BALLAGHVENY LANDFILL,
TIPPERARY COUNTY COUNCIL
BALLYMACKEY,
NENAGH
COUNTY TIPPERARY

ANNUAL ENVIRONMENTAL REPORT

INDUSTRIAL EMISSIONS LICENCE REG. NO. W0078-03

Prepared by:

Tipperary County Council
Environment Section
Civic Office
Clonmel
Co. Tipperary

September 2014

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1. Executive Summary

This is the thirteenth Annual Environmental Report (AER) produced for Ballaghveny Landfill Site, Ballymackey, Nenagh, Co. Tipperary and has been complied in accordance with the requirements of Schedule G of Waste Licence 0078-03.

The purpose of the report is to summarise the interaction of the facility with the local environment.

The Annual Environmental Report includes where applicable the information specified in Schedule G of the Waste Licence and in accordance with the various EPA publications on Landfills.

2. Introduction

Waste Licence Register Number: 0078-03

Name of Operator, Name and Address of Facility in 2013.

North Tipperary County Council,

Ballaghveny Landfill Site,

Ballymackey,

Nenagh,

Co. Tipperary

Reporting period

The reporting period for the purposes of this AER is the 1st January 2013 to the 31st of December 2013.

Site Description

The site is located in a rural area, which is not heavily populated, and its surrounding lands consist of flat open fields screened by dense forestry. Agriculture is the principal land use in the vicinity of the landfill, with pig farming, horses and dairying as the main activities. Access to the site is generally from the Nenagh/Dublin N7 National Primary Route along rural roads.

The landfill is located in the townslands of Ballymackey and Woodville approximately 4km north of Toomevara and 11km north-east of Nenagh. The site is approximately 16.3 Ha in size and is situated on the eastern side of approximately 40 Ha of Land owned by Tipperary County Council (TCC) which also includes Woodville House.

The original site, approximately 5.3 Ha in size, was purchased as a disused quarry by Tipperary County Council following an investigation by An Foras Forbartha in 1985. A total of 5 Cells were developed with cells 3-5 lined. In 2000 TCC bought Woodville House and associated lands to the west and north of the existing landfill.

Three additional lined cells, cells 6, 7, and 8 were developed and filled from September 2001 to June 2005. Cells 9, 10 and 11 were constructed in 2004/2005 and came into operation in June 2005.

Current Status of Ballaghveny Landfill and Civic Amenity Site.

Landfilling of waste in Ballaghveny Landfill ceased on the 26th of February 2011 when a temporary closure of the landfill was initiated.

The Civic Amenity Site was open to the public on Fridays and Saturdays only for recycling and bags of domestic waste but this facility closed on Saturday 30th June 2012.

3. Waste Activities

No waste was landfilled in Ballaghveny Landfill during 2013.

The Civic Amenity Facility was closed to the public and as such no waste was accepted in 2013 at the Facility.

4. Waste during the Previous Years

Table 1 below illustrates the tonnage of waste landfilled at Ballaghveny Landfill since 2001.

Table 1 Waste Accepted for Disposal at Ballaghveny Landfill

Year	Total tonnage accepted at Ballaghveny Landfill
2001	28,588
2002	35,787
2003	36,612
2004	32,622
2005	26,115
2006	31,802
2007	28,470
2008	25,096
2009	21,442
2010	17,004
2011	7,386
2012	0
2013	0

Total tonnage of materials recycled at the Ballaghveny Landfill Facility are listed in Table 2.

Ballaghveny Landfill constructed its Civic Amenity Site in March 2003. The construction of this facility allowed for the expansion of recycling services. The Facility accepted the following for recycling

- Scrap metal
- Plastic
- Carbboard
- Newspaper and Magazines
- Batteries
- Bottle Banks
- Clothes Bank
- Fridge/Freezers
- WEEE
- Flousescent bulbs
- Gas cyclinders
- Christmas trees

Table 2 Tonnage of material recycled at Ballaghveny Civic Amenity Site since 2001.

Year	Total tonnage recycled at Ballaghveny Landfill and Civic Amenity Site
2001	112
2002	123
2003	101
2004	78
2005	67
2006	272
2007	287
2008	319
2009	265
2010	206
2011	58
2012	10
2013	0

5. Remaining Facility Capacity

The most recent topographical survey of Ballaghveny was carried out in August 2014.

A proposed filling plan was produced in January 2010. See Appendix 1 for the topographical survey and the filling plan.

Cell 10b

The floor plan area of Cell 10b is 3,797m^2

This cell has a filling capacity of 46,376m^3

The most recent compaction rate was 0.71t/m^3

A total of 32,927tonnes of waste can be landfilled in this cell.

Cell 11a

The floor plan area of Cell 11a is 2,992m^2

This cell has a filling capacity of 30,441m^3

The most recent compaction rate was 0.71t/m^3

A total of 21,613 tonnes of waste can be landfilled in this cell.

Cell 11b

The floor plan area of Cell 11b is 3,536m^2

This cell has a filling capacity of 34,776m^3

The most recent compaction rate was 0.71t/m^3

A total of 24,691 tonnes of waste can be landfilled in this cell.

The Wedge

The floor plan area of the Wedge is 2,345m^2

This cell has a filling capacity of 70,160m^3

The most recent compaction rate was 0.71t/m^3

A total of 49,814 tonnes of waste can be landfilled in this cell.

This gives a total void space of 129,045m^3.

6. Summary Report of Emissions

The required monitoring programme at Ballaghveny Landfill Facility is specified in Schedule C of Waste Licence W0078/03. The Environmental monitoring period for this AER is 1st January 2013 to the 31st of December 2013.

Drawing DG 0001-01, Rev F06 in Appendix 2 shows the locations of all monitoring points. Appendix 3 has a copy of all relevant reports that relate to:

- Ground water
- Landfill Gas
- Surface water
- Leachate
- PRTR Emission Data

Issues relating to exceedances were reported on EDEN. Refer to Appendix 4 for a list of same.

7. Resource & Energy Consumption

Resource and energy consumption on site can be summarised approximately as follows

Diesel Fuel:

The landfill has a tractor and Quad, which used approximately 500 litres of Diesel in 2013.

Water Consumption:

A total of 14m3 of water was used at the site in 2013.

Energy Audit:

An audit of Tipperary County Council's Ballaghveny Landfill and Civic Amenity Site was carried out by Tipperary Energy Agency in 2009.

Based on this Energy Audit, a number of improvements were carried out at the Site.

8. Leachate

All Leachate is pumped to the Leachate storage lagoon to the north of cells 6-8. The existing Leachate lagoon has a capacity of 1,020m3. Allowing for a free board of 0.5m in accordance with the waste licence, the Leachate storage capacity of the lagoon is 694m3. Leachate volumes removed from the site for treatment in 2013 are included in Appendix 5. An overview of the leachate removed from site for treatment since 2001 is included in Table 3.

Leachate is tankered from the lagoon to

- Nenagh Waste Water Treatment Plant
- Roscrea Waste Water Treatment Plant
- Limerick Main Drainage
- Rilta Treatment Plant, Dublin
- Kilkenny Waste Water Treatment Plant

Table 3 Leachate Removed from Ballaghveny Landfill

Year	Total Leachate removed from Ballaghveny Landfill for treatment at WWTPs
2001	6,210
2002	14,466
2003	12,217
2004	13,273
2005	18,672
2006	16,657
2007	26,016
2008	40,232
2009	22,313
2010	17,203
2011	15,670
2012	6,804
2013	7,112

In accordance with Condition 6.2 of waste licence 0078-03 leachate levels and the freeboard in the leachate storage lagoon are to be monitored continuously. A Scada System is in place and is monitoring same. This system became operational in March 2010. The system records the following:

- Levels of landfill Leachate in the Leachate lagoon
- Levels of Leachate at 20 points in the Landfill including Leachate monitoring boreholes, some dual purpose wells and Leachate pumping chambers.
- Levels and flows in 3 surface water lagoons
- Water quality analysis at the outlet of 3 surface water lagoons.

There were issues with the Scada System at Ballaghveny Landfill during 2012. The original Scada System never gave accurate readings. In 2012, the Council decided to replace the system as the original contractor had gone out of business. Tipperary County Council has employed a new contractor to install new level sensors and has a maintenance contract with this same company to manage same.

Additional date is available in the following appendices

- Details of Leachate composition analysis are given in Appendix 3 –Quarterly analysis
- Leachate monitoring locations are identified in Appendix 2 – Monitoring locations reference drawing DG 0001-01 (F06)

9. Development Works

Cells 1 -10a have a final cap in place.

Tipperary County Council initiated a temporary closure at Ballaghveny Landfill on Saturday the 26th of February 2011. No waste has been landfilled in Ballaghveny since March 2011 and all filled cells have been capped. A Temporary Closure Plan was submitted to the Agency in 2011 and subsequently extended to March 2015.

10. Restoration of Completed Cells/Phases

Cells 1-8 of the Landfill have been capped and restored as per waste licence W0078-02. The filling of Cell 9 was completed in November 2009. This cell was capped during 2011. Cell 10a was closed in March 2011 and capped during 2011. All filled cells in Ballaghveny Landfill are now permanently capped. A green protective geotextile is currently covering the liners at the side of cells 6-8 and cell 10a.

A decision will be made regarding the future of Ballaghveny Landfill in later half of 2014 when it will be decided if the facility will reopen for waste disposal of if a permanent closure will be implemented.

11. Site Survey

The topographical survey of Ballaghveny Landfill is included in Appendix 1.

12. Landfill Gas

Gas Collection and Flaring

The Landfill gas flare which was originally installed in 2002 was re-commissioned in June 2008. The enclosed flare has a maximum capacity of 500m3/hr.

Landfill gas is now collected in 34 vertical wells throughout the landfill and directed to the gas flare. A Fugitive VOC survey of the landfill survey was carried out in July 2014 and is attached in Appendix 6.

13. Water Balance

A revised water balance calculation was carried out in March 2011 in accordance with Section 7.2 of the EPA Manual Landfill Site Design. See Appendix 7 attached.

The estimated Leachate generation figure for 2013 was 9,563m3. As referred to in Section 9 above, the actual quantity of Leachate tinkered from the landfill in 2013 was 7,112t.

14. Procedures

The list of procedures developed up to December 2013 are outlined below.

Tipperary North and South Local Authorities are amalgamating in 2014 and as such a new incorporated set of procedures will be developed.

A comprehensive report under this heading can be seen in the Environmental Management Plan (EMP) for Ballaghveny Landfill for 2009/2010.

- Awareness and Training Procedure
- Communications Procedure
- Corrective Action Procedure
- Emergency Response Procedure
- Environmental Incident Procedure
- Fire Control Procedure
- Leachate monitoring procedure
- Leachate handling procedure
- Waste acceptance procedure
- Operation of the facility in Adverse Wind Conditions
- Vermin and Fly infestation Programme
- Procedure for CCTV at the facility
- Procedure for the Landfilling of waste
- Procedure for erecting Litter Netting
- Procedure for litter picking on local roads
- Site safety rules
- Procedure for using the lawnmower
- Weigh in/out procedures for customers using the weighbridge
- Weigh in/out procedures for fixed charge customers
- Procedures for collecting cash at the weighbridge
- Procedure for Landfill Lodgements
- Procedure for end of day closing at the weighbridge/cash desk
- Procedure for daily balance sheet
- Procedure for daily transaction report
- Procedure for setting up a new account

15. Environmental Objectives and Targets

A Temporary Closure Plan is in place for the Ballaghveny Landfill Site and if any works are to be carried out in 2014 the Agency will be notified in advance as per the waste licence.

16. Tank, Pipeline and Bund Testing and Inspection Report

The Leachate rising main from Cell 9 to the Leachate lagoon was pressure tested in 2012 and passed.

17. Incidents and Complaints

Please find a list of same in Appendix 4.

18. Nuisance

The vermin control programme has been scaled back to quarterly as the facility is now closed and the cells have been capped. The latest report from the Pest Control Company is in Appendix 8.

19. Financial Provisions, Staffing and Public Information

Financial Provision

Tipperary County Council has made the necessary provisions to ensure that there is adequate funding for the management, development and restoration of the Ballaghveny Landfill.

An Environmental Liability Risk Assessment (ELRA) has been completed for the Facility and this is available for inspection at the site.

Section 53A reports have been returned to the Agency detailing Financial Provisions for the site.

The Temporary Closure Plan highlights the financial provisions for the site going forward.

Staffing Structure of the Facility in 2013-

Details of Management Structure:

- North Tipperary County Council has overall responsibility for management and operation of the Ballaghveny Landfill Site.
- Senior Executive Engineer, Mr. Michael Woulfe, has overall responsibility for the management of waste in North Tipperary.
- Ms Olga Doyle, Executive Environmental Scientist, and Ms. Justine Haugh, Environmental Technician have divided their time between Landfill, Infrastructure and Enforcement duties for the North of the County.
- Site Caretaker: Mr. Michael Haverty is based at the site for 2.5 days per week.
- RPS Consulting engineers were employed in 2013 by North Tipperary County Council to do some work on the waste licence.

Staffing Structure of the Facility going forward into 2014:

North Tipperary County Council and South Tipperary County Council merged on the 1st of June 2014 to become Tipperary County Council. Following amalgamation staff have been moved into new positions.

The new management structure at the facility will be submitted to the EPA in the coming weeks for review and approval.

Public Information, Monitoring and Reporting Requirements

North Tipperary County Council submitted a Waste Licence Communications Programme to the Agency and this was subsequently approved.

The following documentation may be viewed by the public at Ballaghveny Landfill, Ballymackey, Nenagh:

Public Information Documentation Index

- Complaints Register
- Corrective Actions Procedure
- Training Records

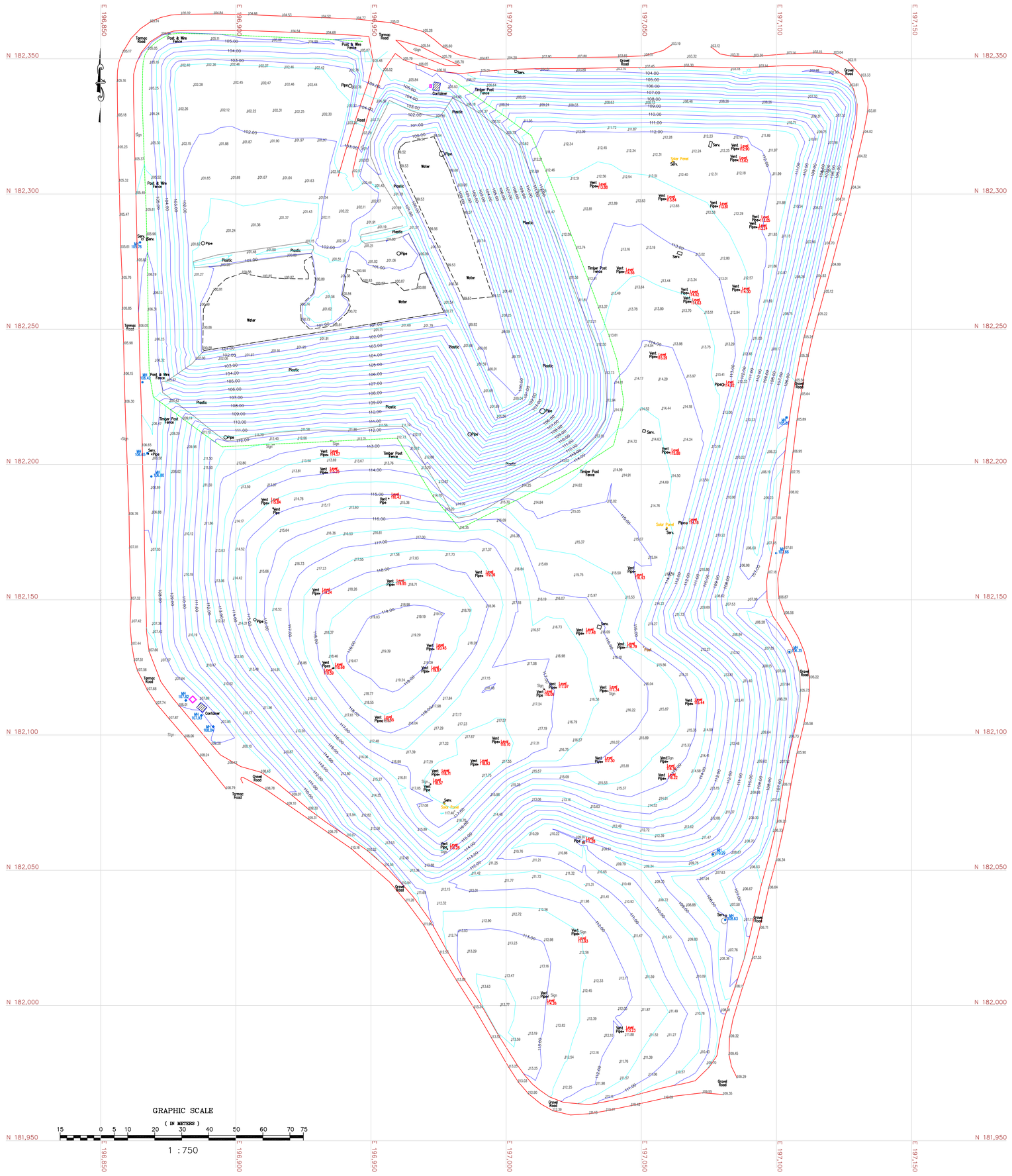
Environmental Monitoring Records

- Monthly Landfill gas composition
- Quarterly surface water composition
- Weekly surface water visual inspections
- Quarterly Leachate composition
- Monthly groundwater levels
- Quarterly groundwater composition
- Annual Biological Assessment for Ballaghveny Stream

Other Monitoring Activity

- Accident/First Aid Report Form
- Leachate Consignment Register
- Waste Licence
- EIS for Landfill Extension Report
- Annual Environmental Report
- Environmental Management Programme
- Management Structure
- Licence requirement Action Plan
- Operational Procedures/Forms
- Document Control
- Calibration Register
- Contingency Plans
- Maintenance Register
- Non - conformances

APPENDIX 1



NOTES:
1. All levels are relative to Ordnance Datum Malin Head
2. 50m sq grid relative to Irish Grid (1970) Co-ordinate reference system
3. Contours are at 0.50m intervals

SYMBOL LEGEND

AV	Air Valve	SV	Sluice Valve
V	Valve	WV	Water Valve
FH	Fire Hydrant	WM	Water Meter
IC	Inspection Chamber	Post	Post
TCD	Telecom Duct	ESBD	ESB Duct
TCB	Telcom Box	ESB	ESB Box
T	Tree	EP	ESB Pole
	Tree Spread	TP	Telecom Pole
	Bush/Shrub	LS	Lamp Standard
Sign	Sign	TSign	Traffic Sign
AJ	Armstrong Junction	GY	Gully
ER	Earth Rod	Gas	Gas
TL	Traffic Light	B	Bollard
CATV	Cable TV Duct	Bin	Bin
	Gate	Stay	Stay
MH	Manhole & Cover Level	Serv	Service
	Survey Station	Pipe	Pipe
	Ridge Height	Coping	Coping Height
	Finished Floor Level	Gutter	Gutter Height
	Eaves Height	Roof	Roof Height
6.75	Boundary Height	5.55	Spot Height

LINE TYPE LEGEND

	Wall		Concrete Edge
	Fence		Centerline of Trees
	Footpath		Hedge
	Drain/River		Step
	Flower Bed		Plinth
	ESB Line		Telecom Line
	Mound		Mound Center
	Kerb		Road
11.00	Contour Major	10.75	Contour Minor
	Building		Plinth
	Bottom of Bank		Top of Bank
	Yellow Line		White Line

REVISIONS

No.	Date	Description

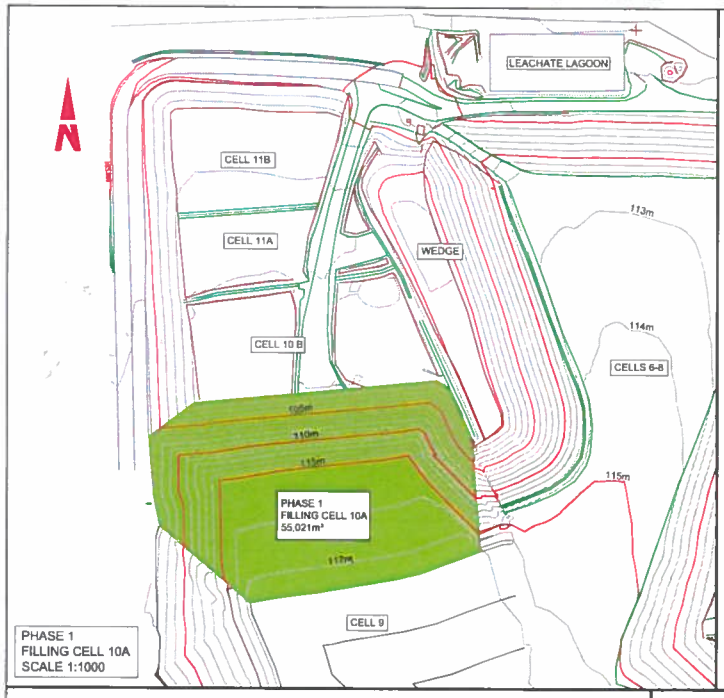
Control Surveys
land and building surveyors
No. 562
6 Crestwood, Kilteragh, Dooradoyle, Limerick.
Tel: 087 2659112 email: cian@controlsurveys.ie
website: www.controlsurveys.ie
• Topographical Surveys • As Built Surveys
• Measured Building Surveys • GPS Surveys
• Legal Mapping • Setting Out

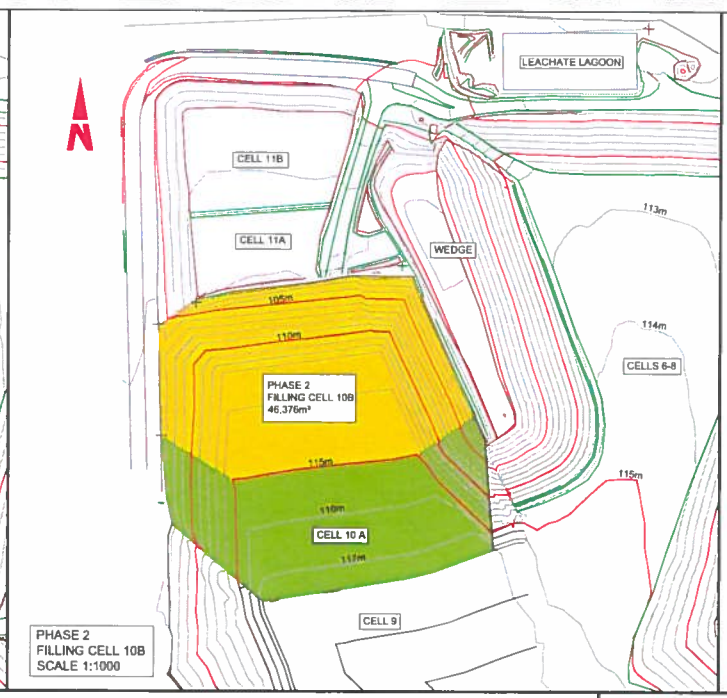
Client:
Tipperary County Council

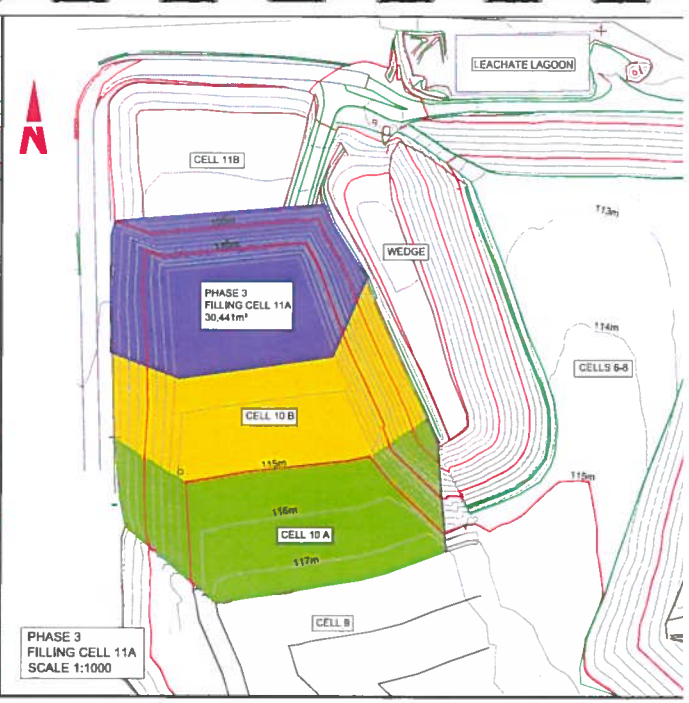
Professional:

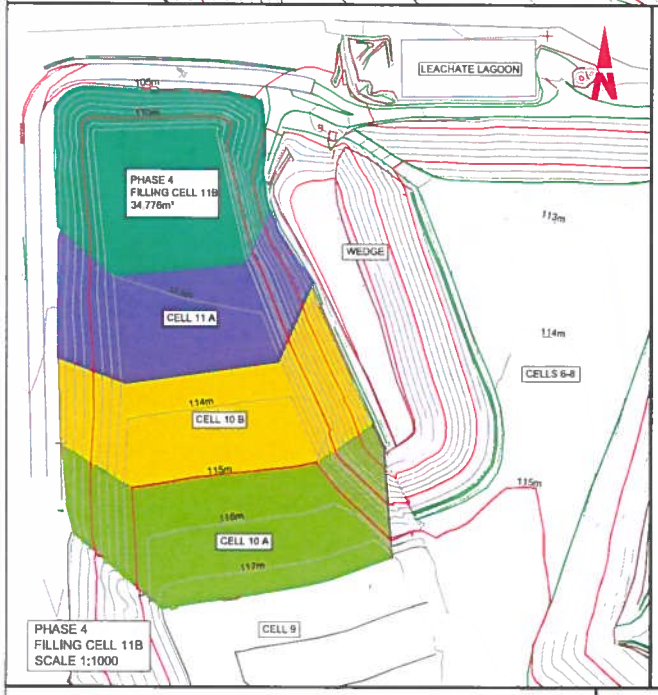
Project Title:
Topographical Survey of Ballyhveny Landfill, Nenagh, Co. Tipperary.

