



# **ANNUAL ENVIRONMENTAL REPORT**

**For**

**MUCKISH LANDFILL SITE**

**Co. Donegal**

**Waste Licence Reference: W0126-01**

**By**

**Donegal County Council**

**For**

**Environmental Protection Agency**

**Reporting Period:**

**January to December 2014**

**May 2015**

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# 1 Introduction

- 1.1 This Annual Environmental Report (AER) has been prepared to meet the requirements of Condition 2.3 of Waste Licence W0126-1 for Muckish Landfill and includes the information listed in Schedule A of the Waste Licence.
- 1.2 Muckish Landfill Site is located in a rural setting on the lower slopes of Muckish Mountain, approximately 5km south east of the village of Falcarragh. The site is within the upper catchment of the Ray River and is situated on an extensive area of blanket bog.
- 1.3 Donegal County Council submitted an application to the Environmental Protection Agency for the continued operation of the landfill site, as required by the Waste Management (Licensing) Regulations 1997. On the 29<sup>th</sup> of May 2001 the Environmental Protection Agency granted the Council a Waste Licence (registration number W0126-1) for the facility, in accordance with the Third Schedule of the Waste Management Act, 1996.
- 1.4 The Licence granted was for the orderly closure, capping and restoration of the landfill and allows only for the acceptance of inert material to be used for the purpose of site restoration. The facility ceased to accept waste on the 6<sup>th</sup> of November 2001 and the site was closed.
- 1.5 The facility had been developed and operated on the 'dilute and disperse' principle, whereby rainfall infiltrated the landfill and generated leachate; the leachate was in turn allowed to disperse into the surrounding environment.
- 1.6 The site was fully restored during 2005/6 in accordance with the approved Restoration and Aftercare Plan.
- 1.7 A summary of Facility Information is provided in Table 1.1 below.

**Table 1.1 Facility Information Summary**

<b>AER Reporting Year</b>	2014
<b>Licence Register Number</b>	W00126-01
<b>Name of site</b>	Muckish Landfill Site
<b>Site Location</b>	Muckish, Falcarragh, County Donegal
<b>NACE Code</b>	3821
<b>Class/Classes of Activity</b>	Landfill

## 2 Reporting Period

2.1 This report refers to the period from 1<sup>st</sup> January, 2014 to 31<sup>st</sup> December 2014.

## 3 Waste Activities Carried Out at the Facility

### Type of Waste

3.1 The licensed disposal activities, in accordance with the Third Schedule of the Waste Management Act, 1996 are restricted to those listed as follows:

- **Class 1 Deposit on, in or under land (including landfill):** This activity is limited to the disposal of inert waste only and leachate treatment at the facility.
- **Class 13 Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced:** This activity is limited to leachate collection and storage prior to treatment.

## 4 Quantities of Waste

4.1 In accordance with Condition 1 of the waste licence only inert material shall be accepted for the purposes of remediation, rehabilitation, enhancement and restoration of the facility. The maximum amount of inert waste to be disposed of at the site is 40,000 tonnes. The quantities of waste received during each year at the facility are presented in Table 4.1. 2,500 tonnes of inert material; (for use in restoration works) was accepted onto the site during 2004. The balance of restoration materials were imported during 2005 as shown in the table. No material has been imported since this time.

**Table 4.1 Waste Quantities Accepted (Tonnes)**

Waste Types	1998	1999	2000	2001	2002	2003	2004	2005
Municipal Waste* (20 03 01)	4,418	5,639	7,008	5,729	0	0	0	0
Inert Waste	0	0	0	0	0	0	2,500	34,667

\* Figures based on estimates.

## 5 Summary Report on Emissions

### Environmental Monitoring Requirements

- 5.1 There is no continuous air, groundwater, surface water or wastewater (sewer) monitoring at Muckish Landfill site. Periodic / non-continuous monitoring of groundwater, surface water, leachate and landfill gas is carried out at the site as per the Schedule, and as agreed with the EPA, as set out in Tables A1, A2, A3 and A4 of Appendix A. It should be noted that annual parameters are in abeyance as agreed with the Agency, and in addition it was agreed that the frequency of regular monitoring would reduce from quarterly to bi-annual. Details of the monitoring locations are shown on drawing no IBR0697/009.

### Monitoring Results

- 5.2 Results of monitoring for the period for groundwater, surface water, leachate and gas are contained in tabular and graphical format in Appendix B.

### Groundwater

- 5.3 The groundwater results contained in this report were assessed against the following:
- EPA Interim Guideline Values<sup>1</sup> (IGV);
  - SI No 278 of 2007 EC (Drinking Water) Regulations (DWR); and
  - SI No 9 of 2010 European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended (GWR 2010).
- 5.4 Groundwater flow is typically in a north-easterly direction ultimately providing base flow to the Ray River. Groundwater monitoring is carried out at three locations (GW1, GW2 and GW3) as shown on Drawing No IBR0697/009. These groundwater monitoring boreholes were installed at the landfill early in 2000 as per licence requirements. Monitoring location GW1 is representative of water quality up-gradient conditions and monitoring locations GW2 and GW3 are down gradient but close to the waste body in the space between the waste and the river.

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<sup>1</sup>EPA (2003) Towards setting guideline values for the protection of groundwater in Ireland. Interim Report

### **Up Gradient**

- 5.5 No elevated concentrations in exceedance of the appropriate GWR or IGV values up gradient of the site have been recorded for the parameters measured throughout the monitoring period.

### **Down Gradient**

- 5.6 The GWR 2010 guideline value for ammonia is 0.175 mg/l. Elevated concentrations of ammonia relative to the screening value were recorded in GW2 and GW3 in November of the monitoring period when values of 0.21 mg/l and 6.11 mg/l were recorded.
- 5.7 The IGV guideline value for iron is 200 µg/l. Elevated concentrations of iron relative to the screening value were recorded in GW2 and GW3 of the monitoring period when values ranging from 585.5 µg/l to 1257.8 µg/l were recorded. It should be noted that iron occurs naturally in Donegal groundwater as they are associated with naturally occurring conditions such as iron rich bedrock or the presence of reducing conditions, that is, anaerobic environment such as peat. This may therefore contribute to higher concentrations of iron recorded in the monitoring results.
- 5.8 The IGV guideline value for potassium is 5 mg/l. Elevated concentrations of potassium relative to the screening value were recorded in GW3 throughout the monitoring period with values ranging from 8.36 mg/l to 12.1 mg/l.
- 5.9 No elevated concentrations, relative to the appropriate screening values, of the remaining parameters measured were recorded down gradient of the site during the monitoring period.
- 5.10 The monitoring results recorded show that, although screening values were exceeded, the impact on the groundwater environment is very limited considering the close proximity of the monitoring wells to the unlined waste body.

