

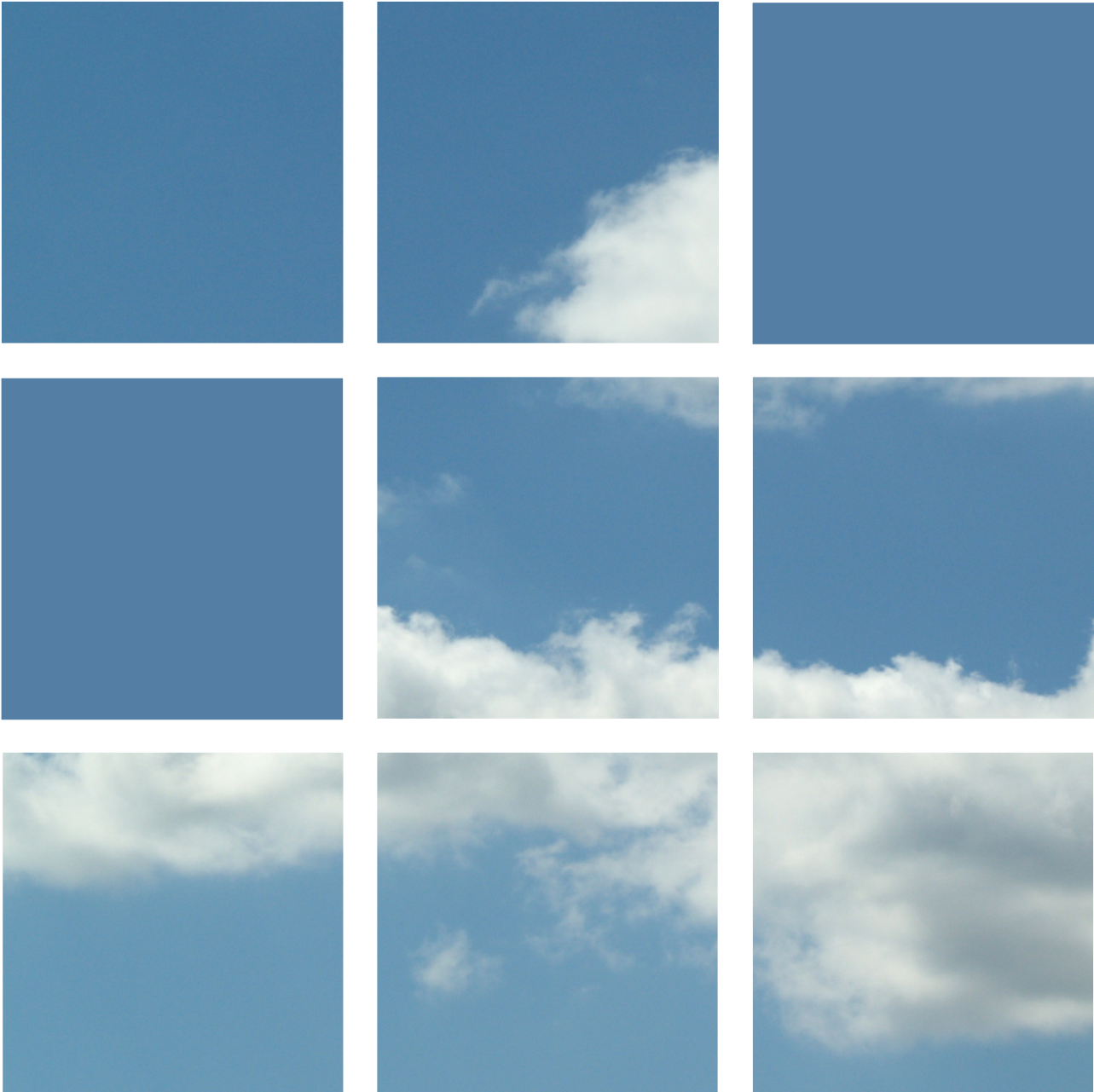


Donegal County Council

Annual Environmental Report 2015

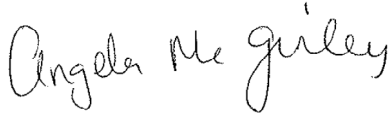

Glenalla Landfill Site

IBR0859 / April 2016



Document Control Sheet

Client	Donegal County Council					
Project Title	Annual Environmental Report 2015					
Document Title	Gleanalla Landfill Site (W0125-01)					
Document No.	IBR0859					
This Document Comprises	DCS	TOC	Text	No. of Tables	No. of Figures	No. of Appendices
	1	1	21	7	1	5

Rev.	Status	Author(s)	Reviewed & Approved By	Issue Date
1.0	Final	 _____ Angela McGinley, Senior Scientist	 _____ Donal Doyle, Director	7th April 2016

Copyright RPS Ireland Limited. All rights reserved.

The report has been prepared for the exclusive use of our client and unless otherwise agreed in writing by RPS Ireland Limited no other party may use, make use of or rely on the contents of this report.

The report has been compiled using the resources agreed with the client and in accordance with the scope of work agreed with the client. No liability is accepted by RPS Ireland Limited for any use of this report, other than the purpose for which it was prepared.

RPS Ireland Limited accepts no responsibility for any documents or information supplied to RPS Ireland Limited by others and no legal liability arising from the use by others of opinions or data contained in this report. It is expressly stated that no independent verification of any documents or information supplied by others has been made.

RPS Ireland Limited has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

No part of this report may be copied or reproduced, by any means, without the written permission of RPS Ireland Limited

Contents

1	Introduction.....	1
2	Waste Activities Carried Out at the Facility.....	3
2.1	Type of Waste.....	3
3	Quantities and Composition of Waste	4
3.1	Quantities of Waste for Restoration.....	4
4	Summary Report of Emissions.....	5
4.1	Environmental Monitoring Requirements	5
4.2	Monitoring Results	5
4.3	Groundwater	5
4.3.1	Upgradient	6
4.3.2	Down Gradient.....	6
4.4	Surface Water.....	8
4.5	Leachate	10
4.6	Landfill Gas.....	10
5	Volume of Leachate Produced and Volume of Leachate Discharged	12
6	Topographical Site Survey	13
7	Reported Incidents and Complaints Summaries	14
8	Review of Nuisance Controls.....	15
9	Management Structure of the Site	16
9.1	Organisation	16
9.2	Management Responsibility	16
10	Programme for Public Information	17
11	Capping and Restoration of the Site	18
12	Report on Staff Training	19
13	Resources and Energy Consumption Summary.....	20
14	Report on Development Work Undertaken During the Reporting Period, and a Timescale for those Proposed During the Coming Year.....	21

Appendices

Appendix A – Drawings

Appendix B - Monitoring Information

Appendix C - Results of Monitoring

Appendix D - Water Balance Calculation

Appendix E - E-PRTR

1 Introduction

This Annual Environmental Report (AER) has been prepared to meet the requirements of Schedule E and F of Waste Licence W0125-1 for Glenalla Landfill. This report provides an environmental review of the site from January to December 2015.