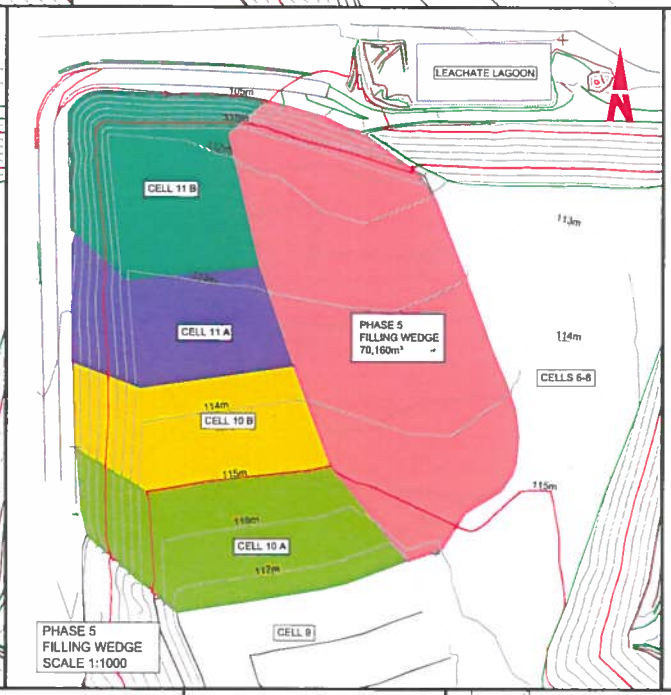
Drawn:	C O'S	**Dwg No:**	14-174-01
Scale:	1:750	**Date:**	18-08-14











Ballaghveny Landfill - Remaining Capacity and Filling Life (from November 2009)

	Floor Plan Area (m2)	Filling Capacity (m3)	Tonnage Available (t) 0.71 t/m3 Comp. Rate	Tonnage Available (t) 0.76 t/m3 Comp. Rate	Filling time (months) Filling @ 30,000tpa 0.71 t/m3 Comp. Rate	Filling time (months) Filling @ 30,000tpa 0.76 t/m3 Comp. Rate	Filling time (months) Filling @ 18,000tpa 0.71 t/m3 Comp. Rate	Filling time (months) Filling @ 18,000tpa 0.76 t/m3 Comp. Rate
Cell 10 A	4,935	55,011	39,059	41,808	15.6	16.7	26.0	27.9
Cell 10 B	3,797	48,376	32,927	35,246	13.2	14.1	22.0	23.5
Cell 11 A	2,992	30,441	21,613	23,135	8.6	9.3	14.4	15.4
Cell 11 B	3,530	34,776	24,691	26,430	9.9	10.6	16.5	17.6
Wedge	2,345	70,160	49,814	53,322	19.9	21.3	33.2	35.5
Total	17,005	236,764	168,102	179,941	67	72	112	120
			Total Years remaining		5.6	6.0	9.3	10.0
			Year of Closure		2015	2015	2019	2019

0.00km 40m 80m 120m 160m 200m
Scale Bar

Comhairle Contae Thiobraid Arann Thuaidh
North Tipperary County Council

RPS Consulting Engineers
RPS Consulting Engineers, Lyrr Building, IDA Business & Technology Park, Mervue, Galway, Ireland.
T: +353 91 534100 - F: +353 91 534199
E: ireland@rpsgroup.ie W: www.rpsgroup.com/ireland

NOTES

1. This drawing is the property of RPS Consulting Engineers. It is a confidential document and must not be copied, used, or its content divulged without prior written consent.
2. All Levels refer to Ordnance Survey Datum, Malin Head.
3. DO NOT SCALE, use figured dimensions only. If in doubt ask.

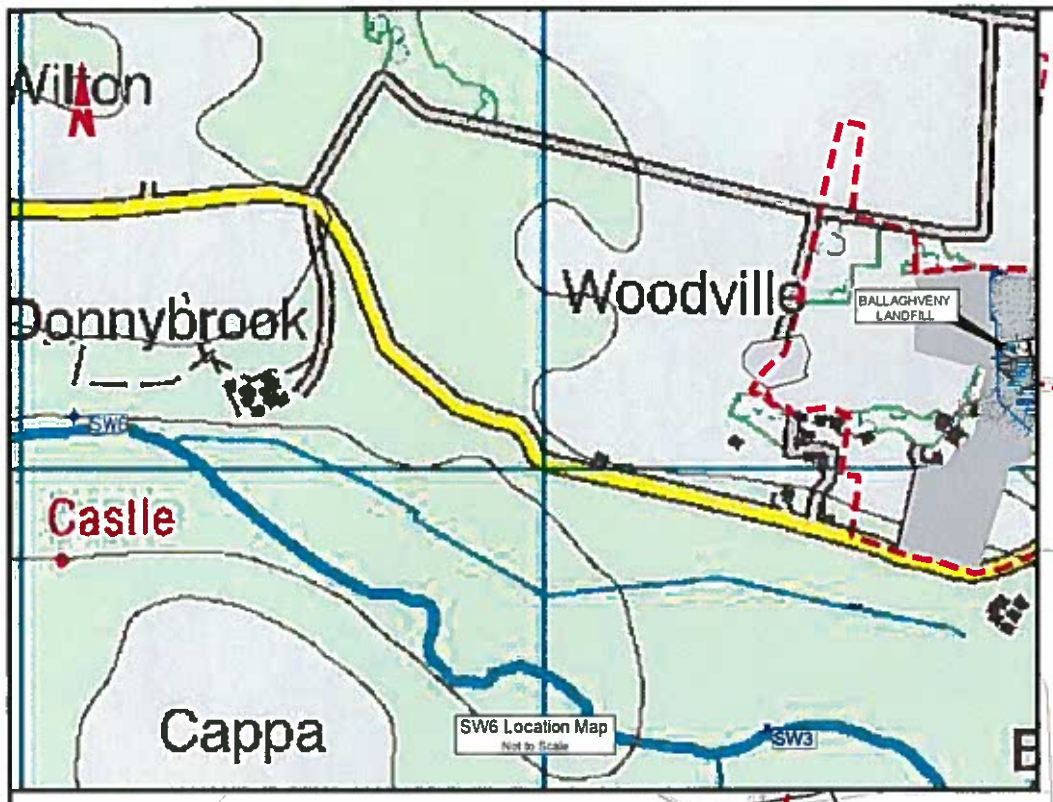
No.	Date	By	Amendment / Issue	Appr.
A02	29.01.10	W.L.	REVISED FILLING SEQUENCE	W.M.
A01	27.01.10	W.L.	ISSUE FOR APPROVAL	W.M.

Project:
BALLAGHVENY LANDFILL- WASTE LICENCE COMPLIANCE

Title:
PROPOSED FILLING PLAN

Drawn by:	W.L.	Job No:	MGE0001
Checked by:	K.G.	File No:	MGE0001DG0171
Approved by:	W.M.	Drg. No:	DG0171
Scale:	1:1000 @ A1	Rev:	A0
Date:	Jan. '10		

APPENDIX 2



LEGEND

- Waste Licence Compliance Boundary
- LS Leachate Chambers
- LFG Landfill Gas Monitoring Point
- LM Leachate Monitoring Points

Leachate Monitoring Points

Point ID	Eastings	Northings
LM01	197140.808	181918.180
LM02	197050.312	181811.121
LM03	197015.242	182004.649
LM04	197024.950	182027.811
LM05	196878.124	182057.758
LM06	197037.747	182111.874
LM07	197013.849	182115.719
LM08	197044.047	182131.719
LM09	197056.659	182098.500
LM10	197037.680	182115.586
LM11	197047.571	182162.104
LM12	197061.719	182204.740
LM13	197054.326	182240.931
LM14	197098.670	182291.969
LM15	197078.583	182295.163
LM16	197086.721	182313.968
LM17	196907.308	182142.340
LM18	196871.402	182123.953
LM19	196898.584	182209.620
LM20	196859.486	182187.125
Leachate Lagoon	197027.888	182367.680

Leachate Sump Points

Point ID	Eastings	Northings
LS1	197030.429	182057.539
LS2	197084.763	182033.251
LS3	196982.888	182317.809
LS4	197018.789	182221.710
LS5	196981.681	182215.364
LS6	196812.728	182144.348
LS7	196801.301	182212.701
LS8	196908.358	182280.865
LS9	196894.048	182285.345
LS10	196949.090	182343.109

Emission Monitoring Points

Point ID	Eastings	Northings
Surface Water Discharge Points		
SWO 1	197234.467	181983.124
SWO 2	197122.680	182168.564
SWO 3	197148.218	182368.397
Gas Flare		
GF 1	197088.284	182357.215

Noise Monitoring Points

Point ID	Eastings	Northings
B 1	197084.813	181988.341
B 2	197111.806	182136.590
B 3	196981.566	182123.457
B 4	197078.313	181877.428
B 5	197144.437	182360.328
B 6	196880.365	182225.658
NSL 1	197360.363	181988.585
NSL 2	196847.807	181793.641

Surface Water Monitoring Points

Point ID	Eastings	Northings
SW 1	197365.676	181991.260
SW 2	196586.950	181739.935
SW 3	196427.752	181505.857
SW 4	197291.036	182493.311
SW 6	195103.271	182100.095
SW 7	196873.146	182372.186

Landfill Gas Monitoring Points (perimeter)

Point ID	Eastings	Northings
MP 2	196983.181	182359.419
MP 3	196879.551	182014.591
MP 4	196954.505	181924.288
MP 6	196631.068	182341.538
MP 7	196641.444	196641.444
MP 8	196809.636	182168.823
MP 15	197268.393	181838.878
MP 16	197052.532	181859.208
MP 17	197284.017	181904.508
MP 18	197141.967	182330.573
MP 19	197131.998	182180.580

Landfill Gas Monitoring Points (within waste)

Point ID	Eastings	Northings
LFG-01	197140.808	181918.180
LFG-02	197117.785	181918.773
LFG-03	197050.312	181811.121
LFG-04	197058.329	181841.927
LFG-05	197043.257	181960.018
LFG-06	197015.242	182004.649
LFG-07	197024.950	182027.811
LFG-08	197035.571	182090.676
LFG-09	197058.028	182083.886
LFG-10	197069.280	182111.313
LFG-11	196997.559	182087.446
LFG-12	196988.311	182088.307
LFG-13	197027.840	182137.685
LFG-14	196953.917	182104.936
LFG-15	196871.380	182123.457
LFG-16	196890.803	182159.005
LFG-17	197047.571	182162.104
LFG-18	197061.719	182204.740
LFG-19	197054.326	182240.931
LFG-20	197098.670	182291.969
LFG-21	197043.324	182278.586
LFG-22	197032.371	182302.594
LFG-23	197078.583	182295.163
LFG-24	197094.316	182288.223
LFG-25	197086.721	182313.968
LFG-26	197086.981	182264.280
LFG-27	197080.065	182229.364
LFG-28	197068.804	182178.029
LFG-29	196858.354	182124.483
LFG-30	196831.048	182152.334
LFG-31	196956.880	182188.405
LFG-32	196912.206	182165.422
LFG-33	196958.488	182187.125
LFG-34	196933.964	182203.348

Groundwater Monitoring Points

Point ID	Eastings	Northings
GW 3	196809.636	182160.823
GW 5	196631.085	182341.539
GW 6 (TAP)	196703.514	182032.840
GW 9	197268.393	181836.676
GW 10	197052.532	181859.208
GW 12	196950.643	181765.364
BH 3	197284.017	181904.508
GW 13	196788.797	182110.341
GW 14	196809.489	182078.188
GW 15	196873.722	182107.296
GW 16	196833.956	182375.736
GW 17	197161.378	182342.301
GW 18	197111.278	182164.296
GW 19	196873.688	181847.139
GW 20	196945.542	181845.379

Dust Monitoring Points

Point ID	Eastings	Northings
DSP 1	197084.524	181983.811
DSP 2	197014.042	181828.817
DSP 3	197075.151	182128.059
DSP 4	196901.058	181962.034

Comhairle Contae Thiobraid Árann Tímaoth
North Tipperary County Council

RPS Consulting Engineers
RPS Consulting Engineers, Lyrr Building, IDA Business & Technology Park, Mervue, Galway, Ireland.
T +353 91 534100 - F +353 91 534199
E ireland@rpsgroup.ie W www.rpsgroup.com/ireland

NOTES

1. This drawing is the property of RPS Consulting Engineers. It is a confidential document and must not be copied, used, or its content divulged without prior written consent.
2. All Levels refer to Ordnance Survey Datum, Malin Head.
3. DO NOT SCALE, use figured dimensions only, if in doubt ask.

No.	Date		Amendment / Issue	App.
F06	12.06.12	DC	Updated following Cell 9 & 10A Capping	DC
F05	12.12.10	DC	Updated following NTCC check	D.C.

Project: BALLAGHVENY LANDFILL- WASTE LICENCE COMPLIANCE

Title: Monitoring Location Reference Drawing

Drawn by	J.O'B.	Job No	060504001
Checked by	D.C.	File No	060504007DG0001
Approved by	W.M.	Drg. No	DG0001-01
Scale	1:2000 @ A1	Rev	F06
Date	Apr. 2002		

APPENDIX 3

BIOLOGICAL MONITORING OF WATER QUALITY IN THE VICINITY OF BALLAGHVENY LANDFILL, COUNTY TIPPERARY

August 2013

Conservation Services, Tullaha, Glenflesk, Killarney, Co. Kerry
Tel/Fax 064 6630130 e-mail cs@conservation-services.ie

CONTENTS

1. INTRODUCTION

As part of the monitoring of water quality in the vicinity of Ballaghveny Landfill Site, Conservation Services, Ecological & Environmental Consultants have been commissioned by Tipperary N.R. County Council to carry out biological sampling and water quality assessment in accordance with EPA Q-rating methodology at five locations adjacent to the landfill site. The sites were most recently assessed by Conservation Services in July 2012 (Conservation Services 2012).

Sampling was carried out on 9th August 2013.

2. METHODOLOGY

2.1. SITE LOCATIONS

Biological sampling and water quality assessment was carried out at the following sites. Grid references were recorded at all sites using a GPS.

SITE	GRID REFERENCE (GPS)
Site A	R97278 82435*
Site A1	R97402 81948
Site B	R95299 82065
Site 1	R95489 81882
Site 2	R94188 81915

*N.B. Site A is located at the most suitable location which is upstream of the drain from the vicinity of the landfill to the stream. The small size and slow flow at this site renders it sub-optimal for the Q-rating method however it is the best that is available.

The location of the sites is shown on Map 1.

2.2. HABITAT ASSESSMENT

Habitat assessment was carried out at each of the five sites selected for invertebrate/water quality assessment. These sites were assessed in terms of:

- Stream width and depth
- Substrate type, listing substrate fractions in order of dominance, i.e. large rocks, cobble, gravel, sand, mud etc.
- Flow type, listing percentage of riffle, glide and pool in the sampling area

- Instream vegetation, listing plant species occurring and their percentage coverage of the stream bottom at the sampling site

- Dominant bankside vegetation, listing the main species overhanging the stream

- Estimated summer cover by bankside vegetation, giving percentage shade of the sampling site

- Rating of the site as habitat for trout adult, nursery and spawning on a scale of Poor/Fair/Good/Very Good/Excellent. This rating assesses the physical suitability of the habitat; the presence/absence/density of salmonids at the site will also depend on present and historical water quality and accessibility of the site to fish.

2.3. INVERTEBRATE SAMPLING AND WATER QUALITY ASSESSMENT

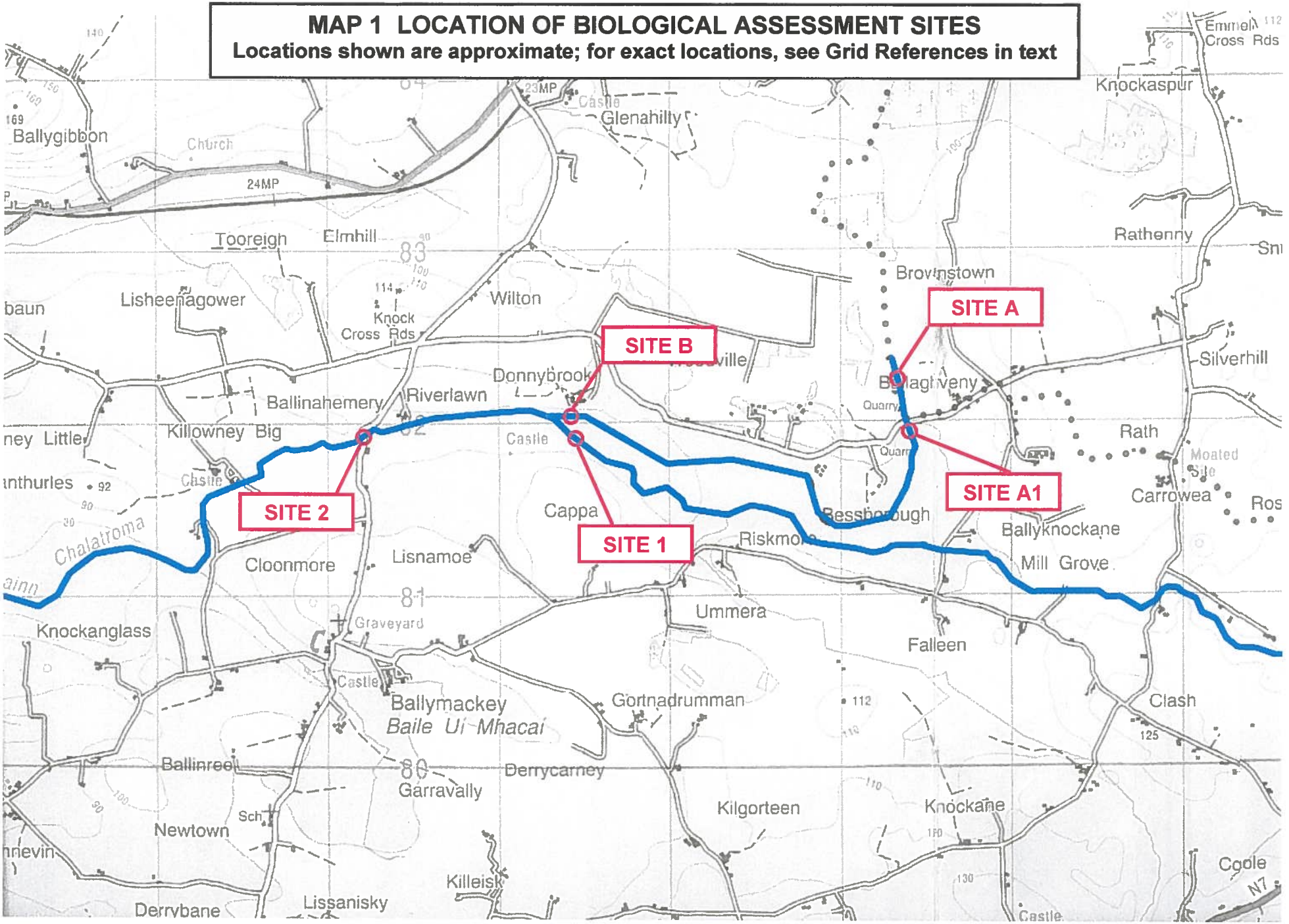
A kick and stone wash invertebrate sample was taken at each site (ISO 7828:1985) using standard methodology employed by EPA. Each sample was retained in a large plastic bag at the sampling site. Sample processing and preservation was carried out under laboratory conditions within 24 hours of sampling. Mud was removed from each sample by sieving under running water through a 500µ sieve. Sieved samples were then live sorted for 30 minutes in a white plastic sorting tray under a bench lamp (ISO 5667-3:1994) and if necessary using a magnifying lens. Macroinvertebrates were stored in 70% alcohol. Preserved invertebrates were identified to the level required for the EPA Q-rating method (McGarrigle *et al,* 2002) using high-power and low-power binocular microscopes when necessary. The preserved samples were archived for future examination or verification. Based on the relative abundance of indicator species, a biotic index (Q-rating) was determined for each site in accordance with the biological assessment procedure used by the

Environmental Protection Agency (Statutory Instruments No. 258 of 1998) and more detailed unpublished methodology (McGarrigle, Clabby and Lucey pers. comm.)

Biotic Index	**Water Framework Directive Ecological Status**	**Quality Status**
Q5	High	Unpolluted Waters
Q4-5	High	
Q4	Good	
Q3-4	Moderate	Slightly Polluted Waters
Q3	Poor	Moderately Polluted Waters
Q2-3	Poor	
Q2	Bad	Seriously Polluted Waters
Q1-2	Bad	
Q1	Bad	

MAP 1 LOCATION OF BIOLOGICAL ASSESSMENT SITES

Locations shown are approximate; for exact locations, see Grid References in text



3. RESULTS

Detailed habitat assessment for each sampling site, including aquatic plant assessment, is contained in Appendix 1.

3.1. SITE A

As there was minimal water flow at the site, conditions were not optimal for the Q-rating method and the Q-value is tentative. The invertebrate community tabulated below merits a tentative Q-rating of Q2-3 indicating moderately polluted conditions and poor ecological status, a slight improvement compared with Q2 in 2012.

INDICATOR GROUP	POLLUTION SENSITIVITY/TOLERANCE	TAXON	NUMBER 2013
A	Very Pollution Sensitive	None recorded	
B	Moderately Pollution Sensitive	Limnephilidae	1
C	Moderately Pollution Tolerant	Corixidae	1
		Velia sp.	2
		Dytiscidae	4
		Chironomidae (ex. *Chironomus*)	25
D	Very Pollution Tolerant	*Asellus aquaticus*	57
		Sphaeriidae	2
E	Most Pollution Tolerant	*Chironomus sp.*	10

3.2. SITE A1

The invertebrate community tabulated below merits a Q-rating of Q3 indicating moderately polluted conditions and poor ecological status, with no significant change since 2012.

INDICATOR GROUP	POLLUTION SENSITIVITY/TOLERANCE	TAXON	NUMBER 2013
A	Very Pollution Sensitive	*Nemurella picteti*	1
B	Moderately Pollution Sensitive	*Agapetus sp.*	1
		Limnephilidae	8
		Sericostoma personatum	4
C	Moderately Pollution Tolerant	*Potamopyrgus antipodarum*	82
		Gammarus duebeni	43
		Hydracarina	1
		Velia sp.	1
		Dytiscidae	3
		Chironomidae	3
		Tipulidae - Pediciidae	3
		Tipulidae s.s.	2
D	Very Pollution Tolerant	*Asellus aquaticus*	6
E	Most Pollution Tolerant	Tubificidae	1

3.3. SITE B

The invertebrate community tabulated below merits a Q-rating of Q3 indicating moderately polluted conditions and poor ecological status, with no significant change in water quality since 2012.

INDICATOR GROUP	POLLUTION SENSITIVITY/TOLERANCE	TAXON	NUMBER 2013
A	Very Pollution Sensitive	None recorded	
B	Moderately Pollution Sensitive	*Baetis muticus*	1
		Limnephilidae	8
		Sericostoma personatum	2
C	Moderately Pollution Tolerant	*Gammarus duebeni*	102
		Hydracarina	2
		Baetis rhodani	8
		Elmidae	6
		Chironomidae (ex. *Chironomus*)	6
		Tipulidae - Pediciidae	3
D	Very Pollution Tolerant	*Glossiphonia sp.*	1
E	Most Pollution Tolerant	None recorded	
-	Not assigned to indicator group	Lumbricidae	1
		Lumbriculidae	3

3.4. SITE 1

The invertebrate community tabulated below merits a Q-rating of Q4 indicating unpolluted conditions and good ecological status.

INDICATOR GROUP	POLLUTION SENSITIVITY/TOLERANCE	TAXON	NUMBER 2013
A	Very Pollution Sensitive	*Isoperla grammatica* (early instar)	1
		Ecdyonurus sp.	45
		Rhithrogena sp.	1
B	Moderately Pollution Sensitive	*Leuctra sp.*	38
C	Moderately Pollution Tolerant	*Gammarus duebeni*	33
		Baetis rhodani	64
		Serratella ignita	17
		Hydropsyche sp.	2
		Rhyacophila sp.	5
		Elmidae	64
		Simuliidae	52
		Tipulidae - Pediciidae	5
D	Very Pollution Tolerant	None Recorded	
E	Most Pollution Tolerant	None Recorded	

3.5. SITE 2

The invertebrate community tabulated below merits a Q-rating of Q4 indicating unpolluted conditions and good ecological status.

