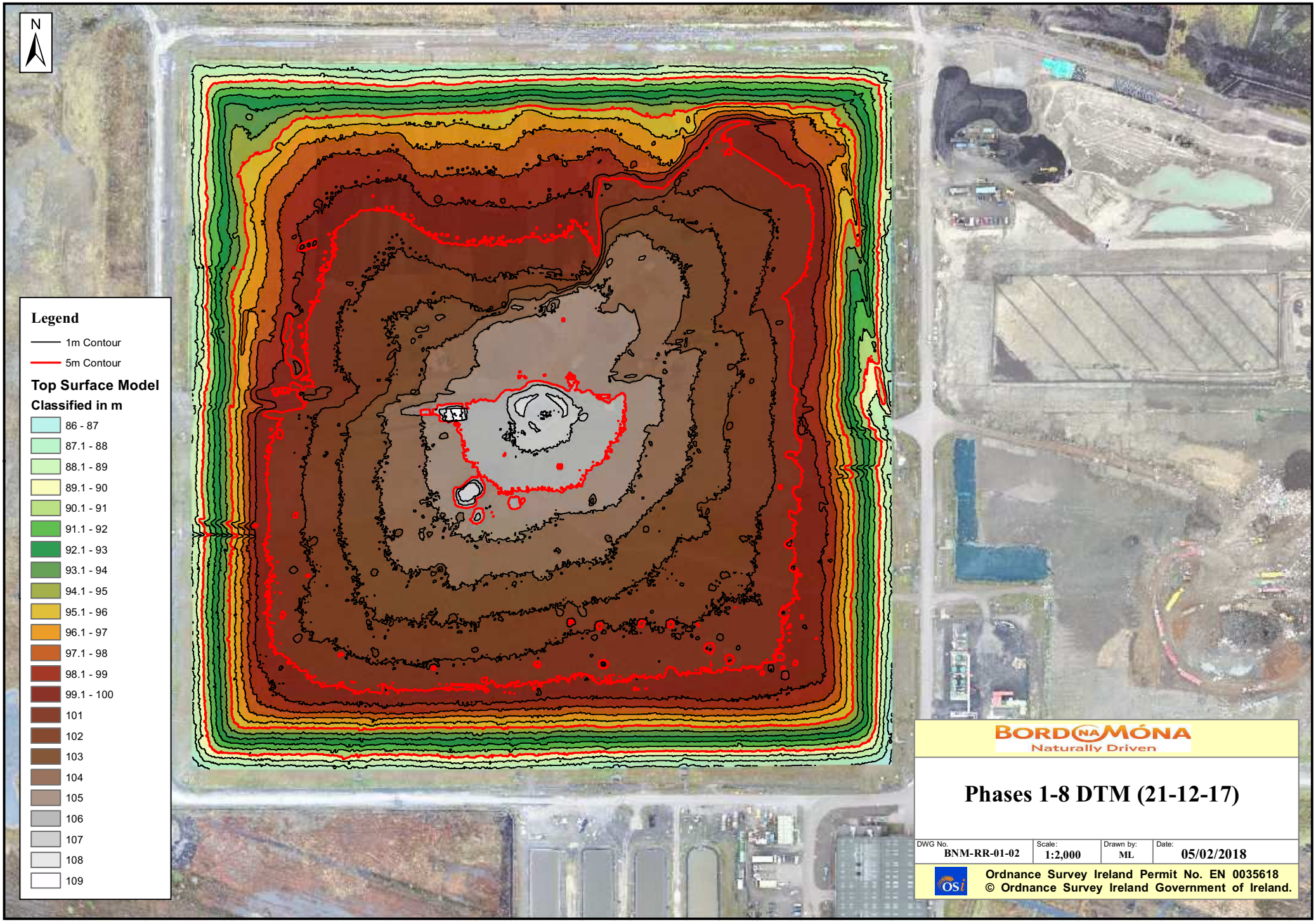
- Prevention,
- Minimisation,

- 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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BORD NA MÓNA
Naturally Driven
Phases 1-8 DTM (21-12-17)
DWG No.
BNM-RR-01-02
Scale:
1:2,000
Drawn by:
ML
Date:
05/02/2018
Ordnance Survey Ireland Permit No. EN 0035618
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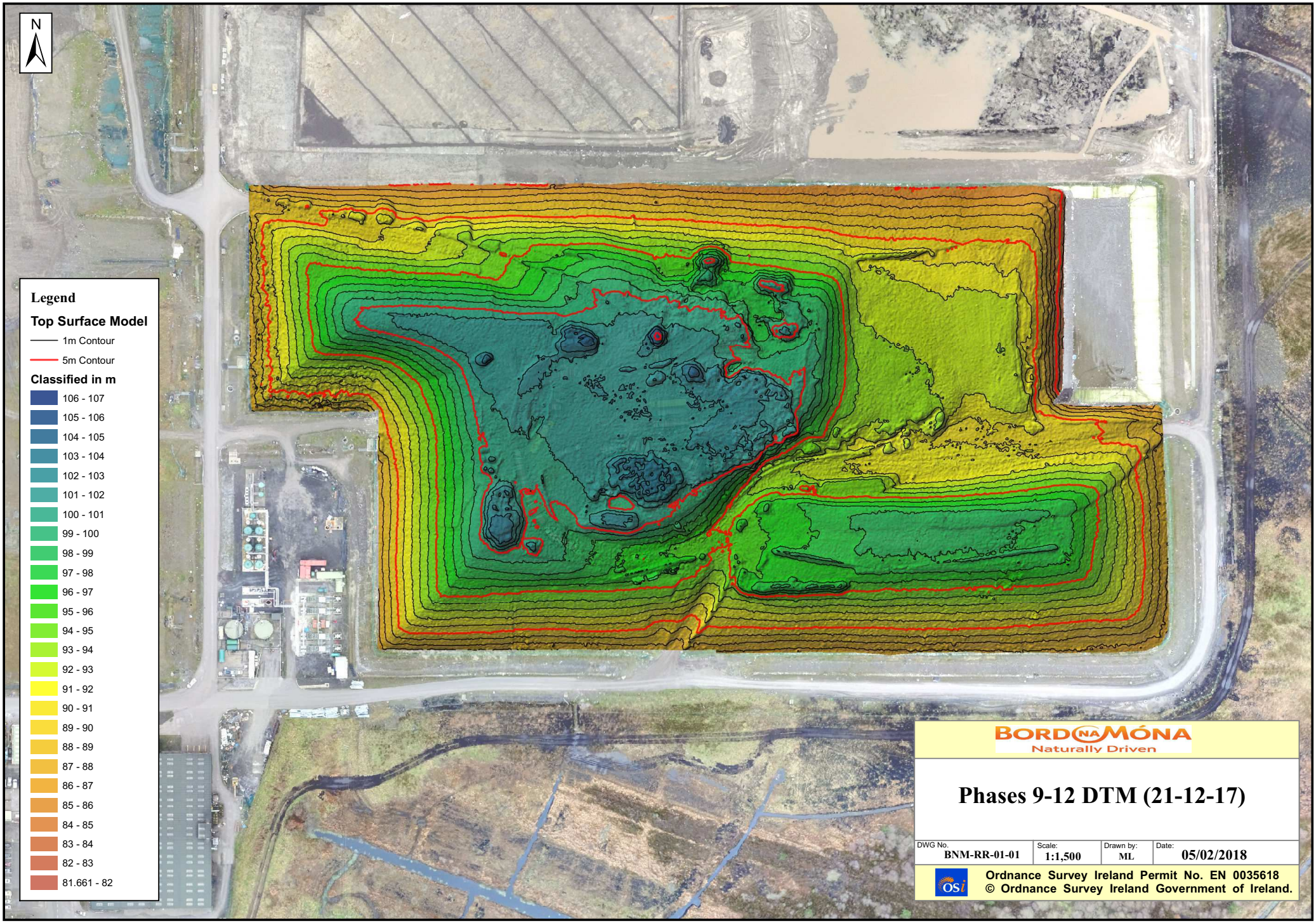
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Naturally Driven
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DWG No. BNM-RR-01-01
Scale: 1:1,500
Drawn by: ML
Date: 05/02/2018
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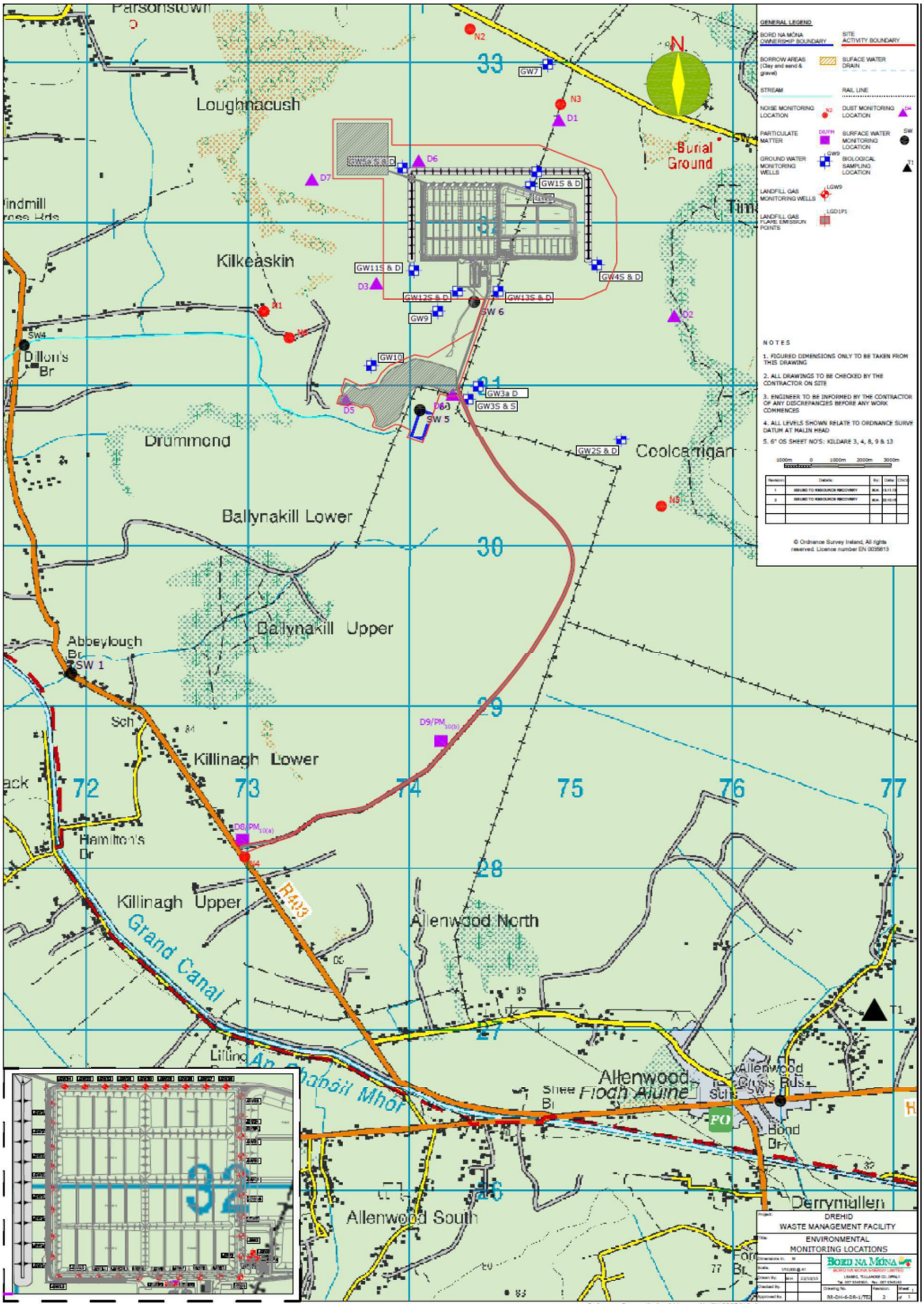
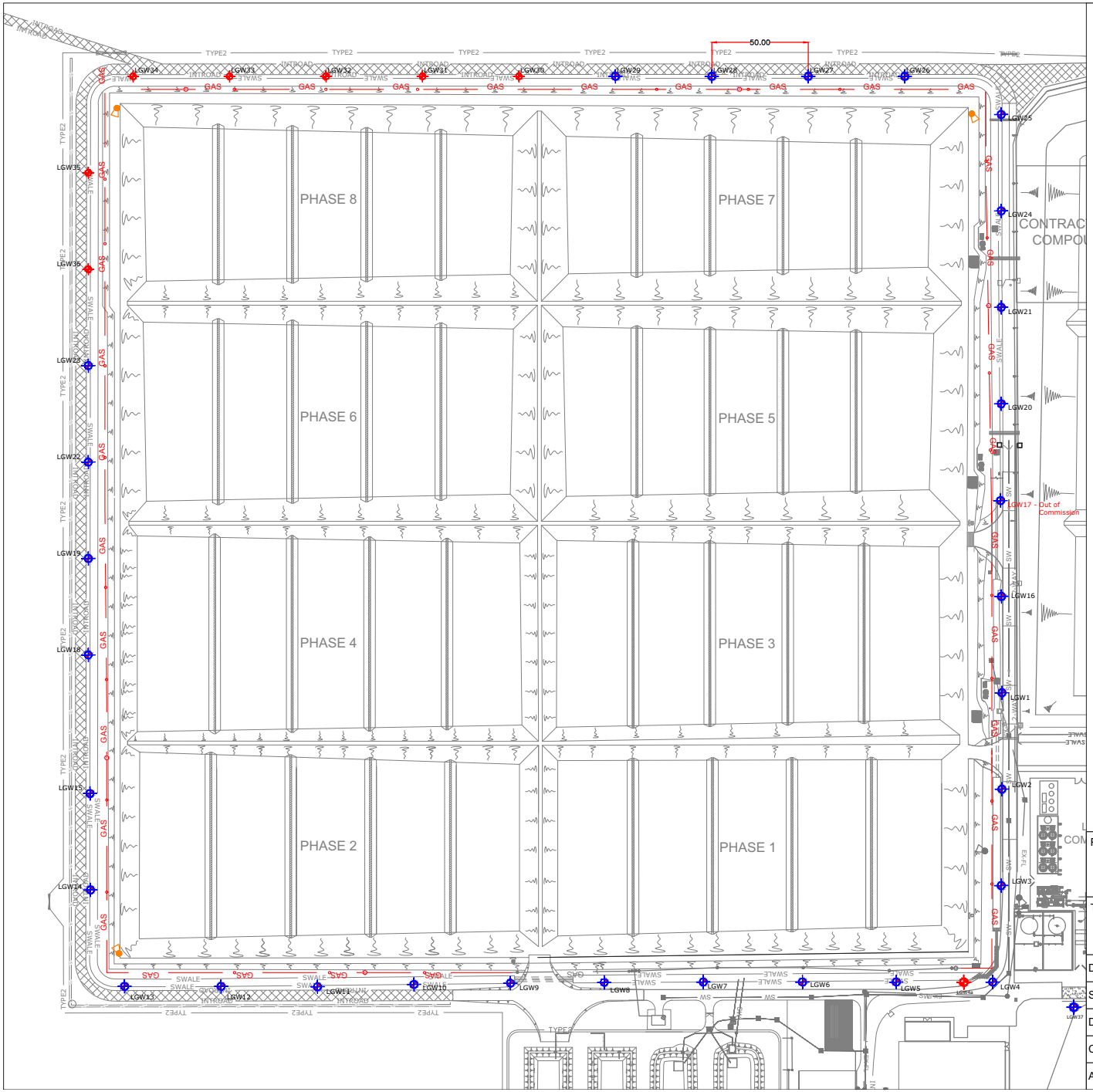
APPENDIX 2

Monitoring Location Maps / Monitoring Results 2017

Surface Water & Groundwater Monitoring Locations



Landfill Gas Monitoring Wells Maps



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PROPOSED GAS MONITORING WELLS (@ 50m centres)