On the 4th of December 2001 the Environmental Protection Agency granted the Council a Waste Licence (registration number W0125-1) for the orderly closure, capping and restoration of the landfill facility, in accordance with the Third Schedule of the Waste Management Act, 1996. Donegal County Council ceased operational activity at Glenalla Landfill Site after the Christmas period in December 2001. Subsequently, Donegal County Council was only permitted to accept inert waste for disposal for the purposes of restoration and aftercare of the site. The quantity of inert waste to be accepted is limited to 46,000 tonnes. The site was formally restored in 2005/6. The Council continues to manage the facility to ensure that activities have not caused environmental pollution and carries out regular environmental monitoring. All monitoring data is submitted to the EPA.

Glenalla Landfill is an unlined, capped facility, historically operated on the dilute and disperse principle, whereby leachate generated by rainfall infiltration and the decomposition of the landfilled waste is allowed to disperse into the surrounding environment. The landfill site is situated in a low-lying hollow that has been infilled by peat deposits constituting an area of blanket bog. These deposits can represent an effective hydraulic barrier to the downward percolation of leachate. The disposal of waste was undertaken by the landraise method, whereby tipping took place directly onto the stripped ground surface raising its level to form an elevated landform flanked by low graded banks. As mentioned above the site was formally restored in 2005/6.

The landfill is situated in a fully rural setting, some 4km east of Milford in an area of moderate relief that forms part of the upper catchment of the Glenalla River. This watercourse dissects the southwest boundary of the landfill site. The ground surface of the closed hollow in which the landfill is based generally falls in a south to south westerly direction under a shallow gradient towards the Glenalla River. The downstream extent of the landfill is therefore represented by a small area situated on the southern site boundary. The area to the north and northeast of the site represents the principal upstream area.

A summary of Facility Information is provided in Table 1.1 below.

Table 1.1 Facility Information Summary

AER Reporting Year	2015
Licence Register Number	W00125-01
Name of site	Glenalla Landfill Site
Site Location	Glenalla, Milford, County Donegal
NACE Code	3821
Class/Classes of Activity	Landfill

2 Waste Activities Carried Out at the Facility

2.1 Type of Waste

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 deposition of inert waste;
- **Class 4 Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons:** This activity is limited to leachate collection and treatment; and
- **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.

3 Quantities and Composition of Waste

3.1 Quantities of Waste for Restoration

In accordance with Condition 1 of the waste licence only inert waste may be deposited at the facility. A maximum of 46,000 tonnes shall be accepted for the purposes of restoration and aftercare. The quantity of waste received during the reporting period and each previous year at the facility are presented in Table 3.1.

Glenalla landfill site was closed in 2001 and no material was imported or exported until restoration works commenced during 2005. The material imported during 2005 was inert and specifically for the purpose of restoring the site.

Table 3.1 Waste Quantities Accepted (Tonnes)

Waste Types	1998	1999	2000	2001	2002	2003	2004	2005
Total (tonnes)	550	1,565	5,722	10,093	0	0	0	34,474*

* = inert material imported for restoration.

4 Summary Report of Emissions

4.1 Environmental Monitoring Requirements

There is no continuous air, groundwater, surface water or wastewater (sewer) monitoring at Glenalla 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 B. It should be noted that monitoring is reduced in frequency from quarterly to bi-annual and annual parameters are in abeyance as agreed with the Agency.

Details of the monitoring locations are shown on Drawing IBR0859/010.

4.2 Monitoring Results

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

4.3 Groundwater

The groundwater results contained in this report were assessed against the following:

- EPA Interim Guideline Values¹ (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 (GTV).

GW1 is located up-gradient of the landfill and GW2 and GW3 are immediately downstream. GW2 was re-drilled during 2006. The direction of groundwater flow is presented in Figure 4 in Appendix A. Parameters to be monitored and frequencies as required by the Waste Licence are listed in Appendix B. Since restoration the Agency has agreed to reduce monitoring frequency to bi-annual and the requirement to test for annual frequency parameters has been dropped. All results in tabular and graphical format are contained in Appendix C.

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

4.3.1 Upgradient

The GTV guideline value for ammonia is 0.175 mg/l. No elevated concentrations of ammonia were recorded up gradient of the site in GW1 during the monitoring period. Trends for ammonia in groundwater are provided in graph format in Appendix C.

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

4.3.2 Down Gradient

A number of parameters monitored bi-annually in the down gradient boreholes exceed the GTV and / or IGV guideline values. These are highlighted in Table 4.1 below and in graph format in Appendix C.

Elevated concentrations of ammonia were recorded down gradient of the site in boreholes GW2 and GW3. These concentrations were elevated relative to the screening value on both occasions in borehole GW2, ranging from 6.1 to 10.6 mg/l N and GW3 ranging from 0.893 to 3.25 mg/l N. These results are consistent with previous results for these wells. It should also be noted that these groundwater wells are located in close proximity to the unlined waste body.

Table 4.1 Groundwater Concentrations 2015

	Date	Ammonia (as N)	Chloride	Conduct'y @ 20°C	Depth	Dissolved Oxygen (Measure't)	Iron	pH	Phenols	Potassium	Sodium	Temp	TOC	TON
GW 1	Jun-15	<0.04	47.64	303	0.8	4.48	<1	6.72	<0.15	2.5	18.3	14.3	2.18	0.16
GW 2	Jun-15	6.1	34.74	558	0.7	4.54	599	7.08	<0.15	4.6	23	16.1	2.69	<0.1
GW 3	Jun-15	3.25	28.79	431	0.5	4.74	9440	6.6	0.15	1.7	13.9	16.2	19.23	<0.1
GW 1	Oct-15	0.013	29.78	290	0.6	3.7	<20	6.72	<150	3.2	17.3	11.2	1.71027	0.029
GW 2	Oct-15	10.6	34.74	657	1.1	2.5	<20	6.96	<0.15	7.5	30	12	2.85129	0.007
GW 3	Oct-15	0.893	9.93	240	0.6	3.2	2900	6.4	<150	1.3	11.9	12	18.57723	0.288

The IGV guideline value for potassium is 5 mg/l. An elevated concentration of potassium was recorded down gradient of the site in borehole GW2 with a concentration of 7.5 mg/l.

Significantly elevated concentrations of iron were recorded down gradient of the site in GW2 and GW3 when levels of iron ranging from 599 and 2900 µg/l were recorded in the monitoring period. It should be noted that iron occurs naturally in Donegal groundwater as it is associated with naturally occurring conditions such as iron rich bedrock or the presence of reducing conditions, that is, anaerobic environment such as peat.

No elevated concentrations in exceedance of the appropriate GTV or IGV values down gradient of the site have been recorded for the remaining parameters measured throughout the monitoring period.

The landfill site was developed to operate on the dilute and disperse principle and results show that groundwater is being impacted from leachate generated within the landfill. It should be noted that groundwater monitoring boreholes in Glenalla are adjacent to / within the unlined waste body and it is expected that concentrations in groundwater have reduced further down gradient of the site.