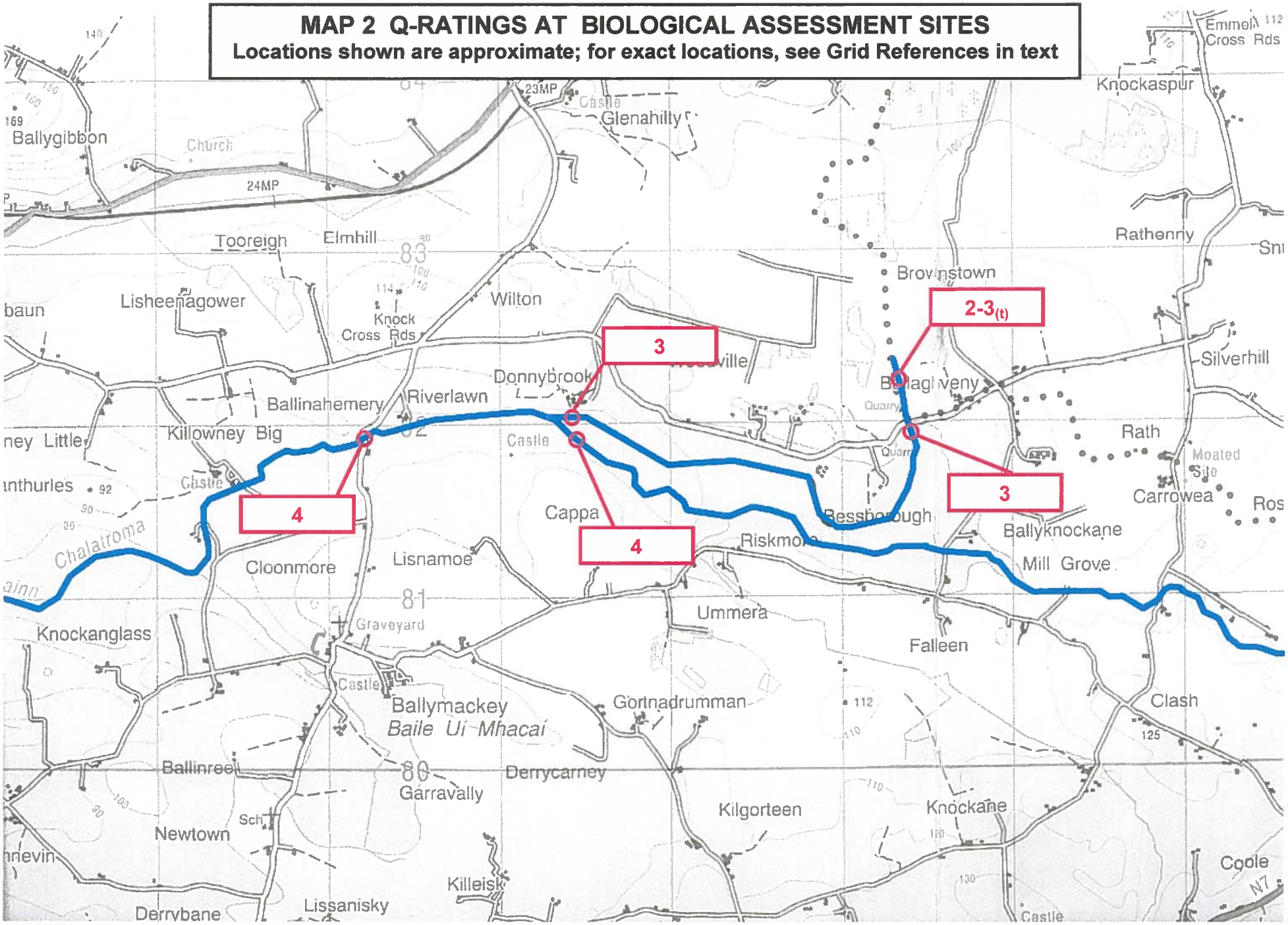
INDICATOR GROUP	POLLUTION SENSITIVITY/TOLERANCE	TAXON	NUMBER 2013
A	Very Pollution Sensitive	*Ecdyonurus sp.*	20
B	Moderately Pollution Sensitive	*Leuctra sp.*	30
		Baetis muticus	2
		Agapetus sp.	1
		Limnephilidae	2
		Sericostoma personatum	5
		Silo pallipes	1
C	Moderately Pollution Tolerant	*Potamopyrgus antipodarum*	15
		Gammarus duebeni	53
		Hydracarina	1
		Baetis rhodani	26
		Serratella ignita	20
		Hydropsyche sp.	20
		Polycentropus sp.	3
		Rhyacophila sp.	11
		Elmidae	37
		Haliplidae	21
		Chironomidae	6
		Simuliidae	1
		Tipulidae - Pediciidae	4
		Tipulidae s.s.	1
D	Very Pollution Tolerant	None Recorded	
E	Most Pollution Tolerant	Nine Recorded	
-	Not assigned to indicator group	Lumbriculidae	1

4. SUMMARY OF MONITORING RESULTS 1998 - 2013

	SITE A	SITE A1	SITE B	SITE 1	SITE 2
Aug 1998	3-4	-	3-4	4	4
May 2002	2	-	3	4-5	4-5
March 2003	3/0	3	3-4	4-5	4-5
May 2004	3-4 (tentative)	3-4	3-4	3-4	3-4
June 2005	3 (tentative)	3	3	4	3-4
May 2006	3 or 3-4 (tentative)	3	3	4	4-5
July 2007	3 or 3-4 (tentative)	3	3	4	3-4
May 2008	3-4 (tentative)	3	3	4	4-5
July 2009	3 (tentative)	3	3	3-4	3-4
July 2010	2-3 (tentative)	3	3	4	4-5
July 2011	2-3 (tentative)	3	3	4-5	4-5
July 2012	2 (tentative)	3	3	4	4
Aug 2013	2-3 (tentative)	3	3	4	4

MAP 2 Q-RATINGS AT BIOLOGICAL ASSESSMENT SITES

Locations shown are approximate; for exact locations, see Grid References in text



5. CONCLUSIONS

5.1. Ballaghveny Stream

Habitat conditions at Site A upstream of the landfill are less than optimal for Q-rating assessment. Taking into account the flow and substrate conditions, the invertebrate data merit a tentative Q2-3 (moderately polluted) rating. The invertebrate data at Site A1, immediately downstream of the landfill, and at Site B c.3km downstream of the landfill, indicate Q3 moderately polluted conditions.

The results of the biological assessment contain no evidence of an impact from the landfill on the water quality of the Ballaghveny stream.

5.2. Ollatrim River

The Ollatrim River upstream and downstream of its confluence with the Ballaghveny Stream is unpolluted with a Q-value of Q4 at both the upstream site and the downstream site. The results of the present survey therefore contain no evidence of an adverse impact on the Ollatrim River from the Ballaghveny Stream.

Signed on behalf of Conservation Services

Helena Twomey

Helena Twomey BA(Mod.) PhD

19 September 2013

6. REFERENCES

Conservation Services (2012) Biological monitoring of water quality in the vicinity of Ballaghveny Landfill, County Tipperary. Unpublished Report to Tipperary North Riding County Council.

McGarrigle *et al* (2002) Water Quality in Ireland 1998-2000. Environmental Protection Agency.

APPENDIX 1

HABITAT ASSESSMENT AT SAMPLING SITES

Site Code	A
Site Location	Upstream of drain from the landfill area
Grid Reference	R97278 82435
Site Photograph	
Width	3 m
Depth	40 cm
Substrate	Mud
Flow Type	Slow glide (almost imperceptible flow)
Instream Vegetation	*Mentha aquatica* 10% *Sparganium erectum* 10%
Dominant Bankside Vegetation	Willow, Grass, Ash
Estimated % Summer Cover of Stream by Bankside Vegetation	15%
Trout Adult Habitat	None
Trout Nursery Habitat	None
Trout Spawning Habitat	None

Site Code	A1
Site Location	Downstream of road bridge.
Grid Reference	R97402 81948
Site Photographs	
Width	0.25-1 m
Depth	2-10 cm
Substrate	Mud, Cobble
Flow Type	Riffle 20% Glide 80%
Instream Vegetation	Bryophytes <5% in open section *Apium nodiflorum* 10% *Mentha aquatica* 15%
Dominant Bankside Vegetation	Ash, Willowherb
Estimated % Summer Cover of Stream by Bankside Vegetation	35%
Trout Adult Habitat	Poor-None
Trout Nursery Habitat	Poor-Fair
Trout Spawning Habitat	Poor

Site Code	B
Site Location	At Donnybrook House
Grid Reference	R95299 82065
Site Photograph	
Width	1-2 m
Depth	15-25 cm
Substrate	Mud, Cobble (few)
Flow Type	Riffle 5% Glide 95%
Instream Vegetation	None
Dominant Bankside Vegetation	Ash, Beech
Estimated % Summer Cover of Stream by Bankside Vegetation	40%
Trout Adult Habitat	Poor
Trout Nursery Habitat	Poor
Trout Spawning Habitat	None

Site Code	1
Site Location	On the Ollatrim River at Donnybrook House upstream of the confluence with Ballaghveny Stream
Grid Reference	R95489 81882
Site Photograph	
Width	8-10 m
Depth	8-25 cm
Substrate	Gravel, Sand, Cobble
Flow Type	Riffle 60% Glide 40%
Instream Vegetation	Filamentous algae <5% *Rorippa nasturtium-aquaticum agg.* <5% *Ranunculus sp.* <5% *Apium nodiflorum* <5%
Dominant Bankside Vegetation	Bramble, Nettle
Estimated % Summer Cover of Stream by Bankside Vegetation	<5%
Trout Adult Habitat	Fair
Trout Nursery Habitat	Fair
Trout Spawning Habitat	Fair-Good

Site Code	2
Site Location	Downstream of Ballinahemery Bridge
Grid Reference	R94188 81915
Site Photograph	
Width	5-6 m
Depth	15-30 cm
Substrate	Gravel, Sand, Cobble
Flow Type	Riffle 50% Glide 50%
Instream Vegetation	*Cladophora sp.* 15% Bryophyta <5% *Ranunculus* sp. <5% *Phalaris arundinacea* <5% *Apium nodiflorum* <5%
Dominant Bankside Vegetation	Grass, *Phalaris arundinacea*
Estimated % Summer Cover of Stream by Bankside Vegetation	<5%
Trout Adult Habitat	Fair-Good
Trout Nursery Habitat	Fair-Good
Trout Spawning Habitat	Fair-Good

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	15/03/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	19/02/2013	Date received:	19/02/2013

			Laboratory Ref:	1300858	1300859	1300860	1300861	1300862	1300863	1300864
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01	WST-W0078-01-LM7
			Sampling point:	clear (slightly brown)	Dark green	No sample, dry	No sample, dry	No sample, dry	No sample, dry	No sample, dry
			Sampled by:	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou
			Time Sampled:	11:55	12:05	12:34	12:32	12:13	12:15	12:18
			Start/End - Dates of Analysis:	19-02-13/25-02-13	19-02-13/25-02-13	19-02-13/19-02-13	19-02-13/19-02-13	19-02-13/19-02-13	19-02-13/19-02-13	19-02-13/19-02-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
F	Depth of Borehole	m		nm	nm	-	-	-	-	-
F	Leachate Level	m		nm	nm	-	-	-	-	-
F	Temperature	°C		9.8	9.1	-	-	-	-	-
F	pH	pH		6.9	7.6	-	-	-	-	-
F	Conductivity @25°C	µS/cm		2950	4070	-	-	-	-	-
L	Biochemical Oxygen Demand	mg/l O2		43.5	39.0	-	-	-	-	-
L	Chemical Oxygen Demand	mg/l O2		106	304	-	-	-	-	-

Comments:

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
8) **L - Lab measured parameter.**
9) **Test Reports relate only to the samples tested and as described on the report form.**
10) **Test Reports shall not be reproduced, except in full, without consent of the EPA.**

Signed: PP

Caroline Bowden, Regional Chemist

Date: 15/Mar/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 15/03/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected: 19/02/2013 Date received: 19/02/2013

			Laboratory Ref:	1300865	1300866	
			Type of sample:	Leachate	Leachate	
			Location code:	WST-W0078-01	WST-W0078-01-LM5	
			Sampling point:	Sightly brown. Taken fro mchamber	Not enough for sample	
			Sampled by:	D.Berry/M.Durou	D.Berry/M.Durou	
			Time Sampled:	nm	12:20	
			Start/End - Dates of Analysis:	19-02-13/25-02-13	19-02-13/19-02-13	
			Status of results:	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**			
F	Depth of Borehole	m		nm	-	
F	Leachate Level	m		nm	-	
F	Temperature	°C		8.4	-	
F	pH	pH		7.5	-	
F	Conductivity @25°C	µS/cm		3820	-	
L	Biochemical Oxygen Demand	mg/l O2		46.0	-	
L	Chemical Oxygen Demand	mg/l O2		205	-	

Comments:

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
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Signed: PP

Caroline Bowden, Regional Chemist

Date: 15/Mar/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	08/11/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	02/04/2013	Date received:	02/04/2013

			Laboratory Ref:	1301506	1301507	1301508	1301509	1301510	1301511	1301512
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01-LM10	WST-W0078-01-LM7
			Sampling point:	Wedge Chamber LS3	Brown, taken from lagoon	No sample	No sample	No sample	No sample	No sample
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	13:15	13:38	13:40	13:45	13:50	13:52	13:53
			Start/End - Dates of Analysis:	02-04-13/26-04-13	02-04-13/26-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
F	Depth of Borehole	m		nm	nm	-	-	-	-	-
F	Leachate Level	m		nm	nm	-	-	-	-	-
F	pH	pH		7.0	7.9	-	-	-	-	-
F	Conductivity @25°C	µS/cm		5210	4620	-	-	-	-	-
L	Ammonia	mg/l N		280	240	-	-	-	-	-
L	Chloride	mg/l Cl		410	385	-	-	-	-	-
L	Nitrite (as N)	mg/l N		0.067	0.006	-	-	-	-	-
L	ortho-Phosphate (as P)	mg/l P		0.27	0.07	-	-	-	-	-
L	Total Oxidised Nitrogen (as N)	mg/l N		1.75	0.6	-	-	-	-	-
L	Chemical Oxygen Demand	mg/l O2		268	285	-	-	-	-	-
L	Biochemical Oxygen Demand	mg/l O2		18.0	24.0	-	-	-	-	-
L	Fluoride	mg/l F		<2.5	<2.5	-	-	-	-	-
L	Sulphate	mg/l SO4		150	130	-	-	-	-	-
L	Aluminium	µg/l		24.6	28.1	-	-	-	-	-
L	Antimony	µg/l		1.43	1.24	-	-	-	-	-
L	Arsenic	µg/l		46.5	31.5	-	-	-	-	-
L	Barium	µg/l		421	318	-	-	-	-	-
L	Beryllium	µg/l		<0.5	<0.5	-	-	-	-	-
L	Boron	µg/l		1480	1260	-	-	-	-	-
L	Cadmium	µg/l		<0.5	<0.5	-	-	-	-	-
L	Calcium	mg/l		149	110	-	-	-	-	-
L	Chromium	µg/l		18.6	17.6	-	-	-	-	-

			Laboratory Ref:	1301506	1301507	1301508	1301509	1301510	1301511	1301512
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01-LM10	WST-W0078-01-LM7
			Sampling point:	Wedge Chamber LS3	Brown, taken from lagoon	No sample	No sample	No sample	No sample	No sample
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	13:15	13:38	13:40	13:45	13:50	13:52	13:53
			Start/End - Dates of Analysis:	02-04-13/26-04-13	02-04-13/26-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
L	Cobalt	µg/l		10.1	7.76	-	-	-	-	-
L	Copper	µg/l		7.03	3.73	-	-	-	-	-
L	Iron	µg/l		6740	3820	-	-	-	-	-
L	Lead	µg/l		1.35	0.57	-	-	-	-	-
L	Magnesium	mg/l		62.1	60	-	-	-	-	-
L	Manganese	µg/l		1610	1250	-	-	-	-	-
L	Mercury	µg/l		<0.5	<0.5	-	-	-	-	-
L	Molybdenum	µg/l		1.87	1.15	-	-	-	-	-
L	Nickel	µg/l		50.4	48.1	-	-	-	-	-
L	Potassium	mg/l		158	151	-	-	-	-	-
L	Selenium	µg/l		13.9	12.6	-	-	-	-	-
L	Sodium	mg/l		333	334	-	-	-	-	-
L	Thallium	µg/l		<0.5	<0.5	-	-	-	-	-
L	Uranium	µg/l		1.46	0.7	-	-	-	-	-
L	Vanadium	µg/l		7.28	5.72	-	-	-	-	-
L	Zinc	µg/l		18.8	23.3	-	-	-	-	-
L	1,1,1,2-Tetrachloroethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,1,1-Trichloroethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,1,2,2-Tetrachloroethane	µg/l		<1	<1	-	-	-	-	-
L	1,1,2-Trichloroethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,1-Dichloroethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,1-Dichloroethene	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,1-Dichloropropene	µg/l		<0.5	<0.5	-	-	-	-	-

			Laboratory Ref:	1301506	1301507	1301508	1301509	1301510	1301511	1301512
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01-LM10	WST-W0078-01-LM7
			Sampling point:	Wedge Chamber LS3	Brown, taken from lagoon	No sample	No sample	No sample	No sample	No sample
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	13:15	13:38	13:40	13:45	13:50	13:52	13:53
			Start/End - Dates of Analysis:	02-04-13/26-04-13	02-04-13/26-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
L	1,2,3-Trichlorobenzene	µg/l		<0.4	<0.4	-	-	-	-	-
L	1,2,3-Trichloropropane	µg/l		<0.6	<0.6	-	-	-	-	-
L	1,2,4-Trichlorobenzene	µg/l		<0.4	<0.4	-	-	-	-	-
L	1,2,4-Trimethylbenzene	µg/l		2.6	<0.5	-	-	-	-	-
L	1,2-Dibromo-3-Chloropropane	µg/l		<1.3	<1.3	-	-	-	-	-
L	1,2-Dibromoethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,2-Dichlorobenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,2-Dichloroethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,2-Dichloropropane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,3,5-Trimethylbenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,3-Dichlorobenzene	µg/l		1.2	<0.5	-	-	-	-	-
L	1,3-Dichloropropane	µg/l		<0.5	<0.5	-	-	-	-	-
L	1,4-Dichlorobenzene	µg/l		1.2	<0.5	-	-	-	-	-
L	2,2-Dichloropropane	µg/l		<0.5	<0.5	-	-	-	-	-
L	2-Chlorotoluene	µg/l		<0.5	<0.5	-	-	-	-	-
L	4-Chlorotoluene	µg/l		<0.5	<0.5	-	-	-	-	-
L	4-Isopropyltoluene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Benzene	µg/l		2.3	<0.5	-	-	-	-	-
L	Bromobenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Bromochloromethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	Bromodichloromethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	Bromoform	µg/l		<0.5	<0.5	-	-	-	-	-
L	Bromomethane	µg/l		<0.5	<0.5	-	-	-	-	-

			Laboratory Ref:	1301506	1301507	1301508	1301509	1301510	1301511	1301512
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01-LM10	WST-W0078-01-LM7
			Sampling point:	Wedge Chamber LS3	Brown, taken from lagoon	No sample	No sample	No sample	No sample	No sample
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	13:15	13:38	13:40	13:45	13:50	13:52	13:53
			Start/End - Dates of Analysis:	02-04-13/26-04-13	02-04-13/26-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
L	c-1,2-Dichloroethene	µg/l		<0.5	<0.5	-	-	-	-	-
L	c-1,3-Dichloropropene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Carbon Tetrachloride	µg/l		<0.5	<0.5	-	-	-	-	-
L	Chlorobenzene	µg/l		0.9	<0.5	-	-	-	-	-
L	Chloroform	µg/l		<0.5	<0.5	-	-	-	-	-
L	Dibromochloromethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	Dibromomethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	Dichlorodifluoromethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	Dichloromethane	µg/l		<0.5	<0.5	-	-	-	-	-
L	Ethylbenzene	µg/l		1.2	<0.5	-	-	-	-	-
L	Hexachlorobutadiene	µg/l		<0.1	<0.1	-	-	-	-	-
L	Isopropylbenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	m,p-Xylene	µg/l		1.5	<0.5	-	-	-	-	-
L	Naphthalene	µg/l		<0.5	<0.5	-	-	-	-	-
L	n-Butylbenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	n-Propylbenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	o-Xylene	µg/l		1.8	<0.5	-	-	-	-	-
L	sec-Butylbenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Styrene	µg/l		<0.5	<0.5	-	-	-	-	-
L	t-1,2-Dichloroethene	µg/l		<0.5	<0.5	-	-	-	-	-
L	t-1,3-Dichloropropene	µg/l		<0.5	<0.5	-	-	-	-	-
L	tert-Butylbenzene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Tetrachloroethene	µg/l		<0.5	<0.5	-	-	-	-	-

			Laboratory Ref:	1301506	1301507	1301508	1301509	1301510	1301511	1301512
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01-LM10	WST-W0078-01-LM7
			Sampling point:	Wedge Chamber LS3	Brown, taken from lagoon	No sample	No sample	No sample	No sample	No sample
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	13:15	13:38	13:40	13:45	13:50	13:52	13:53
			Start/End - Dates of Analysis:	02-04-13/26-04-13	02-04-13/26-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
L	Toluene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Trichloroethene	µg/l		<0.5	<0.5	-	-	-	-	-
L	Trichlorofluoromethane	µg/l		<0.6	<0.6	-	-	-	-	-
L	Vinyl Chloride	µg/l		<0.5	<0.5	-	-	-	-	-

Comments: Supplemental report to report KK1300625/1. This report was amended so that all the metals results were reported in the correct format.

1) **Results hilighted and in bold are outside specified limits.**
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5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
8) **L - Lab measured parameter.**
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Signed: PP 

Caroline Bowden, Regional Chemist

Date: 08/Nov/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 08/11/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected: 02/04/2013 Date received: 02/04/2013

			Laboratory Ref:	1301513	1301514	
			Type of sample:	Leachate	Leachate	
			Location code:	WST-W0078-01-LS2	WST-W0078-01-LM5	
			Sampling point:	Taken from chamber	No sample	
			Sampled by:	DB/JMcG	DB/JMcG	
			Time Sampled:	13:58	14:00	
			Start/End - Dates of Analysis:	02-04-13/30-04-13	02-04-13/02-04-13	
			Status of results:	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**			
F	Depth of Borehole	m		nm	-	
F	Leachate Level	m		nm	-	
F	pH	pH		7.4	-	
F	Conductivity @25°C	µS/cm		4430	-	
L	Ammonia	mg/l N		170	-	
L	Chloride	mg/l Cl		511	-	
L	Nitrite (as N)	mg/l N		0.371	-	
L	ortho-Phosphate (as P)	mg/l P		0.19	-	
L	Total Oxidised Nitrogen (as N)	mg/l N		27.18	-	
L	Chemical Oxygen Demand	mg/l O2		261	-	
L	Biochemical Oxygen Demand	mg/l O2		27.0	-	
L	Fluoride	mg/l F		2.9	-	
L	Sulphate	mg/l SO4		<12.5	-	
L	Aluminium	µg/l		30.3	-	
L	Antimony	µg/l		1.02	-	
L	Arsenic	µg/l		6.41	-	
L	Barium	µg/l		141	-	
L	Beryllium	µg/l		<0.5	-	
L	Boron	µg/l		1110	-	
L	Cadmium	µg/l		<0.5	-	
L	Calcium	mg/l		66	-	
L	Chromium	µg/l		8.6	-	

			Laboratory Ref:	1301513	1301514	
			Type of sample:	Leachate	Leachate	
			Location code:	WST-W0078-01-LS2	WST-W0078-01-LM5	
			Sampling point:	Taken from chamber	No sample	
			Sampled by:	DB/JMcG	DB/JMcG	
			Time Sampled:	13:58	14:00	
			Start/End - Dates of Analysis:	02-04-13/30-04-13	02-04-13/02-04-13	
			Status of results:	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**			
L	Cobalt	µg/l		6.11	-	
L	Copper	µg/l		4.1	-	
L	Iron	µg/l		2070	-	
L	Lead	µg/l		0.59	-	
L	Magnesium	mg/l		82.6	-	
L	Manganese	µg/l		290	-	
L	Mercury	µg/l		<0.5	-	
L	Molybdenum	µg/l		0.59	-	
L	Nickel	µg/l		30.3	-	
L	Potassium	mg/l		199	-	
L	Selenium	µg/l		24.3	-	
L	Sodium	mg/l		402	-	
L	Thallium	µg/l		<0.5	-	
L	Uranium	µg/l		<0.5	-	
L	Vanadium	µg/l		3.68	-	
L	Zinc	µg/l		36.2	-	
L	1,1,1,2-Tetrachloroethane	µg/l		<0.5	-	
L	1,1,1-Trichloroethane	µg/l		<0.5	-	
L	1,1,2,2-Tetrachloroethane	µg/l		<1	-	
L	1,1,2-Trichloroethane	µg/l		<0.5	-	
L	1,1-Dichloroethane	µg/l		<0.5	-	
L	1,1-Dichloroethene	µg/l		<0.5	-	
L	1,1-Dichloropropene	µg/l		<0.5	-	
L	1,2,3-Trichlorobenzene	µg/l		<0.4	-	
L	1,2,3-Trichloropropane	µg/l		<0.6	-	
L	1,2,4-Trichlorobenzene	µg/l		<0.4	-	
L	1,2,4-Trimethylbenzene	µg/l		<0.5	-	
L	1,2-Dibromo-3-Chloropropane	µg/l		<1.3	-	
L	1,2-Dibromoethane	µg/l		<0.5	-	
L	1,2-Dichlorobenzene	µg/l		<0.5	-	
L	1,2-Dichloroethane	µg/l		<0.5	-	
L	1,2-Dichloropropane	µg/l		<0.5	-	
L	1,3,5-Trimethylbenzene	µg/l		<0.5	-	
L	1,3-Dichlorobenzene	µg/l		<0.5	-	
L	1,3-Dichloropropane	µg/l		<0.5	-	
L	1,4-Dichlorobenzene	µg/l		<0.5	-	
L	2,2-Dichloropropane	µg/l		<0.5	-	
L	2-Chlorotoluene	µg/l		<0.5	-	
L	4-Chlorotoluene	µg/l		<0.5	-	
L	4-Isopropyltoluene	µg/l		<0.5	-	

			Laboratory Ref:	1301513	1301514	
			Type of sample:	Leachate	Leachate	
			Location code:	WST-W0078-01-LS2	WST-W0078-01-LM5	
			Sampling point:	Taken from chamber	No sample	
			Sampled by:	DB/JMcG	DB/JMcG	
			Time Sampled:	13:58	14:00	
			Start/End - Dates of Analysis:	02-04-13/30-04-13	02-04-13/02-04-13	
			Status of results:	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**			
L	Benzene	µg/l		<0.5	-	
L	Bromobenzene	µg/l		<0.5	-	
L	Bromochloromethane	µg/l		<0.5	-	
L	Bromodichloromethane	µg/l		<0.5	-	
L	Bromoform	µg/l		<0.5	-	
L	Bromomethane	µg/l		<0.5	-	
L	c-1,2-Dichloroethene	µg/l		<0.5	-	
L	c-1,3-Dichloropropene	µg/l		<0.5	-	
L	Carbon Tetrachloride	µg/l		<0.5	-	
L	Chlorobenzene	µg/l		<0.5	-	
L	Chloroform	µg/l		<0.5	-	
L	Dibromochloromethane	µg/l		<0.5	-	
L	Dibromomethane	µg/l		<0.5	-	
L	Dichlorodifluoromethane	µg/l		<0.5	-	
L	Dichloromethane	µg/l		<0.5	-	
L	Ethylbenzene	µg/l		<0.5	-	
L	Hexachlorobutadiene	µg/l		<0.1	-	
L	Isopropylbenzene	µg/l		<0.5	-	
L	m,p-Xylene	µg/l		<0.5	-	
L	Naphthalene	µg/l		<0.5	-	
L	n-Butylbenzene	µg/l		<0.5	-	
L	n-Propylbenzene	µg/l		<0.5	-	
L	o-Xylene	µg/l		<0.5	-	
L	sec-Butylbenzene	µg/l		<0.5	-	
L	Styrene	µg/l		<0.5	-	
L	t-1,2-Dichloroethene	µg/l		<0.5	-	
L	t-1,3-Dichloropropene	µg/l		<0.5	-	
L	tert-Butylbenzene	µg/l		<0.5	-	
L	Tetrachloroethene	µg/l		<0.5	-	
L	Toluene	µg/l		<0.5	-	
L	Trichloroethene	µg/l		<0.5	-	
L	Trichlorofluoromethane	µg/l		<0.6	-	
L	Vinyl Chloride	µg/l		<0.5	-	

Comments: Supplemental report to report KK1300626/1. This report was amended so that all the metals results were reported in the correct format.