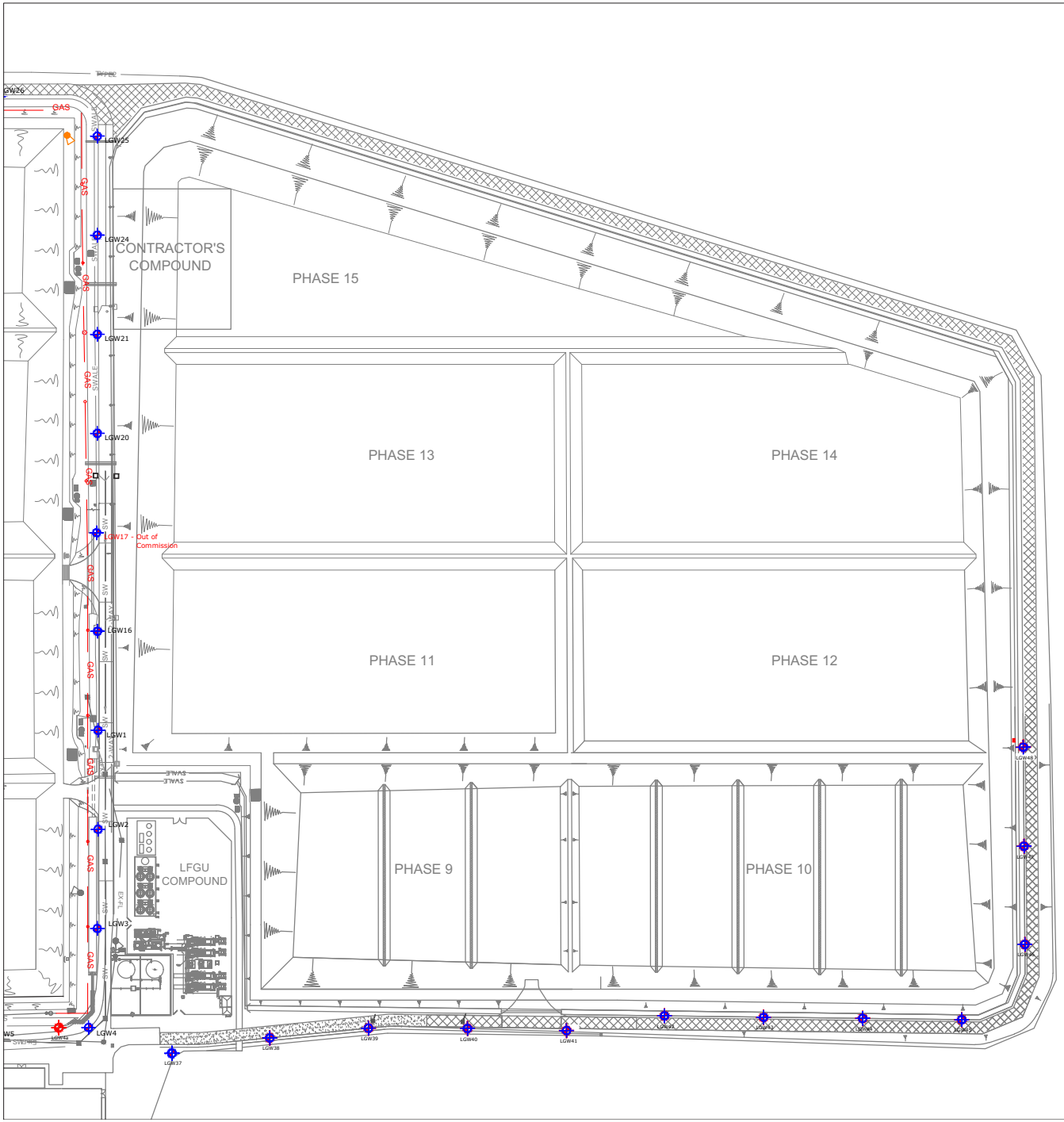
EXISTING GAS MONITORING WELLS (@ 50m centres)

Project:	Drehid Waste Management Facility
Title:	Landfill Gas Monitoring Locations

Dimensions in.	mm	
Scale.	1:2000	
Drawn By.	E.C.	20/11/2014
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
RE-DR-001-2012	2	1 of 1



PROPOSED GAS MONITORING WELLS (@ 50m centres)

EXISTING GAS MONITORING WELLS (@ 50m centres)

Project:	Drehid Waste Management Facility	
Title:	Landfill Gas Monitoring Locations PH 11-15	
Dimensions in.	mm	
Scale.	1:2000	
Drawn By.	M.H	07/04/2016
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
RE-DR-002-2012	2	1 of 1

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	<2	mg/L	yes	
SW6	onsite		COD	quarterly		N/A	18.8	mg/L		
SW6	onsite		Ammonia (as N)	weekly	0.5	All values < ELV	0.08	mg/L	yes	
SW6	onsite		Suspended Solids	weekly	35	All values < ELV	8.7	mg/L	yes	
SW6	onsite		pH	weekly		N/A	7.7	pH units		
SW6	onsite		Conductivity	weekly		N/A	610.6	µS/cm@25oC		
SW6	onsite	Chlorides (as Cl)		weekly		N/A	17.9	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	2	µg/L		
SW6	onsite		Sulphate	Annual		N/A	45	mg/L		
SW6	onsite		Sodium	Annual		N/A	13.8	mg/L		
SW6	onsite		Magnesium	Annual		N/A	6.57	mg/L		
SW6	onsite		Potassium	Annual		N/A	<2	mg/L		
SW6	onsite		Calcium	Annual		N/A	101	mg/L		
SW6	onsite		Boron	Annual		N/A	<135	µg/L		
SW6	onsite	Chromium and compounds (as Cr)		Annual		N/A	6.32	µg/L		
SW6	onsite		Manganese (as Mn)	Annual		N/A	5.79	µg/L		
SW6	onsite	Nickel and compounds (as Ni)		Annual		N/A	5.81	µg/L		
SW6	onsite	Copper and compounds (as Cu)		Annual		N/A	<4	µg/L		
SW6	onsite	Zinc and compounds (as Zn)		Annual		N/A	11.1	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	0.5	N/A	0.11	mg/L	yes	
SW5	downstream		BOD	quarterly	25	All values < ELV	<2	mg/L	yes	
SW5	downstream		COD	quarterly		N/A	63.8	mg/L		
SW5	downstream		Suspended Solids	weekly	35	All values < ELV	8.6	mg/L	yes	
SW5	downstream	Chlorides (as Cl)		weekly		N/A	12.6	mg/L		
SW5	downstream		Conductivity	weekly		N/A	456.5	µS/cm@25oC		
SW5	downstream		pH	weekly		N/A	7.6	pH units		
SW5	downstream		Ortho-phosphate (as PO4)	Annual		N/A	<0.01	mg/L		
SW5	downstream	Total phosphorus		Annual		N/A	<0.05	mg/L		
SW5	downstream		Nitrate (as N)	Annual		N/A	1.2	µg/L		
SW5	downstream		Sulphate	Annual		N/A	22	mg/L		
SW5	downstream		Sodium	Annual		N/A	8.32	mg/L		
SW5	downstream		Magnesium	Annual		N/A	4.87	mg/L		
SW5	downstream		Potassium	Annual		N/A	<2	mg/L		
SW5	downstream		Calcium	Annual		N/A	71.6	mg/L		
SW5	downstream		Boron	Annual		N/A	<135	µg/L		
SW5	downstream	Chromium and compounds (as Cr)		Annual		N/A	<3	µg/L		
SW5	downstream		Manganese (as Mn)	Annual		N/A	42.5	µg/L		
SW5	downstream	Nickel and compounds (as Ni)		Annual		N/A	3.76	µg/L		

SW5	downstream	Copper and compounds (as Cu)		Annual		N/A	<4	µg/L		
SW5	downstream	Zinc and compounds (as Zn)		Annual		N/A	7.03	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	0.821	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	0.05	N/A	0.06	mg/L	yes	
SW4	downstream		BOD	quarterly	25	N/A	2.0	mg/L	yes	
SW4	downstream		COD	quarterly		N/A	50.4	mg/L		
SW4	downstream		Suspended Solids	weekly	35	N/A	7.89	mg/L	yes	
SW4	downstream	Chlorides (as Cl)		weekly		N/A	12.7	mg/L		
SW4	downstream		Conductivity	weekly		N/A	568.36	µS/cm@25oC		
SW4	downstream		pH	weekly		N/A	7.71	pH units		
SW4	downstream		Ortho-phosphate (as PO4)	Annual		N/A	0.02	mg/L		
SW4	downstream	Total phosphorus		Annual		N/A	<0.05	mg/L		
SW4	downstream		Nitrate (as N)	Annual		N/A	1.2	µg/L		
SW4	downstream		Sulphate	Annual		N/A	17	mg/L		
SW4	downstream		Sodium	Annual		N/A	7.37	mg/L		
SW4	downstream		Magnesium	Annual		N/A	7.07	mg/L		
SW4	downstream		Potassium	Annual		N/A	<2	mg/L		
SW4	downstream		Calcium	Annual		N/A	101	mg/L		
SW4	downstream		Boron	Annual		N/A	<135	µg/L		
SW4	downstream	Chromium and compounds (as Cr)		Annual		N/A	<3	µg/L		

SW4	downstream		Manganese (as Mn)	Annual		N/A	44.9	µg/L		
SW4	downstream	Nickel and compounds (as Ni)		Annual		N/A	3.8	µg/L		
SW4	downstream	Copper and compounds (as Cu)		Annual		N/A	<4	µg/L		
SW4	downstream	Zinc and compounds (as Zn)		Annual		N/A	3.93	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	0.468	mg/L		
SW4	downstream	Mercury and compounds (as Hg)		Annual		N/A	<1	µg/L		
SW4	downstream		Pesticides	Annual	<0.01	N/A	<0.01	µg/L		
SW4	downstream		Semi-volatiles	Annual	<1	N/A	<1	µg/L		
SW4	downstream		Volatile organic compounds (as TOC)	Annual	<1	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	178	mg/m2/day	no	OTH Based on VDI 2119 Blatt 2	Exceedance of licence limit of 350mg/m2/day with a result of 1179mg/m2/day, Quarter 3 2017
D2	Total Particulates	Monthly	350	Daily average < ELV	65	mg/m2/day	yes	OTH Based on VDI 2119 Blatt 2	
D5	Total Particulates	Monthly	350	Daily average < ELV	81	mg/m2/day	yes	OTH Based on VDI 2119 Blatt 2	
D6	Total Particulates	Monthly	350	Daily average < ELV	78	mg/m2/day	yes	OTH Based on VDI 2119 Blatt 2	
D8	Total Particulates	Monthly	350	Daily average < ELV	144	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	7.3	6.9	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW1s	Conductivity	APHA 2012 2510B	Monthly	1205.0	1092.8	µS/cm	800 – 1875	1000	no
Monthly	GW1s	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	5.9	4.6	mg/l	0.065-0.175	0.15	no
Monthly	GW1s	Ammonium	via inhouse calculation	Monthly	7.6	5.9	mg/l		0.2	no
Monthly	GW1s	Chloride	APHA 2012 4500-CL–E	Monthly	14	16	mg/l	187.5	30	no
17/22/08/2017	GW1s	Sulphate	APHA 2012 4110B	Annually	0.92	0.92	mg/l	187.5	200	no
17/22/08/2017	GW1s	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2	<0.2	mg/l	37.5	25	no
17/22/08/2017	GW1s	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01	<0.01	mg/l	-	0.03	no
17/22/08/2017	GW1s	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05	<0.05	mg/l	-	-	no
17/22/08/2017	GW1s	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**196**		mg/l	-	200	no
17/22/08/2017	GW1s	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	27.2		mg/l	-	50	no
17/22/08/2017	GW1s	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.43		mg/l	-	5	no
17/22/08/2017	GW1s	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	14.3		mg/l	150	150	no
17/22/08/2017	GW1s	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	17.3		mg/l	-	0.2	no
17/22/08/2017	GW1s	Boron - dissolved	ICP-MS	Annually	9.52		ug/l	0.75	1	no
17/22/08/2017	GW1s	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.83		ug/l	7.5	0.01	no
17/22/08/2017	GW1s	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	330		ug/l	-	0.1	no
17/22/08/2017	GW1s	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW1s	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1s	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no

17/22/08/2017	GW1s	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW1s	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW1s	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	805		ug/l	-	0.05	no
17/22/08/2017	GW1s	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1s	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.82		ug/l	15	0.02	no
17/22/08/2017	GW1s	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW1s	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1s	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1s	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1s	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	11.3		ug/l	-	200	no
17/22/08/2017	GW1s	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1s	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.15		ug/l	-	0.1	no
17/22/08/2017	GW1s	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW1s	Faecal Coliforms	MTM025	Annually	60		cfu / 100 ml	0	0	no
17/22/08/2017	GW1s	Total Coliforms	MTM025	Annually	60		cfu / 100 ml	0	0	no
17/22/08/2017										no
Monthly	GW1d	pH	APHA 2012 4500 H&B	Monthly	7.3	7.5	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW1d	Conductivity	APHA 2012 2510B	Monthly	756.3	793.0	µS/cm	800 – 1875	1000	no
Monthly	GW1d	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	5.7	6.8	mg/l	0.065-0.175	0.15	no
Monthly	GW1d	Ammonium	via inhouse calculation	Monthly	7.3	8.7	mg/l		0.2	no
Monthly	GW1d	Chloride	APHA 2012 4500-CL–E	Monthly	11.8	13.0	mg/l	187.5	30	no
17/22/08/2017	GW1d	Sulphate	APHA 2012 4110B	Annually	<0.50		mg/l	187.5	200	no

17/22/08/2017	GW1d	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW1d	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW1d	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW1d	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**132**		mg/l	-	200	no
17/22/08/2017	GW1d	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.5		mg/l	-	50	no
17/22/08/2017	GW1d	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.05		mg/l	-	5	no
17/22/08/2017	GW1d	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	11.1		mg/l	150	150	no
17/22/08/2017	GW1d	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	16.9		mg/l	-	0.2	no
17/22/08/2017	GW1d	Boron - dissolved	ICP-MS	Annually	<5		ug/l	0.75	1	no
17/22/08/2017	GW1d	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	111		ug/l	7.5	0.01	no
17/22/08/2017	GW1d	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	437		ug/l	-	0.1	no
17/22/08/2017	GW1d	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW1d	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.15		ug/l	-	-	no
17/22/08/2017	GW1d	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW1d	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW1d	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW1d	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	142		ug/l	-	0.05	no
17/22/08/2017	GW1d	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1d	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	40.2		ug/l	15	0.02	no
17/22/08/2017	GW1d	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW1d	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1d	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1d	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

17/22/08/2017	GW1d	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW1d	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW1d	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.54		ug/l	-	0.1	no
17/22/08/2017	GW1d	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW1d	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW1d	Total Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017										no
17/22/08/2017	GW2s	pH	APHA 2012 4500 H&B	Annually	7.6		pH Units			no
17/22/08/2017	GW2s	Conductivity	APHA 2012 2510B	Annually	774		µS/cm			no
17/22/08/2017	GW2s	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Annually	2		mg/l			no
17/22/08/2017	GW2s	Ammonium	via inhouse calculation	Annually	2.6		mg/l			no
17/22/08/2017	GW2s	Chloride	APHA 2012 4500-CL–E	Annually	9.5		mg/l			no
17/22/08/2017	GW2s	Sulphate	APHA 2012 4110B	Annually	8.1		mg/l	187.5	200	no
17/22/08/2017	GW2s	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW2s	Orthophosphate	APHA 2012 4500-P.E	Annually	0.04		mg/l	-	0.03	no
17/22/08/2017	GW2s	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.32		mg/l	-	-	no
17/22/08/2017	GW2s	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**132**		mg/l	-	200	no
17/22/08/2017	GW2s	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	21		mg/l	-	50	no
17/22/08/2017	GW2s	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		mg/l	-	5	no
17/22/08/2017	GW2s	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.92		mg/l	150	150	no
17/22/08/2017	GW2s	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.208		mg/l	-	0.2	no

17/22/08/2017	GW2s	Boron - dissolved	ICP-MS	Annually	34.1		ug/l	0.75	1	no
17/22/08/2017	GW2s	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.67		ug/l	7.5	0.01	no
17/22/08/2017	GW2s	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	387		ug/l	-	0.1	no
17/22/08/2017	GW2s	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW2s	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2s	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW2s	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW2s	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW2s	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	221		ug/l	-	0.05	no
17/22/08/2017	GW2s	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2s	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	11.3		ug/l	15	0.02	no
17/22/08/2017	GW2s	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
17/22/08/2017	GW2s	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2s	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2s	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2s	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW2s	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2s	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW2s	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW2s	Faecal Coliforms	MTM025	Annually	6		cfu / 100 ml	0	0	no
17/22/08/2017	GW2s	Total Coliforms	MTM025	Annually	6		cfu / 100 ml	0	0	no

17/22/08/2017	GW2d	pH	APHA 2012 4500 H&B	Annually	7.7		pH Units			no
17/22/08/2017	GW2d	Conductivity	APHA 2012 2510B	Annually	735		µS/cm			no
17/22/08/2017	GW2d	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Annually	3.3		mg/l			no
17/22/08/2017	GW2d	Ammonium	via inhouse calculation	Annually	4.2		mg/l			no
17/22/08/2017	GW2d	Chloride	APHA 2012 4500-CL–E	Annually	14		mg/l			no
17/22/08/2017	GW2d	Sulphate	APHA 2012 4110B	Annually	1.3		mg/l	187.5	200	no
17/22/08/2017	GW2d	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW2d	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW2d	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW2d	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**123**		mg/l	-	200	no
17/22/08/2017	GW2d	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.43		mg/l	-	50	no
17/22/08/2017	GW2d	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.48		mg/l	-	5	no
17/22/08/2017	GW2d	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	20.5		mg/l	150	150	no
17/22/08/2017	GW2d	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
17/22/08/2017	GW2d	Boron - dissolved	ICP-MS	Annually	<5		ug/l	0.75	1	no
17/22/08/2017	GW2d	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	17.2		ug/l	7.5	0.01	no
17/22/08/2017	GW2d	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	414		ug/l	-	0.1	no
17/22/08/2017	GW2d	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW2d	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.25		ug/l	-	-	no
17/22/08/2017	GW2d	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW2d	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW2d	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no

17/22/08/2017	GW2d	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	313		ug/l	-	0.05	no
17/22/08/2017	GW2d	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2d	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	10.9		ug/l	15	0.02	no
17/22/08/2017	GW2d	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
17/22/08/2017	GW2d	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2d	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2d	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2d	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW2d	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW2d	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW2d	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW2d	Faecal Coliforms	MTM025	Annually	0		cfu / 100 ml	0	0	no
17/22/08/2017	GW2d	Total Coliforms	MTM025	Annually	0		cfu / 100 ml	0	0	no
										no
Monthly	GW3s	pH	APHA 2012 4500 H&B	Monthly	7.2	7.0	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW3s	Conductivity	APHA 2012 2510B	Monthly	860.0	804.9	µS/cm	800 – 1875	1000	no
Monthly	GW3s	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	5.2	3.9	mg/l	0.065-0.175	0.15	no
Monthly	GW3s	Ammonium	via inhouse calculation	Monthly	6.7	5.1	mg/l		0.2	no
Monthly	GW3s	Chloride	APHA 2012 4500-CL–E	Monthly	15.0	13.4	mg/l	187.5	30	no
17/22/08/2017	GW3s	Sulphate	APHA 2012 4110B	Annually	<0.50		mg/l	187.5	200	no
17/22/08/2017	GW3s	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW3s	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no