A hydrogeological risk assessment was undertaken in 2015 and submitted to the EPA. There is uncertainty about the information provided by the downstream wells (GW2 and GW3) for a number of reasons (integrity of the wells and their close proximity to the site). Ideally these wells should be replaced and more remote wells installed, however there are number of practical issues at this site with regards to installing new boreholes.

A series of proposed mitigation measures and additional investigation have been proposed to address the data gaps at the site, to facilitate a more detailed understanding of the hydrogeological regime and to assess the risk posed to downgradient receptors.

4.4 Surface Water

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).

Surface water monitoring is carried out at SW1, SW2, SW3 and SW4. SW1 is reflective of the quality of the surface water upstream of the landfill site. The parameters and frequencies of monitoring required by the Waste Licence are as listed in Appendix B, however since restoration of the site the Agency has agreed to a frequency of bi-annual monitoring and to drop the requirement for the annual parameters. The results of monitoring are highlighted in Table 4.2 below and presented in graphical form in Appendix C.

The EQS guideline value for ammonia for good status is 0.140 mg/l N. Upstream of the site, at surface water monitoring point S1, no elevated concentrations of ammonia were recorded. This reflects the baseline conditions of the surface water upstream of the site.

Elevated concentrations of ammonia were recorded downstream of the site at surface water monitoring points S3 and S4. Elevated concentrations of ammonia in monitoring point S3 ranged from 1.16 to 1.53 mg/l N. At monitoring point S4, elevated concentrations of ammonia ranged from 1.05 to 1.45 mg/l N.

No elevated concentrations in exceedance of the appropriate EQS and SWQS values have been recorded for all other parameters measured bi-annually throughout the monitoring period both upstream and downstream of the site.

The hydrogeological risk assessment in 2015 found that the site is currently impacting on surface waters in the vicinity of the landfill. A number of pathways for leachate to migrate to Glenalla River exist and additional investigation and monitoring is recommended to ascertain the level of risk posed and to develop appropriate mitigation measures.

Table 4.2 Surface Water Concentrations 2015

Location	Date	Ammonia (as N)	BOD	COD	Chloride	Conductivity @ 20°C	Dissolved Oxygen	pH	SS	Temp
SW 1	Jun-15	<0.04	<1	20	31.76	113.8	10.6	6.98	<6	12.2
SW 2	Jun-15	<0.04	<1	22	33.75	112.6	10.7	6.87	<6	11.8
SW 3	Jun-15	1.16	<1	23	30.77	144	10.8	6.77	<6	11.9
SW 4	Jun-15	1.05	<1	21	31.76	140.7	10.8	6.94	<6	11.7
SW 1	Oct-15	0.008	1.58	39	18.86	96.2	10.2	6.49	6.5	12.2
SW 2	Oct-15	0.004	1.49	39	18.86	94.6	10.1	6.41	6	11.9
SW 3	Oct-15	1.53	2.05	35	22.83	135.6	10.2	6.59	17.25	11.9
SW 4	Oct-15	1.45	1.63	34	19.85	139.6	10.2	6.9	9.75	11.9

4.5 Leachate

Leachate is monitored at one location at the facility, L1. Leachate quality varies during the lifetime of a landfill depending on the stage of decomposition of waste. Results from L1 are presented in Appendix C. Some characteristic parameters have been compared with those of 'typical' raw leachate in Table 4.3 below.

Table 4.3 Landfill Gas Results 2015

PARAMETER	Glenalla Landfill Site		From 30 samples from UK/Irish landfills accepting domestic waste Results in mg/l		
	June Conc	Oct Conc	Min.Conc	Max.Conc	Mean
Ammonia (mg/N)	70	38.9	<0.2	1700	491
BOD	<1	<1	4.5	>4800	>834
COD	34	27	<10	33,700	3078
Chloride (mg/l)	92.31	112.16	27	3410	1256
Iron (mg/l)		-	0.4	664	54.4
Potassium (mg/l)		-	2.7	1480	491
Sodium (mg/l)		-	12	3000	904
TON (mg/l N)	0.6	0.132	/	/	/
Conductivity (µS/cm)	1305	1160	503	19,200	7789
pH (pH units)	7.27	7.45	6.4	8.0	7.2

Table 4.3 compares raw leachate concentrations detected at Glenalla 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 weak.

4.6 Landfill Gas

Landfill gas is monitored at three locations at the facility, LG1, LG2, and LG3 which are all located in waste. Both LG1 and LG3 were replaced during restoration works. Maintenance works were carried out previously to secure access to these wells.

Monitoring of the landfill gas was undertaken during June and October of the monitoring period and results are shown in Table 4.4 below. No samples were obtained from LG3 in June 2015 as the well was inaccessible. The results show a variation in methane and carbon dioxide during the monitoring period.

Table 4.4 Landfill Gas Results 2015

Location	Date	Atmospheric Pressure	Carbon Dioxide %v/v	Methane %v/v	Oxygen %v/v
LG1	Jun-15	1030	0.1	0.24	20.5
LG2	Jun-15	1030	0.1	0.1	21.5
LG3	Jun-15	NT	NT	NT	NT
LG1	Oct-15	1003	28.1	55.8	0.5
LG2	Oct-15	1003	5.1	3	14.5
LG3	Oct-15	1003	27.4	54.7	2.2

5 Volume of Leachate Produced and Volume of Leachate Discharged

A water balance calculation has been undertaken and is contained in Appendix D. This indicates that the estimated volume of leachate produced at the site for 2015 was approximately 3,042 m³.

Leachate is tankered from the collection lagoon on the site twice per week. The total volume of leachate tankered during the last reporting period was 2,880m³. Table 5.1 below shows a breakdown of volumes tankered.

Table 5.1 Breakdown of Leachate Volumes by Month in 2015

Month	Leachate Volume (m ³)
January	264.20
February	265.16
March	331.06
April	264.18
May	65.62
June	133.20
July	219.94
August	371.38
September	239.62
October	257.06
November	251.60
December	217.42
Total:	2,880

6 Topographical Site Survey

A topographical survey of the site was carried out in May 2006 post restoration. Copies of the survey were forwarded to the Agency in March 2007.

7 Reported Incidents and Complaints Summaries

Other than the reporting of on-going emissions exceedances detected in the routine monitoring programme (4 in total), no other incidents occurred during the monitoring period and no complaints were received.

Three non compliances were noted on 05/08/15 and 17/11/15 during a site inspection. These were in relation to non-submission of groundwater risk screening reports and exceedance of a surface water trigger.

The groundwater risk screening report was submitted on 16/12/15.

8 Review of Nuisance Controls

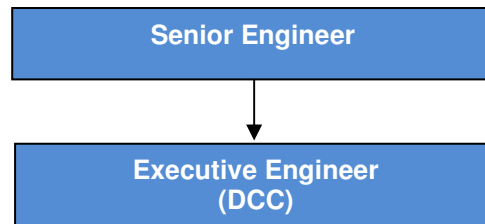
As the facility is non-operational and fully restored, programmes associated with the monitoring and control of potential nuisances are now in abeyance. Site inspections conducted during periodic monitoring check for any sign of nuisance and if any is detected then appropriate measures are taken as per the EMS for the site.'