1) **Results hilighted and in bold are outside specified limits.**
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5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
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Signed: PP  Date: 08/Nov/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	19/08/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	22/07/2013	Date received:	22/07/2013

			Laboratory Ref:	1303272	1303273	1303274	1303275	1303276	1303277	1303278
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-LS3-wedge chamber	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LFG22	WST-W0078-01-LM8	WST-W0078-01-LM10	WST-W0078-01-LM7
			Sampling point:	Slightly brown	Brown	Dry, no sample	Dry, no sample	Dry, no sample	Dry, no sample	Dry, no sample
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	13:55	14:30	14:45	14:32	14:35	14:40	14:42
			Start/End - Dates of Analysis:	22-07-13/29-07-13	22-07-13/29-07-13	22-07-13/22-07-13	22-07-13/22-07-13	22-07-13/22-07-13	22-07-13/22-07-13	22-07-13/22-07-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
F	Temperature	℃		21.7	22.6	-	-	-	-	-
F	pH	pH		7.0	7.6	-	-	-	-	-
F	Conductivity @25℃	µS/cm		2910	5570	-	-	-	-	-
L	Biochemical Oxygen Demand	mg/l O2		49.1	29.0	-	-	-	-	-
L	Chemical Oxygen Demand	mg/l O2		140	361	-	-	-	-	-

Comments:

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Signed: PP 

Caroline Bowden, Regional Chemist

Date: 19/Aug/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 19/08/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected: 22/07/2013 Date received: 22/07/2013

			Laboratory Ref:	1303279	1303280	
			Type of sample:	Leachate	Leachate	
			Location code:	WST-W0078-01-LS2	WST-W0078-01-LM5	
			Sampling point:	Brown	Dry, no sample	
			Sampled by:	DB/JMcG	DB/JMcG	
			Time Sampled:	14:50	14:48	
			Start/End - Dates of Analysis:	22-07-13/29-07-13	22-07-13/22-07-13	
			Status of results:	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**			
F	Temperature	℃		13.5	-	
F	pH	pH		7.4	-	
F	Conductivity @25℃	µS/cm		6740	-	
L	Biochemical Oxygen Demand	mg/l O2		34.5	-	
L	Chemical Oxygen Demand	mg/l O2		601	-	

Comments:

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
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Signed: PP _____ Date: 19/Aug/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	19/12/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	16/10/2013	Date received:	16/10/2013

			Laboratory Ref:	1304708	1304709	1304710	1304711	1304712	1304713	1304714
			Type of sample:	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
			Location code:	WST-W0078-01-L	WST-W0078-01-LL2	WST-W0078-01-LFG21	WST-W0078-01-LM8	WST-W0078-01-L	WST-W0078-01-L	WST-W0078-01-LM5
			Sampling point:	LS3-Wedge Chamber- no sample, level too low	brownish	dry, no sample	dry, no sample	LM10-dry, no sample	LS2-brown	dry, no sample
			Sampled by:	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD
			Time Sampled:	12:25	12:35	13:45	13:48	13:52	13:55	14:05
			Start/End - Dates of Analysis:	16-10-13/16-10-13	16-10-13/28-11-13	16-10-13/16-10-13	16-10-13/16-10-13	16-10-13/16-10-13	16-10-13/28-11-13	16-10-13/16-10-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
F	Temperature	℃		-	14.2	-	-	-	12.7	-
F	pH	pH		-	7.6	-	-	-	7.7	-
F	Conductivity @25℃	µS/cm		-	1841	-	-	-	8850	-
L	Biochemical Oxygen Demand	mg/l O2		-	12	-	-	-	87.5	-
L	Chemical Oxygen Demand	mg/l O2		-	140	-	-	-	971	-
L	Ammonia	mg/l N		-	90.7	-	-	-	498	-
L	Chloride	mg/l Cl		-	133	-	-	-	1030	-

Comments:

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Signed: PP  Date: 19/Dec/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	15/03/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	19/02/2013	Date received:	19/02/2013

			Laboratory Ref:	1300845	1300846	1300847	1300848	1300849	1300850	
			Type of sample:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 -SW3D	WST-W0078-01-SW6	WST-W0078-01-SWD	
			Sampling point:	Clear	Clear	Clear	Clear	clear	Low flow, cloudy	
			Sampled by:	D.Berry/M.Dorau	D.Berry/M.Dorau	D.Berry/M.Dorau	D.Berry/M.Dorau	D.Berry/M.Dorau	D.Berry/M.Dorau	
			Time Sampled:	09:50	10:00	13:40	13:50	14:10	12:10	
			Start/End - Dates of Analysis:							
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**							
F	Temperature	°C		6.7	7.3	8.4	8.5	8.4	7.1	
F	Dissolved Oxygen (as %Sat)	% Saturation		74.0	74.0	94.0	112.0	107.0	100.0	
F	pH	pH		7.6	7.2	7.2	7.6	7.6	7.7	
F	Conductivity @25°C	µS/cm		752	765	834	451	516	371	
L	Biochemical Oxygen Demand	mg/l O2		<1.0	1.2	<1.0	<1.0	<1.0	1.3	
L	Chemical Oxygen Demand	mg/l O2		30	26	<20	<20	<20	22	
L	Ammonia	mg/l N		0.18	0.23	0.07	0.08	0.07	0.99	
L	Chloride	mg/l Cl		24	17	20	15	15	11	
L	Suspended Solids	mg/l		7	<5	<5	<5	6	39	

Comments:

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Signed: PP

Caroline Bowden, Regional Chemist

Date: 15/Mar/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 08/11/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected: 02/04/2013 Date received: 02/04/2013

			Laboratory Ref:	1301493	1301494	1301495
			Type of sample:	Surface Water	Surface Water	Surface Water
			Location code:	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 - SW3D
			Sampling point:	Clear	Clear	Clear
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	11:25	14:15	14:45
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
F	Temperature	℃		5.1	7.9	7.8
F	Dissolved Oxygen (as %Sat)	% Saturation		82.0	94.0	114.0
F	pH	pH		7.1	7.5	7.9
F	Conductivity @25℃	µS/cm		785	843	461
L	Ammonia	mg/l N		0.2	0.03	<0.01
L	Chloride	mg/l Cl		17	21	14
L	Nitrite (as N)	mg/l N		0.012	0.011	0.004
L	ortho-Phosphate (as P)	mg/l P		0.01	0.01	0.01
L	Total Oxidised Nitrogen (as N)	mg/l N		1.69	5.34	3.16
L	Chemical Oxygen Demand	mg/l O2		25	<20	<20
L	Biochemical Oxygen Demand	mg/l O2		1.1	<1.0	<1.0
L	Sulphate	mg/l SO4		13	16	7.8
L	Suspended Solids	mg/l		<25	<25	<17
L	E Coli	per 100ml		96	<10	<10
L	Total coliforms	No/100 ml		380	310	10
L	Aluminium	µg/l		2.62	<12.5	2.73
L	Antimony	µg/l		<0.5	<0.5	<0.5
L	Arsenic	µg/l		0.98	<0.5	<0.5
L	Barium	µg/l		39.7	83.8	96
L	Beryllium	µg/l		<0.5	<0.5	<0.5
L	Boron	µg/l		34	28.8	14.3
L	Cadmium	µg/l		<0.5	<0.5	<0.5

			Laboratory Ref:	1301493	1301494	1301495
			Type of sample:	Surface Water	Surface Water	Surface Water
			Location code:	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 - SW3D
			Sampling point:	Clear	Clear	Clear
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	11:25	14:15	14:45
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
L	Calcium	mg/l		145	148	79.3
L	Chromium	µg/l		1.34	2.37	0.66
L	Cobalt	µg/l		1.2	<0.5	<0.5
L	Copper	µg/l		0.83	<0.5	<0.5
L	Iron	µg/l		408	95	50
L	Lead	µg/l		0.22	-0.0251	<0.5
L	Magnesium	mg/l		9.77	11.4	8.93
L	Manganese	µg/l		215	72.4	11.9
L	Mercury	µg/l		<0.5	<0.5	<0.5
L	Molybdenum	µg/l		0.26	<0.5	<0.5
L	Nickel	µg/l		2.57	<0.5	<0.5
L	Potassium	mg/l		4.45	5.88	1.88
L	Selenium	µg/l		0.65	0.79	<0.5
L	Sodium	mg/l		14.4	12.9	10
L	Thallium	µg/l		<0.5	<0.5	<0.5
L	Uranium	µg/l		1.17	1.63	<0.5
L	Vanadium	µg/l		0.34	<0.5	<0.5
L	Zinc	µg/l		7.88	4.58	7.8
L	1,1,1,2-Tetrachloroethane	µg/l		<0.5	<0.5	<0.5
L	1,1,1-Trichloroethane	µg/l		<0.5	<0.5	<0.5
L	1,1,2,2-Tetrachloroethane	µg/l		<1	<1	<1
L	1,1,2-Trichloroethane	µg/l		<0.5	<0.5	<0.5
L	1,1-Dichloroethane	µg/l		<0.5	<0.5	<0.5
L	1,1-Dichloroethene	µg/l		<0.5	<0.5	<0.5
L	1,1-Dichloropropene	µg/l		<0.5	<0.5	<0.5
L	1,2,3-Trichlorobenzene	µg/l		<0.4	<0.4	<0.4
L	1,2,3-Trichloropropane	µg/l		<0.6	<0.6	<0.6
L	1,2,4-Trichlorobenzene	µg/l		<0.4	<0.4	<0.4
L	1,2,4-Trimethylbenzene	µg/l		<0.5	<0.5	<0.5
L	1,2-Dibromo-3-Chloropropane	µg/l		<1.3	<1.3	<1.3
L	1,2-Dibromoethane	µg/l		<0.5	<0.5	<0.5
L	1,2-Dichlorobenzene	µg/l		<0.5	<0.5	<0.5
L	1,2-Dichloroethane	µg/l		<0.5	<0.5	<0.5
L	1,2-Dichloropropane	µg/l		<0.5	<0.5	<0.5
L	1,3,5-Trimethylbenzene	µg/l		<0.5	<0.5	<0.5
L	1,3-Dichlorobenzene	µg/l		<0.5	<0.5	<0.5
L	1,3-Dichloropropane	µg/l		<0.5	<0.5	<0.5
L	1,4-Dichlorobenzene	µg/l		<0.5	<0.5	<0.5
L	2,2-Dichloropropane	µg/l		<0.5	<0.5	<0.5
L	2-Chlorotoluene	µg/l		<0.5	<0.5	<0.5

			Laboratory Ref:	1301493	1301494	1301495
			Type of sample:	Surface Water	Surface Water	Surface Water
			Location code:	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 - SW3D
			Sampling point:	Clear	Clear	Clear
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	11:25	14:15	14:45
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
L	4-Chlorotoluene	µg/l		<0.5	<0.5	<0.5
L	4-Isopropyltoluene	µg/l		<0.5	<0.5	<0.5
L	Benzene	µg/l		<0.5	<0.5	<0.5
L	Bromobenzene	µg/l		<0.5	<0.5	<0.5
L	Bromochloromethane	µg/l		<0.5	<0.5	<0.5
L	Bromodichloromethane	µg/l		<0.5	<0.5	<0.5
L	Bromoform	µg/l		<0.5	<0.5	<0.5
L	Bromomethane	µg/l		<0.5	<0.5	<0.5
L	c-1,2-Dichloroethene	µg/l		<0.5	<0.5	<0.5
L	c-1,3-Dichloropropene	µg/l		<0.5	<0.5	<0.5
L	Carbon Tetrachloride	µg/l		<0.5	<0.5	<0.5
L	Chlorobenzene	µg/l		<0.5	<0.5	<0.5
L	Chloroform	µg/l		<0.5	<0.5	<0.5
L	Dibromochloromethane	µg/l		<0.5	<0.5	<0.5
L	Dibromomethane	µg/l		<0.5	<0.5	<0.5
L	Dichlorodifluoromethane	µg/l		<0.5	<0.5	<0.5
L	Dichloromethane	µg/l		<0.5	<0.5	<0.5
L	Ethylbenzene	µg/l		<0.5	<0.5	<0.5
L	Hexachlorobutadiene	µg/l		<0.1	<0.1	<0.1
L	Isopropylbenzene	µg/l		<0.5	<0.5	<0.5
L	m,p-Xylene	µg/l		<0.5	<0.5	<0.5
L	Naphthalene	µg/l		<0.5	<0.5	<0.5
L	n-Butylbenzene	µg/l		<0.5	<0.5	<0.5
L	n-Propylbenzene	µg/l		<0.5	<0.5	<0.5
L	o-Xylene	µg/l		<0.5	<0.5	<0.5
L	sec-Butylbenzene	µg/l		<0.5	<0.5	<0.5
L	Styrene	µg/l		<0.5	<0.5	<0.5
L	t-1,2-Dichloroethene	µg/l		<0.5	<0.5	<0.5
L	t-1,3-Dichloropropene	µg/l		<0.5	<0.5	<0.5
L	tert-Butylbenzene	µg/l		<0.5	<0.5	<0.5
L	Tetrachloroethene	µg/l		<0.5	<0.5	<0.5
L	Toluene	µg/l		<0.5	<0.5	<0.5
L	Trichloroethene	µg/l		<0.5	<0.5	<0.5
L	Trichlorofluoromethane	µg/l		<0.6	<0.6	<0.6
L	Vinyl Chloride	µg/l		<0.5	<0.5	<0.5

Comments: Supplemental report to report KK1300621/1. This report was amended so that all the metals results were reported in the correct format.

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2) **nm - "not measured".**
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Signed: PP 

Caroline Bowden, Regional Chemist

Date: 08/Nov/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 08/11/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected: 02/04/2013 Date received: 02/04/2013

			Laboratory Ref:	1301496	1301497	1301498
			Type of sample:	Surface Water	Surface Water	Surface Water
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SWD	WST-W0078-01-SW6
			Sampling point:	Clear	No sample, no discharge	Clear
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	11:15	13:25	14:30
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/02-04-13	02-04-13/24-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
F	Temperature	℃		4.7	-	8.0
F	Dissolved Oxygen (as %Sat)	% Saturation		97.0	-	109.0
F	pH	pH		7.1	-	7.9
F	Conductivity @25℃	µS/cm		761	-	510
L	Ammonia	mg/l N		0.13	-	0.02
L	Chloride	mg/l Cl		15	-	15
L	Nitrite (as N)	mg/l N		0.002	-	0.004
L	ortho-Phosphate (as P)	mg/l P		0.01	-	0.01
L	Total Oxidised Nitrogen (as N)	mg/l N		1.7	-	3.55
L	Chemical Oxygen Demand	mg/l O2		33	-	<20
L	Biochemical Oxygen Demand	mg/l O2		<1.0	-	<1.0
L	Sulphate	mg/l SO4		9	-	8.5
L	Suspended Solids	mg/l		<17	-	<17
L	E Coli	per 100ml		10	-	10
L	Total coliforms	No/100 ml		52	-	52
L	Aluminium	µg/l		11.1	-	3.43
L	Antimony	µg/l		<0.5	-	<0.5
L	Arsenic	µg/l		0.84	-	<0.5
L	Barium	µg/l		28.4	-	95.2
L	Beryllium	µg/l		<0.5	-	<0.5
L	Boron	µg/l		20	-	14.9
L	Cadmium	µg/l		<0.5	-	<0.5

			Laboratory Ref:	1301496	1301497	1301498
			Type of sample:	Surface Water	Surface Water	Surface Water
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SWD	WST-W0078-01-SW6
			Sampling point:	Clear	No sample, no discharge	Clear
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	11:15	13:25	14:30
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/02-04-13	02-04-13/24-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
L	Calcium	mg/l		151	-	87.5
L	Chromium	µg/l		1.07	-	0.87
L	Cobalt	µg/l		0.78	-	<0.5
L	Copper	µg/l		<0.5	-	<0.5
L	Iron	µg/l		743	-	80.1
L	Lead	µg/l		<0.5	-	<0.5
L	Magnesium	mg/l		9.3	-	8.3
L	Manganese	µg/l		120	-	27.2
L	Mercury	µg/l		<0.5	-	<0.5
L	Molybdenum	µg/l		<0.5	-	<0.5
L	Nickel	µg/l		<0.5	-	<0.5
L	Potassium	mg/l		2.23	-	2.58
L	Selenium	µg/l		<0.5	-	0.52
L	Sodium	mg/l		9.99	-	10.1
L	Thallium	µg/l		<0.5	-	<0.5
L	Uranium	µg/l		0.72	-	0.68
L	Vanadium	µg/l		<0.5	-	<0.5
L	Zinc	µg/l		6.76	-	5.08
L	1,1,1,2-Tetrachloroethane	µg/l		<0.5	-	<0.5
L	1,1,1-Trichloroethane	µg/l		<0.5	-	<0.5
L	1,1,2,2-Tetrachloroethane	µg/l		<1	-	<1
L	1,1,2-Trichloroethane	µg/l		<0.5	-	<0.5
L	1,1-Dichloroethane	µg/l		<0.5	-	<0.5
L	1,1-Dichloroethene	µg/l		<0.5	-	<0.5
L	1,1-Dichloropropene	µg/l		<0.5	-	<0.5
L	1,2,3-Trichlorobenzene	µg/l		<0.4	-	<0.4
L	1,2,3-Trichloropropane	µg/l		<0.6	-	<0.6
L	1,2,4-Trichlorobenzene	µg/l		<0.4	-	<0.4
L	1,2,4-Trimethylbenzene	µg/l		<0.5	-	<0.5
L	1,2-Dibromo-3-Chloropropane	µg/l		<1.3	-	<1.3
L	1,2-Dibromoethane	µg/l		<0.5	-	<0.5
L	1,2-Dichlorobenzene	µg/l		<0.5	-	<0.5
L	1,2-Dichloroethane	µg/l		<0.5	-	<0.5
L	1,2-Dichloropropane	µg/l		<0.5	-	<0.5
L	1,3,5-Trimethylbenzene	µg/l		<0.5	-	<0.5
L	1,3-Dichlorobenzene	µg/l		<0.5	-	<0.5
L	1,3-Dichloropropane	µg/l		<0.5	-	<0.5
L	1,4-Dichlorobenzene	µg/l		<0.5	-	<0.5
L	2,2-Dichloropropane	µg/l		<0.5	-	<0.5
L	2-Chlorotoluene	µg/l		<0.5	-	<0.5

			Laboratory Ref:	1301496	1301497	1301498
			Type of sample:	Surface Water	Surface Water	Surface Water
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SWD	WST-W0078-01-SW6
			Sampling point:	Clear	No sample, no discharge	Clear
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	11:15	13:25	14:30
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/02-04-13	02-04-13/24-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
L	4-Chlorotoluene	µg/l		<0.5	-	<0.5
L	4-Isopropyltoluene	µg/l		<0.5	-	<0.5
L	Benzene	µg/l		<0.5	-	<0.5
L	Bromobenzene	µg/l		<0.5	-	<0.5
L	Bromochloromethane	µg/l		<0.5	-	<0.5
L	Bromodichloromethane	µg/l		<0.5	-	<0.5
L	Bromoform	µg/l		<0.5	-	<0.5
L	Bromomethane	µg/l		<0.5	-	<0.5
L	c-1,2-Dichloroethene	µg/l		<0.5	-	<0.5
L	c-1,3-Dichloropropene	µg/l		<0.5	-	<0.5
L	Carbon Tetrachloride	µg/l		<0.5	-	<0.5
L	Chlorobenzene	µg/l		<0.5	-	<0.5
L	Chloroform	µg/l		<0.5	-	<0.5
L	Dibromochloromethane	µg/l		<0.5	-	<0.5
L	Dibromomethane	µg/l		<0.5	-	<0.5
L	Dichlorodifluoromethane	µg/l		<0.5	-	<0.5
L	Dichloromethane	µg/l		<0.5	-	<0.5
L	Ethylbenzene	µg/l		<0.5	-	<0.5
L	Hexachlorobutadiene	µg/l		<0.1	-	<0.1
L	Isopropylbenzene	µg/l		<0.5	-	<0.5
L	m,p-Xylene	µg/l		<0.5	-	<0.5
L	Naphthalene	µg/l		<0.5	-	<0.5
L	n-Butylbenzene	µg/l		<0.5	-	<0.5
L	n-Propylbenzene	µg/l		<0.5	-	<0.5
L	o-Xylene	µg/l		<0.5	-	<0.5
L	sec-Butylbenzene	µg/l		<0.5	-	<0.5
L	Styrene	µg/l		<0.5	-	<0.5
L	t-1,2-Dichloroethene	µg/l		<0.5	-	<0.5
L	t-1,3-Dichloropropene	µg/l		<0.5	-	<0.5
L	tert-Butylbenzene	µg/l		<0.5	-	<0.5
L	Tetrachloroethene	µg/l		<0.5	-	<0.5
L	Toluene	µg/l		<0.5	-	<0.5
L	Trichloroethene	µg/l		<0.5	-	<0.5
L	Trichlorofluoromethane	µg/l		<0.6	-	<0.6
L	Vinyl Chloride	µg/l		<0.5	-	<0.5

Comments: Supplemental report to report KK1300622/1. This report was amended so that all the metals results were reported in the correct format.