17/22/08/2017	GW3s	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW3s	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**153**		mg/l	-	200	no
17/22/08/2017	GW3s	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	10.9		mg/l	-	50	no
17/22/08/2017	GW3s	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.54		mg/l	-	5	no
17/22/08/2017	GW3s	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	11.3		mg/l	150	150	no
17/22/08/2017	GW3s	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.751		mg/l	-	0.2	no
17/22/08/2017	GW3s	Boron - dissolved	ICP-MS	Annually	11.3		ug/l	0.75	1	no
17/22/08/2017	GW3s	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.07		ug/l	7.5	0.01	no
17/22/08/2017	GW3s	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	427		ug/l	-	0.1	no
17/22/08/2017	GW3s	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW3s	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW3s	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW3s	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW3s	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW3s	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	211		ug/l	-	0.05	no
17/22/08/2017	GW3s	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW3s	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.46		ug/l	15	0.02	no
17/22/08/2017	GW3s	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW3s	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW3s	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW3s	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW3s	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW3s	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

17/22/08/2017	GW3s	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.61		ug/l	-	0.1	no
17/22/08/2017	GW3s	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW3s	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW3s	Total Coliforms	MTM025	Annually	450		cfu / 100 ml	0	0	no
Monthly	GW6	pH	APHA 2012 4500 H&B	Monthly	7.6	7.9	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW6	Conductivity	APHA 2012 2510B	Monthly	500.6	538.0	µS/cm	800 – 1875	1000	no
Monthly	GW6	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	5.6	5.8	mg/l	0.065-0.175	0.15	no
Monthly	GW6	Ammonium	via inhouse calculation	Monthly	7.2	7.5	mg/l		0.2	no
Monthly	GW6	Chloride	APHA 2012 4500-CL–E	Monthly	11.1	12.0	mg/l	187.5	30	no
	GW6	Sulphate	APHA 2012 4110B	Annually	<0.5		mg/l	187.5	200	no
17/22/08/2017	GW6	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW6	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW6	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW6	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**71.3**		mg/l	-	200	no
17/22/08/2017	GW6	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.38		mg/l	-	50	no
17/22/08/2017	GW6	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.57		mg/l	-	5	no
17/22/08/2017	GW6	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	10.7		mg/l	150	150	no
17/22/08/2017	GW6	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
17/22/08/2017	GW6	Boron - dissolved	ICP-MS	Annually	<5		ug/l	0.75	1	no
17/22/08/2017	GW6	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	72.9		ug/l	7.5	0.01	no
17/22/08/2017	GW6	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	134		ug/l	-	0.1	no

17/22/08/2017	GW6	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW6	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.74		ug/l	-	-	no
17/22/08/2017	GW6	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW6	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW6	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW6	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	39		ug/l	-	0.05	no
17/22/08/2017	GW6	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW6	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	21.4		ug/l	15	0.02	no
17/22/08/2017	GW6	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
17/22/08/2017	GW6	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW6	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW6	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW6	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW6	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW6	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW6	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW6	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW6	Total Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
Bi-monthly	GW-3D^{New}	pH	APHA 2012 4500 H&B	Bi-monthly	7.2	7.6	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-3D^{New}	Conductivity	APHA 2012 2510B	Bi-monthly	549.0	675.0	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	2.4	4.1	mg/l	0.065-0.175	0.15	no

Bi-monthly	GW-3D[New]	Ammonium	via inhouse calculation	Bi-monthly	3.1	5.3	mg/l		0.2	no
Bi-monthly	GW-3D[New]	Chloride	APHA 2012 4500-CL–E	Bi-monthly	13.6	17.0	mg/l	187.5	30	no
17/22/08/2017	GW-3D[New]	Sulphate	APHA 2012 4110B	Annually	2.7		mg/l	187.5	200	no
17/22/08/2017	GW-3D[New]	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-3D[New]	Orthophosphate	APHA 2012 4500-P.E	Annually	0.12		mg/l	-	0.03	no
17/22/08/2017	GW-3D[New]	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.18		mg/l	-	-	no
17/22/08/2017	GW-3D[New]	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**83.8**		mg/l	-	200	no
17/22/08/2017	GW-3D[New]	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.37		mg/l	-	50	no
17/22/08/2017	GW-3D[New]	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.06		mg/l	-	5	no
17/22/08/2017	GW-3D[New]	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	10		mg/l	150	150	no
17/22/08/2017	GW-3D[New]	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.89		mg/l	-	0.2	no
17/22/08/2017	GW-3D[New]	Boron - dissolved	ICP-MS	Annually	<5		ug/l	0.75	1	no
17/22/08/2017	GW-3D[New]	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	42.7		ug/l	7.5	0.01	no
17/22/08/2017	GW-3D[New]	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	126		ug/l	-	0.1	no
17/22/08/2017	GW-3D[New]	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-3D[New]	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.08		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-3D[New]	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-3D[New]	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-3D[New]	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	475		ug/l	-	0.05	no
17/22/08/2017	GW-3D[New]	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	27.2		ug/l	15	0.02	no
17/22/08/2017	GW-3D[New]	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no

17/22/08/2017	GW-3D[New]	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-3D[New]	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.71		ug/l	-	0.1	no
17/22/08/2017	GW-3D[New]	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-3D[New]	Faecal Coliforms	MTM025	Annually	1		cfu / 100 ml	0	0	no
17/22/08/2017	GW-3D[New]	Total Coliforms	MTM025	Annually	1		cfu / 100 ml	0	0	no
Bi-monthly	GW-5AS	pH	APHA 2012 4500 H&B	Bi-monthly	7.0	7.2	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-5AS	Conductivity	APHA 2012 2510B	Bi-monthly	1005.7	1046	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	6.5	7.1	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-5AS	Ammonium	via inhouse calculation	Bi-monthly	8.4	9.12	mg/l		0.2	no
Bi-monthly	GW-5AS	Chloride	APHA 2012 4500-CL–E	Bi-monthly	10.8	15	mg/l	187.5	30	no
17/22/08/2017	GW-5AS	Sulphate	APHA 2012 4110B	Annually	3.1		mg/l	187.5	200	no
17/22/08/2017	GW-5AS	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-5AS	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW-5AS	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW-5AS	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**189**		mg/l	-	200	no
17/22/08/2017	GW-5AS	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.97		mg/l	-	50	no
17/22/08/2017	GW-5AS	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.32		mg/l	-	5	no

17/22/08/2017	GW-5AS	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	28.7		mg/l	150	150	no
17/22/08/2017	GW-5AS	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.541		mg/l	-	0.2	no
17/22/08/2017	GW-5AS	Boron - dissolved	ICP-MS	Annually	12.8		ug/l	0.75	1	no
17/22/08/2017	GW-5AS	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	12.7		ug/l	7.5	0.01	no
17/22/08/2017	GW-5AS	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	433		ug/l	-	0.1	no
17/22/08/2017	GW-5AS	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-5AS	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.65		ug/l	-	-	no
17/22/08/2017	GW-5AS	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-5AS	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-5AS	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-5AS	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	815		ug/l	-	0.05	no
17/22/08/2017	GW-5AS	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AS	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	41.7		ug/l	15	0.02	no
17/22/08/2017	GW-5AS	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-5AS	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AS	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AS	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AS	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-5AS	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AS	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.41		ug/l	-	0.1	no
17/22/08/2017	GW-5AS	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-5AS	Faecal Coliforms	MTM025	Annually	6		cfu / 100 ml	0	0	no
17/22/08/2017	GW-5AS	Total Coliforms	MTM025	Annually	6		cfu / 100 ml	0	0	no

Bi-monthly	GW-5AD	pH	APHA 2012 4500 H&B	Bi-monthly	7.5	7.2	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-5AD	Conductivity	APHA 2012 2510B	Bi-monthly	793.5	731.1	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	7.8	7.3	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-5AD	Ammonium	via inhouse calculation	Bi-monthly	10.0	9.3	mg/l		0.2	no
Bi-monthly	GW-5AD	Chloride	APHA 2012 4500-CL–E	Bi-monthly	12.0	11.0	mg/l	187.5	30	no
17/22/08/2017	GW-5AD	Sulphate	APHA 2012 4110B	Annually	<0.50		mg/l	187.5	200	no
17/22/08/2017	GW-5AD	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-5AD	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW-5AD	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW-5AD	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**129**		mg/l	-	200	no
17/22/08/2017	GW-5AD	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.7		mg/l	-	50	no
17/22/08/2017	GW-5AD	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.04		mg/l	-	5	no
17/22/08/2017	GW-5AD	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.84		mg/l	150	150	no
17/22/08/2017	GW-5AD	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
17/22/08/2017	GW-5AD	Boron - dissolved	ICP-MS	Annually	7.33		ug/l	0.75	1	no
17/22/08/2017	GW-5AD	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	36.8		ug/l	7.5	0.01	no
17/22/08/2017	GW-5AD	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	900		ug/l	-	0.1	no
17/22/08/2017	GW-5AD	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-5AD	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.97		ug/l	-	-	no
17/22/08/2017	GW-5AD	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-5AD	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no

17/22/08/2017	GW-5AD	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-5AD	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	321		ug/l	-	0.05	no
17/22/08/2017	GW-5AD	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AD	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	49.1		ug/l	15	0.02	no
17/22/08/2017	GW-5AD	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-5AD	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AD	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AD	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AD	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-5AD	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-5AD	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.68		ug/l	-	0.1	no
17/22/08/2017	GW-5AD	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-5AD	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW-5AD	Total Coliforms	MTM025	Annually	10		cfu / 100 ml	0	0	no
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	593.0	513.5	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	1.0	0.9	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-13S	Ammonium	via inhouse calculation	Bi-monthly	1.2	1.1	mg/l		0.2	no
Bi-monthly	GW-13S	Chloride	APHA 2012 4500-CL–E	Bi-monthly	14.0	12.3	mg/l	187.5	30	no
17/22/08/2017	GW-13S	Sulphate	APHA 2012 4110B	Annually	24		mg/l	187.5	200	no
17/22/08/2017	GW-13S	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no

17/22/08/2017	GW-13S	Orthophosphate	APHA 2012 4500-P.E	Annually	0.13		mg/l	-	0.03	no
17/22/08/2017	GW-13S	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.16		mg/l	-	-	no
17/22/08/2017	GW-13S	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**97.4**		mg/l	-	200	no
17/22/08/2017	GW-13S	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.59		mg/l	-	50	no
17/22/08/2017	GW-13S	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<1		mg/l	-	5	no
17/22/08/2017	GW-13S	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	10.5		mg/l	150	150	no
17/22/08/2017	GW-13S	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.18		mg/l	-	0.2	no
17/22/08/2017	GW-13S	Boron - dissolved	ICP-MS	Annually	6.45		ug/l	0.75	1	no
17/22/08/2017	GW-13S	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.17		ug/l	7.5	0.01	no
17/22/08/2017	GW-13S	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	97.6		ug/l	-	0.1	no
17/22/08/2017	GW-13S	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-13S	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13S	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-13S	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-13S	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-13S	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	417		ug/l	-	0.05	no
17/22/08/2017	GW-13S	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13S	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	15	0.02	no
17/22/08/2017	GW-13S	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-13S	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13S	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13S	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13S	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	20.1		ug/l	-	200	no

17/22/08/2017	GW-13S	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13S	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW-13S	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-13S	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW-13S	Total Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
Bi-monthly	GW-13D	pH	APHA 2012 4500 H&B	Bi-monthly	8.1	7.9	pH Units	-	≥6.5 and ≤9.5	no
Bi-monthly	GW-13D	Conductivity	APHA 2012 2510B	Bi-monthly	335.0	287.0	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	0.8	0.6	mg/l	0.065-0.175	0.15	no
Bi-monthly	GW-13D	Ammonium	via inhouse calculation	Bi-monthly	1.1	0.8	mg/l		0.2	no
Bi-monthly	GW-13D	Chloride	APHA 2012 4500-CL–E	Bi-monthly	12.0	11.5	mg/l	187.5	30	no
17/22/08/2017	GW-13D	Sulphate	APHA 2012 4110B	Annually	1.9		mg/l	187.5	200	no
17/22/08/2017	GW-13D	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-13D	Orthophosphate	APHA 2012 4500-P.E	Annually	0.03		mg/l	-	0.03	no
17/22/08/2017	GW-13D	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW-13D	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**36.1**		mg/l	-	200	no
17/22/08/2017	GW-13D	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.64		mg/l	-	50	no
17/22/08/2017	GW-13D	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<1		mg/l	-	5	no
17/22/08/2017	GW-13D	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.39		mg/l	150	150	no
17/22/08/2017	GW-13D	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	0.329		mg/l	-	0.2	no
17/22/08/2017	GW-13D	Boron - dissolved	ICP-MS	Annually	7.72		ug/l	0.75	1	no
17/22/08/2017	GW-13D	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.29		ug/l	7.5	0.01	no

17/22/08/2017	GW-13D	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	45.5		ug/l	-	0.1	no
17/22/08/2017	GW-13D	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-13D	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13D	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.03		ug/l	37.5	0.03	no
17/22/08/2017	GW-13D	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-13D	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-13D	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	325		ug/l	-	0.05	no
17/22/08/2017	GW-13D	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13D	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.95		ug/l	15	0.02	no
17/22/08/2017	GW-13D	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-13D	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13D	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13D	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13D	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-13D	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-13D	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.92		ug/l	-	0.1	no
17/22/08/2017	GW-13D	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-13D	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW-13D	Total Coliforms	MTM025	Annually	16		cfu / 100 ml	0	0	no

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	7.7	7.4	pH Units	-	≥6.5 and ≤9.5	no
Monthly	GW9	Conductivity	APHA 2012 2510B	Monthly	607.0	498.1	µS/cm	800 – 1875	1000	no
Monthly	GW9	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Monthly	5.7	2.8	mg/l	0.065-0.175	0.15	no
Monthly	GW9	Ammonium	via inhouse calculation	Monthly	7.3	3.7	mg/l		0.2	no
Monthly	GW9	Chloride	APHA 2012 4500-CL–E	Monthly	12.0	10.0	mg/l	187.5	30	no
17/22/08/2017	GW9	Sulphate	APHA 2012 4110B	Annually	3.8		mg/l	187.5	200	no
17/22/08/2017	GW9	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW9	Orthophosphate	APHA 2012 4500-P.E	Annually	0.14		mg/l	-	0.03	no
17/22/08/2017	GW9	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.25		mg/l	-	-	no
17/22/08/2017	GW9	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**84.7**		mg/l	-	200	no
17/22/08/2017	GW9	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.18		mg/l	-	50	no
17/22/08/2017	GW9	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<1		mg/l	-	5	no
17/22/08/2017	GW9	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.57		mg/l	150	150	no
17/22/08/2017	GW9	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.42		mg/l	-	0.2	no
17/22/08/2017	GW9	Boron - dissolved	ICP-MS	Annually	<5		ug/l	0.75	1	no
17/22/08/2017	GW9	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	15.5		ug/l	7.5	0.01	no
17/22/08/2017	GW9	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	152		ug/l	-	0.1	no
17/22/08/2017	GW9	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW9	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

17/22/08/2017	GW9	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW9	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW9	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW9	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	291		ug/l	-	0.05	no
17/22/08/2017	GW9	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW9	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.56		ug/l	15	0.02	no
17/22/08/2017	GW9	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
17/22/08/2017	GW9	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW9	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW9	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW9	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	29.3		ug/l	-	200	no
17/22/08/2017	GW9	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW9	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW9	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW9	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW9	Total Coliforms	MTM025	Annually	3		cfu / 100 ml	0	0	no
Bi-Monthly	GW10	pH	APHA 2012 4500 H&B	Bi-Monthly	7.6	7.3	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW10	Conductivity	APHA 2012 2510B	Bi-Monthly	669.0	647.0	µS/cm	800 – 1875	1000	no
Bi-Monthly	GW10	Ammonia as NH3	APHA 2012 4500-NH3 and bluebook Ammonia in waters 1981	Bi-Monthly	5.6	4.1	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW10	Ammonium	via inhouse calculation	Bi-Monthly	7.2	5.3	mg/l		0.2	no
Bi-Monthly	GW10	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	11.0	10.0	mg/l	187.5	30	no

17/22/08/2017	GW10	Sulphate	APHA 2012 4110B	Annually	<0.5		mg/l	187.5	200	no
17/22/08/2017	GW10	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW10	Orthophosphate	APHA 2012 4500-P.E	Annually	0.1		mg/l	-	0.03	no
17/22/08/2017	GW10	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.15		mg/l	-	-	no
17/22/08/2017	GW10	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**110**		mg/l	-	200	no
17/22/08/2017	GW10	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	8.72		mg/l	-	50	no
17/22/08/2017	GW10	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<1		mg/l	-	5	no
17/22/08/2017	GW10	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.72		mg/l	150	150	no
17/22/08/2017	GW10	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.37		mg/l	-	0.2	no
17/22/08/2017	GW10	Boron - dissolved	ICP-MS	Annually	<5		ug/l	0.75	1	no
17/22/08/2017	GW10	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.5		ug/l	7.5	0.01	no
17/22/08/2017	GW10	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	104		ug/l	-	0.1	no
17/22/08/2017	GW10	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW10	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW10	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW10	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW10	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW10	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	201		ug/l	-	0.05	no
17/22/08/2017	GW10	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW10	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.27		ug/l	15	0.02	no
17/22/08/2017	GW10	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	18.75	0.01	no
17/22/08/2017	GW10	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW10	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