9 Management Structure of the Site

9.1 Organisation

The Management Structure of Glenalla Landfill site is set out in Figure 10.1 below.

Figure 9.1 Management Structure



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.

9.2 Management Responsibility

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.

Executive Engineer: Responsible for overall compliance with EPA Licence.

10 Programme for Public Information

A public communication programme has been initiated in accordance with Condition 2 of the Waste Licence to ensure that information concerning the environmental performance is available at reasonable times. The public may view environmental records at the Donegal County Council Environmental Headquarters at Three Rivers Centre in Lifford. Details regarding this programme are contained in Section 2 of the Environmental Management System Manual.

11 Capping and Restoration of the Site

The site was fully restored in 2005/6 in accordance with the approved Restoration and Aftercare Plan dated May 2004.

It was agreed with the Agency in July 2006 that monitoring and reporting frequency would be reduced to bi-annually. It is hoped that when the benefits of restoration have been fully demonstrated that the Council can surrender the licence for this facility.

It was further agreed with the Agency in November 2009 that the annual parameters (including List I & II parameters) could be dispensed with on the restored sites such as Glenalla.

12 Report on Staff Training

No training has been undertaken as the facility is now closed and there are no operational personnel on the site.

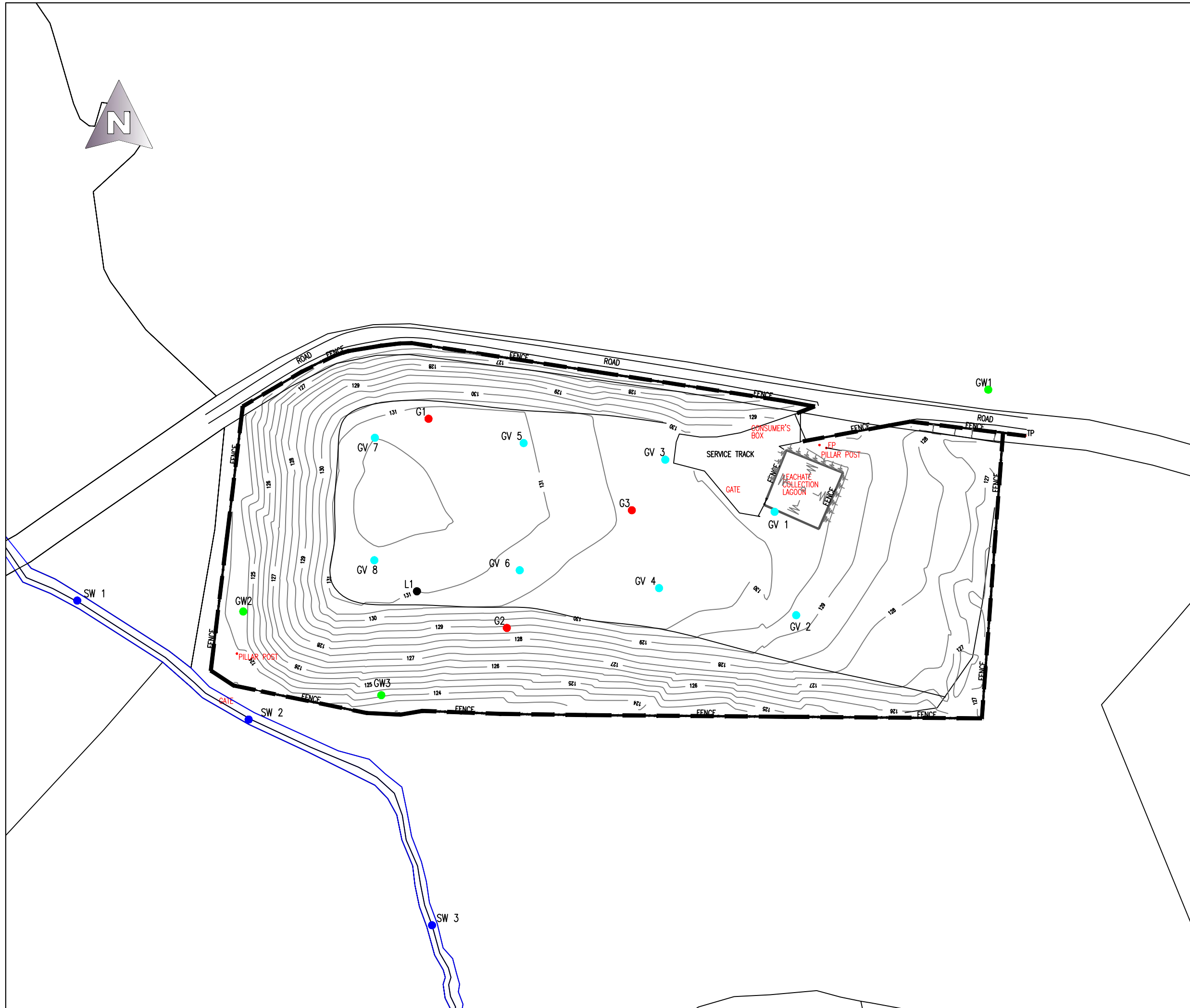
13 Resources and Energy Consumption Summary

An energy efficiency audit has not been carried out at this facility as the landfill site is closed it is not a requirement of the licence. Energy consumption data for the site is unavailable.

14 Report on Development Work Undertaken During the Reporting Period, and a Timescale for those Proposed During the Coming Year

None to report for the period.

Appendix A Drawings



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 recipients 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 recipients drawing production, or setting out on site.

4. Datum:

5. Keys:
- GV Gas Vents
 - L1 Leachate Monitoring Point
 - G1 Gas Monitoring Point
 - SW1 Surface Water Monitoring Point
 - GW1 Ground Waster Monitoring Point

A	Monitoring points updated	MC	Nov 15
rev	amendments	drawn	date

	RPS Consulting Engineers	T	+353 (0) 74 91 61927
	Enterprise Fund Business Centre	F	+353 (0) 74 91 61928
	Ballyraine	W	www.rpsgroup.com/ireland
	Letterkenny Co. Donegal	E	ireland@rpsgroup.com