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Signed: PP  Date: 08/Nov/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 19/08/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected:	22/07/2013	Date received:	22/07/2013

			Laboratory Ref:	1303259	1303260	1303261	1303262	1303263	1303264	
			Type of sample:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 - SW3D	WST-W0078-01-SW6	WST-W0078-01-SWD	
			Sampling point:	Peaty brown	Peaty brown	Clear	Clear	Clear	Dry, no sample	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	11:40	11:50	15:05	15:15	15:40	14:55	
			Start/End - Dates of Analysis:				22-07-13/29-07-13	22-07-13/29-07-13	22-07-13/22-07-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**							
F	Temperature	℃		16.8	16.7	16.9	19.1	19.1	-	
F	Dissolved Oxygen (as %Sat)	% Saturation		38.0	51.0	82.0	100.0	104.0	-	
F	pH	pH		6.5	7.5	7.2	7.8	7.8	-	
F	Conductivity @25℃	µS/cm		780	898	801	518	534	-	
L	Biochemical Oxygen Demand	mg/l O2		1.8	10.2	<1.0	1.1	1.0	-	
L	Chemical Oxygen Demand	mg/l O2		71	49	<20	<20	<20	-	
L	Ammonia	mg/l N		0.51	1.9	0.04	0.02	0.02	-	
L	Chloride	mg/l Cl		12	21	22	16	16	-	
L	Suspended Solids	mg/l		14	10	10	8	10	-	

Comments:

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Signed: PP  Date: 19/Aug/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 19/12/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected:	16/10/2013	Date received:	16/10/2013

			Laboratory Ref:	1304695	1304696	1304697	1304698	1304699	1304700	
			Type of sample:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 - SW3D	WST-W0078-01-SW6	WST-W0078-01-SWD	
			Sampling point:	Heavy rain, brown	brownish	clear	brown, river in flood	brown river in flood	clear	
			Sampled by:	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD	
			Time Sampled:	11:00	11:10	14:20	14:50	14:45	12:55	
			Start/End - Dates of Analysis:	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**							
F	Temperature	℃		10.6	10.7	12.0	11.6	11.5	12.0	
F	Dissolved Oxygen (as %Sat)	% Saturation		98.0	65.0	70.0	94.0	90.0	98.0	
F	pH	pH		6.5	7.1	7.0	7.2	7.5	7.0	
F	Conductivity @25℃	µS/cm		139	668	735	262	405	103	
L	Biochemical Oxygen Demand	mg/l O2		2.9	7.6	4.4	3.9	7.2	1.1	
L	Chemical Oxygen Demand	mg/l O2		78	48	33	119	51	<10	
L	Ammonia	mg/l N		0.06	0.29	0.02	0.16	0.29	0.08	
L	Chloride	mg/l Cl		7	23	28	16	17	4	
L	Suspended Solids	mg/l		33	7	5	433	235	7	

Comments:

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Signed: PP  Date: 19/Dec/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	15/01/14

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	22/07/2013	Date received:	22/07/2013

			Laboratory Ref:	1303259	1303260	1303261	1303262	1303263	1303264	
			Type of sample:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	
			Location code:	WST-W0078-01-SW4	WST-W0078-01-SW1	WST-W0078-01-SW2	WST-W0078-01 -SWD3	WST-W0078-01-SW6	WST-W0078-01-SWD	
			Sampling point:	Peaty brown	Peaty brown	Clear	Clear	Clear	Discharge to Ballyaghveny Stream - Dry	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	11:40	11:50	15:05	15:15	15:40	14:55	
			Start/End - Dates of Analysis:				22-07-13/29-07-13	22-07-13/29-07-13	22-07-13/22-07-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**							
F	Temperature	℃		16.8	16.7	16.9	19.1	19.1	-	
F	Dissolved Oxygen (as %Sat)	% Saturation		38.0	51.0	82.0	100.0	104.0	-	
F	pH	pH		6.5	7.5	7.2	7.8	7.8	-	
F	Conductivity @25℃	µS/cm		780	898	801	518	534	-	
L	Biochemical Oxygen Demand	mg/l O2		1.8	10.2	<1.0	1.1	1.0	-	
L	Chemical Oxygen Demand	mg/l O2		71	49	<20	<20	<20	-	
L	Ammonia	mg/l N		0.51	1.9	0.04	0.02	0.02	-	
L	Chloride	mg/l Cl		12	21	22	16	16	-	
L	Suspended Solids	mg/l		14	10	10	8	10	-	

Comments: Supplement to Test Report KK13011361/1. This supplemental report was issued to correct the location code for sample 1303262 and to clarify the location of sample 1303264.

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Signed: PP  Date: 15/Jan/2014

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	15/03/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	19/02/2013	Date received:	19/02/2013

			Laboratory Ref:	1300851	1300852	1300853	1300854	1300855	1300856	1300857
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Location code:	WST-W0078-01-BH3new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-Bressons	WST-W0078-01-GW12	WST-W0078-01-GW5new	WST-W0078-01
			Sampling point:	Clear	Clear	Clear	clear	Clear	Clear	No sample, pump house gone
			Sampled by:	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou	D.Berry/M.Durou
			Time Sampled:	10:00	10:10	11:00	10:40	11:15	11:30	13:30
			Start/End - Dates of Analysis:	19-02-13/01-03-13	19-02-13/01-03-13	19-02-13/01-03-13	19-02-13/01-03-13	19-02-13/01-03-13	19-02-13/01-03-13	19-02-13/19-02-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
F	Depth of Borehole	m		12.3	13.5	13.3	nm	nm	14	-
F	Water Level	m		8	9	10.7	nm	nm	12.8	-
F	Temperature	°C		9.7	10.3	9.6	6.6	9.2	10.0	-
F	Dissolved Oxygen (as %Sat)	% Saturation		25.0	40.0	80.0	870.0	82.0	26.0	-
F	pH	pH		6.7	6.9	6.7	7.0	6.6	6.5	-
F	Conductivity @25°C	µS/cm		961	1152	882	833	810	738	-
L	Ammonia	mg/l N		0.07	5.1	0.11	0.05	0.04	0.46	-
L	Chloride	mg/l Cl		26	79	26	14	13	17	-
L	Sulphate	mg/l SO4		11	26	18	8.5	6.7	34	-
L	Total coliforms	No/100 ml		-	-	-	0	98	-	-
L	E Coli	per 100ml		-	-	-	0	<10	-	-

Comments:

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Signed: PP _____ Date: 15/Mar/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 08/11/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected: 02/04/2013 Date received: 02/04/2013

				Laboratory Ref:	1301499	1301500	1301501
				Type of sample:	Groundwater	Groundwater	Groundwater
				Location code:	WST-W0078-01-Bressons	WST-W0078-01-GW12	WST-W0078-01-Cullinans
				Sampling point:	Clear, tap at pump house	Clear, well in pump house	No sample, sampling point gone
				Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
				Time Sampled:	12:00	12:30	14:10
				Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/02-04-13
				Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**				
F	Depth of Borehole	m			nm	nm	-
F	Water Level	m			nm	nm	-
F	Temperature	℃			5.5	7.9	-
F	Dissolved Oxygen (as %Sat)	% Saturation			58.0	72.0	-
F	pH	pH			7.0	7.0	-
F	Conductivity @25℃	µS/cm			842	789	-
L	Ammonia	mg/l N			<0.01	0.02	-
L	Chloride	mg/l Cl			15	17	-
L	Nitrite (as N)	mg/l N			<0.002	<0.002	-
L	ortho-Phosphate (as P)	mg/l P			<0.01	<0.01	-
L	Total Oxidised Nitrogen (as N)	mg/l N			3.8	4.29	-
L	Fluoride	mg/l F			<0.25	<0.25	-
L	Sulphate	mg/l SO4			9.7	7.8	-
L	E Coli	per 100ml			<10	<10	-
L	Total coliforms	No/100 ml			<10	72	-
L	Aluminium	µg/l			<12.5	6.43	-
L	Antimony	µg/l			<0.5	0.91	-
L	Arsenic	µg/l			<0.5	<0.5	-
L	Barium	µg/l			32.4	27.8	-
L	Beryllium	µg/l			<0.5	<0.5	-
L	Boron	µg/l			22.8	16.5	-
L	Cadmium	µg/l			<0.5	<0.5	-

			Laboratory Ref:	1301499	1301500	1301501
			Type of sample:	Groundwater	Groundwater	Groundwater
			Location code:	WST-W0078-01-Bressons	WST-W0078-01-GW12	WST-W0078-01-Cullinans
			Sampling point:	Clear, tap at pump house	Clear, well in pump house	No sample, sampling point gone
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	12:00	12:30	14:10
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
L	Calcium	mg/l		169	153	-
L	Chromium	µg/l		1.78	<0.5	-
L	Cobalt	µg/l		<0.5	<0.5	-
L	Copper	µg/l		5.97	<0.5	-
L	Iron	µg/l		<25	<25	-
L	Lead	µg/l		<0.5	<0.5	-
L	Magnesium	mg/l		10.8	10.3	-
L	Manganese	µg/l		<25	<25	-
L	Mercury	µg/l		<0.5	<0.5	-
L	Molybdenum	µg/l		<0.5	0.96	-
L	Nickel	µg/l		<0.5	<0.5	-
L	Potassium	mg/l		2.8	1.14	-
L	Selenium	µg/l		1.23	0.89	-
L	Sodium	mg/l		10.2	13.4	-
L	Thallium	µg/l		<0.5	<0.5	-
L	Uranium	µg/l		1.03	<0.5	-
L	Vanadium	µg/l		<0.5	<0.5	-
L	Zinc	µg/l		7.61	4.37	-
L	1,1,1,2-Tetrachloroethane	µg/l		<0.5	<0.5	-
L	1,1,1-Trichloroethane	µg/l		<0.5	0.7	-
L	1,1,2,2-Tetrachloroethane	µg/l		<1	<1	-
L	1,1,2-Trichloroethane	µg/l		<0.5	<0.5	-
L	1,1-Dichloroethane	µg/l		<0.5	1.6	-
L	1,1-Dichloroethene	µg/l		<0.5	<0.5	-
L	1,1-Dichloropropene	µg/l		<0.5	<0.5	-
L	1,2,3-Trichlorobenzene	µg/l		<0.4	<0.4	-
L	1,2,3-Trichloropropane	µg/l		<0.6	<0.6	-
L	1,2,4-Trichlorobenzene	µg/l		<0.4	<0.4	-
L	1,2,4-Trimethylbenzene	µg/l		<0.5	<0.5	-
L	1,2-Dibromo-3-Chloropropane	µg/l		<1.3	<1.3	-
L	1,2-Dibromoethane	µg/l		<0.5	<0.5	-
L	1,2-Dichlorobenzene	µg/l		<0.5	<0.5	-
L	1,2-Dichloroethane	µg/l		<0.5	<0.5	-
L	1,2-Dichloropropane	µg/l		<0.5	<0.5	-
L	1,3,5-Trimethylbenzene	µg/l		<0.5	<0.5	-
L	1,3-Dichlorobenzene	µg/l		<0.5	<0.5	-
L	1,3-Dichloropropane	µg/l		<0.5	<0.5	-
L	1,4-Dichlorobenzene	µg/l		<0.5	<0.5	-
L	2,2-Dichloropropane	µg/l		<0.5	<0.5	-
L	2-Chlorotoluene	µg/l		<0.5	<0.5	-

			Laboratory Ref:	1301499	1301500	1301501
			Type of sample:	Groundwater	Groundwater	Groundwater
			Location code:	WST-W0078-01-Bressons	WST-W0078-01-GW12	WST-W0078-01-Cullinans
			Sampling point:	Clear, tap at pump house	Clear, well in pump house	No sample, sampling point gone
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	12:00	12:30	14:10
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/02-04-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**			
L	4-Chlorotoluene	µg/l		<0.5	<0.5	-
L	4-Isopropyltoluene	µg/l		<0.5	<0.5	-
L	Benzene	µg/l		<0.5	<0.5	-
L	Bromobenzene	µg/l		<0.5	<0.5	-
L	Bromochloromethane	µg/l		<0.5	<0.5	-
L	Bromodichloromethane	µg/l		4.2	<0.5	-
L	Bromoform	µg/l		6.1	<0.5	-
L	Bromomethane	µg/l		<0.5	<0.5	-
L	c-1,2-Dichloroethene	µg/l		<0.5	0.8	-
L	c-1,3-Dichloropropene	µg/l		<0.5	<0.5	-
L	Carbon Tetrachloride	µg/l		<0.5	<0.5	-
L	Chlorobenzene	µg/l		<0.5	<0.5	-
L	Chloroform	µg/l		0.9	<0.5	-
L	Dibromochloromethane	µg/l		8.8	<0.5	-
L	Dibromomethane	µg/l		<0.5	<0.5	-
L	Dichlorodifluoromethane	µg/l		<0.5	<0.5	-
L	Dichloromethane	µg/l		<0.5	3.3	-
L	Ethylbenzene	µg/l		<0.5	<0.5	-
L	Hexachlorobutadiene	µg/l		<0.1	<0.1	-
L	Isopropylbenzene	µg/l		<0.5	<0.5	-
L	m,p-Xylene	µg/l		<0.5	<0.5	-
L	Naphthalene	µg/l		<0.5	<0.5	-
L	n-Butylbenzene	µg/l		<0.5	<0.5	-
L	n-Propylbenzene	µg/l		<0.5	<0.5	-
L	o-Xylene	µg/l		<0.5	<0.5	-
L	sec-Butylbenzene	µg/l		<0.5	<0.5	-
L	Styrene	µg/l		<0.5	<0.5	-
L	t-1,2-Dichloroethene	µg/l		<0.5	<0.5	-
L	t-1,3-Dichloropropene	µg/l		<0.5	<0.5	-
L	tert-Butylbenzene	µg/l		<0.5	<0.5	-
L	Tetrachloroethene	µg/l		<0.5	<0.5	-
L	Toluene	µg/l		<0.5	0.5	-
L	Trichloroethene	µg/l		<0.5	<0.5	-
L	Trichlorofluoromethane	µg/l		<0.6	<0.6	-
L	Vinyl Chloride	µg/l		<0.5	<0.5	-

Comments: Supplemental report to report KK1300623/1. This report was amended so that all the metals results were reported in the correct format.

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
8) **L - Lab measured parameter.**
9) **Test Reports relate only to the samples tested and as described on the report form.**
10) **Test Reports shall not be reproduced, except in full, without consent of the EPA.**

Signed: PP 

Caroline Bowden, Regional Chemist

Date: 08/Nov/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 04/11/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected:	02/04/2013	Date received:	02/04/2013

			Laboratory Ref:	1301502	1301503	1301504	1301505	
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	
			Location code:	WST-W0078-01-GW5new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-BH3new	
			Sampling point:	Slightly Cloudy	Clear	Clear	Clear	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	12:55	11:50	12:15	11:35	
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/26-04-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**					
F	Depth of Borehole	m		14	13.5	13.3	12.3	
F	Water Level	m		12.4	8.8	9.8	7.5	
F	Temperature	℃		9.4	10.6	9.6	9.7	
F	Dissolved Oxygen (as %Sat)	% Saturation		18.0	25.0	63.0	24.0	
F	pH	pH		6.8	6.8	6.8	6.7	
F	Conductivity @25℃	µS/cm		740	1231	852	984	
L	Ammonia	mg/l N		0.54	8.6	0.02	0.11	
L	Chloride	mg/l Cl		17	102	26	33	
L	Nitrite (as N)	mg/l N		<0.002	0.003	<0.002	<0.002	
L	ortho-Phosphate (as P)	mg/l P		<0.01	<0.01	<0.01	<0.01	
L	Total Oxidised Nitrogen (as N)	mg/l N		<0.20	4.03	15.54	7.6	
L	Fluoride	mg/l F		<0.25	1	<0.25	<0.25	
L	Sulphate	mg/l SO4		33	31	18	13	
L	E Coli	per 100ml		<10	<10	<10	<10	
L	Total coliforms	No/100 ml		<10	<10	<10	<10	
L	Aluminium	µg/l		78.6	13.8	28.4	7.16	
L	Antimony	µg/l		0.67	0.29	<0.5	<0.5	
L	Arsenic	µg/l		3.31	1.91	1.02	<0.5	
L	Barium	µg/l		42.5	84.9	32.4	47.4	
L	Beryllium	µg/l		0.03	0.01	<0.5	<0.5	
L	Boron	µg/l		13	147	41.6	85.5	
L	Cadmium	µg/l		0.02	0.03	<0.5	<0.5	
L	Calcium	mg/l		159	151	130	167	

			Laboratory Ref:	1301502	1301503	1301504	1301505	
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	
			Location code:	WST-W0078-01-GW5new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-BH3new	
			Sampling point:	Slightly Cloudy	Clear	Clear	Clear	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	12:55	11:50	12:15	11:35	
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/26-04-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**					
L	Chromium	µg/l		0.85	1.01	1.32	1.93	
L	Cobalt	µg/l		0.76	2.19	<0.5	1.12	
L	Copper	µg/l		0.67	0.32	<0.5	0.84	
L	Iron	µg/l		2670	625	188	66.6	
L	Lead	µg/l		0.72	0.53	<0.5	<0.5	
L	Magnesium	mg/l		6.28	22.8	10.8	14.9	
L	Manganese	µg/l		353	277	22.9	278	
L	Mercury	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Molybdenum	µg/l		0.84	0.25	<0.5	<0.5	
L	Nickel	µg/l		-1.59	5.62	<0.5	<0.5	
L	Potassium	mg/l		0.55	11.7	1.9	8.95	
L	Selenium	µg/l		0.56	3.05	1.09	0.99	
L	Sodium	mg/l		7.67	72.7	13.8	25.3	
L	Thallium	µg/l		0.05	0.03	<0.5	<0.5	
L	Uranium	µg/l		1.9	0.66	0.5	0.74	
L	Vanadium	µg/l		0.49	0.1	<0.5	<0.5	
L	Zinc	µg/l		6.69	8.44	9.95	7.33	
L	1,1,1,2-Tetrachloroethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,1,1-Trichloroethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,1,2,2-Tetrachloroethane	µg/l		<1	<1	<1	<1	
L	1,1,2-Trichloroethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,1-Dichloroethane	µg/l		<0.5	<0.5	3.4	<0.5	
L	1,1-Dichloroethene	µg/l		<0.5	<0.5	<0.5	<0.5	

			Laboratory Ref:	1301502	1301503	1301504	1301505	
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	
			Location code:	WST-W0078-01-GW5new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-BH3new	
			Sampling point:	Slightly Cloudy	Clear	Clear	Clear	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	12:55	11:50	12:15	11:35	
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/26-04-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**					
L	1,1-Dichloropropene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,2,3-Trichlorobenzene	µg/l		<0.4	<0.4	<0.4	<0.4	
L	1,2,3-Trichloropropane	µg/l		<0.6	<0.6	<0.6	<0.6	
L	1,2,4-Trichlorobenzene	µg/l		<0.4	<0.4	<0.4	<0.4	
L	1,2,4-Trimethylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,2-Dibromo-3-Chloropropane	µg/l		<1.3	<1.3	<1.3	<1.3	
L	1,2-Dibromoethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,2-Dichlorobenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,2-Dichloroethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,2-Dichloropropane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,3,5-Trimethylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,3-Dichlorobenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,3-Dichloropropane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	1,4-Dichlorobenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	2,2-Dichloropropane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	2-Chlorotoluene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	4-Chlorotoluene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	4-Isopropyltoluene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Benzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Bromobenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Bromochloromethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Bromodichloromethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Bromoform	µg/l		<0.5	<0.5	<0.5	<0.5	

			Laboratory Ref:	1301502	1301503	1301504	1301505	
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	
			Location code:	WST-W0078-01-GW5new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-BH3new	
			Sampling point:	Slightly Cloudy	Clear	Clear	Clear	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	12:55	11:50	12:15	11:35	
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/26-04-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**					
L	Bromomethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	c-1,2-Dichloroethene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	c-1,3-Dichloropropene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Carbon Tetrachloride	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Chlorobenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Chloroform	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Dibromochloromethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Dibromomethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Dichlorodifluoromethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Dichloromethane	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Ethylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Hexachlorobutadiene	µg/l		<0.1	<0.1	<0.1	<0.1	
L	Isopropylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	m,p-Xylene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Naphthalene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	n-Butylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	n-Propylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	o-Xylene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	sec-Butylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Styrene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	t-1,2-Dichloroethene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	t-1,3-Dichloropropene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	tert-Butylbenzene	µg/l		<0.5	<0.5	<0.5	<0.5	

			Laboratory Ref:	1301502	1301503	1301504	1301505	
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	
			Location code:	WST-W0078-01-GW5new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-BH3new	
			Sampling point:	Slightly Cloudy	Clear	Clear	Clear	
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	
			Time Sampled:	12:55	11:50	12:15	11:35	
			Start/End - Dates of Analysis:	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/24-04-13	02-04-13/26-04-13	
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	
Parameter		**Units**	**Limits**					
L	Tetrachloroethene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Toluene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Trichloroethene	µg/l		<0.5	<0.5	<0.5	<0.5	
L	Trichlorofluoromethane	µg/l		<0.6	<0.6	<0.6	<0.6	
L	Vinyl Chloride	µg/l		<0.5	<0.5	<0.5	<0.5	

Comments: Supplemental report to report KK1300624/1. This report was amended so that all the metals results were reported in the correct format.

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
8) **L - Lab measured parameter.**
9) **Test Reports relate only to the samples tested and as described on the report form.**
10) **Test Reports shall not be reproduced, except in full, without consent of the EPA.**

Signed: PP

Caroline Bowden, Regional Chemist

Date: 04/Nov/2013

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of:	Analysis of landfill site sample(s)
Report to:	North Tipperary County Council
Report date:	19/08/13

Facility:	**Ballaghveny Landfill** Ballymackey, Co. Tipperary,
Reference No:	W0078-01

Date collected:	22/07/2013	Date received:	22/07/2013

			Laboratory Ref:	1303265	1303266	1303267	1303268	1303269	1303270	1303271
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Location code:	WST-W0078-01-BH3new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-Bressons	WST-W0078-01-GW12	WST-W0078-01-GW5new	WST-W0078-01-GW
			Sampling point:	Clear	Clear	Clear	Clear	Clear	Brownish	Cullinens
			Sampled by:	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG	DB/JMcG
			Time Sampled:	12:00	12:15	12:55	12:40	13:15	13:45	nm
			Start/End - Dates of Analysis:	22-07-13/31-07-13	22-07-13/31-07-13	22-07-13/31-07-13	22-07-13/31-07-13	22-07-13/31-07-13	22-07-13/31-07-13	22-07-13/22-07-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
F	Depth of Borehole	m		12.3	13.5	13.3	nm	nm	14	-
F	Water Level	m		6.2	8.5	9.1	nm	nm	12.5	-
F	Temperature	℃		10.7	12.2	12.3	15.8	11.5	11.5	-
F	Dissolved Oxygen (as %Sat)	% Saturation		24.0	16.0	46.0	70.0	61.0	17.0	-
F	pH	pH		6.7	6.6	6.5	6.6	6.7	6.5	-
F	Conductivity @25℃	µS/cm		1001	1501	825	864	798	726	-
L	Ammonia	mg/l N		0.32	9.6	0.02	0.01	0.02	0.52	-
L	Chloride	mg/l Cl		39	158	34	32	22	17	-
L	Sulphate	mg/l SO4		16	29	17	13	9.2	30	-
L	E Coli	per 100ml		-	-	-	0	-	-	-
L	Total coliforms	No/100 ml		-	-	-	0	-	-	-

Comments:

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
8) **L - Lab measured parameter.**
9) **Test Reports relate only to the samples tested and as described on the report form.**
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Signed: PP  Date: 19/Aug/2013

Caroline Bowden, Regional Chemist

Environmental Protection Agency
Regional Inspectorate
Seville Lodge, Callan Road,
Kilkenny

Test Report

Report of: Analysis of landfill site sample(s)
Report to: North Tipperary County Council
Report date: 19/12/13

Facility: **Ballaghveny Landfill**
Ballymackey, Co. Tipperary,
Reference No: W0078-01

Date collected:	16/10/2013	Date received:	16/10/2013

			Laboratory Ref:	1304701	1304702	1304703	1304704	1304705	1304706	1304707
			Type of sample:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Location code:	WST-W0078-01-BH3new	WST-W0078-01-GW9new	WST-W0078-01-GW10new	WST-W0078-01-Bressons	WST-W0078-01-GW12	WST-W0078-01-GW5new	WST-W0078-01-GW
			Sampling point:	clear	clear	clear	clear	clear	clear	Cullinans-sampling point gone, no sample
			Sampled by:	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD	DB & MD
			Time Sampled:	11:20	11:35	11:45	11:55	12:10	12:50	13:20
			Start/End - Dates of Analysis:	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/22-10-13	16-10-13/16-10-13
			Status of results:	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**	**Final Report**
Parameter		**Units**	**Limits**							
F	Depth of Borehole	m		12.3	13.5	13.3	nm	nm	14	-
F	Water Level	m		5.8	8.5	9	nm	nm	11.6	-
F	Temperature	℃		10.7	12.0	11.0	12.5	11.7	10.9	-
F	Dissolved Oxygen (as %Sat)	% Saturation		24.0	26.0	25.0	58.0	40.0	16.0	-
F	pH	pH		6.7	6.7	6.8	6.7	6.8	6.8	-
F	Conductivity @25℃	µS/cm		1044	1169	825	833	824	755	-
L	Ammonia	mg/l N		0.12	15	<0.02	<0.02	<0.02	0.66	-
L	Chloride	mg/l Cl		53	211	39	20	25	19	-
L	Fluoride	mg/l F		<0.5	<0.5	<0.25	<0.25	<0.25	<0.25	-
L	Sulphate	mg/l SO4		17	21	17	15	13	29	-
L	Total coliforms	No/100 ml		-	-	-	0	9200	-	-
L	E Coli	per 100ml		-	-	-	0	<10	-	-

Comments:

1) **Results hilighted and in bold are outside specified limits.**
2) **nm - "not measured".**
3) **nd - "none detected".**
4) **nt - "time not recorded".**
5) **nr - "not reported".**
6) **tntc - "too numerous to count".**
7) **F - Field measured parameter.**
8) **L - Lab measured parameter.**
9) **Test Reports relate only to the samples tested and as described on the report form.**
10) **Test Reports shall not be reproduced, except in full, without consent of the EPA.**

Signed: PP  Date: 19/Dec/2013

Caroline Bowden, Regional Chemist

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Flare & Ancillary Equipment Inspection/Service Record