17/22/08/2017	GW10	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW10	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	12.5		ug/l	-	200	no
17/22/08/2017	GW10	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW10	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW10	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW10	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW10	Total Coliforms	MTM025	Annually	5		cfu / 100 ml	0	0	no
Bi-Monthly	GW-11S	pH	APHA 2012 4500 H&B	Bi-Monthly	7.4	7.3	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-11S	Conductivity	APHA 2012 2510B	Bi-Monthly	880.0	829.8	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	8.0	7.1	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-11S	Ammonium	via inhouse calculation	Bi-Monthly	10.3	9.1	mg/l		0.2	no
Bi-Monthly	GW-11S	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	14.0	12.2	mg/l	187.5	30	no
17/22/08/2017	GW-11S	Sulphate	APHA 2012 4110B	Annually	9.7		mg/l	187.5	200	no
17/22/08/2017	GW-11S	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-11S	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW-11S	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW-11S	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**150**		mg/l	-	200	no
17/22/08/2017	GW-11S	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.21		mg/l	-	50	no
17/22/08/2017	GW-11S	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.96		mg/l	-	5	no

17/22/08/2017	GW-11S	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	10.8		mg/l	150	150	no
17/22/08/2017	GW-11S	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	20.2		mg/l	-	0.2	no
17/22/08/2017	GW-11S	Boron - dissolved	ICP-MS	Annually	7.4		ug/l	0.75	1	no
17/22/08/2017	GW-11S	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	37.7		ug/l	7.5	0.01	no
17/22/08/2017	GW-11S	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	464		ug/l	-	0.1	no
17/22/08/2017	GW-11S	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-11S	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.41		ug/l	-	-	no
17/22/08/2017	GW-11S	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-11S	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-11S	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-11S	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2150		ug/l	-	0.05	no
17/22/08/2017	GW-11S	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11S	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	31.7		ug/l	15	0.02	no
17/22/08/2017	GW-11S	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-11S	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11S	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11S	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11S	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-11S	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11S	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	3.74		ug/l	-	0.1	no

17/22/08/2017	GW-11S	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-11S	Faecal Coliforms	MTM025	Annually	300		cfu / 100 ml	0	0	no
17/22/08/2017	GW-11S	Total Coliforms	MTM025	Annually	300		cfu / 100 ml	0	0	no
Bi-Monthly	GW-11D	pH	APHA 2012 4500 H&B	Bi-Monthly	7.3	7.2	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-11D	Conductivity	APHA 2012 2510B	Bi-Monthly	872.0	795.8	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	8.2	7.3	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-11D	Ammonium	via inhouse calculation	Bi-Monthly	10.5	9.4	mg/l		0.2	no
Bi-Monthly	GW-11D	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	14.0	12.5	mg/l	187.5	30	no
17/22/08/2017	GW-11D	Sulphate	APHA 2012 4110B	Annually	<0.50		mg/l	187.5	200	no
17/22/08/2017	GW-11D	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-11D	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW-11D	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW-11D	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**127**		mg/l	-	200	no
17/22/08/2017	GW-11D	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.14		mg/l	-	50	no
17/22/08/2017	GW-11D	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	2.08		mg/l	-	5	no
17/22/08/2017	GW-11D	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	13		mg/l	150	150	no
17/22/08/2017	GW-11D	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
17/22/08/2017	GW-11D	Boron - dissolved	ICP-MS	Annually	8.24		ug/l	0.75	1	no
17/22/08/2017	GW-11D	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	14.5		ug/l	7.5	0.01	no

17/22/08/2017	GW-11D	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	445		ug/l	-	0.1	no
17/22/08/2017	GW-11D	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-11D	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.83		ug/l	-	-	no
17/22/08/2017	GW-11D	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-11D	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-11D	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-11D	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	378		ug/l	-	0.05	no
17/22/08/2017	GW-11D	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11D	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	43.3		ug/l	15	0.02	no
17/22/08/2017	GW-11D	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-11D	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11D	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11D	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11D	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-11D	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-11D	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	9.84		ug/l	-	0.1	no
17/22/08/2017	GW-11D	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-11D	Faecal Coliforms	MTM025	Annually	2		cfu / 100 ml	0	0	no
17/22/08/2017	GW-11D	Total Coliforms	MTM025	Annually	2		cfu / 100 ml	0	0	no
										no
Bi-Monthly	GW-12S	pH	APHA 2012 4500 H&B	Bi-Monthly	8.0	7.8	pH Units	-	≥6.5 and ≤9.5	no

Bi-Monthly	GW-12S	Conductivity	APHA 2012 2510B	Bi-Monthly	425.5	414.8	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	6.5	6.1	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-12S	Ammonium	via inhouse calculation	Bi-Monthly	8.4	7.9	mg/l		0.2	no
Bi-Monthly	GW-12S	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	11.0	10.4	mg/l	187.5	30	no
17/22/08/2017	GW-12S	Sulphate	APHA 2012 4110B	Annually	<0.50		mg/l	187.5	200	no
17/22/08/2017	GW-12S	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-12S	Orthophosphate	APHA 2012 4500-P.E	Annually	<0.01		mg/l	-	0.03	no
17/22/08/2017	GW-12S	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	<0.05		mg/l	-	-	no
17/22/08/2017	GW-12S	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**57**		mg/l	-	200	no
17/22/08/2017	GW-12S	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	5.13		mg/l	-	50	no
17/22/08/2017	GW-12S	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.24		mg/l	-	5	no
17/22/08/2017	GW-12S	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	15.6		mg/l	150	150	no
17/22/08/2017	GW-12S	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
17/22/08/2017	GW-12S	Boron - dissolved	ICP-MS	Annually	9.17		ug/l	0.75	1	no
17/22/08/2017	GW-12S	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	115		ug/l	7.5	0.01	no
17/22/08/2017	GW-12S	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	219		ug/l	-	0.1	no
17/22/08/2017	GW-12S	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-12S	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12S	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-12S	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no

17/22/08/2017	GW-12S	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-12S	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	48.1		ug/l	-	0.05	no
17/22/08/2017	GW-12S	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12S	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	6.78		ug/l	15	0.02	no
17/22/08/2017	GW-12S	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-12S	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12S	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12S	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12S	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-12S	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12S	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	1.74		ug/l	-	0.1	no
17/22/08/2017	GW-12S	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	<1		ug/l	-	-	no
17/22/08/2017	GW-12S	Faecal Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
17/22/08/2017	GW-12S	Total Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no
Bi-Monthly	GW-12D	pH	APHA 2012 4500 H&B	Bi-Monthly	8.1	8.0	pH Units	-	≥6.5 and ≤9.5	no
Bi-Monthly	GW-12D	Conductivity	APHA 2012 2510B	Bi-Monthly	309.0	294.9	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	2.0	1.7	mg/l	0.065-0.175	0.15	no
Bi-Monthly	GW-12D	Ammonium	via inhouse calculation	Bi-Monthly	2.6	1.9	mg/l		0.2	no
Bi-Monthly	GW-12D	Chloride	APHA 2012 4500-CL–E	Bi-Monthly	20.0	11.3	mg/l	187.5	30	no
17/22/08/2017	GW-12D	Sulphate	APHA 2012 4110B	Annually	<0.50		mg/l	187.5	200	no

17/22/08/2017	GW-12D	Nitrate as NO3	APHA 2012 4500-NO_2B. Colorimetric Method	Annually	<0.2		mg/l	37.5	25	no
17/22/08/2017	GW-12D	Orthophosphate	APHA 2012 4500-P.E	Annually	0.12		mg/l	-	0.03	no
17/22/08/2017	GW-12D	Total Phosphours	APHA 2012 4500-PB & Hach Method 8190	Annually	0.14		mg/l	-	-	no
17/22/08/2017	GW-12D	Calcium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	**28.9**		mg/l	-	200	no
17/22/08/2017	GW-12D	Magnesium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	7.55		mg/l	-	50	no
17/22/08/2017	GW-12D	Potassium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<1		mg/l	-	5	no
17/22/08/2017	GW-12D	Sodium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	16.1		mg/l	150	150	no
17/22/08/2017	GW-12D	Iron - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<0.1		mg/l	-	0.2	no
17/22/08/2017	GW-12D	Boron - dissolved	ICP-MS	Annually	10.3		ug/l	0.75	1	no
17/22/08/2017	GW-12D	Arsenic - dissolved	ICP-MS Based on EPA Method 200.8	Annually	13.7		ug/l	7.5	0.01	no
17/22/08/2017	GW-12D	Barium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	53.6		ug/l	-	0.1	no
17/22/08/2017	GW-12D	Cadmium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.005	no
17/22/08/2017	GW-12D	Cobalt - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12D	Chromium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	37.5	0.03	no
17/22/08/2017	GW-12D	Copper - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	1.5	0.03	no
17/22/08/2017	GW-12D	Mercury - dissolved	ICP-MS	Annually	<1		ug/l	7.5	0.001	no
17/22/08/2017	GW-12D	Manganese - dissolved	ICP-MS Based on EPA Method 200.8	Annually	100		ug/l	-	0.05	no
17/22/08/2017	GW-12D	Berylium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12D	Nickel - dissolved	ICP-MS Based on EPA Method 200.8	Annually	4.25		ug/l	15	0.02	no
17/22/08/2017	GW-12D	Lead - dissolved	ICP-MS Based on EPA Method 200.8	Annually			ug/l	18.75	0.01	no
17/22/08/2017	GW-12D	Antimony - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12D	Selenium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12D	Silver - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no

17/22/08/2017	GW-12D	Aluminium - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	200	no
17/22/08/2017	GW-12D	Tin - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	-	no
17/22/08/2017	GW-12D	Zinc - dissolved	ICP-MS Based on EPA Method 200.8	Annually	<2		ug/l	-	0.1	no
17/22/08/2017	GW-12D	VOC's USEPA 524.2 list	GC-FID, GC-MS Based on USEPA 524.2 method	Annually	**28.9**		ug/l	-	-	no
17/22/08/2017	GW-12D	Faecal Coliforms	MTM025	Annually	7.55		cfu / 100 ml	0	0	no
17/22/08/2017	GW-12D	Total Coliforms	MTM025	Annually	<1		cfu / 100 ml	0	0	no

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)?
05/12-10-17	30 Mins	N1 (NSL)	yes	38-42	41-44	34-36	62-72	No	**Site:** Very faint reverse alarms. Engines of heavy plant machinery occasionally faintly audible. **Background:** Distant traffic on road. Birdsong. Metal cutting in dwelling 100 meters away. Low frequency buzzing from direction of Monaghan Mushrooms. People walking/talking on access road.	Yes
12-10-17	30 Mins	N2	No	52-56	55-60	42-48	73-77	No	**Site:** Machinery faintly audible from site. Faint reverse alarms. **Background**: Birdsong. Passing road traffic on external road – averaging - **Dominant Source**	no
12/10/17	30 Mins	N3	No	49-53	51-56	41-45	72-81	No	**Site:** Reverse alarms in distance. Heavy plant machinery operating on landfill. **Background:** Traffic on regional road – **Dominant Source.** Bird and cattle calls.	Yes
05/12-10-17	30 Mins	N4	No	59-62	60-65	42-46	79-85	No	**Site:** Cars and trucks entering/exiting the landfill. Lorry's with engines idling at entrance (30m) **Dominant Source- Lmax**. Breaks screeching. **Background:** Passing road traffic on R403 **Dominant Source- Lmax**. Bird songs, Dogs barking. House alarm sounding.	No
12/10/17	30 Mins	N5	No	43-48	44-46	36-37	70-74	No	**Site:** Trucks entering/exiting site on access road. Plant Machinery and reversing alarms audible. Faint hume of fans from Compositing facility. **Background:** Faint road traffic occasional audible. Birdsong. Aircraft overhead.	Yes
09-11-17	30 Mins	N1 (NSL)	yes	33-35	34-38	29-32	54-63	No	**Site:** No noise detected that was attributed to on site activity **Background:** Distant traffic on road. Nosie form plant in Carbury mushrooms factory audible along with reversing beacons.	Yes

09-11-17	30 Mins	N2	No	36-41	32	24-26	41-74	No	**Site:** No noise detected that was attributed to on site activity **Background:** Road traffic **- dominant noise source** Animal calls and reversing beacons audible. Low Hum from composite facility (Carbury Mushrooms)	No
09-11-17	30 Mins	N3	No	33-56	30-53	23-26	33-77	No	**Site:** No noise detected that was attributed to on site activity **Background:** Occasional passing traffic on the L5025 road (100m). **Dominant source** of noise. Low Hum from composite facility (Carbury Mushrooms). Animal calls	No
09-11-17	30 Mins	N4	No	41-50	45-50	28-30	71-74	No	**Site:** Access gate to site closing. Loose fence rattling **Background;** Passing road traffic on the R403 **dominate noise source**.	No
09-11-17	30 Mins	N5	No	29	29	25	61	No	**Site:** No noise detected that was attributed to on site activity **Background:** Road traffic was barely audible in the distance. Low hum form composite facility (Carbury mushrooms) audible. Dominate source animal calls (dogs/birds).	Yes

Leachate Monitoring Results

Quarter 1

Table 2.0 : Results of the Chemical Analysis of Leachate Sample TK-2		
Sample ID	Units	TK-2
Received Date & Time		02/02/17
Sample Type		Leachate
BOD	mg/l O_2	1912
COD	mg/l O_2	8285

Quarter 2

Table 2.0 : Results of the Chemical Analysis of Leachate Sample TK-2		
Sample ID	Units	TK-2
Received Date & Time		04/05/2017 16:53:51
Sample Type		Leachate
BOD	mg/l O_2	3,700
COD	mg/l O_2	9,480

Quarter 3

Table 2.0 : Results of the Chemical Analysis of Leachate Sample TK-2		
Sample ID	Units	TK-2
Received Date & Time		19/07/2017 16:13
Sample Type		Leachate
BOD	mg/l O_2	875
COD	mg/l O_2	5,440

Quarter 4

Table 2.0 : Results of the Annual Chemical Analysis of Leachate Sample TK-2		
Sample ID	Units	TK-1
Received Date & Time		26/11/17
Sample Type		Leachate
pH	pH Units	7.8
Conductivity	µS/cm	23,660
BOD	mg/l O_2	2,500
COD	mg/l O_2	8,920
Chloride	mg/l	2,462
Fluoride	mg/l	<0.10
PO_4-P	mg/l	2.3
Total Phosphorous	mg/l	11
NH_4-N	mg/l	1,927
Sulphate	mg/l	142
Sodium (total)	mg/l	2,420
Magnesium(total)	mg/l	243
Potassium (total)	mg/l	1,430

Calcium (total)	mg/l	208
Boron (total)	µg/l	4,650
Chromium (total)	µg/l	428
Manganese (total)	µg/l	637
Nickel (total)	µg/l	285
Copper (total)	µg/l	5.49
Zinc (total)	µg/l	60.1
Cadmium (total)	µg/l	<2
Lead (total)	µg/l	6.99
Iron (total)	mg/l	1.49
Mercury (total)	µg/l	<0.02
Cyanide	mg/l	1
TON	mg/l	<0.2

Table 2.0 :	Results of the Annual Chemical Analysis of Leachate Sample TK-2		
Comb Pesticide Suite			
	Dichlorvos**	µg/l	<0.01
	Mevinphos**	µg/l	<0.01
	alpha-HCH/Lindane**	µg/l	<0.01
	Diazinon**	µg/l	<0.01
	gamma-HCH/Lindane**	µg/l	<0.01
	Heptachlor**	µg/l	<0.01
	Aldrin**	µg/l	<0.01
	beta-HCH/Lindane**	µg/l	<0.01
	Methyl Parathion**	µg/l	<0.01
	Malathion**	µg/l	<0.01
	Fenitrothion**	µg/l	<0.01
	Heptachlor Epoxide**	µg/l	<0.01
	Parathion**	µg/l	<0.01
	o,p-DDE**	µg/l	<0.01
	Endosulfan I**	µg/l	<0.01
	p,p-DDE**	µg/l	<0.01
	Dieldrin**	µg/l	<0.01
	o,p-TDE**	µg/l	<0.01
	Endrin**	µg/l	<0.01
	o,p-DDT**	µg/l	<0.01
	p,p-TDE**	µg/l	<0.01
	Ethion**	µg/l	<0.01
	Endosulfan II**	µg/l	<0.01
	p,p-DDT**	µg/l	<0.01
	o,p-Methoxychlor**	µg/l	<0.01
	p,p-Methoxychlor**	µg/l	<0.01
	Endosulfan Sulphate**	µg/l	<0.01
	Azinphos Methyl**	µg/l	<0.01
SVOC's			
	1,2,4-Trichlorobenzene**	µg/l	<1
	1,2-Dichlorobenzene**	µg/l	<1
	1,3-Dichlorobenzene**	µg/l	<1
	1,4-Dichlorobenzene**	µg/l	<1

Table 2.0 :	Results of the Annual Chemical Analysis of Leachate Sample TK-2		
SVOC's	2,4,5-Trichlorophenol**	µg/l	<20
	2,4,6-Trichlorophenol**	µg/l	<20
	2,4-Dichlorophenol**	µg/l	<20
	2,4-Dimethylphenol**	µg/l	<20