### **Surface Water**

- 5.11 The surface water results contained in this report were assessed against the following:
- SI No 294 of 1989 European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations (SWQS); and
  - SI No 272 of 2009 European Communities Environmental Objectives (Surface Water) Regulations 2009 (EQS).

- 5.12 Muckish landfill site is situated in the upper catchment of the Ray (Duvowen) River. The landfill site is based on an area of extensive blanket bog. This river forms the north-eastern boundary of the landfill. Surface water monitoring is carried out at four monitoring locations as shown on Drawing no IBR0697-009 Monitoring Locations. Monitoring points SW1 and SW2 are upstream of the waste body. Monitoring points SW3 and SW4 are mid / downstream locations.

#### **Upstream**

- 5.13 The SWQS value for COD is 40 mg/l. One instance of an elevated concentration of COD relative to the screening value was recorded upstream of the site at surface water monitoring point SW2. A COD value of 46 mg/l was recorded in May of the monitoring period.
- 5.14 No elevated concentrations, relative to the appropriate screening values, of the remaining parameters measured were recorded upstream of the site during the monitoring period.

#### **Downstream**

- 5.15 The EQS 2009 guideline value for ammonia for good status is 0.140 mg/l N. One instance of an elevated concentration of ammonia relative to this screening value was recorded downstream of the site at surface water monitoring point SW4 during the monitoring period. A value for ammonia of 0.51 mg/l N was recorded in November of the monitoring period.
- 5.16 The SWQS value for COD is 40 mg/l. One instance of an elevated concentration of COD relative to the screening value was recorded upstream of the site at surface water monitoring point SW3. A COD value of 52 mg/l was recorded in May of the monitoring period. It should also be noted that an elevated concentration of COD was also recorded upgradient of the site in May of the monitoring period.
- 5.17 The EQS 2009 guideline value for BOD for good status is 2.60 mg/l. One instance of a slightly elevated concentration of BOD relative to this screening value, 3.0 mg/l, was recorded downstream of the site at surface water monitoring point SW4 during the monitoring period.
- 5.18 No elevated concentrations, relative to the appropriate screening values, of the remaining parameters measured were recorded upstream of the site during the monitoring period.
- 5.19 The results recorded show that there is little impact from the site on the surface water environment and these results are consistent with previous periods since restoration.

## Leachate Composition

5.20 Leachate monitoring was previously carried out at one monitoring location on the site (L1) as shown on Drawing No IBR0697-009 Monitoring Locations. This well became inaccessible during 2011 and leachate is now sampled from the leachate collection sump. Results from this are presented in Appendix B. Some characteristic parameters have been compared with those of 'typical' raw leachate in Table 5.1 below.

**Table 5.1 Raw Leachate Concentrations 2014**

PARAMETER	Muckish Landfill Site		From 30 samples from UK/Irish landfills accepting domestic waste Results in mg/l		
	Min Conc	Max Conc	Min Conc	Max Conc	Mean
Ammonia (mg/N)	0.35	3.28	<0.2	1700	491
BOD	6	6.69	4.5	>4800	>834
COD	43	68	<10	33,700	3078
Chloride (mg/l)	30	100	27	3410	1256
Iron (mg/l)	-	0.023	0.4	664	54.4
TON (mg/l N)	0.2	1.52	/	/	/
Conductivity (µS/cm)	346	1424	503	19,200	7789
pH (pH units)	6.71	6.73	6.4	8.0	7.2

5.21 Table 5.1 compares raw leachate concentrations detected at Muckish with 'typical leachate composition from 30 samples from UK / Irish Landfills accepting mainly domestic waste' (taken from EPA Manual for Landfill Operational Practices). Parameters measured are all consistent with typical leachate ranges shown and with the results issued last period. The leachate is very weak, and results continue to be well below the ELV.

## Landfill Gas

5.22 Landfill gas monitoring is undertaken at three locations P1, P2 & P3 (as shown on Drawing No IBR0697-009 Monitoring Locations), all of which are within the site boundary in waste.

5.23 These wells generally show similar production levels of methane with levels ranging from 47.6% to 58.7%. These results are consistent with levels detected in previous periods. All results are contained in Appendix B.



## 6 Hydrogeological Risk Assessment

- 6.1 A hydrogeological risk assessment is currently being undertaken for Muckish Landfill Site. This report is being on foot of a technical amendment to the waste licence by EPA: "Within eighteen months of the date of this technical amendment, the licensee shall carry out a risk screening and where necessary a technical assessment in accordance with the Guidance on the Authorisation of Discharges to Groundwater, published by the Environmental Protection Agency".
- 6.2 The objectives of this assessment will include the following:
- To consolidate all available geological, hydrogeological and hydrological data relating to the site and its immediate environs;
  - To assess and interpret all available water quality data recorded to-date;
  - To develop an appropriate Conceptual Site Model (CSM) for the site;
  - To assess the level of risk posed to sensitive receptors; and
  - To develop an appropriate compliance monitoring programme for the site.
- 6.3 This assessment will be submitted to EPA under a separate cover.

## 7 Volume of Leachate Produced and Volume of Leachate Discharged

- 7.1 Leachate is being tankered on a weekly basis from the collection sump on site. Records show that during this period 3010.5 m<sup>3</sup> of leachate was removed from the site and tankered off site to the Letterkenny Sludge Treatment Centre. Table 7.1 below shows the monthly breakdown of tankering volumes.
- 7.2 A water balance calculation has been produced for this period and is shown in Appendix C. This indicates that the estimated volume of leachate being produced at the site for the reporting period is 2,487 m<sup>3</sup>.

**Table 7.1 Breakdown of Leachate Volumes by Month in 2014**

Month	Leachate Volume (m3)
January	295.08
February	231.22
March	290.74
April	262.02
May	224.40
June	194.08
July	210.26
August	261.84
September	188.52
October	263.84
November	259.32
December	329.18
<b>Total:</b>	<b>3010.50</b>

## 8 Capping and Restoration of Completed Cells / Phases

8.1 The site is fully restored.

## 9 Reported Incidents and Complaints Summaries

9.1 Other than the reporting of on-going emissions exceedances detected in the routine monitoring programme, no incidents occurred during the monitoring period and no complaints were received.