Client
Donegal County Council

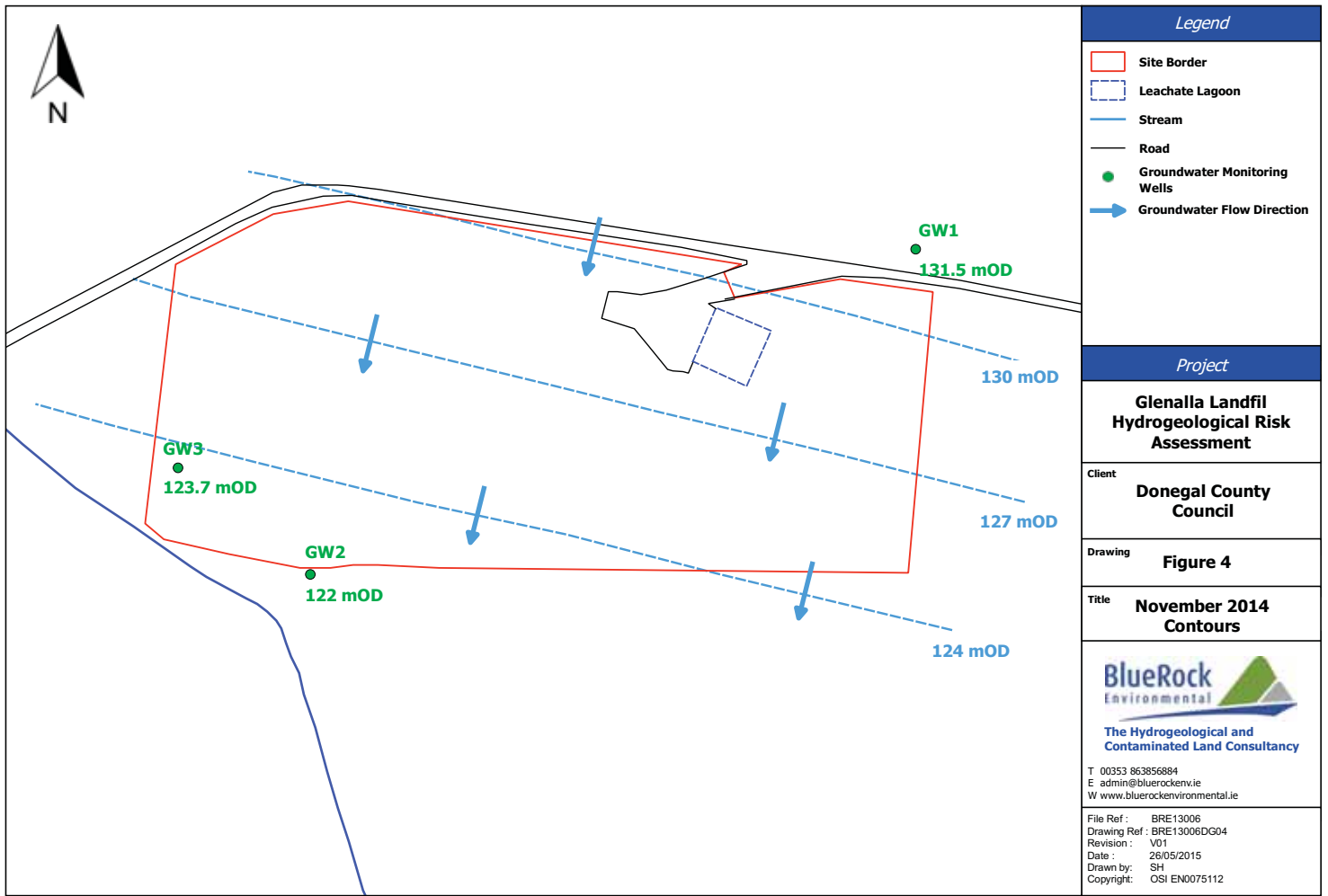
Project
Donegal Landfill Site Reporting 2015

Title
Glenalla LFS - Monitoring Points

Drawing Status	Sheet Size	Drawing Scale
Preliminary	A3	1:1000

Drawing Number	Rev
IBR0859/101	A

Project Leader	Drawn By	Date	Initial Review
DD	AMB	Apr '15	AMcG



Appendix B

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
TON

Table A4 Landfill Gas Parameters and Monitoring Frequencies

Bi-Annually
Atmospheric Pressure
Carbon Dioxide
Methane
Oxygen
Temperature

Appendix C

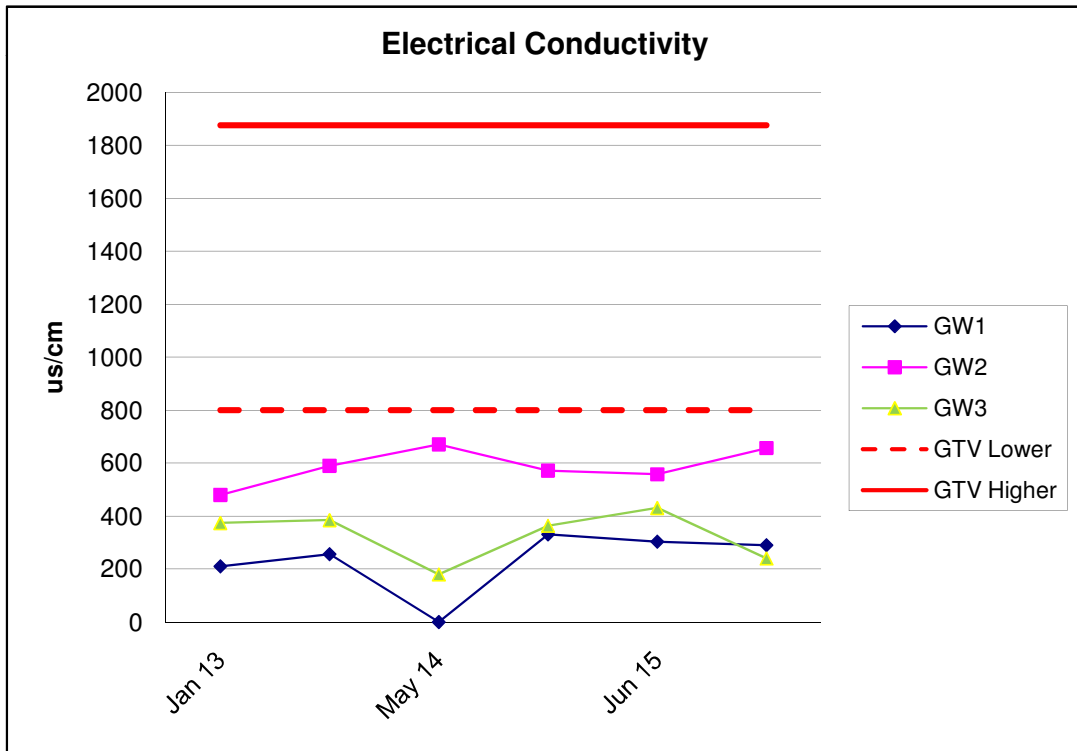
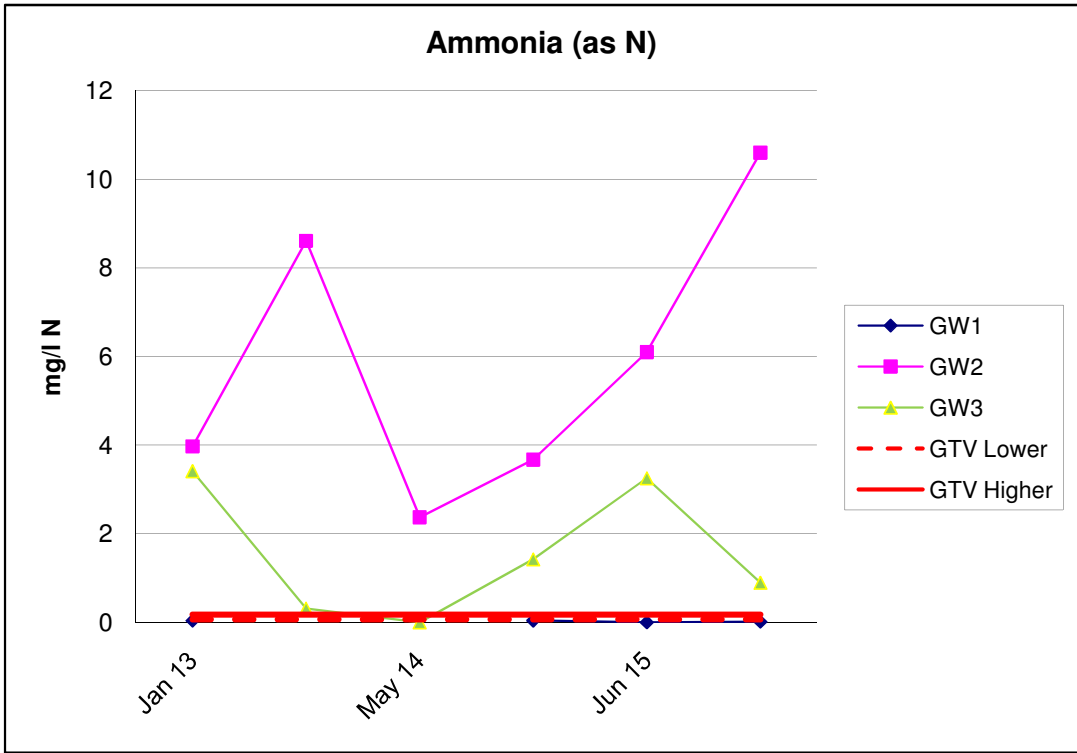
Results of Monitoring