	2,4-Dinitrotoluene**	µg/l	<20
	2,6-Dinitrotoluene**	µg/l	<20
	2-Chloronaphthalene**	µg/l	<20
	2-Chlorophenol**	µg/l	<20
	2-Methylnaphthalene**	µg/l	<20
	2-Methylphenol**	µg/l	60.4
	2-Nitroaniline**	µg/l	<20
	2-Nitrophenol**	µg/l	<20
	3-Nitroaniline**	µg/l	<20
	4-Bromophenylphenylether**	µg/l	<20
	4-Chloro-3-methylphenol**	µg/l	<20
	4-Chloroaniline**	µg/l	<20
	4-Chlorophenylphenylether**	µg/l	<20
	4-Methylphenol**	µg/l	920
	4-Nitrophenol**	µg/l	<20
	4-Nitroaniline**	µg/l	<20
	Azobenzene**	µg/l	<20
	Acenaphthylene**	µg/l	<20
	Acenaphthene**	µg/l	<20
	Anthracene**	µg/l	<20
	Bis(2-Chloroethyl)ether**	µg/l	<20
	Bis(2-chloroethoxy)methane**	µg/l	<20
	Bis(2-ethylhexyl)phthalate**	µg/l	<50
	Benzo(a)anthracene**	µg/l	<20
	Butylbenzylphthalate**	µg/l	<20
	Benzo(a)pyrene**	µg/l	<20
	Benzo(ghi)perylene**	µg/l	<20
	Carbazole**	µg/l	<20
	Chrysene**	µg/l	<20
	Dibenzofuran**	µg/l	<20
	n-Di-butylphthalate**	µg/l	<20
	Diethyl phthalate**	µg/l	<20
	Dibenzo(a,h)anthracene**	µg/l	<20
	Dimethyl phthalate**	µg/l	<20
	n-Di octyl phthalate**	µg/l	<100
	Fluoranthene**	µg/l	<20
	Flourene**	µg/l	<20
	Hexachlorobenzene**	µg/l	<20
	hexachlorobutadiene**	µg/l	<20
	Pentachlorophenol**	µg/l	<20
	Phenol**	µg/l	767
	N-nitrosodi-n-propylamine**	µg/l	<20
	Hexachloroethane**	µg/l	<20
	Nitrobenzene**	µg/l	<20
	Naphthalene**	µg/l	<1
	Isophorone**	µg/l	<20
	Hexachlorocyclopentadiene**	µg/l	<20
	Phenanthrene**	µg/l	<20
	Indenol(1,2,3-cd)pyrene**	µg/l	<20
	Pyrene**	µg/l	<20
VOC's	Dichlorodifluoromethane**	µg/l	<1
	Chloromethane**	µg/l	<1
	Vinyl chloride**	µg/l	<1
	Bromomethane**	µg/l	<1

Table 2.0 :	**Results of the Annual Chemical Analysis of Leachate Sample TK-2**		
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	2.35
	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	7.93
	1,2-Dichloroethane**	µg/l	<1
	Trichloroethene**	µg/l	5.25
	1,2-Dichloropropane**	µg/l	<1
	Dibromomethane**	µg/l	<1
	Bromodichloromethane**	µg/l	<1
	Toluene**	µg/l	54.9
	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	47.4
	Styrene**	µg/l	3.22
	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	7.21
	4-Isopropyltoluene**	µg/l	8.37
	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	25.2
	o-Xylene**	µg/l	24.2
	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	1.84
	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 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 17th & 30th January 2017	**Time:** 11:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Clear, bright, dry	**Barometric pressure:** 1012 & 979 mbar	
	Ambient Temp: 7°C	

30th January 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.0	1.2	19.6	979	
LG – 02	0.0	0.1	21.5	979	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.0	0.2	22.2	979	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.2	0.1	21.8	979	
LG – 07	0.0	0.1	22.2	979	
LG – 08	0.0	0.1	21.8	979	
LG – 09	0.0	0.5	21.4	979	
LG – 10	0.0	0.7	18.8	979	
LG – 11	0.0	0.5	22.1	979	
LG – 12	0.0	1.3	22.1	979	
LG – 13	0.0	0.2	22.9	979	
LG – 14	0.0	0.1	21.9	979	
LG – 15	0.0	1.4	22.0	979	
LG – 16	0.0	1.5	17.2	979	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.0	0.1	21.9	979	
LG – 19	0.0	0.1	22.0	979	
LG – 20	0.0	0.2	20.8	979	

LG – 21	0.0	0.8	20.9	979	
LG – 22	0.0	0.1	21.9	979	
LG – 23	0.0	0.1	21.9	979	
LG – 24	0.0	0.3	21.1	979	
LG - 25	0.0	0.1	21.2	979	
LG - 26	0.1	0.4	21.0	979	
LG – 27	0.0	0.1	21.2	979	
LG - 28	0.0	0.5	21.3	979	
LG - 29	0.0	0.4	21.4	979	
LG - 30	0.0	1.0	21.1	979	
LG - 31	0.0	0.5	21.5	979	
LG - 32	0.0	0.4	21.4	979	
LG - 33	0.0	0.7	21.5	979	
LG – 34	0.3	0.9	21.3	979	
LG - 35	0.0	0.1	21.7	979	
LG - 36	0.0	0.1	21.8	979	
LG - 37	0.0	1.4	20.8	979	
LG - 38	0.0	0.8	22.1	979	
LG - 39	0.0	0.4	22.2	979	
LG - 40	0.0	1.4	21.1	979	
LG - 41	0.1	1.1	21.8	979	
LG - 42	0.0	0.1	22.3	979	
LG - 43	0.0	0.4	22.2	979	
LG - 44	0.0	1.1	20.7	979	
LG – 45	0.0	0.2	22.1	979	
LG - 46	0.0	1.0	21.0	979	
LG – 47	0.0	0.2	22.2	979	

17th January 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	60.6	38.2	0.6	1012	
P1W007	43.8	37.5	1.6	1012	
P1W009	53.5	37.9	0	1012	
P1W011	56.1	36.7	0	1012	
P1W015	51.8	35.2	0.3	1012	
PHASE 2					
P2W005	37.8	27.8	0	1012	
P2W012	18.1	13.0	9.7	1012	
P2W013	58.7	38.7	0.4	1012	
P2W014	52.9	35.6	0.4	1012	
P2W015	59.5	38.9	0	1012	
PHASE 3					
P3W005	62.9	38.4	2.1	1012	
P3W013	67.7	43.2	0.7	1012	
P3W022	43.2	26.4	5.1	1012	
P3W024	58.6	39.9	0.3	1012	
PHASE 4					
P4W004	57.3	38.3	0.1	1012	
P4W005	44.9	31.3	3.7	1012	
P4W006	59.3	38.2	0.9	1012	
P4W008	0.3	0.1	20.7	1012	
P4W009	36.6	34.3	8.4	1012	
PHASE 5					

P5W003	58.2	39.9	0.3	1012	
P5W004	41.8	28.4	5.3	1012	
P5W007	45.2	32.7	2.7	1012	
P5W008	56.5	38.7	0.4	1012	
P5W012	47.3	40.9	0.9	1012	
PHASE 6					
P6W004	58.6	39.2	0.6	1012	
P6W005	43.2	32.4	2.0	1012	
P6W010	49.3	32.7	1.8	1012	
P6W012	60.1	40.2	0.5	1012	
P6W018	45.6	34.2	2.2	1012	
PHASE 7					
P7W001	50.4	38.3	0.1	1012	
P7W002	33.3	31.3	3.7	1012	
P7W006	40.4	38.2	0.9	1012	
P7W008	50.3	36.2	0.8	1012	
P7W011	54.9	38.5	0.7	1012	
PHASE 8					
P8W001	50.2	36.5	0.8	1012	
P8W003	47.1	37.2	2.1	1012	
P8W005	47.3	38.4	1.8	1012	
P8W007	40.9	37.4	3.1	1012	
P8W008	44.3	38.4	2.4	1012	
PHASE 9					
P9W002	48.9	39.1	2.1	1012	
P9W003	38.7	29.9	3.4	1012	
P9W004	42.2	32.0	2.1	1012	
P9W014	33.4	38.6	2.4	1012	
P9W015	50.3	38.8	2.1	1012	

PHASE 10					
P10W007	38.9	34.8	1.1	1012	
P10W008	42.2	36.4	1.2	1012	
P10W013	30.6	30.7	0.5	1012	
P10W006	42.9	37.5	0.1	1012	
P10W004	52.3	38.2	0.9	1012	

February 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 22nd February 2017	**Time:** 10:30
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Overcast, Windy	**Barometric pressure:** 1002 mbar	
	Ambient Temp: 9°C	

22nd February 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	0.9	19.2	1002	
LG – 02	0.0	0.1	20.4	1002	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.1	0.3	21.9	1002	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.1	0.2	21.0	1002	
LG – 07	0.0	0.1	22.4	1002	
LG – 08	0.0	0.2	20.9	1002	
LG – 09	0.0	0.4	21.6	1002	
LG – 10	0.1	0.5	19.5	1002	
LG – 11	0.0	0.3	22.6	1002	
LG – 12	0.0	1.1	22.4	1002	
LG – 13	0.0	0.2	22.4	1002	
LG – 14	0.0	0.1	20.5	1002	
LG – 15	0.0	1.2	22.9	1002	
LG – 16	0.0	1.3	18.5	1002	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.1	0.3	20.9	1002	
LG – 19	0.0	0.3	21.4	1002	
LG – 20	0.0	0.2	20.9	1002	
LG – 21	0.0	0.7	21.4	1002	
LG – 22	0.0	0.3	20.2	1002	

LG – 23	0.0	0.1	21.7	1002	
LG – 24	0.0	0.2	20.9	1002	
LG - 25	0.0	0.1	20.9	1002	
LG - 26	0.0	0.2	21.5	1002	
LG – 27	0.0	0.2	20.2	1002	
LG - 28	0.1	0.6	21.5	1002	
LG - 29	0.0	0.3	21.0	1002	
LG - 30	0.0	0.8	22.5	1002	
LG - 31	0.0	0.4	22.4	1002	
LG - 32	0.1	0.5	22.6	1002	
LG - 33	0.0	0.8	21.3	1002	
LG – 34	0.2	0.7	21.6	1002	
LG - 35	0.0	0.1	21.5	1002	
LG - 36	0.0	0.1	21.3	1002	
LG - 37	0.0	1.2	21.2	1002	
LG - 38	0.0	0.6	22.4	1002	
LG - 39	0.1	0.3	22.0	1002	
LG - 40	0.0	1.2	21.0	1002	
LG - 41	0.1	1.2	21.6	1002	
LG - 42	0.0	0.1	22.1	1002	
LG - 43	0.0	0.3	22.3	1002	
LG - 44	0.1	1.3	20.5	1002	
LG – 45	0.0	0.2	21.8	1002	
LG - 46	0.0	0.9	21.0	1002	
LG – 47	0.0	0.2	22.2	1002	

22nd February 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	57.5	37.6	0.7	1002	

P1W007	52.0	34.9	1.4	1002	
P1W009	56.9	37.1	1.2	1002	
P1W0011	58.8	37.4	0.5	1002	
P1W012	24.1	32.4	0.4	1002	
PHASE 2					
P2W003	67.5	33.2	0.0	1002	
P2W005	56.4	38.4	0.0	1002	
P2W006	48.7	39.9	1.1	1002	
P2W010	60.1	40.1	0.0	1002	
P2W013	52.6	35.4	0.9	1002	
PHASE 3					
P3W005	55.6	39.1	1.1	1002	
P3W013	55	37.1	1.3	1002	
P3W022	58.4	41.5	0.0	1002	
P3W024	54.5	38.0	1.6	1002	
P3W020	51.4	36.5	2.4	1002	
PHASE 4					
P4W004	53.6	35.7	0.5	1002	
P4W005	50.6	36.3	1.7	1002	
P4W006	51.9	36.1	0.3	1002	
P4W008	43.4	31.7	2.8	1002	
P4W009	39.2	32.9	0.4	1002	
PHASE 5					
P5W003	58.7	40.7	0.3	1002	
P5W004	58.8	41.5	0.2	1002	
P5W007	53.6	27.5	3.1	1002	
P5W008	47.5	38.6	0.2	1002	
P5W012	27.3	30.7	0.8	1002	

PHASE 6					
P6W004	52.2	37.6	0.3	1002	
P6W005	55.0	38.4	0.9	1002	
P6W010	60.1	39.7	0.3	1002	
P6W012	49.2	38.0	0.9	1002	
P6W018	41.4	34.3	0.8	1002	
PHASE 7					
P7W001	43.2	37.9	0.0	1002	
P7W002	35.5	32.5	1.9	1002	
P7W006	54.2	38.8	1.2	1002	
P7W008	30.3	31.7	0.8	1002	
P7W011	29.7	23.3	4.5	1002	
PHASE 8					
P8W001	40.1	35.1	2.8	1002	
P8W003	44.6	34.9	2.9	1002	
P8W005	53.9	44.2	0.2	1002	
P8W007	53.4	43.2	0.5	1002	
P8W008	59.4	42.1	0.4	1002	
PHASE 9					
P9W002	39.2	38.0	2.9	1002	
P9W003	41.4	34.3	4.8	1002	
P9W004	45.2	38.1	3.2	1002	
PHASE 10					
P10W007	39.2	38.0	3.9	1002	
P10W008	36.4	34.3	4.8	1002	
P10W013	34.5	36.5	4.1	1002	

March 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 13th & 20th March 2017	**Time:** 10:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Windy, Overcast, Dry	**Barometric pressure:** 999 & 1013 mbar	
	Ambient Temp: 9°C	

20th March 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.0	0.4	21.3	999	
LG – 02	0.0	1.2	19.4	999	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.0	0.2	20.7	999	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.0	0.1	20.4	999	
LG – 07	0.0	1.0	20.7	999	
LG – 08	0.0	0.2	21.4	999	
LG – 09	0.0	0.4	20.5	999	
LG – 10	0.0	0.8	21.2	999	
LG – 11	0.0	0.1	21.6	999	
LG – 12	0.0	1.0	21.0	999	
LG – 13	0.0	0.5	21.4	999	
LG – 14	0.0	0.2	21.6	999	
LG – 15	0.1	0.5	21.5	999	
LG – 16	0.0	0.8	20.3	999	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.0	0.1	21.8	999	
LG – 19	0.0	0.1	21.7	999	
LG – 20	0.0	0.1	21.7	999	
LG – 21	0.0	0.8	21.6	999	

LG – 22	0.0	0.1	21.7	999	
LG – 23	0.0	0.1	21.7	999	
LG – 24	0.0	0.1	21.7	999	
LG - 25	0.1	0.2	21.0	999	
LG - 26	0.1	0.5	21.4	999	
LG – 27	0.0	0.8	20.6	999	
LG - 28	0.0	0.1	21.7	999	
LG - 29	0.0	0.2	21.5	999	
LG - 30	0.0	1.3	21.1	999	
LG - 31	0.0	0.2	21.6	999	
LG - 32	0.0	1.0	20.5	999	
LG - 33	0.0	0.5	21.4	999	
LG – 34	0.0	0.5	21.6	999	
LG - 35	0.0	0.5	21.7	999	
LG - 36	0.0	0.2	21.6	999	
LG - 37	0.0	0.7	19.7	999	
LG - 38	0.0	1.4	18.2	999	
LG - 39	0.0	1.3	18.4	999	
LG - 40	0.0	1.2	18.6	999	
LG - 41	0.0	0.4	19.8	999	
LG - 42	0.0	0.3	20.0	999	
LG - 43	0.0	0.1	20.7	999	
LG - 44	0.0	1.4	18.1	999	
LG – 45	0.0	0.7	19.8	999	
LG - 46	0.1	0.1	20.8	999	
LG – 47	0.0	0.1	20.6	999	

13th March 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	57.8	35.5	0.2	1013	

P1W007	51.6	35.1	1.2	1013	
P1W009	31.6	26.9	1.5	1013	
P1W011	59.2	36.3	0	1013	
P1W012	60.9	38.9	0.1	1013	
PHASE 2					
P2W003	65.6	32.1	0.4	1013	
P2W005	42.1	31.8	1.0	1013	
P2W006	40.4	32.5	0.3	1013	
P2W012	57.8	36.1	0.4	1013	
P2W015	56.7	35.9	0.3	1013	
PHASE 3					
P3W003	59.2	38.3	0.2	1013	
P3W005	47.6	34.3	0.8	1013	
P3W006	54.9	37.8	0.1	1013	
P3W010	56.1	35.9	0.3	1013	
P3W012	46.1	31.8	1.2	1013	
PHASE 4					
P4W001	57.7	39.8	0	1013	
P4W002	13.0	14.2	9.4	1013	Valve turned off
P4W005	52.4	36.6	0.3	1013	
P4W006	46.8	32.9	3.6	1013	
P4W009	31.7	30.2	0.5	1013	
PHASE 5					
P5W001	31.5	25.6	3.3	1013	
P5W005	57.5	38.4	0.1	1013	
P5W007	59.3	39.4	0.3	1013	
P5W008	50.2	37.4	0.4	1013	
P5W012	48.1	35.6	2.0	1013	

PHASE 6					
P6W004	52.4	37.2	0	1013	
P6W005	58.9	38.6	0.1	1013	
P6W010	47.5	33.3	0.9	1013	
P6W012	48.7	35.8	0.4	1013	
P6W017	54.8	38.3	0.3	1013	
PHASE 7					
P7W001	39.4	34.4	0.3	1013	
P7W002	36.3	29.2	0.9	1013	
P7W006	48.5	37.4	0.3	1013	
P7W008	36.5	35.6	0	1013	
P7W012	51.3	40.2	0.2	1013	
PHASE 8					
P8W001	25.5	321.8	8.4	1013	
P8W003	41.6	34.6	0.9	1013	
P8W005	48.8	37.9	0.6	1013	
P8W007	41.5	55.1	0.6	1013	
P8W008	44.3	36.2	0.3	1013	
PHASE 9					
P9W001	38.2	31.6	4.5	1013	
P9W002	52.1	40.6	0.2	1013	
P9W003	37.5	30.9	5.3	1013	
P9W006	41.8	36.5	2.0	1013	
P9W007	55.2	43.9	0	1013	
PHASE 10					
P10W001	39.3	37.6	0	1013	
P10W002	57.5	41.5	0	1013	
P10W006	43.3	34.6	2.5	1013	
P10W007	40.1	36.2	0.7	1013	