## 10 Review of Nuisance Controls

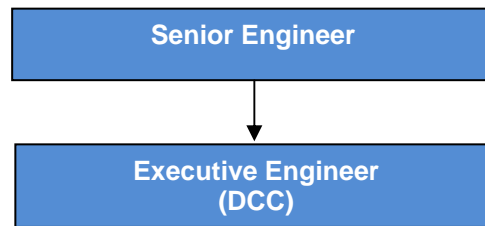
10.1 The site is inspected regularly for all types of nuisances (flies, pests, dust, litter and illegal dumping, birds and odours) and where any action is deemed necessary the appropriate steps are taken in accordance with the EMS.

## 11 Management Structure of the Site

### Organisation

11.1 The Management Structure of Muckish Landfill site is set out in Figure 11.1 below.

**Figure 11.1 Management Structure**



11.2 An Environmental Liability Risk Assessment has not been carried out at this facility as the landfill site is closed it is not a requirement of the licence.

### Management Responsibility

11.3 Senior Engineer: Overall responsibility for the management of the site and ensuring compliance with the Waste Licence. Delegation of authority and responsibility to ensure the effective management of the facility and licence compliance.

11.4 Executive Engineer: Responsible for overall compliance with EPA Licence.

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## Appendix A - Monitoring Information

**Appendix A - Monitoring Information**

**Table A1 Groundwater Parameters and Monitoring Frequencies**

Bi-Annually
Visual Inspection
Temperature
Groundwater Level
pH
Electrical Conductivity
Ammoniacal Nitrogen
Dissolved Oxygen
Chloride
Iron
Potassium
TOC
TON
Phenols
Sodium

**Table A2 Surface Water Parameters and Monitoring Frequencies**

Bi-Annually
Visual Inspection
Temperature
Total Suspended Solids
pH
Electrical Conductivity
Ammoniacal Nitrogen
Dissolved Oxygen
Chloride
BOD
COD

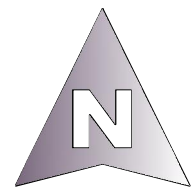
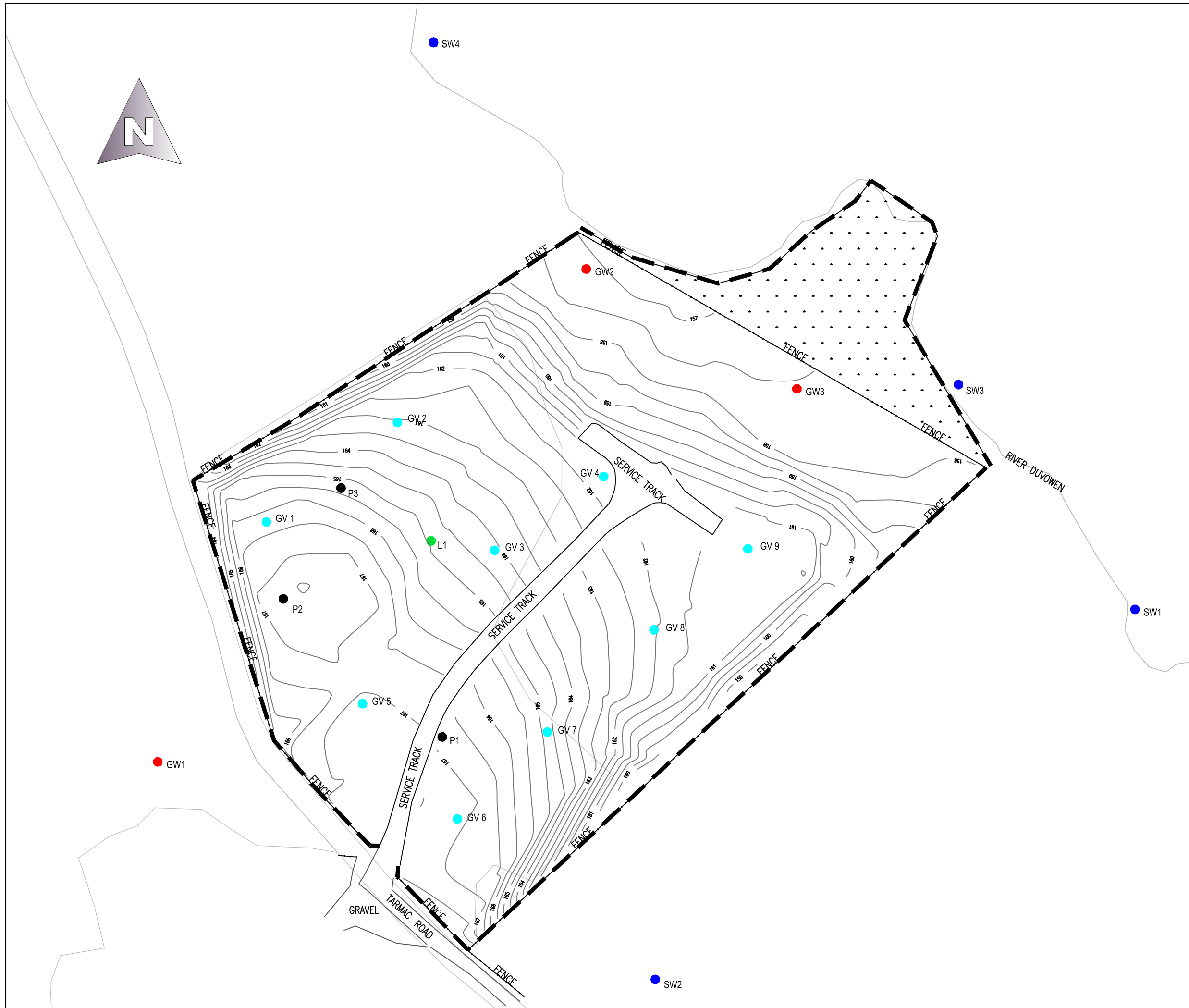
**Table A3 Leachate Parameters and Monitoring Frequencies**

Bi-Annually
Visual Inspection
Leachate Level
Temperature

pH
Electrical Conductivity
Ammoniacal Nitrogen
COD
BOD
Chloride
Dissolved Oxygen
TON
Iron

**Table A4 Landfill Gas Parameters and Monitoring Frequencies**

Bi-Annually
Atmospheric Pressure
Carbon Dioxide
Methane
Oxygen
Temperature



**NOTES**

1. Verifying Dimensions.  
The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.  
Any information concerning the location of existing services indicated on this drawing is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.
3. Issue of Drawings.  
Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg, dxf etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipient's own risk. RPS will not accept any responsibility for any errors arising from the use of these files, either by human error by the recipient, listing of un-dimensioned measurements, compatibility issues with the recipient's software, and any errors arising when these files are used to aid the recipient's drawing production, or setting out on site.