Site/Location:	Ballaghveny
Technician:	John Smith
Equipment details / Reference #.	Organics 500 Enclosed Flare
Date:	28/1/2013

Item	*Readings to be taken daily or fed to SCADA*	Data Recorded		Item Checked			Condition		Comment
1) Daily Inspection				**Y**	**N**	**N/A**	**OK**	**Fault**	
001	CH4	47.1	% Vol.						
002	CO2	29.4	% Vol.						
003	O2	1	% Vol.						
004	CO	4	PPM						
005	Record booster operational hours	35443	Hrs						
006	Flow rate	300	M3/hr						
007	Suction pressure	-7	Mbar						
008	Flare Temperature	1020	C°						
2) Weekly Inspection									
009	Is pilot line free of condensate?			✓			✓		
010	Is emissions sample line clear?			✓			✓		
011	Is there adequate flow through the analysers?			✓			✓		
012	Is the UV sensor free of dirt and aimed correctly?			✓			✓		Cleaned
013	Check flare temp and louver operation			✓			✓		New TC element
014	Check pots for condensate build up			✓			✓		
015	Check for any obvious defects			✓			✓		
016	Condensate Pump (Hour Clock / Cycle Counter)								
017	Compressor - pressure & condensate check	7	Bar				✓		
3) Monthly Inspection (to include items above)									
018	Calibrate Rosemount analyser or Equivalent			✓			✓		
019	Are there any gas leaks in or around the skid?			✓			✓		
020	Is the ignition probe correctly positioned?			✓			✓		Removed/decoked and repositioned
021	Are the condensate collection tanks empty?			✓			✓		
022	Pressure drops across the flame traps	6	mbar				✓		
023	Clean the pilot flame trap			✓			✓		
024	Check for any obvious defects throughout			✓			✓		
025	Abnormal Noise			✓			✓		
026	Oil / Grease stains or leaks			✓			✓		

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		Data Recorded		Y	N	N/A	OK	Fault	Comment
			Units						
027	Blow down compressor			✓			✓		
028	Check pressure relief valve			✓			✓		
029	Check Air Dryer operation & condition					✓			
030	Clean flame arresters			✓			✓		Chemically cleaned & power washed
031	Examine burner tips for deterioration			✓			✓		Some of the burners show signs of deterioration.
032	Calibrate Rosemount analyser or Equivalent			✓			✓		
033	Check safety chain			✓			✓		
034	Change oil in booster					✓			
035	Check belt tension					✓			
036	Clean pilot solenoid filter			✓			✓		
037	Clean Demister Filter			✓			✓		Cleaned
038	Check for excess vibration/noise in skid			✓			✓		
039	Check temp. in skid and extractor fan operation					✓			
040	Any obvious defects			✓			✓		
041	Check integrity of wiring/connections			✓			✓		
042	Grease Motor bearings & Shaft Seals			✓			✓		Greased
5) Annual Inspection *(to include items above)*									
043	Change drive belts								
6) Every Three years *(to include items above)*									
044	Motor / booster bearings & shaft seals								
045	Inspect anti vibration mounts								

Type of Inspection Performed	**No.**	4	**General Comments & Recommendations**
• New K-type TC element installed – an S-type will be the long term solution when the issues in thefield are addressed			
• Inlet flame arrestor was particularly dirty			
• Removed as much coke from the burners as possible			

Signed:

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Flare & Ancillary Equipment Inspection/Service Record

Site/Location:	Ballaghveny
Technician:	James Fagan
Date:	4/6/2013

Equipment details / Reference #. Organics 500 Enclosed Flare

Item	*Readings to be taken daily or fed to SCADA*	Data Recorded		Item Checked			Condition		Comment
1) Daily Inspection				**Y**	**N**	**N/A**	**OK**	**Fault**	
001	CH4	53.1	% Vol.						
002	CO2	30.1	% Vol.						
003	O2	.5	% Vol.						
004	CO	4	PPM						
005	Record booster operational hours	38408	Hrs						
006	Flow rate	330	M3/hr						
007	Suction pressure	--29	Mbar						
008	Flare Temperature	1020	C°						
2) Weekly Inspection									
009	Is pilot line free of condensate?			✓			✓		
010	Is emissions sample line clear?			✓			✓		
011	Is there adequate flow through the analysers?			✓			✓		
012	Is the UV sensor free of dirt and aimed correctly?			✓			✓		Cleaned
013	Check flare temp and louver operation			✓			✓		Retuned controller and reset louvres
014	Check pots for condensate build up			✓			✓		
015	Check for any obvious defects			✓			✓		
016	Condensate Pump (Hour Clock / Cycle Counter)								
017	Compressor - pressure & condensate check	7	Bar				✓		Oil change
3) Monthly Inspection (to include items above)									
018	Calibrate Rosemount analyser or Equivalent			✓			✓		
019	Are there any gas leaks in or around the skid?			✓			✓		
020	Is the ignition probe correctly positioned?			✓			✓		Removed/decoked and repositioned
021	Are the condensate collection tanks empty?			✓			✓		
022	Pressure drops across the flame traps	6	mbar				✓		
023	Clean the pilot flame trap			✓			✓		
024	Check for any obvious defects throughout			✓			✓		
025	Abnormal Noise			✓			✓		
026	Oil / Grease stains or leaks			✓			✓		

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4) Quarterly Inspection ***(to include items above)***		**Data Recorded**		**Y**	**N**	**N/A**	**OK**	**Fault**	**Comment**
			Units						
027	Blow down compressor			✓			✓		
028	Check pressure relief valve			✓			✓		
029	Check Air Dryer operation & condition					✓			
030	Clean flame arresters			✓			✓		Chemically cleaned & power washed
031	Examine burner tips for deterioration			✓				✓	Removed louvers and repaired burners
032	Calibrate Rosemount analyser or Equivalent			✓			✓		
033	Check safety chain			✓			✓		
034	Change oil in booster					✓			
035	Check belt tension					✓			
036	Clean pilot solenoid filter			✓			✓		
037	Clean Demister Filter			✓			✓		Cleaned
038	Check for excess vibration/noise in skid			✓			✓		
039	Check temp. in skid and extractor fan operation					✓			
040	Any obvious defects			✓			✓		
041	Check integrity of wiring/connections			✓			✓		
042	Grease Motor bearings & Shaft Seals			✓			✓		Greased
5) Annual Inspection ***(to include items above)***									
043	Change drive belts								
6) Every Three years ***(to include items above)***									
044	Motor / booster bearings & shaft seals								
045	Inspect anti vibration mounts								

Type of Inspection Performed	**No.**	4	**General Comments & Recommendations**
• Completely reset and calibrated temperature control system			
• Got into the stack and repaired the burners			
• Replaced the GSM modem and added new numbers			

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Flare & Ancillary Equipment Inspection/Service Record

Site/Location:	Ballaghveny
Technician:	James Fagan
Equipment details / Reference #.	Organics 500 Enclosed Flare
Date:	10/12/2013

Item	*Readings to be taken daily or fed to SCADA*	Data Recorded		Item Checked			Condition		Comment
1) Daily Inspection				**Y**	**N**	**N/A**	**OK**	**Fault**	
001	CH4	33.3	% Vol.						
002	CO2	24.2	% Vol.						
003	O2	4.2	% Vol.						
004	CO	4	PPM						
005	Record booster operational hours	42772	Hrs						
006	Flow rate	260	M3/hr						
007	Suction pressure	-14	Mbar						
008	Flare Temperature	1000	C°						Replaced TC
2) Weekly Inspection									
009	Is pilot line free of condensate?			✓			✓		
010	Is emissions sample line clear?			✓			✓		
011	Is there adequate flow through the analysers?			✓			✓		
012	Is the UV sensor free of dirt and aimed correctly?			✓			✓		Cleaned
013	Check flare temp and louver operation			✓			✓		Replaced and programmed transmitter to calibrate the logged temp
014	Check pots for condensate build up			✓			✓		
015	Check for any obvious defects			✓			✓		
016	Condensate Pump (Hour Clock / Cycle Counter)								
017	Compressor - pressure & condensate check	7	Bar				✓		Oil change
3) Monthly Inspection (to include items above)									
018	Calibrate Rosemount analyser or Equivalent			✓			✓		
019	Are there any gas leaks in or around the skid?			✓			✓		
020	Is the ignition probe correctly positioned?			✓			✓		Removed/decoked and repositioned
021	Are the condensate collection tanks empty?			✓			✓		
022	Pressure drops across the flame traps	6	mbar				✓		
023	Clean the pilot flame trap			✓			✓		
024	Check for any obvious defects throughout			✓			✓		
025	Abnormal Noise			✓			✓		
026	Oil / Grease stains or leaks			✓			✓		

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4) Quarterly Inspection ***(to include items above)***		**Data Recorded**		**Y**	**N**	**N/A**	**OK**	**Fault**	**Comment**
			Units						
027	Blow down compressor			✓			✓		
028	Check pressure relief valve			✓			✓		
029	Check Air Dryer operation & condition					✓			
030	Clean flame arresters			✓			✓		Cleaned
031	Examine burner tips for deterioration			✓			✓		
032	Calibrate Rosemount analyser or Equivalent			✓			✓		
033	Check safety chain			✓			✓		
034	Change oil in booster					✓			
035	Check belt tension					✓			
036	Clean pilot solenoid filter			✓			✓		
037	Clean Demister Filter			✓			✓		Cleaned
038	Check for excess vibration/noise in skid			✓			✓		
039	Check temp. in skid and extractor fan operation					✓			
040	Any obvious defects			✓			✓		
041	Check integrity of wiring/connections			✓			✓		
042	Grease Motor bearings & Shaft Seals			✓			✓		Greased
5) Annual Inspection ***(to include items above)***									
043	Change drive belts								
6) Every Three years ***(to include items above)***									
044	Motor / booster bearings & shaft seals								
045	Inspect anti vibration mounts								

Type of Inspection Performed	**No.**	4	**General Comments & Recommendations**
• Replaced TC			
• Replaced and programmed the transmitter to facilitate more accurate temperature retransmition to the HMI and scada			
• The compressor needs a new inlet filter			

Signed:

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**									**Date:**	30/01/13
Flare _ Set 01	**Ch_4**	**33.6**	**CO_2**	**26.1**	**O_2**	**2.9**	**H_2S ppm**	**10**	**Total Flow m^3**	**328**	**Technician:** G. Fallon
Flare _ Set 02	**Ch_4**	**39.6**	**CO_2**	**27.0**	**O_2**	**2.6**	**H_2S ppm**	**48**	**Total Flow m^3**	**335**	**Atm. Press.** 998 mbar

	Sample	Ch_4		CO_2		O_2		Control valve position			Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	57.5		27.0		0.2				10%			
LM-02	**LFG 2-A**	17.2		21.2		0.2				7%			No adjustment
LM-03	**LFG 3-A**	19.4		22.0		0.3				5%			
LM-04	**LFG 4-A**	15.0		22.1		0.3				7%			
	LFG 5-A	24.8		21.9		0.2				5%			No suction
	LFG 6-A	19.0		18.6		3.3				5%			Dewatered
	LFG 7-A	4.1		11.4		9.5				0%			Closed
	LFG 8-A	3.0		8.9		10.0				5%			Open
	LFG 9-A	57.2		28.9		0.4				50%			No suction
	LFG 10-A	71.4		33.4		0.2				50%			Small suction
	LFG 11-A	24.9		25.7		0.1				50%			Adjusted
	LFG 12-A	34.8		27.7		0.3				100%			No suction
	LFG 13-A	40.1		26.7		0.3				100%			Dewatered
Cell-09	**LFG 14-A**	48.7		27.2		4.8				100%	7.8	0.0	Water logged
	LFG 15-A	70.3		36.3		0.4				100%	10.8	0.6	No adjustment
	LFG 16-A	72.0		35.9		0.1				100%			No adjustment
LM-11	**LFG 17-A**	14.9		20.2		1.4		-5%		5%			Adjusted
LM-12	**LFG 18-A**	27.4		15.8		10.1		-5%		5%			Dewatered
	LFG 19-A	68.3		31.8		0.4				100%			No adjustment
LM-14	**LFG 20-A**	66.6		33.3		0.0				100%			No adjustment
	LFG 21-A	68.4		35.3		0.0				100%			
	LFG 22-A	69.6		35.4		0.0				100%			No adjustment
LM-15	**LFG 23-A**	70.1		33.5		0.0				100%			No adjustment
	LFG 24-A	68.5		32.5		0.2				100%			No adjustment
LM-16	**LFG 25-A**	66.8		31.6		0.0				100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position			Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 26-A	67.5		32.4		0.8				100%			No adjustment
LM-05													
LM-06/28		35.8		28.4		0.1				100%			Trapped condensate
LM-08													
	B – Line 1	14.7		19.9		2.6				20%			
Bottom	**Horiz-01**	53.4		32.6		3.5				5%			
Top	**Horiz-02**	53.4		32.6		3.5				10%			
Cell 09	**31**	51.2		30.5		2.8				100%	15.1	0.5	Pump checked
Cell 09	**30**	48.4		30.3		1.8				100%	9.0	0.5	Pump checked
Cell 09	**29**	67.8		35.7		0.7				100%	12.1	0.5	Pump checked
Cell 09	**L - Chmb**	52.0		30.9		1.4				100%	16	0.5	
Cell 09	**B-Line**	50.4		29.8		2.6				100%			
Cell 10A	**33**	70.1		37.0		0.0				100%	10.0	0.5	Pump checked
Cell 10A	**34**	68.2		36.5		0.0				100%	7.5	0.2	Pipe Kinked
Cell 10A	**32**	71.1		37.0		0.0				100%	6.5	2.5	Pipe Kinked
Cell 10A	**B-Line**	40.2		34.4		0.3				10%			Needs attention
Cell 10	**L - Chmb**	58.0		33.9		0.2				100%	14.5	1.5	Valve Required

Comment:

All wells with leachate extraction pumps are currently licence level compliant.

Sump pump in Cell 10a requires attention.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**										**Date:**	01/03/13
Flare _ Set 01	**Ch_4**	**29.7**	**CO_2**	**26.3**	**O_2**	**3.2**	**H_2S ppm**	**07**	**Total Flow m^3**	**315**	**Technician:**	J. Power & J. Fagan
Flare _ Set 02	**Ch_4**	**78.1**	**CO_2**	**26.6**	**O_2**	**2.9**	**H_2S ppm**	**18**	**Total Flow m^3**	**320**	**Atm. Press.**	996 mbar

	Sample	Ch_4		CO_2		O_2		Control valve position			Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	58.2		27.0		0.1				5%			
LM-02	**LFG 2-A**	17.0		21.2		0.2				7%			No adjustment
LM-03	**LFG 3-A**	19.0		22.0		0.1				5%			
LM-04	**LFG 4-A**	14.7		22.1		0.5				7%			
	LFG 5-A	24.8		21.9		0.2				5%			No suction
	LFG 6-A	19.0		18.6		3.3				5%			Dewatered
	LFG 7-A	2.1		11.4		8.1				0%			Closed
	LFG 8-A	3.0		7.7		11.1				5%			Open
	LFG 9-A	57.2		28.9		0.4				50%			No suction
	LFG 10-A	71.4		33.4		0.2				50%			Low suction
	LFG 11-A	24.9		25.7		0.1				50%			Adjusted
	LFG 12-A	34.8		27.7		0.3				100%			No suction
	LFG 13-A	40.1		26.7		0.3				100%			Dewatered
Cell-09	**LFG 14-A**	48.7		27.2		4.8				100%			Water logged
	LFG 15-A	68.3		35.3		0.4				100%			No adjustment
	LFG 16-A	68.0		35.9		0.1				100%			No adjustment
LM-11	**LFG 17-A**	14.9		20.2		1.4				5%			Adjusted
LM-12	**LFG 18-A**	27.4		15.8		10.1				5%			
	LFG 19-A	69.3		31.8		0.4				100%			No adjustment
LM-14	**LFG 20-A**	66.6		33.3		0.0				100%			No adjustment
	LFG 21-A	68.4		35.3		0.0				100%			
	LFG 22-A	59.6		35.2		0.0				100%			No adjustment
LM-15	**LFG 23-A**	68.1		33.5		0.0				100%			No adjustment
	LFG 24-A	67.3		32.5		0.2				100%			No adjustment
LM-16	**LFG 25-A**	63.9		31.3		0.6				100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position			Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 26-A	66.5		32.1		1.2				100%			No adjustment
LM-05													
LM-06/28		36.8		28.4		0.3				100%			Trapped condensate
LM-08													
	B – Line 1	16.1		19.9		2.3				20%			
Bottom	**Horiz-01**	53.4		32.6		3.5				5%			
Top	**Horiz-02**	53.4		32.6		3.5				10%			
Cell 09	**31**	51.5		30.7		2.6				100%			
Cell 09	**30**	48.4		30.3		1.8				100%			
Cell 09	**29**	66.8		35.7		0.7				100%			
Cell 09	**L - Chmb**	53.4		31.3		1.6				100%			
Cell 09	**B-Line**	50.4		29.8		2.6				100%			
Cell 10A	**33**	68.8		36.2		0.0				100%			
Cell 10A	**34**	67.2		36.5		0.0				100%			
Cell 10A	**32**	70.2		36.8		0.0				100%			
Cell 10A	**B-Line**	43.1		34.8		0.1				10%			Needs attention
Cell 10	**L - Chmb**	57.6		33.3		0.1				100%			Valve Required

Comment:

Pipework needs attention to prevent condensate getting trapped.

Settlement on 10A is becoming a problem for pipe work dewatering.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**									**Date:**	02/04/13
Flare _ Set 01	**Ch_4**	**32.6**	**CO_2**	**24.7**	**O_2**	**4.7**	**H_2S ppm**	**15**	**Total Flow m^3**	**325**	**Technician:** J. Fagan
Flare _ Set 02	**Ch_4**	**33.8**	**CO_2**	**24.8**	**O_2**	**4.5**	**H_2S ppm**	**18**	**Total Flow m^3**	**331**	**Atm. Press.** 1003 mbar

	Sample	Ch_4		CO_2		O_2		Control valve position			Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	31.2		21.3		0.2				5%			
LM-02	**LFG 2-A**	16.8		20.1		0.2				7%			
LM-03	**LFG 3-A**	23.1		24.1		0.1				5%			
LM-04	**LFG 4-A**	14.9		22.1		0.5				7%			
	LFG 5-A	24.8		21.9		0.2				5%			No suction
	LFG 6-A	19.0		18.6		3.3				5%			Dewatered
	LFG 7-A	2.1		11.4		8.1				0%			
	LFG 8-A	6.7		14.9		5.1				5%			
	LFG 9-A	72.8		27.6		0.2				50%			No suction
	LFG 10-A	71.3		34.1		0.0				50%			Low suction
	LFG 11-A	31.3		25.4		0.1				50%			
	LFG 12-A	47.1		29.3		0.3				100%			No suction
	LFG 13-A	47.7		28.9		0.3				100%			Dewatered
Cell-09	**LFG 14-A**	59.7		33.8		1.5				100%			Water logged
	LFG 15-A	67.8		37.8		0.2				100%			
	LFG 16-A	71.8		36.1		0.0				100%			
LM-11	**LFG 17-A**	31.1		26.7		1.2				5%			
LM-12	**LFG 18-A**	62.0		34.9		0.3				5%			Dewatered
	LFG 19-A	-		-		-				100%			Needs attention
LM-14	**LFG 20-A**	66.5		34.1		0.0				100%			No adjustment
	LFG 21-A	68.6		37.7		0.0				100%			
	LFG 22-A	69.4		36.1		0.0				100%			No adjustment
LM-15	**LFG 23-A**	69.1		34.2		0.0				100%			No adjustment
	LFG 24-A	68.4		33.1		0.0				100%			No adjustment
LM-16	**LFG 25-A**	66.9		34.9		0.0				100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position			Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 26-A	69.6		32.1		1.2				100%			No adjustment
LM-05													
LM-06/28		53.8		28.4		0.2				100%			Trapped condensate
LM-08													
	B – Line 1	16.7		19.9		2.3				20%			
Bottom	**Horiz-01**	53.4		32.6		3.5				5%			
Top	**Horiz-02**	53.4		32.6		3.5				10%			
Cell 09	**31**	54.2		32.8		1.6				100%			
Cell 09	**30**	58.7		34.9		1.0				100%			
Cell 09	**29**	67.4		36.9		0.3				100%			
						0.9							
Cell 09	**L - Chmb**	53.8		34.1		2.4				100%			
Cell 09	**B-Line**	52.1		30.8		0.0				100%			
Cell 10A	**33**	62.7		36.3		0.0				100%			
Cell 10A	**34**	36.8		29.2		1.2				100%			
Cell 10A	**32**	59.9		36.0		0.0				100%			
Cell 10A	**B-Line**	25.1		20.5		6.2				10%			Needs attention
Cell 10	**L - Chmb**	17.4		15.8		10.6				100%			Valve Required

Comment:

Pipework needs attention to prevent condensate getting trapped.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**										**Date:**	29/4/2013
Flare _ Set 01	**Ch_4**	**33.7**	**CO_2**	**25.4**	**O_2**	**4.8**	**H_2S ppm**	**11**	**Total Flow m^3**	**260**	**Technician:**	J. Smyth
Flare _ Set 02	**Ch_4**	**37.5**	**CO_2**	**26.5**	**O_2**	**3.4**	**H_2S ppm**	**27**	**Total Flow m^3**	**285**	**Atm. Press.**	1005

	Sample	Ch_4		CO_2		O_2		Control valve position			Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	67.9		29.1		0.2				10%			
LM-02	**LFG 2-A**	17.3		22.3		0.2				7%			
LM-03	**LFG 3-A**	20.7		22.1		0.4				5%			
LM-04	**LFG 4-A**	16.1		23.1		0.4				7%			
	LFG 5-A	29.2		22.8		0.3				5%			
	LFG 6-A	17.8		21.9		0.4				5%			
	LFG 7-A	19.6		24.0		0.0		+2%		2%			
	LFG 8-A	7.5		15.1		5.5				5%			
	LFG 9-A	72.5		27.8		0.2				50%			No suction
	LFG 10-A	73.8		29.5		0.2				50%			
	LFG 11-A	31.4		26.1		0.2				50%			
	LFG 12-A	49.9		30.3		0.3				100%			
	LFG 13-A	46.5		29.6		0.4				100%			
Cell-09	**LFG 14-A**	66.1		36.5		1.2				100%			De-watered
	LFG 15-A	71.7		39.3		0.3				100%			
	LFG 16-A	71.9		38.3		0.2				100%			
LM-11	**LFG 17-A**	35.9		29.2		0.5		+20		25%			
LM-12	**LFG 18-A**	72.5		22.4		8.4				5%			
	LFG 19-A	68.3		35.4		0.3				100%			
LM-14	**LFG 20-A**	71.8		34.8		1.3				100%			
	LFG 21-A	68.9		38.9		0.0				100%			Found off?
	LFG 22-A	69.9		37.5		0.0				100%			
LM-15	**LFG 23-A**	68.1		35.5		0.0				100%			
	LFG 24-A	71.3		35.0		0.2				100%			
LM-16	**LFG 25-A**	73.3		37.6		0.0				100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position			Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 26-A	62.6		33.2		0.8				100%			
LM-05													
LM-06/28		52.6		30.5		0.2				100%			Water in line
LM-08													
	B – Line 1	18.9		22.4		0.3				20%			
Bottom	**Horiz-01**	53.4		32.6		3.5				5%			
Top	**Horiz-02**	53.4		32.6		3.5				10%			
Cell 09	**31**	54.8		34.4		2.2				100%			
Cell 09	**30**	64.1		37.0		1.2				100%			
Cell 09	**29**	71.1		39.5		0.4				100%			
Cell 09	**L - Chmb**	63.4		36.7		0.6				100%			De-watered
Cell 09	**B-Line**	58.8		34.4		2.5				100%			
Cell 10A	**33**	61.8		37.1		0.0				100%			
Cell 10A	**34**	35.1		29.5		1.5				100%			
Cell 10A	**32**	61.6		37.5		0.0				100%			
Cell 10A	**B-Line**	24.6		19.3		8.6				10%			
Cell 10	**L - Chmb**	17.3		15.8		9.9				100%			180 line flooded

Comment:

Settlement is causing dewatering problems in a lot of piping.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**													**Date:**	31/05/2013
Flare _ Set 01	**Ch_4**	**50.4**	**CO_2**	**30.3**	**O_2**	**1.2**	**H_2S ppm**	**74**	**Total Flow m^3**	**330**	**Suction**	**- 20**		**Technician:**	J. Smyth
Flare _ Set 02	**Ch_4**	**40.1**	**CO_2**	**27.3**	**O_2**	**1.8**	**H_2S ppm**	**13**	**Total Flow m^3**	**318**	**Suction**	**- 18**		**Atm. Press.**	1008