P10W008	50.8	40.1	1.0	1013	
PHASE 11					
P11W001	47.8	56.8	0	1013	
P11W004	45.8	57.3	0.3	1013	
P11W006	44.1	54.8	0.6	1013	
P11W007	21.3	32.5	8.1	1013	Valve turned off
P11W008	36.9	62.5	1.3	1013	

April 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 26th & 27th April 2017	**Time:** 10:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Wet, overcast, breezy	**Barometric pressure:** 1000 & 998mbar	
	Ambient Temp: 11°C	

27th April 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.0	0.6	20.5	998	
LG – 02	0.0	0.1	21.3	998	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.0	0.1	21.3	998	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.0	0.2	21.1	998	
LG – 07	0.0	1.1	18.5	998	
LG – 08	0.0	0.2	19.7	998	
LG – 09	0.0	0.6	17.2	998	
LG – 10	0.0	0.7	16.4	998	
LG – 11	0.0	0.1	19.0	998	
LG – 12	0.0	0.8	19.1	998	
LG – 13	0.0	1.0	18.6	998	
LG – 14	0.0	0.2	19.1	998	
LG – 15	0.0	0.5	19.3	998	
LG – 16	0.0	1.5	18.4	998	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.0	0.1	19.1	998	
LG – 19	0.0	0.1	19.5	998	
LG – 20	0.0	0.2	19.2	998	
LG – 21	0.0	0.5	19.3	998	

LG – 22	0.0	0.1	19.4	998	
LG – 23	0.0	0.1	19.3	998	
LG – 24	0.0	0.1	19.6	998	
LG - 25	0.0	0.1	19.4	998	
LG - 26	0.0	0.6	19.2	998	
LG – 27	0.0	1.2	16.3	998	
LG - 28	0.0	1.3	16.1	998	
LG - 29	0.0	0.5	18.5	998	
LG - 30	0.0	1.4	17.2	998	
LG - 31	0.0	0.2	19.4	998	
LG - 32	0.0	0.1	19.3	998	
LG - 33	0.0	0.4	19.2	998	
LG – 34	0.0	0.4	19.2	998	
LG - 35	0.0	0.5	19.1	998	
LG - 36	0.0	0.2	19.2	998	
LG - 37	0.0	1.4	17.7	998	
LG - 38	0.0	1.3	18.6	998	
LG - 39	0.0	1.3	18.4	998	
LG - 40	0.0	0.8	19.6	998	
LG - 41	0.0	1.1	18.1	998	
LG - 42	0.0	0.3	20.1	998	
LG - 43	0.0	1.2	18.0	998	
LG - 44	0.0	1.4	18.0	998	
LG – 45	0.0	0.8	19.0	998	
LG - 46	0.0	0.1	20.6	998	
LG – 47	0.0	0.1	20.6	998	

26th April 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	49.4	36.2	0.8	1000	

P1W007	39.5	25.5	7.5	1000	
P1W009	48.7	38.9	0.8	1000	
P1W0011	58.1	36.5	0.7	1000	
P1W012	48.5	32.3	4.1	1000	
PHASE 2					
P2W003	65.5	43.2	0.2	1000	
P2W005	56.5	37.9	0.7	1000	
P2W006	54.4	38.4	0.6	1000	
P2W010	55.0	40.7	0.5	1000	
P2W013	47.1	55.9	0.8	1000	
PHASE 3					
P3W003	66.7	42.1	0.8	1000	
P3W005	62.9	38.4	2.1	1000	
P3W007	67.7	43.2	0.7	1000	
P3W010	34.5	30.3	1.2	1000	
P3W024	59.5	38.2	0.5	1000	
PHASE 4					
P4W004	70.8	40.9	0	1000	
P4W005	57.1	39.7	0.7	1000	
P4W006	54.2	37.7	0.5	1000	
P4W008	55.0	40.7	0.5	1000	
P4W009	67.8	46.8	0.7	1000	
PHASE 5					
P5W003	67.8	45.5	0.1	1000	
P5W004	45.2	38.6	0.2	1000	
P5W007	55.5	42.3	0.2	1000	
P5W008	51.8	41.5	0.2	1000	
P5W012	57.8	40.2	2.1	1000	

PHASE 6					
P6W004	63.3	43.6	0.3	1000	
P6W005	61.9	41.4	0.4	1000	
P6W010	62.6	44.4	0	1000	
P6W012	8.1	21.1	1.4	1000	
P6W018	53.5	42.1	0.1	1000	
PHASE 7					
P7W001	50.2	40.4	0.3	1000	
P7W002	36.1	26.2	8.5	1000	
P7W006	33.3	32.7	0.3	1000	
P7W008	41.5	35.8	0.5	1000	
P7W011	57.9	45.3	0.1	1000	
PHASE 8					
P8W001	56.2	41.8	0.7	1000	
P8W003	41.8	21.0	0.8	1000	
P8W005	47.5	35.6	2.8	1000	
P8W007	40.9	33.2	4.3	1000	
P8W008	45.3	35.9	1.1	1000	
PHASE 9					
P9W002	55.6	43.7	0.1	1000	
P9W003	42.3	32.5	4.7	1000	
P9W004	57.1	46.2	0.3	1000	
PHASE 10					
P10W007	52.4	41.3	0.4	1000	
P10W008	41.1	37.1	0.5	1000	
P10W013	48.7	38.9	0.8	1000	
P10W010	50.5	38.6	1.9	1000	
P10W001	52.1	42.7	0	1000	

PHASE 11					
P11W002	40.6	38.4	0	1000	
P11W007	44.1	41.6	1.6	1000	
P11W008	33.4	37.1	2.7	1000	

May 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 23rd & 31st May 2017	**Time:** 10:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Dry, breezy	**Barometric pressure:** 1002 & 996 mbar	
	Ambient Temp: 12°C	

23rd May 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	0.6	20.4	1002	
LG – 02	0.1	0.2	21.1	1002	
LG – 03	_	_	_	-	Out of commission
LG – 04A	0.1	0.2	20.9	1002	Replacement Well
LG – 05	_	_	_	-	Out of commission
LG – 06	0.1	0.1	20.3	1002	
LG – 07	0.2	1.4	16.2	1002	
LG – 08	0.2	0.1	19.5	1002	
LG – 09	0.1	0.6	15.2	1002	
LG – 10	0.1	0.1	20.1	1002	
LG – 11	0.1	0.5	18.6	1002	
LG – 12	0.1	1.0	19.4	1002	
LG – 13	0.1	1.1	15.7	1002	
LG – 14	0.2	0.1	20.6	1002	
LG – 15	0.1	0.4	19.9	1002	
LG – 16	0.1	0.4	20.5	1002	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.1	0.2	20.2	1002	
LG – 19	0.1	0.0	20.3	1002	
LG – 20	0.1	0.0	19.3	1002	
LG – 21	0.1	0.4	20.3	1002	

LG – 22	0.1	0.1	20.4	1002	
LG – 23	0.1	0.1	19.9	1002	
LG – 24	0.1	0.0	20.8	1002	
LG - 25	0.1	1.2	19.5	1002	
LG - 26	0.1	0.1	20.5	1002	
LG – 27	0.1	0.1	20.7	1002	
LG - 28	0.1	0.3	20.6	1002	
LG - 29	0.2	0.2	20.4	1002	
LG - 30	0.1	0.5	20.5	1002	
LG - 31	0.1	0.3	20.4	1002	
LG - 32	0.1	1.2	19.2	1002	
LG - 33	0.1	0.0	18.1	1002	
LG – 34	0.2	0.3	18.6	1002	
LG - 35	0.1	0.1	18.7	1002	
LG - 36	0.2	0.2	19.2	1002	
LG - 37	0.1	1.3	18.7	1002	
LG - 38	0.1	0.2	20.4	1002	
LG - 39	0.1	0.0	21	1002	
LG - 40	0.3	0.6	19.2	1002	
LG - 41	0.2	0.1	20.4	1002	
LG - 42	0.1	0.2	20.7	1002	
LG - 43	0.3	1.2	18.7	1002	
LG - 44	0.2	1.1	18.2	1002	
LG – 45	0.2	1.2	18.6	1002	
LG - 46	0.5	0.6	19.1	1002	
LG – 47	0.3	0.8	19.5	1002	

31st May 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	49.9	33.5	0.7	996	
P1W007	54.5	38.0	1.1	996	
P1W009	53.6	37.5	0.6	996	
P1W011	58.3	41.6	0.0	996	
P1W012	44.8	31.6	0.9	996	
PHASE 2					
P2W003	47.9	32.5	0.4	996	
P2W005	60.1	39.2	0.4	996	
P2W006	40.2	33.8	0.1	996	
P2W010	57.6	38.5	0.0	996	
P2W013	35.1	27.2	1.2	996	
PHASE 3					
P3W003	64.5	40.6	0.3	996	
P3W005	50.3	31.7	0.4	996	
P3W007	62.9	41.7	0.1	996	
P3W010	60.6	38.1	0.8	996	
P3W024	60.1	39.0	0.8	996	
PHASE 4					
P4W004	50.3	31.7	0.4	996	
P4W005	51.8	33.4	0.5	996	
P4W006	62.9	41.0	0.1	996	
P4W008	48.5	35.9	0.7	996	
P4W009	60.1	39.0	0.8	996	
PHASE 5					
P5W003	32.5	22.2	6.0	996	

P5W004	32.9	21.3	4.1	996	
P5W007	62.5	43.4	0.4	996	
P5W008	58.2	39.6	0.4	996	
P5W012	63.5	41.5	0.1	996	
PHASE 6					
P6W004	59.1	39.4	0.1	996	
P6W005	56.7	42.2	0.0	996	
P6W010	35.1	23.1	4.6	996	
P6W012	49.1	42.1	0.1	996	
P6W018	24.3	28.3	3.8	996	
PHASE 7					
P7W001	38.5	34.4	0.2	996	
P7W002	47.7	38.9	0.1	996	
P7W006	49.5	39.1	0.4	996	
P7W008	59.5	42.4	0.6	996	
P7W011	55.5	38.3	0.2	996	
PHASE 8					
P8W001	52.3	39.4	0.5	996	
P8W003	52.2	41.2	0.4	996	
P8W005	47.8	39.4	0.6	996	
P8W007	56.5	44.1	0.0	996	
P8W008	53.2	40.3	0.6	996	
PHASE 9					
P9W002	55.8	42.0	0.7	996	
P9W003	53.3	37.9	2.3	996	
P9W004	54.3	46.7	0.0	996	
PHASE 10					
P10W001	59.1	50.6	0.2	996	

P10W007	57.8	45.1	0.0	996	
P10W008	38.3	37.5	5.7	996	
P10W010	49.9	46.9	0.3	996	
P10W013	53.9	44.9	0.6	996	
PHASE 11					
P11W003	59.3	40.5	0.5	996	
P11W004	52.7	41.7	0.9	996	
P11W005	38.9	35.7	0.9	996	
P11W006	40.7	37.9	0.3	996	
P11W007	44.1	38.0	2.5	996	

June 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 14th & 27th June 2017	**Time:** 11:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Warm, bright, dry	**Barometric pressure:** 1009 & 1005 mbar	
	Ambient Temp: 19°C	

14th June 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	0.2	20.4	1009	
LG – 02	0.1	0.2	20.2	1009	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.1	0.1	20.1	1009	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.1	0.9	17.8	1009	
LG – 07	0.1	1.0	20.6	1009	
LG – 08	0.1	0.0	17.6	1009	
LG – 09	0.1	0.9	16.3	1009	
LG – 10	0.1	0.4	20.1	1009	
LG – 11	0.1	0.2	20.1	1009	
LG – 12	0.2	0.2	19.8	1009	
LG – 13	0.1	0.7	19.1	1009	
LG – 14	0.1	0.2	20.7	1009	
LG – 15	0.1	0.2	20.6	1009	
LG – 16	0.1	0.2	20.5	1009	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.1	0.1	20.7	1009	
LG – 19	0.1	0.0	20.8	1009	
LG – 20	0.1	0.0	19.9	1009	
LG – 21	0.2	0.3	20.1	1009	

LG – 22	0.1	0.0	20.6	1009	
LG – 23	0.1	0.1	20.8	1009	
LG – 24	0.1	0.2	20.3	1009	
LG - 25	0.2	1.1	20.0	1009	
LG - 26	0.1	0.2	20.1	1009	
LG – 27	0.1	0.2	20.2	1009	
LG - 28	0.2	0.3	19.7	1009	
LG - 29	0.3	0.2	20.1	1009	
LG - 30	0.1	0.1	19.7	1009	
LG - 31	0.1	0.2	20.4	1009	
LG - 32	0.1	0.9	19.4	1009	
LG - 33	0.2	0.0	20.6	1009	
LG – 34	0.2	0.7	20.2	1009	
LG - 35	0.1	0.0	20.7	1009	
LG - 36	0.1	0.2	20.4	1009	
LG - 37	0.1	0.3	20.3	1009	
LG - 38	0.2	0.6	19.0	1009	
LG - 39	0.1	0.9	19.6	1009	
LG - 40	0.4	1.2	17.0	1009	
LG - 41	0.2	0.0	20.3	1009	
LG - 42	0.1	0.6	19.9	1009	
LG - 43	0.1	0.1	20.7	1009	
LG - 44	0.0	1.2	18.8	1009	
LG – 45	0.0	0.6	19.8	1009	
LG - 46	0.1	0.1	20.8	1009	
LG – 47	0.0	0.2	20.7	1009	
27th June 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	50.8	36.5	1.0	1005	
P1W007	53.4	37.2	0.2	1005	

P1W009	49.4	36.9	0.2	1005	
P1W011	51.2	38.1	0.1	1005	
P1W012	46.2	34.2	0.7	1005	
PHASE 2					
P2W003	45.6	34.3	0.8	1005	
P2W005	56.2	36.2	0.2	1005	
P2W006	46.5	33.8	0.1	1005	
P2W010	57.6	38.5	0.0	1005	
P2W013	35.1	27.2	1.2	1005	
PHASE 3					
P3W003	52.9	41.4	0.8	1005	
P3W005	58.7	38.4	0.5	1005	
P3W007	56.1	38.3	0.2	1005	
P3W010	58.8	37.5	0.8	1005	
P3W014	59.8	41.5	1.2	1005	
PHASE 4					
P4W004	52.5	34.2	0.6	1005	
P4W005	49.8	32.3	0.3	1005	
P4W006	58.4	38.2	0.1	1005	
P4W008	44.6	32.4	0.3	1005	
P4W009	59.7	38.0	0.8	1005	
PHASE 5					
P5W003	44.5	32.2	3.0	1005	
P5W004	38.9	28.3	3.5	1005	
P5W007	58.3	38.4	1.5	1005	
P5W008	57.3	36.8	0.9	1005	
P5W012	58.5	37.5	0.9	1005	
PHASE 6					
P6W004	56.2	35.6	1.2	1005	

P6W005	55.2	43.2	0.2	1005	
P6W010	42.3	33.4	1.6	1005	
P6W012	48.2	38.1	0.5	1005	
P6W018	36.4	32.6	2.5	1005	
PHASE 7					
P7W001	44.3	37.4	0.1	1005	
P7W002	47.2	37.1.	0.3	1005	
P7W006	49.5	39.1	0.4	1005	
P7W008	59.5	42.4	0.6	1005	
P7W011	55.5	38.3	0.2	1005	
PHASE 8					
P8W001	54.2	38.4	0.9	1005	
P8W003	48.1	38.4	1.4	1005	
P8W005	44.2	36.2	1.2	1005	
P8W007	49.5	38.1	1.8	1005	
P8W008	50.4	39.7	1.6	1005	
PHASE 9					
P9W002	50.8	42.0	0.7	1005	
P9W003	50.3	39.9	1.2	1005	
P9W004	56.8	42.2	0.5	1005	
PHASE 10					
P10W001	55.3	45.6	0.7	1005	
P10W007	52.6	46.4	0.5	1005	
P10W008	48.1	39.2	3.5	1005	
P10W010	50.1	45.2	0.6	1005	
P10W013	54.2	45.3	0.8	1005	
PHASE 11					
P11W003	57.3	44.5	0.7	1005	

P11W004	50.7	44.7	0.7	1005	
P11W005	38.9	35.7	0.9	1005	
P11W006	44.7	36.4	0.4	1005	
P11W007	46.1	35.6	1.5	1005	

July 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 19th & 28th July 2017	**Time:** 11:00 & 14:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Warm, bright, dry	**Barometric pressure:** 1007 mbar	
	Ambient Temp: 18°C & 17°C	

19th July 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	0.2	20.6	1007	
LG – 02	0.1	0.2	20.4	1007	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.1	0.1	20.7	1007	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.1	0.8	19.7	1007	
LG – 07	0.1	1.3	17.5	1007	
LG – 08	0.1	0.0	20.6	1007	
LG – 09	0.2	0.7	18.5	1007	
LG – 10	0.2	0.5	19.8	1007	
LG – 11	0.0	0.2	20.0	1007	
LG – 12	0.1	0.2	20.0	1007	
LG – 13	0.2	0.7	19.2	1007	
LG – 14	0.1	0.2	20.5	1007	
LG – 15	0.1	0.2	20.6	1007	
LG – 16	0.1	0.5	19.9	1007	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.1	0.1	20.7	1007	
LG – 19	0.1	0.0	20.9	1007	
LG – 20	0.1	0.0	20.5	1007	
LG – 21	0.2	0.4	19.9	1007	