4. Keys:

- GV Gas Vents Locations
- GW Groundwater Monitoring Boreholes
- L Leachate Monitoring Location
- SW Surfacewater monitoring Locations
- P Gas Monitoring Locations

rev	amendments	drawn	date

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Client  
**Donegal County Council**

Project  
**Donegal Landfill Site Reporting 2015**

Title  
**Muckish LFS - Monitoring Points**

Drawing Status Preliminary	Sheet Size A3	Drawing Scale 1:1000
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Drawing Number <b>IBR0697 /009</b>	Rev <b>0</b>
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Project Leader AMcG	Drawn By AMB	Date May '15	Initial Review CG
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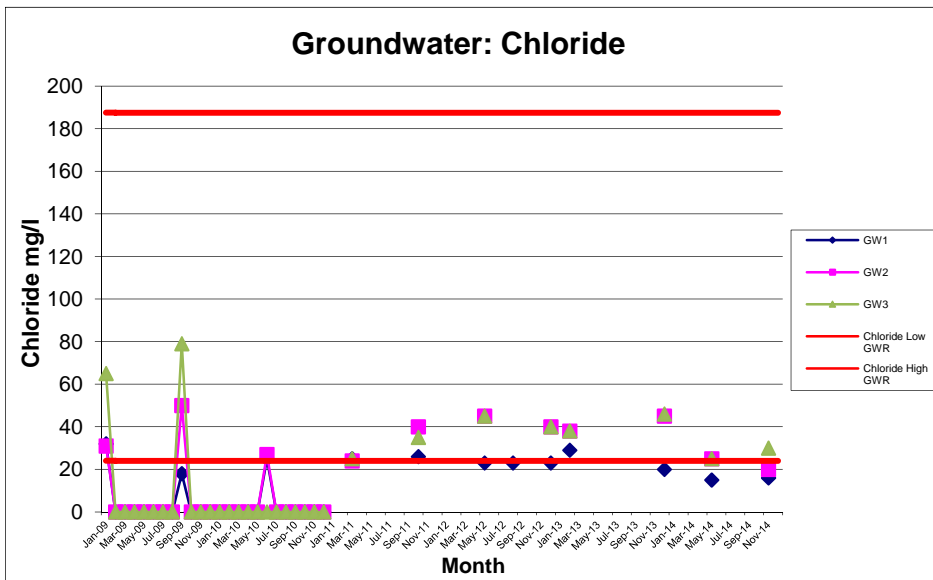
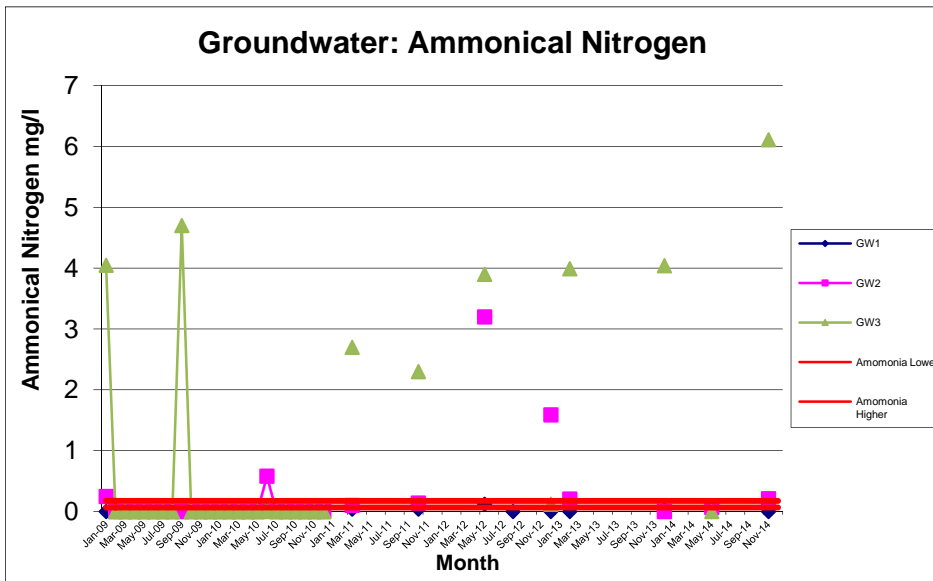
## Appendix B - Results of Monitoring



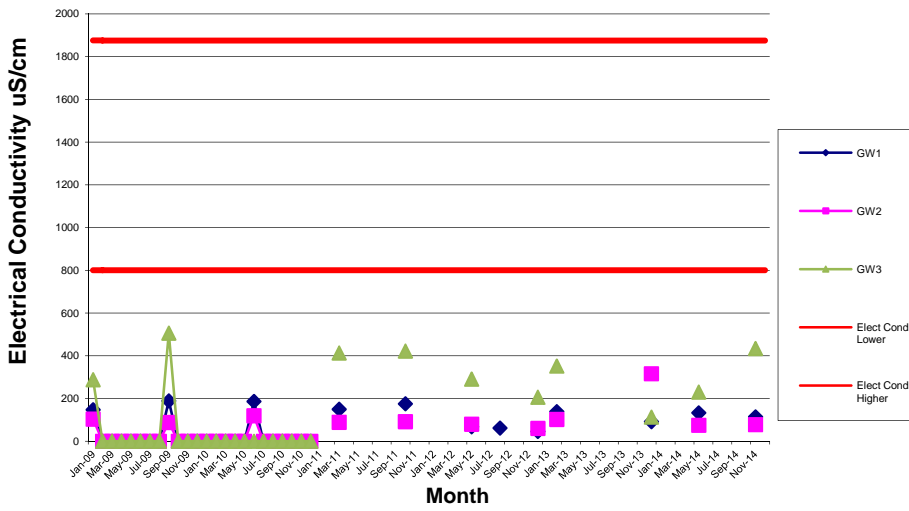
Location		Muckish, Falcarragh, Co Donegal											
Sample Type		Groundwater											
Site No		GW1											
Date of Sample		Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Lab No						142502740							
pH						6.67						5.81	
Temp	C					12						10.9	
Electrical Conductivity	uS/cm					133						114.3	
Ammonical Nitrogen	mg/l					<0.04						<0.04	
COD	mg/l												
BOD	mg/l												
Dissolved Oxygen	mg/l					7.65						10.1	
SS	mg/l												
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l					15						16	
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Dissolved Iron	ug/l					92.7						97	
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l					2.4						1.35	
Sodium	mg/l					11.2						8.34	
Sulphate	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l					13.62						11.47	
Total Oxidised Nitrogen	mg/l					0.74						0.69	
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Fluoride	mg/l												
Total Phenols	mg/l					<0.15						<0.15	
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l												
Nitrate	mg/l												
Phosphate - ORTHO	mg/l												
Phosphate - TOTAL	mg/l												
Total Coliforms												<1	
Facel Coliforms												<1	
Depth	m					3.2						4	