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	41.4		18.9		5.4				-3	10%			
LM-02	**LFG 2-A**	36.4		25.3		0.2				-4	7%			
LM-03	**LFG 3-A**	31.8		23.3		0.2				-4	5%			
LM-04	**LFG 4-A**	36.9		25.8		0.2				-4	7%			
	LFG 5-A	37.4		25.5		0.2				-2.5	5%			
	LFG 6-A	3.1		24.3		0.2				-3.5	5%			
	LFG 7-A	65.1		31.5		1.2		+2%		-4	2%			
	LFG 8-A	3.4		16.3		2.1				-5	5%			
	LFG 9-A	77.9		24.5		0.3				+0.2	50%			No suction
	LFG 10-A	74.2		27.3		0.4				-0.2	50%			
	LFG 11-A	25.6		21.6		2.1				-11	50%			
	LFG 12-A	34.9		26.1		0.2				-11	100%			
	LFG 13-A	38.8		25.8		0.1				-12	100%			
Cell-09	**LFG 14-A**	65.4		34.5		0.8				-11	100%			De-watered
	LFG 15-A	67.9		36.5		0.0				-11	100%			
	LFG 16-A	66.7		35.0		0.1				-10	100%			
LM-11	**LFG 17-A**	34.9		26.9		0.4		+20		-11	25%			
LM-12	**LFG 18-A**	24.2		14.1		13.5				-3.5	5%			
	LFG 19-A	71.3		32.3		1.4				-12	100%			
LM-14	**LFG 20-A**	64.9		32.1		1.2				-12	100%			
	LFG 21-A	68.2		35.7		0.0				-12	100%			Found off?
	LFG 22-A	66.8		34.4		0.1				-14	100%			
LM-15	**LFG 23-A**	45.1		23.2		6.8				-14	100%			
	LFG 24-A	69.5		32.8		0.2				-14	100%			
LM-16	**LFG 25-A**	66.2		33.6		1.2				-14	100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position				Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 26-A	63.1		30.4		2.2				-14	100%			
LM-05														
LM-06/28		40.7		27.3		0.5				-8	100%			Water in line
LM-08														
	B – Line 1	37.1		25.6		0.3				-4	20%			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	56.2		33.1		1.3				-10	100%			
Cell 09	30	63.4		35.5		0.8				-12	100%			
Cell 09	29	66.2		36.0		0.4				-11	100%			
Cell 09	L - Chmb	64.4		34.9		0.9				-12	100%			De-watered
Cell 09	B-Line	54.8		30.9		2.5				-12	100%			
Cell 10A	33	61.1		34.7		0.0				-3.5	100%			
Cell 10A	34	43.4		30.4		0.3				-3.5	100%			
Cell 10A	32	59.9		34.9		0.0				-3.7	100%			
Cell 10A	B-Line	41.9		28.0		2.3				-4	10%			
Cell 10	L - Chmb	45.8		31.2		0.2				+0.09	100%			180 line flooded

Comment:

Settlement is causing dewatering problems in a lot of piping.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**											**Date:**	25/06/2013
Flare _ Set 01	**Ch_4**	**41.4**	**CO_2**	**26.2**	**O_2**	**4.0**	**H_2S ppm**	**11**	**Total Flow m^3**	**310**	**Suction**	**- 18**	**Technician:** J. Smyth
Flare _ Set 02	**Ch_4**	**43.1**	**CO_2**	**26.8**	**O_2**	**3.2**	**H_2S ppm**	**26**	**Total Flow m^3**	**320**	**Suction**	**- 17**	**Atm. Press.** 1017

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	53.2		21.2		7.6				-2	10%			
LM-02	**LFG 2-A**	19.2		22.6		0.4				-3	7%			
LM-03	**LFG 3-A**	26.0		22.1		0.2				-3	5%			
LM-04	**LFG 4-A**	21.4		23.3		0.0				-3	7%			
	LFG 5-A	21.0		22.2		0.4				-2.5	5%			
	LFG 6-A	18.3		21.9		0.2				-3.5	5%			
	LFG 7-A	11.3		15.1		8.8				-3.5	2%			
	LFG 8-A	30.3		20.3		0.1				-7	5%			
	LFG 9-A	75.1		25.5		0.0				+0.2	50%			No suction
	LFG 10-A	74.9		33.1		0.5				-0.2	50%			Water inline
	LFG 11-A	32.6		23.9		1.8				-11	50%			
	LFG 12-A	51.5		31.3		0.4				-11	100%			
	LFG 13-A	45.6		27.9		0.4				-11	100%			
Cell-09	**LFG 14-A**	78.5		42.4		0.0				-10	100%			De-watered
	LFG 15-A	76.2		42.2		0.0				-11	100%			
	LFG 16-A	77.1		40.2		0.0				-7.5	100%			Pump leaking air
LM-11	**LFG 17-A**	34.1		26.3		1.8				-9	25%			
LM-12	**LFG 18-A**	74.3		38.7		0.8				-7.5	5%			De watered
	LFG 19-A	73.1		36.6		0.0				-10	100%			
LM-14	**LFG 20-A**	70.1		35.0		2.2				-10	100%			
	LFG 21-A	70.9		40.8		0.0				-10	100%			
	LFG 22-A	74.2		40.4		0.3				-11	100%			
LM-15	**LFG 23-A**	66.1		28.6		5.4				-11	100%			
	LFG 24-A	42.8		20.0		8.7				-11.5	100%			
LM-16	**LFG 25-A**	69.8		32.4		2.1				-11.5	100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position				Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 26-A	73.1		36.6		0.5				-11	100%			
LM-05														
LM-06/28		52.1		31.2		0.4				-10	100%			Water in line
LM-08														
	B – Line 1	19.8		21.8		0.9				-4	20%			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	69.9		36.6		2.1				-10	100%			
Cell 09	30	74.9		40.1		0.8				-7	100%			
Cell 09	29	73.3		38.3		3.1				-10	100%			
Cell 09	L - Chmb	77.1		47.1		0.0				-10	100%			De-watered
Cell 09	B-Line	72.1		36.5		2.5				-10	100%			
Cell 10A	33	63.8		35.7		0.7				-5.5	100%			
Cell 10A	34	42.8		30.0		1.4				-5	100%			
Cell 10A	32	55.2		30.4		4.1				-5	100%			
Cell 10A	B-Line	37.9		24.4		4.8				-5	10%			
Cell 10	L - Chmb	31.1		24.0		4.8				0	100%			180 line flooded

Comment:

Field balance carried out after a flare shutdown hence the higher than normal methane values in some wells.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**											**Date:**	26/07/2013
Flare _ Set 01	**Ch_4**	**41.6**	**CO_2**	**31.1**	**O_2**	**3.3**	**H_2S ppm**	**63**	**Total Flow m^3**	**310**	**Suction**	**- 13**	**Technician:** J. Smyth
Flare _ Set 02	**Ch_4**	**44.4**	**CO_2**	**32.5**	**O_2**	**2.1**	**H_2S ppm**	**88**	**Total Flow m^3**	**320**	**Suction**	**- 10**	**Atm. Press.** 996

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	61.1		26.8		1.0				-0.5	10%			
LM-02	**LFG 2-A**	22.9		23.8		0.0				-1.2	7%			
LM-03	**LFG 3-A**	20.3		22.4		0.0				-1.5	5%			
LM-04	**LFG 4-A**	20.9		24.3		0.0				-1.3	7%			
	LFG 5-A	20.1		23.7		0.0				-1.3	5%			
	LFG 6-A	19.6		22.6		0.0				-2.2	5%			
	LFG 7-A	15.5		20.2		2.5		+2%		-2.4	2%			
	LFG 8-A	47.4		28.7		0.0				-0.2	5%			
	LFG 9-A	74.5		31.5		0.0				0.01	50%			Flooded
	LFG 10-A	70.1		35.8		0.0				0.5	50%			No suction
	LFG 11-A	43.2		28.9		0.6				-4.2	50%			No suction
	LFG 12-A	56.7		31.5		0.2				-4.0	100%			
	LFG 13-A	55.1		30.7		0.0				-1.6	100%			
Cell-09	**LFG 14-A**	67.5		40.9		0.2				-4.0	100%			De-watered
	LFG 15-A	66.4		41.2		0.0				-4.0	100%			
	LFG 15-B	26.1		19.4		10.7		5%		-0.5	5%			
	LFG 16-A	67.2		39.4		0.0				-4.0	100%			
LM-11	**LFG 17-A**	42.9		33.5		0.5		+20		-4.0	25%			
LM-12	**LFG 18-A**	26.9		17.2		10.9				-4.5	5%			
	LFG 19-A	69.4		35.5		0.4				-5.2	100%			
LM-14	**LFG 20-B**	32.3		21.7		8.5				-0.5	100%			
	LFG 21-A	66.4		39.7		0.0				-6.5	100%			Found off?
	LFG 22-A	64.5		39.1		0.3				-7.0	100%			
LM-15	**LFG 23-A**	59.2		34.2		2.1				-6.2	100%			
	LFG 24-B	6.1		4.4		17.3				-0.1	100%			
LM-16	**LFG 25-A**	48.6		31.7		3.5				-7.0	100%			

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Cell /Region	Sample Point	Ch_4		CO_2		$0.2O_2$		Control valve position				Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 25-B	24.1		18.4		10.3				-0.2	2%			
	LFG 26-A	65.9		35.5		0.5				-6.2	100%			
LM-05														
LM-06/28		47.3		31.5		0.3				-4.2	100%			Water in line
LM-08														
	B – Line 1	20.9		23.8		0.2				-2.5	20%			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	59.7		40.1		0.7				-4.0	100%			
Cell 09	30	59.1		40.0		1.2				-4.0	100%			
Cell 09	29	61.2		39.8		0.7				-4.0	100%			
Cell 09	L - Chmb	64.5		41.0		0.2				-4.0	100%			De-watered
Cell 09	B-Line	47.7		32.3		3.7				-4.5	100%			
Cell 10A	33	64.5		40.3		0.0				-3.5	100%			
Cell 10A	34	42.6		32.5		2.9				-3.5	100%			
Cell 10A	34-B	48.6		34.9		1.8				-2.0	50%			
Cell 10A	32	57.9		39.6		1.0				-3.7	100%			
Cell 10A	32-B	53.2		35.8		2.4				-2.5	100%			
Cell 10A	B-Line	42.5		32.4		2.8				-4	10%			No suction
Cell 10	L - Chmb	41.5		34.8		0.8				+0.01	100%			180 line flooded

Comment:

Settlement is causing dewatering problems in a lot of piping.

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**											**Date:**	21/08/2013
Flare _ Set 01	**Ch_4**	**31.8**	**CO_2**	**27.8**	**O_2**	**3.4**	**H_2S ppm**	**15**	**Total Flow m^3**	**265**	**Suction**	**-13**	**Technician:** J. Smyth
Flare _ Set 02	**Ch_4**	**37.6**	**CO_2**	**29.1**	**O_2**	**3.0**	**H_2S ppm**	**10**	**Total Flow m^3**	**275**	**Suction**	**-12**	**Atm. Press.** 1006

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	23.1		23.9		4.5				-3.5	5			
LM-02	**LFG 2-A**	13.5		24.7		0.5				-4.5	2			
LM-03	**LFG 3-A**	16.8		23.4		0.0				-5	2			
LM-04	**LFG 4-A**	16.6		24.4		0.0				-5	2			
	LFG 5-A	43.1		28.2		0.0				-8	2			
	LFG 6-A	28.8		21.4		4.9				-6.5	2			
	LFG 7-A	18.6		24.2		2.0				-6	2			
	LFG 8-A	3.4		13.4		8.1				-4	1			Water in line
	LFG 9-A	71.1		31.1		0.0				-0.01	100			Water in line
	LFG 10-A	60.3		33.9		1.7				-0.6	100			Water in line
	LFG 11-A	27.2		28.2		0.2				-10	50			
	LFG 12-A	39.6		31.0		0.5				-10	100			
	LFG 13-A	34.6		28.7		0.8				-10	100			
Cell-09	**LFG 14-A**	65.5		40.8		0.3				-10	100			
	LFG 15-A	66.1		41.1		0.2				-10	100			
	LFG 15-B	34.1		24.2		8.2				-0.5	2			
	LFG 16-A	65.1		39.1		0.4				-10	100			
LM-11	**LFG 17-A**	15.4		23.7		1.3		-5%		-6	20			
LM-12	**LFG 18-A**	3.6		5.4		14.8				-7	2			
	LFG 19-A	65.4		34.1		0.4				-8	100			
LM-14	**LFG 20-B**	18.6		13.1		12.8				-0.2	2			
	LFG 21-A	67.5		39.9		0.0				-8	100			
	LFG 22-A	64.1		34.4		0.3				-10	100			
LM-15	**LFG 23-A**	62.4		35.1		1.2				-8	50			
	LFG 24-B	33.4		22.9		6.7				-0.2	2			
LM-16	**LFG 25-A**	52.3		31.7		3.4				-9	50			

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Cell /Region	Sample Point	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 25-B	25.7		19.0		10.3				-0.2	2			
	LFG 26-A	63.2		35.0		0.0				-8	100			
LM-05														
LM-06/28		41.5		32.4		0.3				-10	100			
LM-08														
	B – Line 1	34.3		27.7		0.7				-7	5			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	51.3		35.9		2.1				-10	100			
Cell 09	30	61.8		39.5		0.9				-10	100			De watered
Cell 09	29	64.4		40.6		1.2				-10	100			
Cell 09	L - Chmb	67.6		40.9		0.0				-11	100			
Cell 09	B-Line	49.2		33.0		3.3				-11	100			
Cell 10A	33	67.1		40.5		0.0				-1	100			
Cell 10A	34	56.1		37.1		1.3				-1	100			
Cell 10A	34-B	65.4		41.7		0.2				-1	100			
Cell 10A	32	68.8		41.7		0.0				-1	100			
Cell 10A	32-B	56.1		36.8		1.9				-1	100			
Cell 10A	B-Line	48.1		35.8		0.0				+0.01	100			
Cell 10	L - Chmb	48.0		34.1		2.5				-2	10			

Comment:

Valves needed on 180 line along base of Cell 10A

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**													**Date:**	30/09/2013
Flare _ Set 01	**Ch_4**	**34.8**	**CO_2**	**26.7**	**O_2**	**3.5**	**H_2S ppm**	**-**	**Total Flow m^3**	**240**	**Suction**	**-13**		**Technician:**	J. Smyth
Flare _ Set 02	**Ch_4**	**39.9**	**CO_2**	**28.2**	**O_2**	**2.7**	**H_2S ppm**	**-**	**Total Flow m^3**	**255**	**Suction**	**-11**		**Atm. Press.**	988

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	49.1		24.3		2.1				-4	5			
LM-02	**LFG 2-A**	34.1		24.3		0.2				-5	2			
LM-03	**LFG 3-A**	29.9		23.8		0.0				-5	2			
LM-04	**LFG 4-A**	30.6		23.6		0.0				-4	2			
	LFG 5-A	15.8		19.2		3.2				-3.5	2			
	LFG 6-A	14.9		21.9		0.4				-5	2			
	LFG 7-A	9.8		20.7		2.2				-5	2			
	LFG 8-A	40.5		27.8		0.0				-9	1			Water in line
	LFG 9-A	70.1		29.3		0.0				-0.3	100			Water in line
	LFG 10-A	68.7		33.7		0.0				+0.3	100			Water in line
	LFG 11-A	34.1		26.0		0.8				-9	50			
	LFG 12-A	44.8		29.5		0.0				-8	100			
	LFG 13-A	35.1		24.2		3.2				-9	100			
Cell-09	**LFG 14-A**	64.5		37.0		0.0				-8	100			
	LFG 15-A	66.5		37.5		0.0				-8	100			
	LFG 15-B	66.5		36.7		0.0				-1	2			
	LFG 16-A	66.1		35.9		0.2				-8	100			De-watered
LM-11	**LFG 17-A**	23.4		24.6		1.3				-7	20			
LM-12	**LFG 18-A**	0.9		7.5		17.7				+0.1	2			De-watered
	LFG 19-A	68.9		33.0		0.5				-7	100			
LM-14	**LFG 20-B**	32.5		20.6		8.2				-0.2	2			
	LFG 21-A	66.3		36.1		0.0				-7	100			
	LFG 22-A	64.5		35.7		0.5				-7	100			
LM-15	**LFG 23-A**	65.0		33.2		0.6				-7	50			
	LFG 24-B	62.5		34.0		0.3				-0.5	2			
LM-16	**LFG 25-A**	31.7		21.2		8.1				-0.1	50			

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	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	Point	Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 25-B	49.1		26.9		2.9				-7	2			
	LFG 26-A	64.1		32.3		0.5				-7	100			
LM-05														
LM-06/28		45.1		30.5		0.0				-6	100			
LM-08														
	B – Line 1	27.8		23.3		0.5				-5	5			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	53.3		34.7		1.7				-7	100			
Cell 09	30	61.5		36.6		0.9				-7	100			De watered
Cell 09	29	65.6		36.9		0.0				-7	100			
Cell 09	L - Chmb	67.1		37.2		0.0				-11	100			
Cell 09	B-Line	32.7		25.3		4.3				-11	100			
Cell 10A	33	62.3		36.3		0.0				-2.5	100			
Cell 10A	34	47.2		33.1		1.2				-2	100			
Cell 10A	34-B	33.4		25.7		4.2				-2	100			
Cell 10A	32	56.1		36.1		0.0				-2	100			
Cell 10A	32-B	43.2		28.6		4.2				-2	100			
Cell 10A	B-Line	56.5		33.6		1.9				-6	100			
Cell 10	L - Chmb	-		-		-				-				Line Flooded

Comment:

Valves needed on 180 line along base of Cell 10A

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Gas Field Balance Results

Site:	Ballaghveny Waste Facility Licence #.												Date:	24/10/2013
Flare _ Set 01	Ch_4	32.6	CO_2	24.3	O_2	3.8	H_2S ppm	75	Total Flow m^3	270	Suction	-13	Technician:	J. Smyth
Flare _ Set 02	Ch_4	40.2	CO_2	27.5	O_2	2.7	H_2S ppm	34	Total Flow m^3	285	Suction	-11	Atm. Press.	998

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	Point	Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
LM-01	LFG 1-A	45.8		25.2		0.6				-5.5	5			
LM-02	LFG 2-A	26.6		22.9		0.0				-6	2			
LM-03	LFG 3-A	24.4		22.6		0.0				-5	2			
LM-04	LFG 4-A	25.1		22.6		0.0				-5	2			
	LFG 5-A	33.2		23.5		0.0				-5	2			
	LFG 6-A	20.2		20.1		0.2				-4.5	2			
	LFG 7-A	59.1		34.8		0.4				-4.5	2			
	LFG 8-A	32.1		21.2		2.5				-8.5	1			Water in line
	LFG 9-A	71.2		32.3		0.0				0	100			Water in line
	LFG 10-A	54.5		29.7		1.8				-0.5	100			Water in line
	LFG 11-A	-		-		-				-				Under test
	LFG 12-A	43.9		27.4		0.4				-9	100			
	LFG 13-A	40.5		25.7		1.5				-8.5	100			
Cell-09	LFG 14-A	57.2		34.5		0.4				-7.5	100			
	LFG 15-A	62.6		35.9		0.3				-9	100			
	LFG 15-B	31.6		20.4		8.3				-0.5	2			
	LFG 16-A	58.3		32.5		0.4				-9	100			De-watered
LM-11	LFG 17-A	17.1		22.4		0.9				-7.5	20			
LM-12	LFG 18-A	1.2		11.1		17.8				0	2			De-watered
	LFG 19-A	64.7		32.2		0.2				-7.5	100			
LM-14	LFG 20-B	-		-		-				-				Under Test
	LFG 21-A	62.4		34.8		0.0				-8	100			
	LFG 22-A	60.7		33.5		0.3				-8	100			
LM-15	LFG 23-A	62.4		31.8		1.0				-8.5	50			
	LFG 24-B	24.0		14.0		12.2				-0.2	2			
LM-16	LFG 23-B	6.4		2.5		19.2				-7	50			

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Cell /Region	Sample Point	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 25-A	-		-		-				-	-			Under Test
	LFG 26-A	64.7		32.1		0.2				-8.5	100			
LM-05														
LM-06/28		46.3		28.8		0.0				-5	100			Water in line
LM-08														
	B – Line 1	32.1		24.7		0.4				-4	5			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	53.8		32.7		1.7				-8.5	100			
Cell 09	30	58.1		34.5		1.0				-8.5	100			De watered
Cell 09	29	61.5		35.1		0.2				-9	100			
Cell 09	L - Chmb	63.1		35.8		0.2				-9	100			
Cell 09	B-Line	53.6		31.6		2.6				-6	100			New sample vlv.
Cell 10A	33	55.2		33.5		0.4				-3	100			
Cell 10A	34	41.5		29.7		1.4				-2	100			
Cell 10A	34-B	32.1		27.9		0.8				-2	100			
Cell 10A	32	51.9		32.3		0.3				-2	100			
Cell 10A	32-B	47.9		30.3		2.7				-2	100			
Cell 10A	B-Line	29.7		23.6		4.2				-2	100			
Cell 10	L - Chmb	-		-		-				-				Line Flooded

Comment:

Valves needed on 180 line along base of Cell 10A

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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**													**Date:**	29/11/2013
Flare _ Set 01	**Ch_4**	**35.0**	**CO_2**	**23.4**	**O_2**	**4.0**	**H_2S ppm**	**-**	**Total Flow m^3**	**324**	**Suction**	**-14**		**Technician:**	G. Fallon
Flare _ Set 02	**Ch_4**	**34.6**	**CO_2**	**25.1**	**O_2**	**3.8**	**H_2S ppm**	**-**	**Total Flow m^3**	**298**	**Suction**	**-11**		**Atm. Press.**	1021

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	48.5		22.3		2.0				-4	5			
LM-02	**LFG 2-A**	34.1		23.9		0.1				-5	2			
LM-03	**LFG 3-A**	30.0		23.8		0.0				-5	2			
LM-04	**LFG 4-A**	28.8		23.6		0.0				-4	2			
	LFG 5-A	15.8		19.2		3.3				-3.5	2			
	LFG 6-A	17.1		21.1		0.4				-5	2			
	LFG 7-A	8.8		20.7		2.2				-5	2			
	LFG 8-A	16.3		15.3		6.6				-9	1			Water in line
	LFG 9-A	70.4		24.4		0.2				-0.3	100			Water in line
	LFG 10-A	57.8		26.0		3.1				+0.3	100			Water in line
	LFG 11-A	8.9		4.3		17.3				-9	50			
	LFG 12-A	42.8		28.5		0.0				-8	100			
	LFG 13-A	38.2		25.4		0.6				-9	100			
Cell-09	**LFG 14-A**	63.4		33.9		0.7				-8	100			
	LFG 15-A	58.4		35.3		0.3				-8	100			
	LFG 15-B	28.4		17.6		10.0				-1	2			
	LFG 16-A	64.6		33.2		0.1				-8	100			De-watered
LM-11	**LFG 17-A**	16.2		22.4		0.3				-7	20			
LM-12	**LFG 18-A**	36.4		14.3		9.8				+0.1	2			De-watered
	LFG 19-A	67.1		31.7		0.7				-7	100			
LM-14	**LFG 20-B**	9.7		7.1		15.2				-0.2	2			
	LFG 21-A	64.7		34.4		0.5				-7	100			
	LFG 22-A	65.3		34.6		0.3				-7	100			
LM-15	**LFG 23-A**	64.4		30.9		1.1				-7	50			
	LFG 23-B	6.1		3.9		17.8				-6	5			
	LFG 24-B	62.5		33.1		0.1				-0.5	2			

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	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	Point	Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
LM-16	LFG 25-A	31.7		24.3		8.1				-0.1	50			
	LFG 25-B	49.1		26.9		2.9				-7	2			
	LFG 26-A	64.6		31.6		0.5				10	100			
LM-05														
LM-06/28		45.1		30.5		0.0				-6	100			
LM-08														
	B – Line 1	27.8		23.3		0.5				-5	5			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	48.1		29.3		3.0				-7	100			
Cell 09	30	55.8		31.9		1.5				-4	100			De watered
Cell 09	29	63.4		34.8		0.6				-8.7	100			
Cell 09	L - Chmb	54.4		31.7		1.4				-9	100			
Cell 09	B-Line	32.7		25.3		4.3				-11	100			
Cell 10A	33	62.3		36.3		0.0				-2.5	100			
Cell 10A	34	47.2		33.1		1.2				-2	100			
Cell 10A	34-B	33.4		25.7		4.2				-2	100			
Cell 10A	32	47.9		31.7		0.3				-3	100			
Cell 10A	32-B	43.5		28.2		3.1				-3	100			
Cell 10A	B-Line	56.5		33.6		1.9				-6	100			
Cell 10	L - Chmb	-		-		-				-				Line Flooded

Comment:

Valves needed on 180 line along base of Cell 10A

Irish Biotech Systems
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Gas Field Balance Results

Site:	**Ballaghveny Waste Facility Licence #.**											**Date:**	17/12/2013
Flare _ Set 01	**Ch_4**	**32.3**	**CO_2**	**23.0**	**O_2**	**4.5**	**H_2S ppm**	**40**	**Total Flow m^3**	**290**	**Suction**	**-13**	**Technician:** J. Smyth
Flare _ Set 02	**Ch_4**	**36.8**	**CO_2**	**25.3**	**O_2**	**3.4**	**H_2S ppm**	**68**	**Total Flow m^3**	**310**	**Suction**	**-16**	**Atm. Press.** 1007

	Sample	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
Cell /Region	**Point**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Set 1**	**Set 2**	**Adj. 1 %**	**Adj.2 %**	**Suction (-) mbar**	**Final %**	**Well Dpt.(m)**	**Leachate Level (m)**	
LM-01	**LFG 1-A**	58.4		24.1		0.7				-0.2	5			
LM-02	**LFG 2-A**	20.5		20.8		0.2				-4	2			
LM-03	**LFG 3-A**	26.6		22.5		0.2				-3.5	2			
LM-04	**LFG 4-A**	27.7		23.1		0.1				-3.5	2			
	LFG 5-A	26.8		21.8		0.2				-3	2			
	LFG 6-A	24.8		20.8		0.2				-3	2			
	LFG 7-A	13.4		19.5		3.2				-3	2			
	LFG 8-A	24.4		22.7		0.2				-8	1			Water in line
	LFG 9-A	37.2		16.6		1.4				-0.7	100			Water in line
	LFG 10-A	61.7		26.4		0.6				0	100			Water in line
	LFG 11-A	22.2		16.4		6.9				-9	50			
	LFG 12-A	37.8		26.1		0.2				-9	100			
	LFG 13-A	41.5		26.2		0.4				-8	100			
Cell-09	**LFG 14-A**	58.7		33.6		0.8				-9	100			
	LFG 15-A	63.9		36.0		0.1				-9	100			
	LFG 15-B	34.3		21.6		7.5				-0.3	2			
	LFG 16-A	57.7		32.5		0.2				-8	100			De-watered
LM-11	**LFG 17-A**	14.7		22.2		0.2				-7	20			
LM-12	**LFG 18-A**	35.7		12.9		10.3				0.1	2			De-watered
	LFG 19-A	63.6		31.6		0.2				-7	100			
LM-14	**LFG 20-B**	60.5		34.1		0.0				-0.2				
	LFG 21-A	63.6		34.1		0.2				-7	100			
	LFG 22-A	64.7		34.3		0.3				-7	100			
LM-15	**LFG 23-A**	63.8		31.4		1.2				-7	50			
	LFG 23-B	7.9		3.2		18.3				-6	0			
LM-16	**LFG 24-B**	10.1		5.4		17.4				-0.5	1			

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Cell /Region	Sample Point	Ch_4		CO_2		O_2		Control valve position				Leachate		Comment
		Set 1	Set 2	Set 1	Set 2	Set 1	Set 2	Adj. 1 %	Adj.2 %	Suction (-) mbar	Final %	Well Dpt.(m)	Leachate Level (m)	
	LFG 25-A	65.4		34.1		0.1				-12	50			Under Test
	LFG 26-A	63.6		31.2		0.5				-12	100			
LM-05														
LM-06/28		43.6		27.9		0.0				-5	100			Water in line
LM-08														
	B – Line 1	25.1		21.2		0.9				-4	5			
Bottom	Horiz-01	53.4		32.6		3.5					5%			
Top	Horiz-02	53.4		32.6		3.5					10%			
Cell 09	31	51.6		31.3		1.7				-9	100			
Cell 09	30	57.3		33.4		0.9				-8	100			De watered
Cell 09	29	62.7		35.2		0.3				-9	100			
Cell 09	L - Chmb	53.1		31.3		1.9				-8	100			
Cell 09	B-Line	51.5		30.4		2.5				-9	100			
Cell 10A	33	54.5		32.7		0.6				-3.5	100			
Cell 10A	34	46.3		31.2		1.5				-3	100			
Cell 10A	34-B	28.1		26.3		0.4				-2	100			
Cell 10A	32	47.5		32.4		0.2				-3	100			
Cell 10A	32-B	46.9		30.1		2.3				-3	100			
Cell 10A	B-Line	28.1		21.8		5.3				-3	5			
Cell 10	L - Chmb	-		-		-				-				Line Flooded

Comment:

Valves needed on 180 line along base of Cell 10A

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.18

REFERENCE YEAR	2013

1. FACILITY IDENTIFICATION

Parent Company Name	Tipperary County Council
Facility Name	Ballaghveny Landfill
PRTR Identification Number	W0078
Licence Number	W0078-03

Waste or IPPC Classes of Activity

No.	class_name
3.5	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
3.1	Deposit on, in or under land (including landfill).
3.11	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.13	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.
3.2	Land treatment, including biodegradation of liquid or sludge discards in soils.
3.4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
4.10	The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.3	Recycling or reclamation of metals and metal compounds.
4.4	Recycling or reclamation of other inorganic materials.