LG – 22	0.1	0.0	20.6	1007	
LG – 23	0.1	0.2	20.6	1007	
LG – 24	0.1	0.2	20.5	1007	
LG - 25	0.2	1.0	19.6	1007	
LG - 26	0.1	0.2	20.1	1007	
LG – 27	0.1	0.3	20.0	1007	
LG - 28	0.3	0.3	19.7	1007	
LG - 29	0.3	0.4	19.8	1007	
LG - 30	0.1	0.1	20.5	1007	
LG - 31	0.1	0.2	20.4	1007	
LG - 32	0.2	0.9	19.4	1007	
LG - 33	0.2	0.1	20.5	1007	
LG – 34	0.2	0.7	20.2	1007	
LG - 35	0.1	0.1	20.5	1007	
LG - 36	0.1	0.2	20.4	1007	
LG - 37	0.1	0.4	20.1	1007	
LG - 38	0.2	0.6	19.0	1007	
LG - 39	0.2	0.5	19.9	1007	
LG - 40	0.4	1.1	17.5	1007	
LG - 41	0.2	0.1	20.3	1007	
LG - 42	0.2	0.6	19.9	1007	
LG - 43	0.1	0.1	20.7	1007	
LG - 44	0.0	1.3	18.7	1007	
LG – 45	0.1	0.5	19.8	1007	
LG - 46	0.1	0.1	20.7	1007	
LG – 47	0.0	0.1	20.7	1007	

28th July 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	49.4	36.2	1.1	1007	

P1W007	50.6	36.1	0.4	1007	
P1W009	51.9	35.4	0.9	1007	
P1W011	51.4	36.7	0.4	1007	
P1W012	48.3	35.2	0.5	1007	
PHASE 2					
P2W003	47.2	32.9	0.6	1007	
P2W005	55.3	37.3	0.6	1007	
P2W006	46.5	33.8	0.1	1007	
P2W010	57.6	38.5	0.0	1007	
P2W013	34.5	31.2	1.1	1007	
PHASE 3					
P3W003	50.6	39.8	0.9	1007	
P3W005	54.6	34.4	0.9	1007	
P3W007	52.4	36.5	0.4	1007	
P3W010	56.2	36.1	0.4	1007	
P3W014	58.9	40.1	1.1	1007	
PHASE 4					
P4W004	50.9	35.4	0.4	1007	
P4W005	48.1	34.3	0.5	1007	
P4W006	54.6	37.4	0.3	1007	
P4W008	46.2	31.3	0.5	1007	
P4W009	57.1	36.4	0.6	1007	
PHASE 5					
P5W003	48.2	36.4	2.1	1007	
P5W004	42.2	32.2	2.4	1007	
P5W007	56.2	37.1	1.2	1007	
P5W008	58.1	36.1	0.7	1007	
P5W012	55.4	37.1	0.8	1007	
PHASE 6					
P6W004	55.1	36.4	1.0	1007	
P6W005	54.1	42.0	0.3	1007	
P6W010	43.8	34.1	1.3	1007	
P6W012	47.1	39.2	0.6	1007	

P6W018	40.1	33.2	1.9	1007	
PHASE 7					
P7W001	46.1	36.2	0.3	1007	
P7W002	46.1	34.2	0.4	1007	
P7W006	50.3	38.1	0.4	1007	
P7W008	55.4	39.1	0.7	1007	
P7W011	52.8	37.1	0.6	1007	
PHASE 8					
P8W001	53.2	37.4	0.8	1007	
P8W003	47.2	37.1	1.2	1007	
P8W005	46.2	34.2	1.1	1007	
P8W007	48.2	36.3	1.2	1007	
P8W008	48.2	38.7	1.2	1007	
PHASE 9					
P9W002	49.2	40.1	0.8	1007	
P9W003	49.8	37.8	1.0	1007	
P9W004	55.1	40.6	0.8	1007	
PHASE 10					
P10W001	54.3	41.2	0.5	1007	
P10W007	50.1	42.1	0.4	1007	
P10W008	50.2	40.1	2.1	1007	
P10W010	50.1	44.3	0.4	1007	
P10W013	50.1	46.1	0.7	1007	
PHASE 11					
P11W003	55.8	45.2	0.9	1007	
P11W004	52.5	46.2	0.7	1007	
P11W005	42.1	39.1	0.7	1007	
P11W006	44.7	39.4	0.6	1007	
P11W007	50.1	41.6	1.5	1007	

August 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 22nd & 29th August 2017	**Time:** 10:15 & 14:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Dry & Bright	**Barometric pressure:** 1009 & 1005 mbar	
	Ambient Temp: 17°C	

22nd August 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.2	0.5	19.6	1009	
LG – 02	0.2	0.0	20.4	1009	
LG – 03	_	_	_	_	Out of commission
LG – 04A	0.1	0.0	20.4	1009	Replacement Well
LG – 05	_	_	_	_	Out of commission
LG – 06	0.2	0.1	20.2	1009	
LG – 07	0.2	0.7	19.1	1009	
LG – 08	0.2	0.0	20.5	1009	
LG – 09	0.2	1.0	17.7	1009	
LG – 10	0.2	0.2	20.0	1009	
LG – 11	0.2	0.1	20.4	1009	
LG – 12	0.2	0.2	20.4	1009	
LG – 13	0.2	0.1	20.1	1009	
LG – 14	0.2	0.2	20.2	1009	
LG – 15	0.2	0.3	20.5	1009	
LG – 16	0.1	0.9	19.7	1009	
LG - 17	_	_	_	_	Out of commission
LG – 18	0.2	0.6	19.8	1009	
LG – 19	0.1	0.0	20.5	1009	
LG – 20	0.2	0.1	20.3	1009	
LG – 21	0.2	0.5	19.8	1009	

LG – 22	0.2	0.1	20.1	1009	
LG – 23	0.1	0.1	20.4	1009	
LG – 24	0.1	0.0	20.4	1009	
LG - 25	0.1	0.3	19.8	1009	
LG - 26	0.1	0.5	19.9	1009	
LG – 27	0.2	0.0	20.2	1009	
LG - 28	0.1	0.1	20.6	1009	
LG - 29	0.3	1.1	19.0	1009	
LG - 30	0.2	1.2	18.9	1009	
LG - 31	0.2	0.7	19.7	1009	
LG - 32	0.2	0.8	19.7	1009	
LG - 33	0.1	0.1	20.5	1009	
LG – 34	0.2	0.6	20.0	1009	
LG - 35	0.2	0.1	20.3	1009	
LG - 36	0.1	0.2	20.3	1009	
LG - 37	0.1	1.1	19.0	1009	
LG - 38	0.2	0.2	19.6	1009	
LG - 39	0.1	0.4	19.7	1009	
LG - 40	0.2	0.9	19.5	1009	
LG - 41	0.1	0.2	20.2	1009	
LG - 42	0.3	0.2	19.9	1009	
LG - 43	0.2	0.4	19.9	1009	
LG - 44	0.2	0.9	19.7	1009	
LG – 45	0.0	0.6	20.7	1009	
LG - 46	0.1	0.1	20.8	1009	
LG – 47	0.0	0.0	20.9	1009	

29th August 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	48.1	37.5	0.9	1005	
P1W007	51.2	37.3	0.4	1005	
P1W009	50.1	36.1	0.3	1005	
P1W011	51.1	37.2	0.3	1005	
P1W012	49.2	35.2	0.7	1005	
PHASE 2					
P2W003	48.1.2	35.3	0.7	1005	
P2W005	54.1	34.2	0.5	1005	
P2W006	46.1	31.5	0.4	1005	
P2W010	50.6	37.5	0.3	1005	
P2W013	36.2	30.1	0.9	1005	
PHASE 3					
P3W003	49.9	38.1	0.9	1005	
P3W005	52.1	38.4	0.5	1005	
P3W007	56.1	34.3	0.2	1005	
P3W010	55.1	35.2	0.6	1005	
P3W014	57.2	39.2	1.1	1005	
PHASE 4					
P4W004	50.1	37.2	0.9	1005	
P4W005	48.2	35.1	0.6	1005	
P4W006	55.1	37.5	0.3	1005	
P4W008	46.5	34.2	0.7	1005	
P4W009	54.1	36.5	0.9	1005	
PHASE 5					
P5W003	46.3	38.1	1.8	1005	
P5W004	44.9	33.1	1.7	1005	
P5W007	55.1	36.8	1.4	1005	
P5W008	57.1	36.5	0.8	1005	

P5W012	55.1	36.4	1.2	1005	
PHASE 6					
P6W004	55.4	36.2	1.3	1005	
P6W005	52.1	41.2	0.4	1005	
P6W010	45.8	35.1	1.5	1005	
P6W012	48.7	37.2	0.7	1005	
P6W018	42.1	34.2	1.8	1005	
PHASE 7					
P7W001	45.1	36.2	0.3	1005	
P7W002	45.1	36.2	0.5	1005	
P7W006	50.1	39.4	0.3	1005	
P7W008	52.2	39.2	0.6	1005	
P7W011	53.5	36.3	0.5	1005	
PHASE 8					
P8W001	52.2	36.9	0.7	1005	
P8W003	48.7	39.7	1.6	1005	
P8W005	46.7	35.2	1.3	1005	
P8W007	48.5	37.1	1.6	1005	
P8W008	49.5	37.5	1.4	1005	
PHASE 9					
P9W002	48.8	40.0	1.9	1005	
P9W003	49.8	39.6	1.8	1005	
P9W004	51.2	41.6	0.9	1005	
PHASE 10					
P10W001	53.2	40.1	1.3	1005	
P10W007	50.2	45.1	0.9	1005	
P10W008	49.2	38.2	3.1	1005	
P10W010	49.3	43.1	0.7	1005	
P10W013	51.1	42.1	1.1	1005	

PHASE 11					
P11W003	54.1	42.1	1.2	1005	
P11W004	51.1	43.1	1.1	1005	
P11W005	45.2	40.1	1.3	1005	
P11W006	42.2	36.4	1.4	1005	
P11W007	43.1	39.6	1.6	1005	

September 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 22nd & 28th September 2017	**Time:** 10:00 & 14:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Warm, bright, dry	**Barometric pressure:** 1003 & 1005 mbar	
	Ambient Temp: 17°C & 16°C	

22nd September 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.0	0.2	20.7	1003	
LG – 02	0.0	0.6	20.7	1003	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.0	0.1	20.8	1003	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.1	0.1	20.6	1003	
LG – 07	0.0	1.4	15.7	1003	
LG – 08	0.1	0.1	20.8	1003	
LG – 09	0.2	1.2	16.8	1003	
LG – 10	0.3	1.0	17.5	1003	
LG – 11	0.0	0.1	20.8	1003	
LG – 12	0.0	1.1	20.1	1003	
LG – 13	0.1	1.2	20.4	1003	
LG – 14	0.1	0.4	20.7	1003	
LG – 15	0.2	0.3	20.2	1003	
LG – 16	0.0	0.7	20.3	1003	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.0	0.1	20.6	1003	
LG – 19	0.1	0.1	20.6	1003	
LG – 20	0.1	1.3	18.7	1003	
LG – 21	0.5	0.8	19.8	1003	

LG – 22	0.1	0.2	20.5	1003	
LG – 23	0.1	0.2	20.5	1003	
LG – 24	0.0	0.2	20.4	1003	
LG - 25	0.1	0.1	20.7	1003	
LG - 26	0.0	0.2	20.4	1003	
LG – 27	0.1	0.1	20.5	1003	
LG - 28	0.0	0.5	20.3	1003	
LG - 29	0.5	0.1	20.1	1003	
LG - 30	0.2	1.4	18.8	1003	
LG - 31	0.0	0.2	20.4	1003	
LG - 32	0.1	0.2	20.5	1003	
LG - 33	0.1	0.1	20.6	1003	
LG – 34	0.0	0.5	20.5	1003	
LG - 35	0.0	0.4	20.6	1003	
LG - 36	0.0	0.2	20.6	1003	
LG - 37	0.0	0.7	19.7	1003	
LG - 38	0.0	0.5	19.9	1003	
LG - 39	0.0	0.3	20.4	1003	
LG - 40	0.0	1.4	18.7	1003	
LG - 41	0.0	0.9	19.4	1003	
LG - 42	0.0	0.5	20.0	1003	
LG - 43	0.0	0.5	20.1	1003	
LG - 44	0.0	1.3	18.7	1003	
LG – 45	0.0	0.7	20.6	1003	
LG - 46	0.0	0.1	20.9	1003	
LG – 47	0.0	0.0	20.9	1003	

28th September 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W006	48.2	37.0	0.4	1005	

P1W007	50.2	37.2	0.6	1005	
P1W009	48.1	37.4	0.4	1005	
P1W011	51.2	38.1	0.1	1005	
P1W012	44.3	36.2	0.5	1005	
PHASE 2					
P2W003	46.4	37.1	0.6	1005	
P2W005	54.2	34.0	0.3	1005	
P2W006	47.6	35.6	0.2	1005	
P2W010	54.8	37.4	0.3	1005	
P2W013	38.8	30.4	0.8	1005	
PHASE 3					
P3W003	50.9	39.1	0.7	1005	
P3W005	50.1	36.5	0.9	1005	
P3W007	53.1	37.3	0.4	1005	
P3W010	55.8	36.5	0.9	1005	
P3W014	55.2	39.3	1.4	1005	
PHASE 4					
P4W004	51.2	36.2	1.1	1005	
P4W005	50.1	37.1	0.7	1005	
P4W006	52.1	37.4	0.7	1005	
P4W008	46.2	35.9.2	0.6	1005	
P4W009	52.1	36.1.3	0.6	1005	
PHASE 5					
P5W003	45.5	34.4	3.0	1005	
P5W004	42.8	34.2	1.9	1005	
P5W007	54.1	37.4	1.8	1005	
P5W008	56.4	38.1	1.4	1005	
P5W012	53.2	35.4	0.8	1005	
PHASE 6					
P6W004	54.2	36.4	1.7	1005	
P6W005	47.9	40.1	0.5	1005	
P6W010	44.5	36.2	1.2	1005	
P6W012	47.5	38.4	1.2	1005	

P6W018	40.1	34.2	1.5	1005	
PHASE 7					
P7W001	47.2	37.1	0.8	1005	
P7W002	46.2	36.1	0.5	1005	
P7W006	49.1	39.2	0.8	1005	
P7W008	50.1	40.1	0.5	1005	
P7W011	51.2	37.9	0.3	1005	
PHASE 8					
P8W001	53.2	37.4	0.6	1005	
P8W003	49.1	36.9	1.3	1005	
P8W005	45.6	36.1	1.4	1005	
P8W007	47.5	37.5	1.5	1005	
P8W008	49.1	38.5	1.1	1005	
PHASE 9					
P9W002	49.1	39.8	1.1	1005	
P9W003	48.5	39.1	1.2	1005	
P9W004	52.1	40.1	1.1	1005	
PHASE 10					
P10W001	52.1	43.2	1.3	1005	
P10W007	50.1	42.1	0.8	1005	
P10W008	48.1	39.5	2.5	1005	
P10W010	49.1	42.1	0.6	1005	
P10W013	50.1	41.2	1.2	1005	
PHASE 11					
P11W003	52.1	41.2	1.1	1005	
P11W004	50.1	42.1	1.2	1005	
P11W005	44.2	38.2	1.5	1005	
P11W006	46.2	37.1	1.2	1005	
P11W007	44.1	36.2	1.4	1005	
PHASE 12					
P12W001	48.2	38.9	1.4		
P12W002	49.1	37.5	2.1		

October 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 20th & 31st October 2017	**Time:** 10:00 & 14:00
Instrument ID: Geotech GA 5000	**Date Next Calibration:** November 2017	
Weather: Warm, bright, dry	**Barometric pressure:** 1005 & 1021mbar	
	Ambient Temp: 15°C & 13°C	

20th October 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	0.3	20.9	1005	
LG – 02	0.0	0.5	20.7	1005	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.0	0.2	20.9	1005	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.1	0.1	20.6	1005	
LG – 07	0.0	1.2	15.5	1005	
LG – 08	0.1	0.1	20.7	1005	
LG – 09	0.2	0.9	17.2	1005	
LG – 10	0.3	1.1	17.1	1005	
LG – 11	0.0	0.1	20.8	1005	
LG – 12	0.0	1.0	20.0	1005	
LG – 13	0.1	1.0	20.1	1005	
LG – 14	0.1	0.5	20.5	1005	
LG – 15	0.1	0.3	20.6	1005	
LG – 16	0.1	0.7	20.3	1005	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.0	0.1	20.6	1005	
LG – 19	0.1	0.1	20.6	1005	
LG – 20	0.1	1.0	19.9	1005	
LG – 21	0.4	0.6	19.7	1005	

LG – 22	0.1	0.2	20.3	1005	
LG – 23	0.1	0.2	20.3	1005	
LG – 24	0.1	0.3	20.2	1005	
LG - 25	0.1	0.1	20.7	1005	
LG - 26	0.1	0.2	20.4	1005	
LG – 27	0.1	0.3	20.5	1005	
LG - 28	0.1	0.4	20.3	1005	
LG - 29	0.5	0.1	20.1	1005	
LG - 30	0.2	1.2	18.8	1005	
LG - 31	0.0	0.1	20.4	1005	
LG - 32	0.1	0.2	20.5	1005	
LG - 33	0.1	0.2	20.4	1005	
LG – 34	0.0	0.4	20.6	1005	
LG - 35	0.0	0.4	20.6	1005	
LG - 36	0.1	0.2	20.5	1005	
LG - 37	0.0	0.6	19.9	1005	
LG - 38	0.1	0.5	19.9	1005	
LG - 39	0.1	0.3	20.3	1005	
LG - 40	0.0	1.4	18.7	1005	
LG - 41	0.0	0.9	19.4	1005	
LG - 42	0.1	0.5	20.0	1005	
LG - 43	0.0	0.5	20.1	1005	
LG - 44	0.0	1.3	18.7	1005	
LG – 45	0.1	0.8	20.5	1005	
LG - 46	0.0	0.1	20.9	1005	
LG – 47	0.0	0.0	20.9	1005	