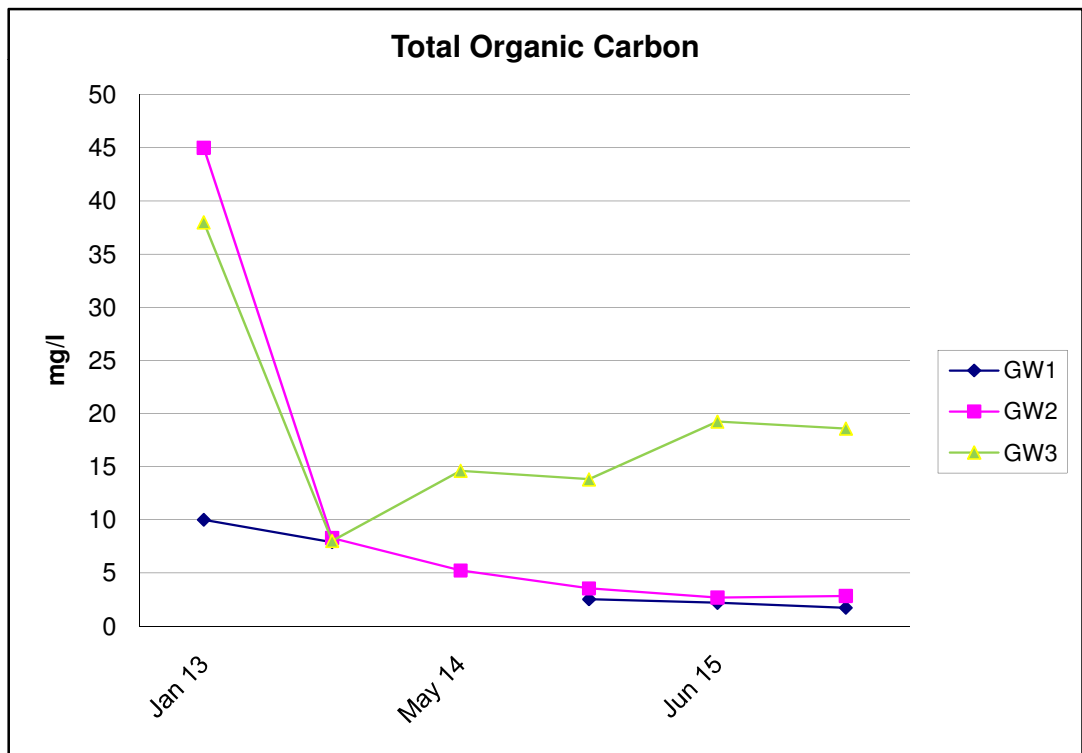
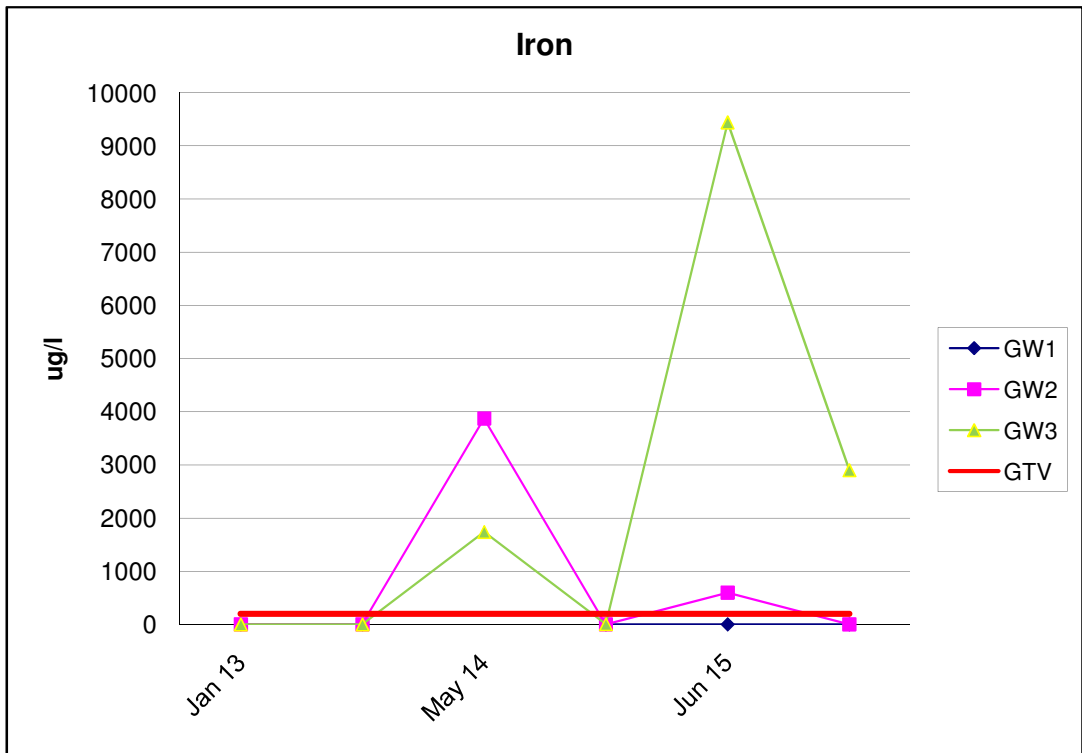
Location	Date	Ammonia (as N)	Chloride	Conduct'y @ 20°C	Depth	Dissolved Oxygen (Measure't)	Iron	pH	Phenols	Potassium	Sodium	Temp	TOC	TON
GW 1	Jun-15	<0.04	47.64	303	0.8	4.48	<1	6.72	<0.15	2.5	18.3	14.3	2.18	0.16
GW 2	Jun-15	6.1	34.74	558	0.7	4.54	599	7.08	<0.15	4.6	23	16.1	2.69	<0.1
GW 3	Jun-15	3.25	28.79	431	0.5	4.74	9440	6.6	0.15	1.7	13.9	16.2	19.23	<0.1
GW 1	Oct-15	0.013	29.78	290	0.6	3.7	<20	6.72	<150	3.2	17.3	11.2	1.71027	0.029
GW 2	Oct-15	10.6	34.74	657	1.1	2.5	<20	6.96	<0.15	7.5	30	12	2.85129	0.007
GW 3	Oct-15	0.893	9.93	240	0.6	3.2	2900	6.4	<150	1.3	11.9	12	18.57723	0.288