Location		Muckish, Falcarragh, Co Donegal											
Sample Type		Groundwater											
Site No		GW2											
Date of Sample		Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Lab No						142502740							
pH						5.61						5.84	
Temp	C					12						10.8	
Electrical Conductivity	uS/cm					74.9						77.8	
Ammonical Nitrogen	mg/l					0.065						0.21	
COD	mg/l												
BOD	mg/l												
Dissolved Oxygen	mg/l					3.61						8.6	
SS	mg/l												
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l					25						20	
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Dissolved Iron	ug/l					1257.8						1074	
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l					2.6						4.51	
Sodium	mg/l					10.4						9.12	
Sulphate	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l					22.88						31.07	
Total Oxidised Nitrogen	mg/l					0.532						0.3	
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Fluoride	mg/l												
Total Phenols	mg/l					<0.15						NT	
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l												
Nitrate	mg/l												
Phosphate - ORTHO	mg/l												
Phosphate - TOTAL	mg/l												
Total Coliforms												<1	
Facel Coliforms												<1	
Depth	m					0.2						1	

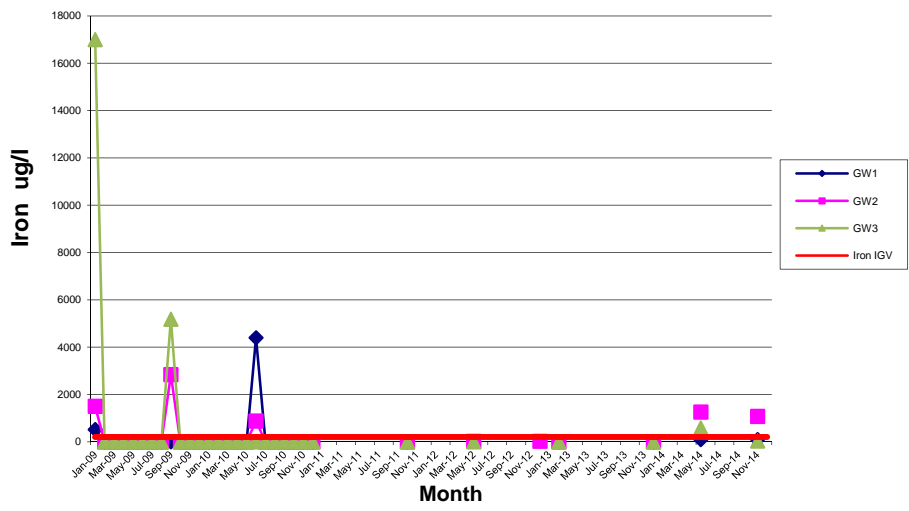
Location		Muckish, Falcarragh, Co Donegal											
Sample Type		Groundwater											
Site No		GW3											
Date of Sample		Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Lab No						142502740							
pH						6.36						6.63	
Temp	C					12						11.2	
Electrical Conductivity	uS/cm					230						434	
Ammonical Nitrogen	mg/l					<0.04						6.11	
COD	mg/l												
BOD	mg/l												
Dissolved Oxygen	mg/l					0.96						4.72	
SS	mg/l												
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l					25						30	
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Dissolved Iron	ug/l					585.5						34	
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l					12.1						8.36	
Sodium	mg/l					25.9						20.72	
Sulphate	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l					11.06						13.66	
Total Oxidised Nitrogen	mg/l					0.065						0.11	
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Fluoride	mg/l												
Total Phenols	mg/l					<0.15						<0.15	
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Microtox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l												
Nitrate	mg/l												
Phosphate - ORTHO	mg/l												
Phosphate - TOTAL	mg/l												
Total Coliforms												<1	
Facel Coliforms												<1	
Depth	m					0.2						1	



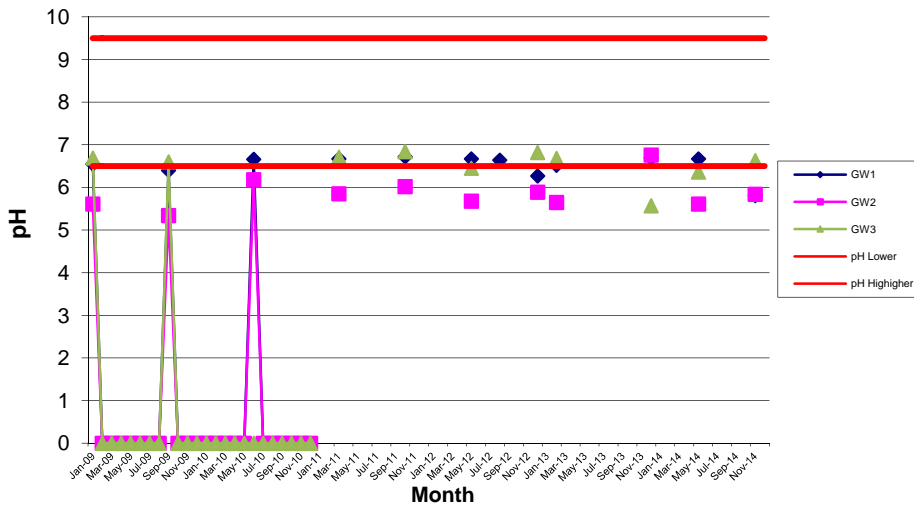
### Groundwater: Electrical Conductivity