31st October 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W001	50.7	34.1	0.9	1021	

P1W003	52.9	37.8	0.1	1021	
P1W008	49.9	36.8	0.2	1021	
P1W009	54.5	34.4	1.7	1021	
P1W012	42.5	29.1	3.2	1021	
PHASE 2					
P2W003	58.4	29.9	1.9	1021	
P2W005	53.4	35.9	1.8	1021	
P2W006	35.8	30.4	1.5	1021	
P2W009	59.9	35.4	0.3	1021	
P2W012	57.9	34.6	0.3	1021	
PHASE 3					
P3W005	40.6	27.6	5.4	1021	
P3W007	54.9	38.3	0.2	1021	
P3W009	33.1	30.2	0.3	1021	
P3W010	58.9	39.3	0.2	1021	
P3W012	44.6	34.0	0.3	1021	
PHASE 4					
P4W002	49.5	36.5	0.9	1021	
P4W004	46.8	34.2	0.1	1021	
P4W005	39.3	32.5	0.4	1021	
P4W010	56.5	40.7	0.4	1021	
P4W012	58.7	37.6	0.3	1021	
PHASE 5					
P5W001	46.4	34.3	1.4	1021	
P5W004	36.8	30.9	1.6	1021	
P5W006	59.9	39.4	2.7	1021	
P5W007	53.8	37.9	0.5	1021	
P5W009	50.1	37.5	1.1	1021	
PHASE 6					

P6W003	57.7	33.9	0.0	1021	
P6W006	45.6	35.8	0.0	1021	
P6W007	58.1	39.8	0.0	1021	
P6W009	42.8	33.9	1.4	1021	
P6W015	38.5	28.7	1.3	1021	
PHASE 7					
P7W004	45.9	37.6	0.0	1021	
P7W010	43.7	41.1	0.2	1021	
P7W012	50.3	40.2	0.0	1021	
P7W014	56.1	42.3	0.0	1021	
P7W015	33.7	27.3	2.7	1021	
PHASE 8					
P8W001	40.5	34.0	0.6	1021	
P8W003	47.9	38.1	0.9	1021	
P8W006	42.8	35.5	0.0	1021	
P8W011	51.7	37.1	0.0	1021	
P8W013	48.5	35.8	0.0	1021	
PHASE 9					
P9W001	51.3	37.4	1.7	1021	
P9W002	46.4	36.3	1.4	10321	
P9W003	38.1	35.0	0.8	1021	
P9W006	44.6	40.8	0.6	1021	
P9W008	47.5	49.1	0.0	1021	
PHASE 10					
P10W001	46.0	43.7	1.3	1021	
P10W003	40.6	42.7	0.3	1021	
P10W004	46.0	40.8	0.0	1021	
P10W006	55.3	43.7	0.0	1021	
P10W007	53.7	41.3	0.7	1021	

PHASE 11					
P11W002	44.1	39.4	0.6	1021	
P11W004	34.1	31.7	1.9	1021	
P11W005	33.9	31.1	3.4	1021	
P11W006	47.8	38.1	0.2	1021	
P11W007	47.2	38.3	0.0	1021	
PHASE 12					
P12W001	57.3	49.2	0.0	1021	
P12W005	49.8	47.5	0.7	1021	
P12W007	49.9	42.4	0.8	1021	

November 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 23rd & 30th November	**Time:** 14:00
Instrument ID: Geotech GA 2000	**Date Next Calibration:** April 2018	
Weather: Overcast, Calm, Dry, Cold	**Barometric pressure:** 1007 & 1020mbar	
	Ambient Temp: 5°C	

23rd November 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	0.6	20.1	1007	
LG – 02	0.1	0.2	21.5	1007	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.1	0.1	21.6	1007	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.0	0.1	20.7	1007	
LG – 07	0.1	1.1	19.1	1007	
LG – 08	0.1	0.1	20.7	1007	
LG – 09	0.0	0.4	20.5	1007	
LG – 10	0.1	0.6	20.5	1007	
LG – 11	0.0	0.2	21.3	1007	
LG – 12	0.1	1.0	20.3	1007	
LG – 13	0.0	0.0	21.2	1007	
LG – 14	0.0	0.9	20.8	1007	
LG – 15	0.1	1.1	20.5	1007	
LG – 16	0.2	0.5	21.0	1007	
LG - 17	-	-	-	-	Out of commission
LG – 18	0.1	0.1	20.6	1007	
LG – 19	0.0	0.1	21.3	1007	
LG – 20	0.5	0.5	21.0	1007	
LG – 21	0.0	0.5	21.6	1007	

LG – 22	0.0	0.0	21.7	1007	
LG – 23	0.0	0.2	21.2	1007	
LG – 24	0.1	0.3	21.4	1007	
LG - 25	0.1	0.1	21.6	1007	
LG - 26	0.1	0.1	21.7	1007	
LG – 27	0.1	0.2	21.4	1007	
LG - 28	0.1	0.5	21.2	1007	
LG - 29	0.2	0.3	21.1	1007	
LG - 30	0.1	1.0	21.0	1007	
LG - 31	0.0	0.1	21.5	1007	
LG - 32	0.1	0.5	21.2	1007	
LG - 33	0.0	0.0	21.7	1007	
LG – 34	0.0	1.2	21.2	1007	
LG - 35	0.1	0.7	21.4	1007	
LG - 36	0.0	0.3	21.5	1007	
LG - 37	0.2	0.9	21.0	1007	
LG - 38	0.1	0.3	21.2	1007	
LG - 39	0.1	0.2	21.6	1007	
LG - 40	0.1	1.1	21.0	1007	
LG - 41	0.1	0.6	19.9	1007	
LG - 42	0.1	0.4	20.1	1007	
LG - 43	0.0	0.5	20.1	1007	
LG - 44	0.0	1.0	19.5	1007	
LG – 45	0.1	1.0	20.1	1007	
LG - 46	0.0	0.2	21.5	1007	
LG – 47	0.1	0.2	21.1	1007	

30th November 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W001	59.9	37.3	0.4	1020	

P1W003	46.7	36.2	0.4	1020	
P1W008	45.7	35.3	0.6	1020	
P1W009	38.5	30.5	1.2	1020	
P1W012	57.3	36.2	0.6	1020	
PHASE 2					
P2W003	48.4	35.0	0.9	1020	
P2W005	52.5	35.2	2.1	1020	
P2W006	47.4	33.1	3.7	1020	
P2W009	55.6	35.7	0.8	1020	
P2W012	51.3	33.5	0.8	1020	
PHASE 3					
P3W005	41.3	28.8	2.5	1020	
P3W007	56.5	39.4	0.3	1020	
P3W009	27.9	24.6	2.1	1020	
P3W010	53.5	37.4	0.5	1020	
P3W012	37.5	30.8	0.4	1020	
PHASE 4					
P4W002	40.2	24.5	2.9	1020	
P4W004	43.7	34.6	0.0	1020	
P4W005	49.2	37.9	0.8	020	
P4W008	37.4	26.5	7.2	1020	
P4W012	49.5	34.2	0.8	1020	
PHASE 5					
P5W002	53.9	37.2	1.2	1020	
P5W004	60.5	39.7	0.1	1020	
P5W006	57.1	39.0	0.8	1020	
P5W007	58.5	403.	0.3	1020	
P5W009	57.5	41.1	0.3	1020	
PHASE 6					

P6W003	40.3	29.9	1.2	1020	
P6W004	42.3	33.9	0.4	1020	
P6W011	44.8	37.5	0.4	1020	
P6W015	53.7	40.1	0.3	1020	
P6W016	43.1	37.1	0.7	1020	
PHASE 7					
P7W002	53.5	40.0	0.0	1020	
P7W003	54.6	39.6	0.0	1020	
P7W006	54.2	39.4	1.1	1020	
P7W011	52.1	44.7	0.0	1020	
P7W014	52.3	41.3	0.0	1020	
PHASE 8					
P8W001	32.4	29.1	2.8	1020	
P8W003	36.1	32.8	1.5	1020	
P8W005	39.4	34.1	0.2	1020	
P8W007	45.3	36.4	0.4	1020	
P8W011	43.4	36.6	0.0	1020	
PHASE 9					
P9W001	41.2	33.4	2.6	1020	
P9W002	44.4	35.3	1.1	1020	
P9W005	50.9	44.7	0.0	1020	
PHASE 10					
P10W001	51.8	42.4	0.0	1020	
P10W002	51.1	46.3	0.4	1020	
P10W003	48.2	46.3	0.7	1020	
P10W005	54.1	42.5	0.0	1020	
P10W007	44.5	38.2	2.3	1020	
PHASE 11					

P11W005	31.7	29.5	2.3	1020	
P11W006	32.5	30.6	3.3	1020	
P11W007	32.6	31.2	1.0	1020	
P11W008	33.5	32.9	0.0	1020	
PHASE 12					
P12W001	54.5	51.2	0.1	1020	
P12W002	50.9	51.9	0.2	1020	
P12W003	37.0	45.6	0.0	1020	
P12W005	57.7	49.0	0.0	1020	
P12W007	51.7	43.2	0.5	1020	

December 2017

Drehid Facility (W0201-03)		
Operator: Phoebe Dillane	**Date:** 20th & 21st December	**Time:** 14:00
Instrument ID: Geotech GA 2000	**Date Next Calibration:** April 2018	
Weather: Overcast, Calm, Dry	**Barometric pressure:** 1026 mbar	
	Ambient Temp: 7°C & 10°C	

20th December 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
LG – 01	0.1	1.0	20.8	1026	
LG – 02	0.1	0.1	21.7	1026	
LG – 03	-	-	-	-	Out of commission
LG – 04A	0.1	0.1	21.7	1026	Replacement Well
LG – 05	-	-	-	-	Out of commission
LG – 06	0.1	0.0	20.7	1026	
LG – 07	0.1	1.0	19.3	1026	
LG – 08	0.0	0.1	20.6	1026	
LG – 09	0.0	0.1	20.9	1026	
LG – 10	0.1	0.8	20.7	1026	
LG – 11	0.0	0.4	21.1	1026	
LG – 12	0.1	1.2	20.5	1026	
LG – 13	0.0	0.0	21.3	1026	
LG – 14	0.0	1.1	21.1	1026	
LG – 15	0.0	1.3	21.3	1026	
LG – 16	0.1	0.6	21.7	1026	
LG - 17	-	-	-	1026	Out of commission
LG – 18	0.0	0.1	20.8	1026	
LG – 19	0.0	0.1	21.5	1026	
LG – 20	0.9	0.3	21.3	1026	
LG – 21	0.0	0.2	21.6	1026	

LG – 22	0.0	0.0	21.6	1026	
LG – 23	0.0	0.3	21.5	1026	
LG – 24	0.1	0.3	21.6	1026	
LG - 25	0.0	0.1	21.1	1026	
LG - 26	0.1	0.1	21.7	1026	
LG – 27	0.0	0.2	21.5	1026	
LG - 28	0.1	0.4	21.5	1026	
LG - 29	0.1	0.2	21.4	1026	
LG - 30	0.1	1.1	21.5	1026	
LG - 31	0.1	0.0	21.5	1026	
LG - 32	0.1	0.7	21.5	1026	
LG - 33	0.0	0.0	21.7	1026	
LG – 34	0.1	1.4	21.3	1026	
LG - 35	0.1	0.6	21.5	1026	
LG - 36	0.0	0.3	21.5	1026	
LG - 37	0.1	1.1	21.1	1026	
LG - 38	0.1	0.0	21.6	1026	
LG - 39	0.1	0.1	21.8	1026	
LG - 40	0.1	0.1	21.6	1026	
LG - 41	0.1	0.6	20.0	1026	
LG - 42	0.1	0.4	19.9	1026	
LG - 43	0.0	0.5	20.1	1026	
LG - 44	0.0	1.1	19.3	1026	
LG – 45	0.1	0.9	20.2	1026	
LG - 46	0.0	0.1	20.9	1026	
LG – 47	0.0	0.0	20.9	1026	

21st December 2017					
Sample Station Number	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**	**Pressure (mbar)**	**Comments**
PHASE 1					
P1W001	50.9	33.1	2.1	1030	

P1W003	43.2	34.2	0.3	1030	
P1W008	40.5	33.4	0.3	1030	
P1W010	34.7	31.8	0.6	1030	
P1W011	46.1	32.5	0.7	1030	
PHASE 2					
P2W003	43.9	29.7	0.4	1030	
P2W005	51.9	34.6	0.5	1030	
P2W006	34.4	28.6	2.0	1030	
P2W009	49.5	34.1	0.6	1030	
P2W011	42.3	32.0	0.3	1030	
PHASE 3					
P3W003	34.3	24.7	2.5	1030	
P3W005	33.4	24.3	2.1	1030	
P3W007	55.9	39.8	0.2	1030	
P3W010	50.7	36.7	0.3	1030	
P3W012	31.2	28.5	0.2	1030	
PHASE 4					
P4W004	43.5	33.7	0.1	1030	
P4W005	33.5	30.0	0.7	1030	
P4W008	52.9	37.4	3.9	1030	
P4W010	54.7	40.6	0.3	1030	
P4W012	51.2	34.3	0.7	1030	
PHASE 5					
P5W001	43.3	31.7	2.9	1030	
P5W002	28.7	23.1	6.7	1030	
P5W004	58.4	37.8	0.1	1030	
P5W005	58.9	39.5	0.5	1030	
P5W012	55.4	40.9	0.7	1030	
PHASE 6					

P6W003	51.3	33.3	0.7	1030	
P6W007	50.2	38.2	0.0	1030	
P6W011	46.7	38.1	0.0	1030	
P6W014	43.9	37.0	0.8	1030	
P6W016	58.4	40.2	0.0	1030	
PHASE 7					
P7W002	46.5	37.3	0.6	1030	
P7W004	42.5	36.6	0.0	1030	
P7W006	40.3	35.8	0.5	1030	
P7W011	47.7	41.0	0.1	1030	
P7W015	49.9	38.8	0.7	1030	
PHASE 8					
P8W002	43.5	34.8	0.2	1030	
P8W005	38.7	33.7	0.1	1030	
P8W007	40.9	34.2	0.4	1030	
P8W009	48.8	34.2	0.4	1030	
P8W013	40.9	34.8	0.2	1030	
PHASE 9					
P9W001	45.9	36.5	1.3	1030	
P9W002	43.8	35.3	1.1	1030	
P9W003	42.7	37.8	0.0	1030	
P9W006	41.6	40.5	0.7	1030	
PHASE 10					
P10W001	49.3	48.4	0.3	1030	
P10W003	50.8	45.8	0.1	1030	
P10W005	59.9	43.2	0.0	1030	
P10W006	53.3	46.1	0.6	1030	
P10W007	52.6	49.9	0.5	1030	

PHASE 11					
P11W005	53.6	42.4	0.0	1030	
P11W006	57.4	44.6	0.0	1030	
P11W007	52.6	41.2	0.0	1030	
P11W008	55.9	41.9	0.0	1030	
PHASE 12					
P12W001	51.1	51.8	0.1	1030	
P12W002	60.7	47.6	0.0	1030	
P12W003	58.4	49.8	0.0	1030	
P12W004	56.8	49.1	0.0	1030	
P12W007	56.6	43.3	0.0	1030	

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 Landfill Supervisor 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 Inspection

Procedure

Litter Control

Permanent litter nets are erected around the lined area with an entrance for access, they consist of 6m poles with UV treated netting.

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 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 foreman 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 Facility Manager and Landfill Supervisor will agree if necessary to close the site.

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

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

Dust Minimisation

The Landfill Supervisor must insure that dust generation is minimised on the site. Dust generation is controlled onsite through the use of 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 Landfill Supervisor or Facility Manager.

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 site roads and hard standing surfaces are swept using a road sweeper as conditions dictate. The road should be swept until the Landfill Supervisor 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 Facility 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 Facility 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 Facility 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 Facility 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 Facility 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

Environmental Protection Agency

Guidance to completing the PRTR workbook

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2017

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	Environmental Compliance Officer
AER Returns Contact Telephone Number	045439464
AER Returns Contact Mobile Phone Number	0872794952
AER Returns Contact Fax Number	045439489
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

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

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
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	306148.8	0.0	306148.8

* 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	T (Total) kg/Year	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Facility Total Capacity m3 per hour	
Total estimated methane generation (as per site model)	8270992.0	E	OTH	Gassim 2.5	N/A	
Methane flared	2203753.5	C	OTH	Monthly records	0.0	(Total Flaring Capacity)
Methane utilised in engine/s	5761089.7	M	OTH	SCADA	0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	306148.8	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 only concerns Releases from your

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	0.0	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 02 08	Yes	108.46	other engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Rilta Environmental,W0185-01	Site No 14A1,Greenogue Business Park,Rathcoole,Dublin,Ireland	Rilta Environmental,W0185-01,Site No. 14A1,Greenogue Business Park,Rathcoole,Dublin,Ireland	Site No. 14A1,Greenogue Business Park,Rathcoole,Dublin,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
To Other Countries	15 02 02	Yes	0.0	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	D10	M	Weighed	Abroad	Enva,W0184-01	Clonminam Industrial Estate,.,Portlaoise,Co. Laois,Ireland	Kreis Weseler Abfallgesellschaft,E17012100,Kamp Lintfort,.,.,.,Germany	Kamp Lintfort,.,.,.,Germany
Within the Country	16 01 07	Yes	0.26	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
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	17086.36	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	9505.728	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	0.0	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	19 07 03	No	13596.9	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Ringsend WwTW,D0034-01	Pigeon House Road,Ringsend ,Dublin,Dublin,Ireland		
Within the Country	19 12 02	No	21.1	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 03	No	0.0	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	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		

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

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