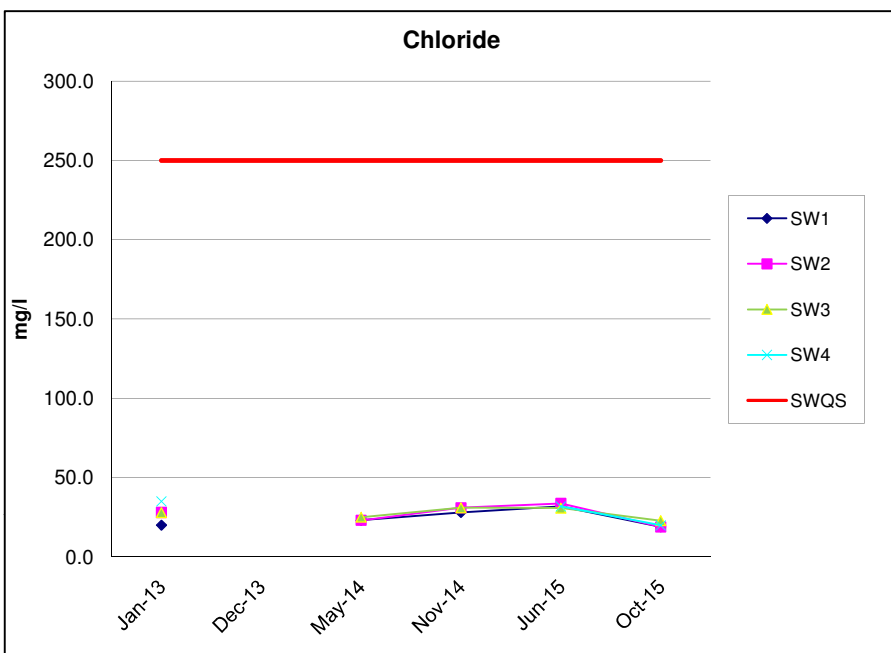
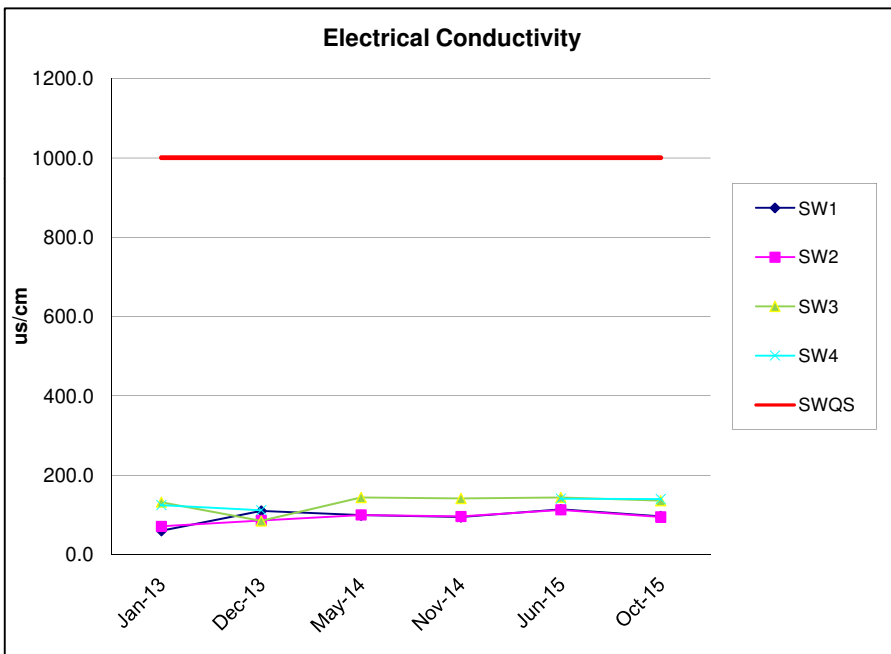
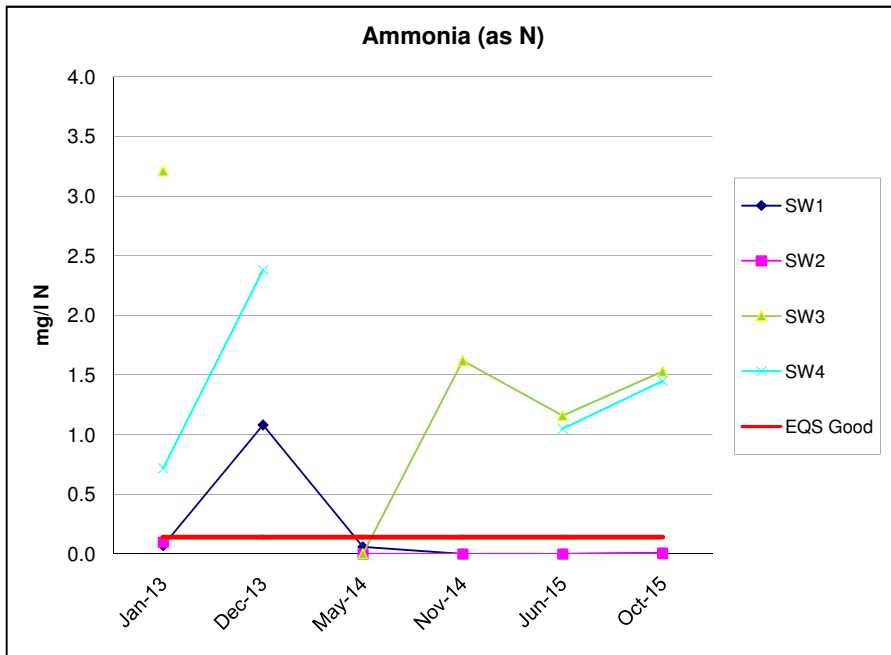
Location	Date	Ammonia (as N)	BOD	COD	Chloride	Conductivity @ 20°C	Dissolved Oxygen (Measurement)	pH	SS	Temp
SW 1	Jun-15	<0.04	<1	20	31.76	113.8	10.6	6.98	<6	12.2
SW 2	Jun-15	<0.04	<1	22	33.75	112.6	10.7	6.87	<6	11.8
SW 3	Jun-15	1.16	<1	23	30.77	144	10.8	6.77	<6	11.9
SW 4	Jun-15	1.05	<1	21	31.76	140.7	10.8	6.94	<6	11.7
SW 1	Oct-15	0.008	1.58	39	18.86	96.2	10.2	6.49	6.5	12.2
SW 2	Oct-15	0.004	1.49	39	18.86	94.6	10.1	6.41	6	11.9
SW 3	Oct-15	1.53	2.05	35	22.83	135.6	10.2	6.59	17.25	11.9
SW 4	Oct-15	1.45	1.63	34	19.85	139.6	10.2	6.9	9.75	11.9