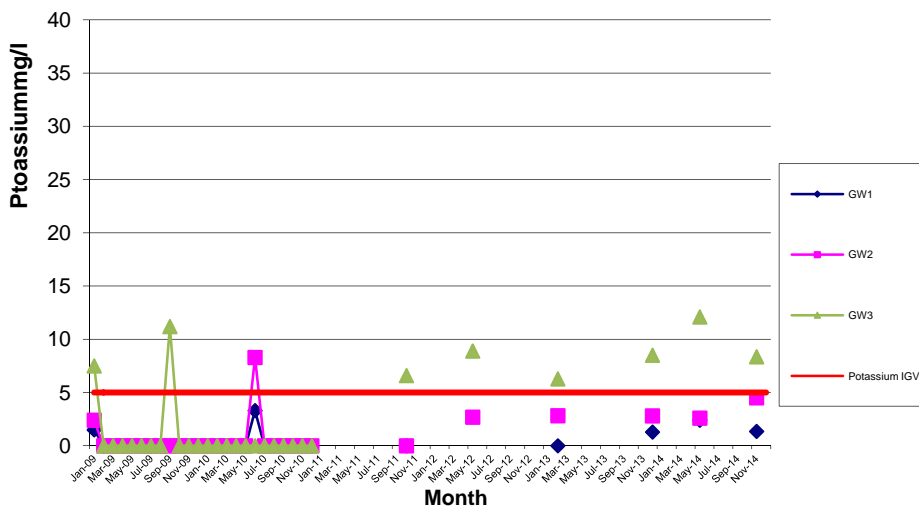
### Groundwater: Iron



### Groundwater: pH Levels



### Groundwater: Potassium



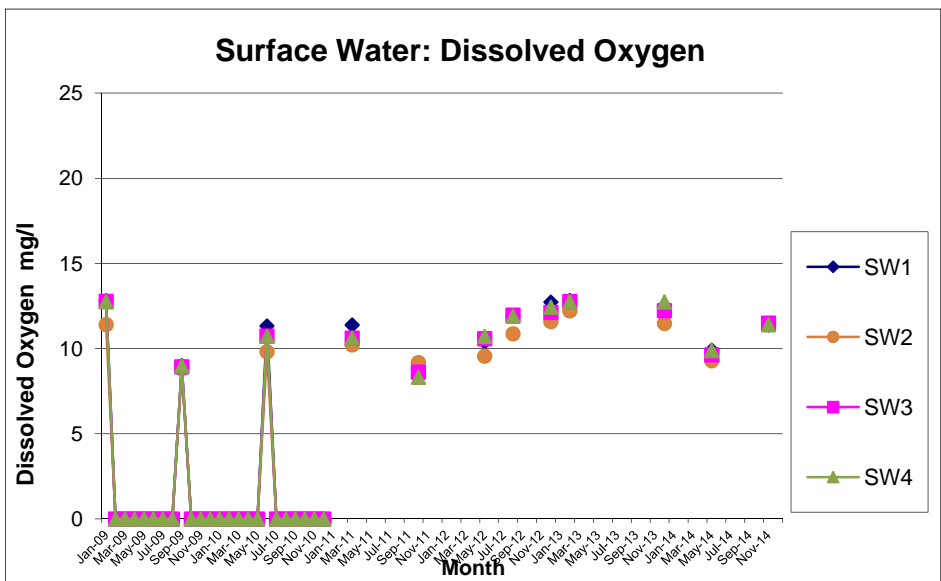
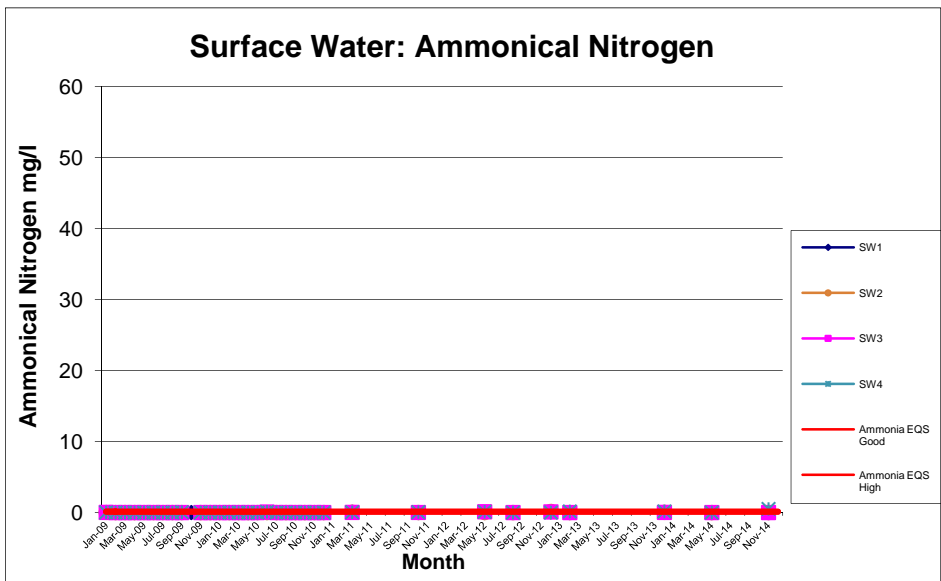
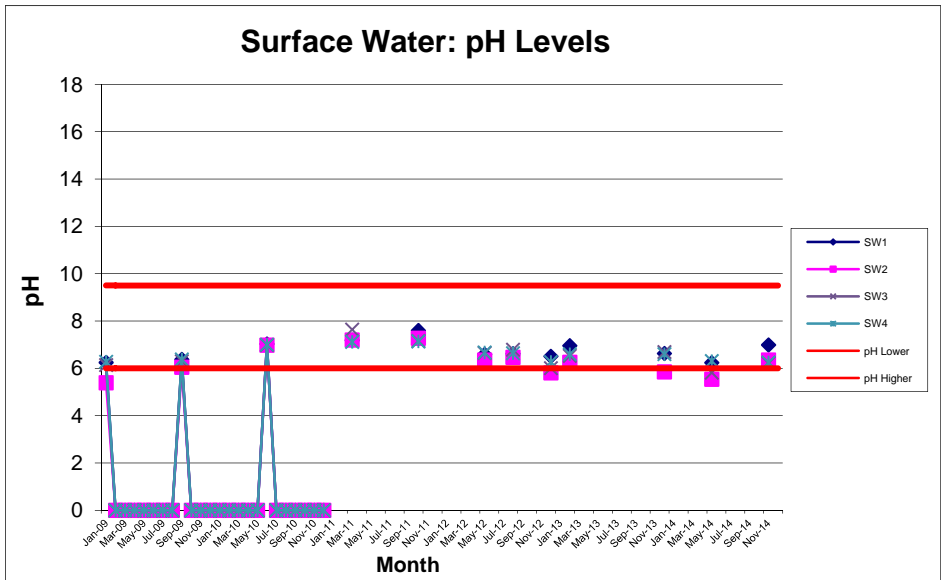