Location	Sample Date	Ammonia (as N)	BOD	COD	Chloride	Conductivity @ 20°C	Depth	pH	Temp	TON	Visual Inspection
L 1	Jun-15	70	<1	34	92.31	1305	4	7.27	15.6	0.6	0
Lagoon	Jun-15	23.6	<1	35	46.65	747	1	7.89	16.6	<0.1	0
L 1	Oct-15	38.9	<1	27	112.16	1160	3.2	7.45	11.7	0.132	0
Lagoon	Oct-15	37.1	4.51	37	54.59	1534	0.5	7.07	12.2	0.031	0

Location	Date	Atmospheric Pressure	Carbon Dioxide	Methane	Oxygen
LG1	Jun-15	1030	0.1	0.24	20.5
LG2	Jun-15	1030	0.1	0.1	21.5
LG3	Jun-15	NT	NT	NT	NT
LG1	Oct-15	1003	28.1	55.8	0.5
LG2	Oct-15	1003	5.1	3	14.5
LG3	Oct-15	1003	27.4	54.7	2.2







Appendix D

Water Balance Calculation and Meteorological Data

GLENNALLA WATER BALANCE CALCULATION

Year	Status	Rainfall (mm)	Temp Restored area Area	Temp Restored area infiltration IRCA(m3)	Restored area Area	Restored area infiltration IRCA(m3)	Total Water	Leachate produced Lo(m3)	Leachate Volume Tankered
2015	Closed	1,484			20,500	3,042	3,042	3,042	2,880
Total		1,484						3,042	2,880

Assumptions

IRCA=	Fully Capped/Restored area infiltration of rainfall estimated (2-10% of ER),EPA Manual	10%	%
Restored area	Area capped is 20,500.	20,500	m ²
Rainfall Data	Data taken from Met Eireann Station Malin Head, Total Rainfall used.	1483.8	mm

Total rainfall in millimetres for Malin_head	Year	2015	2014	2013	2012
	Jan	176	162.2	140.9	134.7
Feb	85.8	189.9	74.1	68.1	
Mar	123.1	71.6	61.7	29.8	
Apr	64.7	33.4	61.6	46.3	
May	137	86.8	102.5	50.7	
Jun	56.1	48.6	85.5	141.1	
Jul	132.7	86	56.5	91.4	
Aug	111	95.3	92.6	87.3	
Sep	29.7	23	69.7	139.2	
Oct	71.9	131.4	103.8	123.5	
Nov	222.9	134.4	116	87.4	
Dec	272.9	150.5	178.6	149.3	
Annual	1483.8	1213.1	1143.5	1148.8	

Appendix E

E-PRTR (AER Electronic Reporting System)



[Guidance to completing the PRTR workbook](#)

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2015
-----------------------	------

1. FACILITY IDENTIFICATION

Parent Company Name	Donegal County Council
Facility Name	Glenalla Landfill Site
PRTR Identification Number	W0125
Licence Number	W0125-01

Classes of Activity

No.	class name
-	Refer to PRTR class activities below

Address 1	Glenalla
Address 2	Milford
Address 3	
Address 4	
	Donegal
Country	Ireland
Coordinates of Location	-7.63731 55.0981
River Basin District	GBNIIENW
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Julie McMahon
AER Returns Contact Email Address	julie.mcmahon@donegalcoco.ie
AER Returns Contact Position	0749122787
AER Returns Contact Telephone Number	0872861096
AER Returns Contact Mobile Phone Number	0749161304
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	1
User Feedback/Comments	
Web Address	

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# : W0125 | Facility Name : Glenalla Landfill Site | Filename : W0125_2015.xls | Return Year : 2015 |

05/04/2016 16:39

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-v302	0.0	41730.0	0.0	41730.0
03	Carbon dioxide (CO2)	C	OTH	landgem-v302	0.0	114500.0	0.0	114500.0
02	Carbon monoxide (CO)	C	OTH	landgem-v302	0.0	20.4	0.0	20.4
07	Non-methane volatile organic compounds (NMVOC)	C	OTH	landgem-v302	0.0	269.0	0.0	269.0
55	1,1,1-trichloroethane	C	OTH	landgem-v302	0.0	0.33	0.0	0.33
56	1,1,2,2-tetrachloroethane	C	OTH	landgem-v302	0.0	0.96	0.0	0.96
34	1,2-dichloroethane (EDC)	C	OTH	landgem-v302	0.0	0.21	0.0	0.21
62	Benzene	C	OTH	landgem-v302	0.0	0.77	0.0	0.77
58	Trichloromethane	C	OTH	landgem-v302	0.0	0.018	0.0	0.018
65	Ethyl benzene	C	OTH	landgem-v302	0.0	2.541	0.0	2.541
73	Toluene	C	OTH	landgem-v302	0.0	18.7	0.0	18.7
78	Xylenes	C	OTH	landgem-v302	0.0	6.62	0.0	6.62
57	Trichloroethylene	C	OTH	landgem-v302	0.0	1.914	0.0	1.914
60	Vinyl chloride	C	OTH	landgem-v302	0.0	2.37	0.0	2.37
35	Dichloromethane (DCM)	C	OTH	landgem-v302	0.0	6.18	0.0	6.18

* 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
					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: Please enter summary data on the quantities of methane flared and / or utilised	Method Used				Facility Total Capacity m3 per hour
	T (Total) kg/Year	M/C/E	Method Code	Designation or Description	
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# : W0125 | Facility Name : Glenalla Landfill Site | Filename : W0125_2015.xls | Return Year : 2015 |

05/04/2016 16:40

Please enter all quantities on this sheet in Tonnes

3

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non-Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	19 07 03	No	2880.0 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 WWTP,Letterkenny County Donegal,Ireland		

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