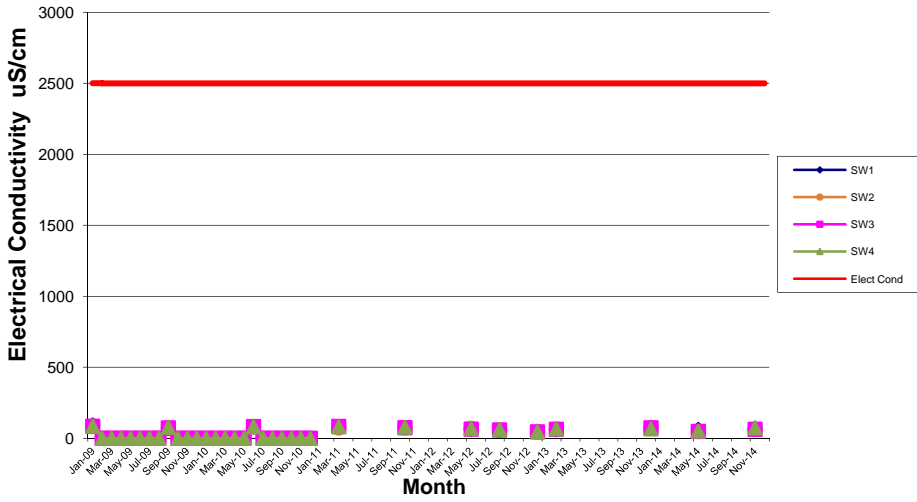




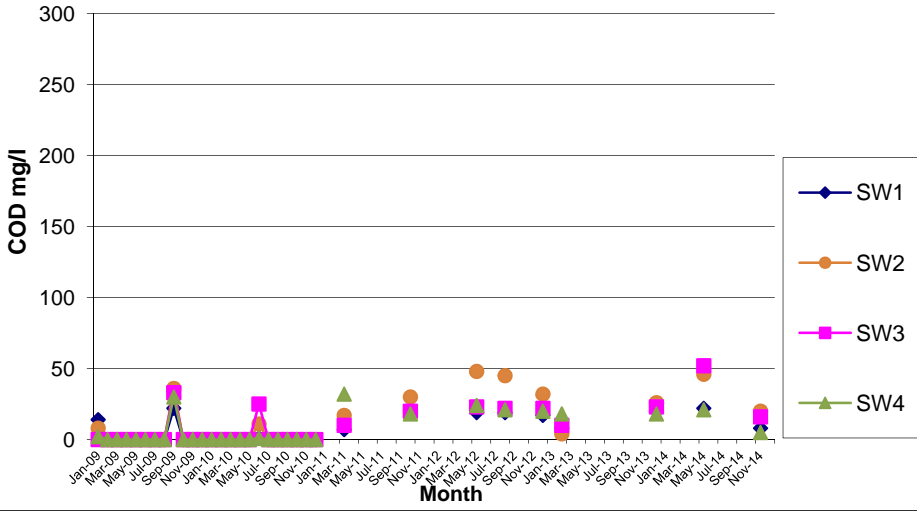




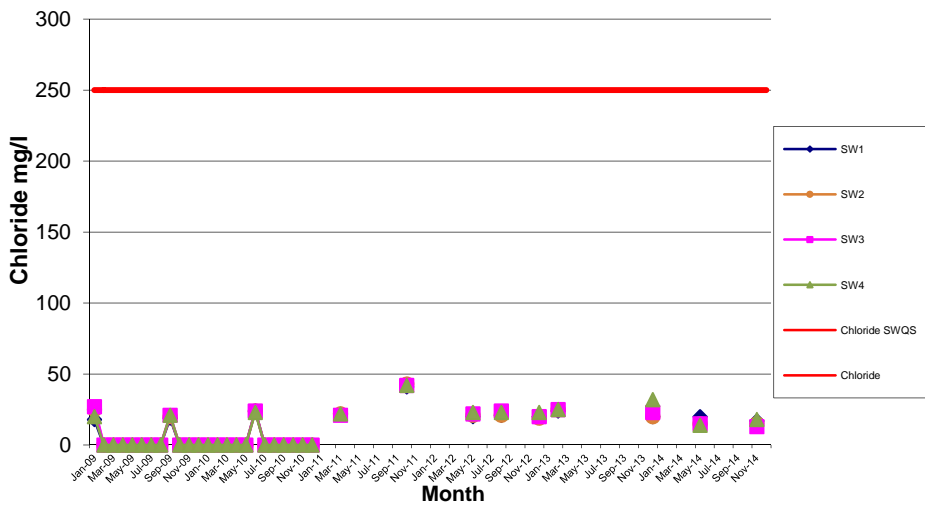
### Surface Water: Electrical Conductivity



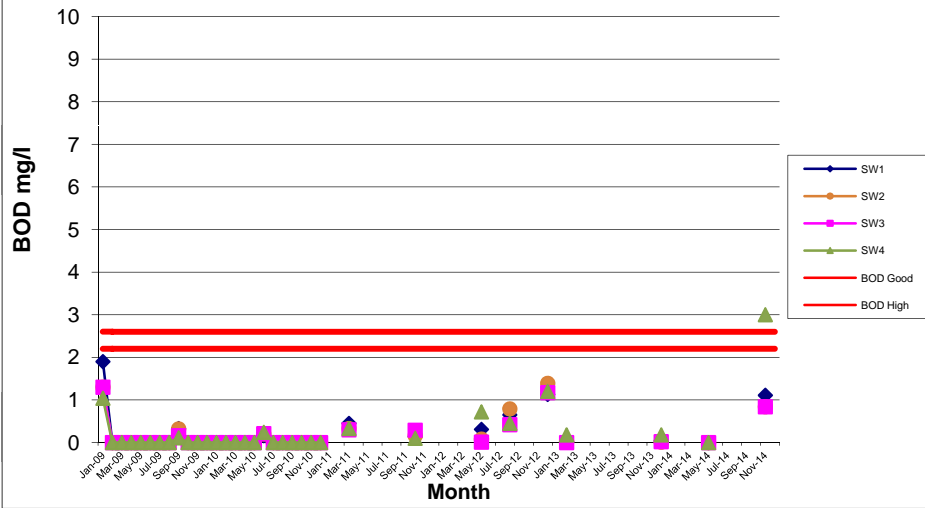
### Surface Water: COD



### Surface Water: Chloride



### Surface Water: BOD



Location		Muckish, Falcarragh, Co Donegal											
Sample Type		Leachate											
Site No		Leachate Holding Lagoon											
Date of Sample		Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Lab No													
pH						6.71						6.73	
Temp	C					12						13.5	
Electrical Conductivity	uS/cm					346						1424	
Ammonical Nitrogen	mg/l					0.35						3.28	
COD	mg/l					43						68	
BOD	mg/l					6						6.69	
Dissolved Oxygen	mg/l											74.2	
SS	mg/l												
Residue on Evaporator	mg/l												
Calcium	ug/l												
Cadmium	ug/l												
Chromium	ug/l												
Chloride	mg/l					30						100	
Chlorine	mg/l												
Copper	ug/l												
Cyanide	mg/l												
Total Iron	ug/l											0.023	
Lead	ug/l												
Magnesium	ug/l												
Manganese	ug/l												
Mercury	ug/l												
Nickel	mg/l												
Potassium	mg/l												
Sodium	mg/l												
Sulphate	mg/l												
Zinc	ug/l												
Total Alkalinity as CaCO3	mg/l												
Total Organic Carbon	mg/l												
Total Oxidised Nitrogen	mg/l					0.2						1.52	
Arsenic	mg/l												
Barium	mg/l												
Boron	ug/l												
Fluoride	mg/l												
Total Phenols	mg/l												
Phosphorous	mg/l												
Selenium	mg/l												
Silver	mg/l												
Mircrotox	Toxic Units												
Microtox	Toxic Units												
Nitrite	mg/l												
Nitrate	mg/l												
Phosphate - ORTHO	mg/l												
Phosphate - TOTAL	mg/l												
Total Coliforms													
Facel Coliforms													
Depth	m					2.00							

**Muckish Landfill**

StationName		Atmospheric Pressure	Carbon Dioxide	Methane	Oxygen
Muckish P1	22/05/2014	983	24.3	50	24
Muckish P2	26/05/2014	994	25.9	53	0.3
Muckish P3	26/05/2014	994	29.4	53.9	0.3
Muckish P1	27/11/2014	974	26.7	57.2	0.1
Muckish P2	27/11/2014	973	22.6	47.6	3
Muckish P3	27/11/2014	973	32.4	58.7	0.1

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## Appendix C - Water Balance Calculation



**MUCKISH WATER BALANCE CALCULATION**

Year	Status	Rainfall (mm)	Temp Area	Temp infiltration IRCA(m3)	Restored area Area	Restored area infiltration IRCA(m3)	Total Water	Leachate produced Lo(m3)	Leachate Volume tankered Lo(m3)
2014	Closed	1,213	0		20,500	2,487	2,487	2,487	2,786
<b>Total</b>		1,213						2,487	2,786

**Assumptions**

<b>IRCA=</b>	Fully Capped/Restored area infiltration of rainfall estimated (2-10%),EPA Manual	10%	%
<b>Restored area</b>	Area capped is 20,500.	20,500	m <sup>2</sup>
<b>Rainfall Data</b>	Data taken from Met Eireann Station Malin Head, Total Rainfall used.	1213.1	mm

## Appendix D - E-PRTR Regulations (AER Electronic Reporting System)



| PRTR# : W0126 | Facility Name : Muckish Landfill Site | Filename : W0126\_2014.xls | Return Year : 2014 |

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[Guidance to completing the PRTR workbook](#)

# AER Returns Workbook

Version 1.1.18

<b>REFERENCE YEAR</b>	2014
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## 1. FACILITY IDENTIFICATION

Parent Company Name	Donegal County Council
Facility Name	Muckish Landfill Site
PRTR Identification Number	W0126
Licence Number	W0126-01

### Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	Muckish
Address 2	Falcarragh
Address 3	
Address 4	
	Donegal
Country	Ireland
Coordinates of Location	-8.03537 55.0931
River Basin District	GBNIENW
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
<b>AER Returns Contact Name</b>	Julie McMahon
<b>AER Returns Contact Email Address</b>	julie.mcmahon@donegalcoco.ie
<b>AER Returns Contact Position</b>	Executive Engineer
<b>AER Returns Contact Telephone Number</b>	0749122787
<b>AER Returns Contact Mobile Phone Number</b>	0872861096
<b>AER Returns Contact Fax Number</b>	0749161304
<b>Production Volume</b>	0.0
<b>Production Volume Units</b>	
<b>Number of Installations</b>	0
<b>Number of Operating Hours in Year</b>	0
<b>Number of Employees</b>	1
<b>User Feedback/Comments</b>	
<b>Web Address</b>	

## 2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General
50.1	General

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

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

## 4. WASTE IMPORTED/ACCEPTED ONTO SITE

[Guidance on waste imported/accepted onto site](#)

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

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

4.1 RELEASES TO AIR

[Link to previous years emissions data](#)

| PRTR# : W0126 | Facility Name : Muckish Landfill Site | Filename : W0126\_2014.xls | Return Year : 2014 |

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SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT		METHOD			QUANTITY			
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

POLLUTANT		METHOD			QUANTITY			
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	Landgem	0.0	63731.91	0.0	63731.91
03	Carbon dioxide (CO2)	C	OTH	Landgem	0.0	174865.42	0.0	174865.42
02	Carbon monoxide (CO)	C	OTH	Landgem	0.0	31.16	0.0	31.16
07	Non-methane volatile organic compounds (NMVOC)	C	OTH	Landgem	0.0	410.9	0.0	410.9
55	1,1,1-trichloroethane	C	OTH	Landgem	0.0	0.51	0.0	0.51
56	1,1,2,2-tetrachloroethane	C	OTH	Landgem	0.0	1.47	0.0	1.47
34	1,2-dichloroethane (EDC)	C	OTH	Landgem	0.0	0.32	0.0	0.32
62	Benzene	C	OTH	Landgem	0.0	1.18	0.0	1.18
58	Trichloromethane	C	OTH	Landgem	0.0	0.03	0.0	0.03
35	Dichloromethane (DCM)	C	OTH	Landgem	0.0	9.45	0.0	9.45
65	Ethyl benzene	C	OTH	Landgem	0.0	3.88	0.0	3.88
73	Toluene	C	OTH	Landgem	0.0	28.55	0.0	28.55
60	Vinyl chloride	C	OTH	Landgem	0.0	3.63	0.0	3.63
78	Xylenes	C	OTH	Landgem	0.0	10.12	0.0	10.12
57	Trichloroethylene	C	OTH	Landgem	0.0	2.92	0.0	2.92

\* 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)

POLLUTANT		METHOD			QUANTITY			
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
247	Acetone	C	OTH	Landgem	0.0	3.23	0.0	3.23

\* 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:	Muckish Landfill Site				
Please enter summary data on the quantities of methane flared and / or utilised	T (Total) kg/Year	M/C/E	Method Code	Designation or Description	Facility Total Capacity m3 per hour
	Total estimated methane generation (as per site model)	0.0			N/A
	Methane flared	0.0			0.0 (Total Flaring Capacity)
	Methane utilised in engine/s	0.0			0.0 (Total Utilising Capacity)
	Net methane emission (as reported in Section A above)	0.0			N/A

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR#: W0126 | Facility Name : Muckish Landfill Site | Filename : W0126\_2014.xls | Return Year : 2014 |

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Please enter all quantities on this sheet in Tonnes

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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	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		Non	Non	Non	Non		
Within the Country	19 07 03	No	3010.5 in 19 07 02	landfill leachate other than those mentioned	D8	M	Weighed	Offsite in Ireland	Donegal County Council,D0009-01		Thorn rd,Magheranan,Letterkenny, Co.Donegal,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](#)