Address 1	Ballymackey
Address 2	
Address 3	
Address 4	
	Tipperary
Country	Ireland
Coordinates of Location	-7.46859 53.2333
River Basin District	IEGBNISH
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Louise Ryan
AER Returns Contact Email Address	louisem.ryan@tipperarycoco.ie
AER Returns Contact Position	Landfill Manager
AER Returns Contact Telephone Number	0761 065000
AER Returns Contact Mobile Phone Number	087 6598692
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	www.tipperarycoco.ie

2. PRTR CLASS ACTIVITIES

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

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

Is it applicable?	No
Have you been granted an exemption ?	No
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4. WASTE IMPORTED/ACCEPTED ONTO SITE Guidance on waste imported/accepted onto site

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	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)	Methane	C	ESTIMATE	Gassim	435817.49	435817.49	0.0	0.0
02	Carbon monoxide (CO)	C	ESTIMATE	Gassim	486.36	486.36	0.0	0.0
03	**Carbon dioxide (CO2)**	C	ESTIMATE	Gassim	449620.12	449620.12	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 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: Ballaghveny Landfill

Please enter summary data on the quantities of methane flared and / or utilised	**T (Total) kg/Year**	**M/C/E**	**Method Used**		**Facility Total Capacity m3 per hour**	
			Method Code	**Designation or Description**		
Total estimated methane generation (as per site model)	1142371.28	E	Gassim	Gassim model	N/A	
Methane flared	706553.79	C	EPA Landfill Gas Survey	EPA Landfill Gas Survey	500.0	(Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	435817.49	E	Gassim and EPA Landfil	Gassim and EPA Landfill Gas	N/A	

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	19 07 03	No	5898.42	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Thurles WWTP,D0026-01	Thurles WWTP,Thurles WWTP,Co Tipperary,.,Ireland		
Within the Country	19 07 03	No	1107.78	Leachate	D8	M	Weighed	Offsite in Ireland	Nenagh Wastewater Treatment Plant ,D0027-01	New Nenagh WWTP,Old Birr Road,Nenagh,.,Ireland		
Within the Country	19 07 03	No	49.62	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Roscrea WWTP,D0025-01	Roscrea WWTP,Roscrea ,Co. Tipperary,.,Ireland		
Within the Country	19 07 03	No	55.72	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Kilkenny City WWTP,W0018-01	Kilkenny City WWTP,Kilkenny ,Co. Kilkenny,.,Ireland	.,.,.,.,.,.,Ireland	.,.,.,.,Ireland
Within the Country	**20 01 35**	**Yes**	0.0	WEEE	R4	M	Weighed	Offsite in Ireland	WEEE Recycling Ireland ,Waste Collection Permit No. 085(2)/OY/346/06	Cappincur Industrial Estate,Daingean Rd.,Tullamore,.,Co. Offaly	.,.,.,.,.,.,Ireland	.,.,.,.,Ireland
Within the Country	20 03 01	No	0.0	Domestic & Commercial, Local Authority Commercial Waste & Reception Skip	D5	M	Weighed	Offsite in Ireland	Advanced Environmental Solutions ,WCP/OY/0/601/08/0	Springfort Cross,Nenagh,Co. Tipperary,.,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

APPENDIX 4

BALLAGHVENY LANDFILL INCIDENT SUMMARY 2013

Incident No.	Incident Nature	Category 1	Raised By	Status	CI Refs	Incident Date	Date Submitted	Date Closed
INCI000778	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	07/02/2013 15:00	08/02/2013 14:32	25/02/2013 17:05
INCI000800	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	07/02/2013 14:00	12/02/2013 16:58	30/07/2013 14:44
INCI000816	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	14/02/2013 16:53	30/07/2013 14:45
INCI000823	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	15/02/2013 16:51	30/07/2013 14:45
INCI000882	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	25/02/2013 16:38	30/07/2013 14:45
INCI000892	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	26/02/2013 17:27	30/07/2013 14:45
INCI000906	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	27/02/2013 16:21	30/07/2013 15:39
INCI000914	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	28/02/2013 14:47	30/07/2013 15:38
INCI000925	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	01/03/2013 15:36	30/07/2013 15:37
INCI000933	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	04/03/2013 17:02	30/07/2013 15:36
INCI000945	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	05/03/2013 17:19	30/07/2013 15:35
INCI000947	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	05/03/2013 14:00	05/03/2013 17:44	27/11/2013 10:17
INCI000966	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	07/03/2013 17:29	30/07/2013 15:34
INCI000987	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	11/03/2013 15:25	30/07/2013 15:33
INCI001014	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	13/03/2013 17:23	30/07/2013 15:32
INCI001026	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	14/03/2013 15:32	30/07/2013 15:31
INCI001052	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	19/03/2013 17:06	30/07/2013 15:29
INCI001061	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	20/03/2013 16:59	30/07/2013 15:28
INCI001064	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	21/03/2013 16:30	30/07/2013 15:25
INCI001093	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	26/03/2013 15:05	
INCI001107	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	27/03/2013 16:13	30/07/2013 15:20
INCI001135	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	02/04/2013 17:09	30/07/2013 15:19
INCI001168	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	04/04/2013 17:21	30/07/2013 15:17
INCI001213	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	09/04/2013 15:35	30/07/2013 15:16
INCI001219	Monitoring Equipment offline	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	10/04/2013 15:35	30/07/2013 15:15
INCI001276	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	16/04/2013 17:01	30/07/2013 14:42
INCI001288	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	17/04/2013 16:48	30/07/2013 14:42
INCI001299	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	18/04/2013 15:21	30/07/2013 14:43
INCI001300	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	18/04/2013 13:00	18/04/2013 16:02	27/11/2013 10:19
INCI001333	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	24/04/2013 17:08	30/07/2013 14:44
INCI001345	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	25/04/2013 16:33	30/07/2013 14:44
INCI001383	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	02/05/2013 16:39	29/07/2013 16:09
INCI001416	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	07/05/2013 17:04	29/07/2013 16:10
INCI001423	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	08/05/2013 16:55	29/07/2013 16:10
INCI001431	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	09/05/2013 15:40	29/07/2013 16:10
INCI001463	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	15/05/2013 15:25	30/07/2013 14:38
INCI001503	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	21/05/2013 16:33	30/07/2013 14:38
INCI001513	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	22/05/2013 15:45	
INCI001526	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	24/05/2013 16:36	30/07/2013 14:38

INCI001558	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	30/05/2013 14:28	30/07/2013 14:39
INCI001577	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	04/06/2013 16:57	30/07/2013 14:39
INCI001585	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	05/06/2013 16:30	30/07/2013 14:40
INCI001614	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	07/06/2013 15:33	30/07/2013 14:40
INCI001647	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	12/06/2013 15:04	30/07/2013 14:40
INCI001657	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	13/06/2013 16:51	30/07/2013 14:41
INCI001667	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	14/06/2013 16:00	30/07/2013 14:41
INCI001670	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	14/06/2013 10:00	14/06/2013 16:50	27/11/2013 10:19
INCI001695	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	19/06/2013 17:15	30/07/2013 14:41
INCI001710	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	21/06/2013 15:33	30/07/2013 14:41
INCI001729	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	25/06/2013 14:18	30/07/2013 14:42
INCI001757	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	27/06/2013 13:04	
INCI001783	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	01/07/2013 12:43	30/07/2013 15:06
INCI001813	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	03/07/2013 15:53	30/07/2013 15:05
INCI001828	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	05/07/2013 15:05	30/07/2013 15:04
INCI001866	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	10/07/2013 12:30	
INCI001878	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	11/07/2013 16:45	30/07/2013 15:02
INCI001885	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	12/07/2013 16:13	30/07/2013 15:01
INCI001908	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	16/07/2013 15:12	30/07/2013 15:00
INCI001925	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	18/07/2013 13:29	30/07/2013 14:58
INCI001943	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	19/07/2013 15:17	30/07/2013 14:55
INCI001972	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	14/02/2013 10:00	24/07/2013 17:08	
INCI002092	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	05/08/2013 09:00	07/08/2013 12:20	27/09/2013 15:18
INCI002100	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	05/08/2013 09:00	08/08/2013 15:41	27/09/2013 15:23
INCI002108	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	05/08/2013 09:00	09/08/2013 15:34	27/09/2013 15:23
INCI002132	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	05/08/2013 09:00	13/08/2013 17:07	15/08/2013 09:16
INCI002140	Trigger Level Reached	Category 1	Justine Haugh	Closed	CI000136	05/08/2013 09:00	14/08/2013 16:48	27/09/2013 15:25
INCI002277	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	22/07/2013 13:00	06/09/2013 16:58	27/11/2013 10:19
INCI002278	Trigger Level Reached	Category 1	Justine Haugh	Open	n/a	22/07/2013 14:00	06/09/2013 17:31	
INCI002288	Trigger Level Reached	Category 1	Justine Haugh	Closed	n/a	06/09/2013 12:00	10/09/2013 12:29	27/09/2013 15:28
INCI002708	Trigger Level Reached	Category 1	Margaret O'Sullivan	Open-CI	CI000136	05/11/2013 00:00	06/11/2013 14:43	
INCI002709	Trigger Level Reached	Category 1	Margaret O'Sullivan	Open-CI	CI000136	05/11/2013 00:00	06/11/2013 15:03	
INCI002711	Trigger Level Reached	Category 1	Margaret O'Sullivan	Open-CI	CI000136	06/11/2013 00:00	06/11/2013 15:16	
INCI002712	Trigger Level Reached	Category 1	Margaret O'Sullivan	Open	n/a	30/10/2013 00:00	06/11/2013 15:52	
INCI002964	Other	Category 1	Margaret O'Sullivan	Closed	n/a	10/12/2013 00:00	11/12/2013 13:04	07/03/2014 16:25
INCI003065	Trigger Level Reached	Category 1	Margaret O'Sullivan	Open-CI	CI000136	20/12/2013 00:00	23/12/2013 09:19	
INCI003131	Trigger Level Reached	Category 1	Margaret O'Sullivan	Open-CI	CI000136	31/12/2013 00:00	03/01/2014 14:33	

APPENDIX 5

Form No. F7

LEACHATE REGISTER

Date: 02/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:50:13	11.24	NENAGH WWTP
JOHN MACKEY	06TN2718	11:15:51	11.74	NENAGH WWTP
JOHN MACKEY	06TN2718	12:53:31	12.58	NENAGH WWTP
JOHN MACKEY	06TN2718	14:16:27	11.70	NENAGH WWTP
JOHN MACKEY	06TN2718	15:41:55	12.26	NENAGH WWTP

Total Volume : 59.52

Date: 03/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:12:29	12.40	NENAGH WWTP
JOHN MACKEY	06TN2718	10:53:51	12.56	NENAGH WWTP
JOHN MACKEY	06TN2718	12:23:38	11.72	NENAGH WWTP

Total Volume : 36.68

Date: 08/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:16:42	12.56	NENAGH WWTP
JOHN MACKEY	06TN2718	10:47:07	11.36	NENAGH WWTP
JOHN MACKEY	06TN2718	12:15:57	11.62	NENAGH WWTP
JOHN MACKEY	06TN2718	14:33:25	9.58	NENAGH WWTP
JOHN MACKEY	06TN2718	16:05:11	10.98	NENAGH WWTP

Total Volume : 56.10

Date: 09/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:13:14	11.34	NENAGH WWTP
HOGANS	10TN771	10:23:50	12.64	ROSCREA WWTP
JOHN MACKEY	06TN2718	10:40:31	12.36	NENAGH WWTP
HOGANS	10TN771	11:43:07	12.34	ROSCREA WWTP
HOGANS	10TN771	13:11:14	12.22	ROSCREA WWTP
JOHN MACKEY	06TN2718	13:17:16	11.86	NENAGH WWTP

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 09/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	15:09:49	10.80	NENAGH WWTP
JOHN MACKEY	06TN2718	17:00:06	6.38	NENAGH WWTP

Total Volume : 89.94

Date: 10/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:10:33	11.74	NENAGH WWTP
JOHN MACKEY	06TN2718	10:57:49	11.06	NENAGH WWTP

Total Volume : 22.80

Date: 15/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:16:29	12.48	NENAGH WWTP
JOHN MACKEY	06TN2718	10:28:52	12.36	NENAGH WWTP
JOHN MACKEY	06TN2718	12:07:45	12.46	NENAGH WWTP
JOHN MACKEY	06TN2718	14:09:50	12.34	NENAGH WWTP
JOHN MACKEY	06TN2718	15:50:31	12.64	NENAGH WWTP

Total Volume : 62.28

Date: 16/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:19:34	11.64	NENAGH WWTP
JOHN MACKEY	06TN2718	10:30:22	12.54	NENAGH WWTP
JOHN MACKEY	06TN2718	11:50:16	12.58	NENAGH WWTP
JOHN MACKEY	06TN2718	13:54:36	7.68	NENAGH WWTP
JOHN MACKEY	06TN2718	15:36:09	12.46	NENAGH WWTP

Total Volume : 56.90

Date: 17/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 17/01/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	08:58:23	12.60	NENAGH WWTP
JOHN MACKEY	06TN2718	10:18:11	12.50	NENAGH WWTP
JOHN MACKEY	06TN2718	11:56:56	12.24	NENAGH WWTP

Total Volume : 37.34

Date: 05/02/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:24:32	11.48	NENAGH WWTP
JOHN MACKEY	06TN2718	11:03:34	12.74	NENAGH WWTP
JOHN MACKEY	06TN2718	12:34:20	10.94	NENAGH WWTP
JOHN MACKEY	06TN2718	14:36:02	12.78	NENAGH WWTP
JOHN MACKEY	06TN2718	15:56:45	12.32	NENAGH WWTP

Total Volume : 60.26

Date: 13/02/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:05:29	12.56	NENAGH WWTP
JOHN MACKEY	06TN2718	10:39:12	12.54	NENAGH WWTP
JOHN MACKEY	06TN2718	12:29:53	12.62	NENAGH WWTP
JOHN MACKEY	06TN2718	13:52:49	12.76	NENAGH WWTP
JOHN MACKEY	06TN2718	15:36:22	12.24	NENAGH WWTP

Total Volume : 62.72

Date: 14/02/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:06:36	12.48	NENAGH WWTP
JOHN MACKEY	06TN2718	10:15:51	12.74	NENAGH WWTP
JOHN MACKEY	06TN2718	11:34:43	12.58	NENAGH WWTP
JOHN MACKEY	06TN2718		12.60	NENAGH WWTP
JOHN MACKEY	06TN2718		12.60	NENAGH WWTP
JOHN MACKEY	06TN2718		12.60	NENAGH WWTP

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 14/02/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 75.60

Date: 19/02/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:29:53	12.74	NENAGH WWTP
JOHN MACKEY	06TN2718	10:50:01	12.46	NENAGH WWTP
JOHN MACKEY	06TN2718	13:01:19	12.62	NENAGH WWTP
JOHN MACKEY	06TN2718	14:29:30	12.60	NENAGH WWTP
JOHN MACKEY	06TN2718	15:56:08	12.82	NENAGH WWTP

Total Volume : 63.24

Date: 26/02/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:16:58	12.08	NENAGH WWTP
JOHN MACKEY	06TN2718	11:44:48	11.90	NENAGH WWTP
JOHN MACKEY	06TN2718	13:34:47	12.06	NENAGH WWTP
JOHN MACKEY	06TN2718	15:13:07	12.58	NENAGH WWTP
JOHN MACKEY	06TN2718	16:50:14	12.64	NENAGH WWTP

Total Volume : 61.26

Date: 05/03/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:04:38	12.54	NENAGH WWTP
JOHN MACKEY	12TN345	12:33:03	12.42	NENAGH WWTP
JOHN MACKEY	12TN345	14:09:25	12.40	NENAGH WWTP
JOHN MACKEY	12TN345	15:30:31	12.68	NENAGH WWTP
JOHN MACKEY	12TN345	16:43:22	12.70	NENAGH WWTP

Total Volume : 62.74

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 13/03/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	12TN345	09:37:33	12.92	NENAGH WWTP
JOHN MACKEY	12TN345	10:54:09	12.18	NENAGH WWTP
JOHN MACKEY	12TN345	12:12:34	12.36	NENAGH WWTP
JOHN MACKEY	12TN345	13:33:54	12.42	NENAGH WWTP
JOHN MACKEY	12TN345	15:03:26	12.62	NENAGH WWTP

Total Volume : 62.50

Date: 19/03/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	07TN733	09:38:50	10.74	NENAGH WWTP
JOHN MACKEY	07TN733	10:59:46	12.22	NENAGH WWTP
JOHN MACKEY	07TN733	12:28:30	12.24	NENAGH WWTP
JOHN MACKEY	07TN733	14:11:24	12.28	NENAGH WWTP

Total Volume : 47.48

Date: 26/03/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	12TN345	09:25:49	12.64	NENAGH WWTP
JOHN MACKEY	12TN345	10:38:44	12.56	NENAGH WWTP
JOHN MACKEY	12TN345	12:17:11	12.66	NENAGH WWTP
JOHN MACKEY	12TN345	13:45:20	13.00	NENAGH WWTP
JOHN MACKEY	12TN345	15:27:12	12.50	NENAGH WWTP

Total Volume : 63.36

Date: 02/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	12TN345	09:42:01	12.54	NENAGH WWTP
JOHN MACKEY	12TN345	10:54:53	12.82	NENAGH WWTP
JOHN MACKEY	12TN345	12:07:28	12.64	NENAGH WWTP
JOHN MACKEY	12TN345	13:21:42	12.64	NENAGH WWTP
JOHN MACKEY	12TN345	14:51:40	12.46	NENAGH WWTP

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 02/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 63.10

Date: 04/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	12:53:37	32.44	THURLES S T P

Total Volume : 32.44

Date: 09/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	10:00:39	30.22	THURLES S T P
JOHN MACKEY	06TN2718	11:10:11	11.84	NENAGH WWTP
HOGANS	02D861	13:02:11	31.54	THURLES S T P
JOHN MACKEY	06TN2718	13:18:04	12.62	NENAGH WWTP
JOHN MACKEY	06TN2718	14:42:34	12.34	NENAGH WWTP
JOHN MACKEY	06TN2718	16:04:51	12.62	NENAGH WWTP
JOHN MACKEY	06TN2718		12.36	NENAGH WWTP

Total Volume : 123.54

Date: 10/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:48:06	30.60	THURLES S T P
HOGANS	02D861	12:58:56	30.42	THURLES S T P

Total Volume : 61.02

Date: 16/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
JOHN MACKEY	06TN2718	09:10:05	12.60	NENAGH WWTP
HOGANS	02D861	10:07:18	32.40	THURLES S T P
JOHN MACKEY	06TN2718	10:30:07	12.60	NENAGH WWTP
HOGANS	02D861	13:25:35	28.90	THURLES S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 16/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 86.50

Date: 17/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:25:57	30.80	THURLES S T P
HOGANS	02D861	13:00:21	30.10	THURLES S T P

Total Volume : 60.90

Date: 18/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:26:20	32.04	THURLES S T P

Total Volume : 32.04

Date: 23/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	10:03:04	32.74	THURLES S T P
HOGANS	02D861	13:41:41	28.16	THURLES S T P

Total Volume : 60.90

Date: 24/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:30:11	31.50	THURLES S T P
HOGANS	02D861	12:48:59	26.98	THURLES S T P

Total Volume : 58.48

Date: 25/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:53:07	27.48	THURLES S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 25/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 27.48

Date: 30/04/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:27:06	28.62	THURLES S T P
HOGANS	02D861	12:58:32	28.58	THURLES S T P

Total Volume : 57.20

Date: 01/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:36:01	27.48	THURLES S T P
HOGANS	02D861	13:17:16	30.66	THURLES S T P

Total Volume : 58.14

Date: 02/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	09:22:07	27.72	THURLES S T P

Total Volume : 27.72

Date: 07/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D861	11:11:57	31.76	THURLES S T P
HOGANS	02D861	15:01:47	25.32	THURLES S T P

Total Volume : 57.08

Date: 09/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	02D80835	09:24:42	29.18	THURLES S T P
HOGANS	02D80835	12:51:02	29.82	THURLES S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 22/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	16:19:41	31.88	THURLES S T P

Total Volume : 94.84

Date: 28/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:36:20	31.62	THURLES S T P
HOGANS	131TN892	12:57:43	31.80	THURLES S T P

Total Volume : 63.42

Date: 29/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:29:09	31.68	THURLES S T P
HOGANS	131TN892	12:24:03	31.90	THURLES S T P
HOGANS	131TN892	15:42:49	30.98	THURLES S T P

Total Volume : 94.56

Date: 30/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892		31.64	THURLES S T P

Total Volume : 31.64

Date: 04/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892		31.42	THURLES S T P
HOGANS	131TN892	13:51:20	31.84	THURLES S T P

Total Volume : 63.26

Date: 05/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 09/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 59.00

Date: 14/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:37:05	32.18	THURLES S T P
HOGANS	131TN892	13:47:14	31.12	THURLES S T P

Total Volume : 63.30

Date: 15/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:34:53	32.00	THURLES S T P
HOGANS	131TN892	12:59:08	31.98	THURLES S T P

Total Volume : 63.98

Date: 16/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:33:04	31.06	THURLES S T P

Total Volume : 31.06

Date: 21/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:32:52	31.40	THURLES S T P
HOGANS	131TN892	13:05:39	31.84	THURLES S T P

Total Volume : 63.24

Date: 22/05/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:30:29	31.60	THURLES S T P
HOGANS	131TN892	12:59:58	31.36	THURLES S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 05/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:07:09	31.72	THURLES S T P
HOGANS	131TN892	12:01:24	32.00	THURLES S T P
HOGANS	131TN892	15:04:55	31.90	THURLES S T P

Total Volume : 95.62

Date: 06/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:09:55	31.58	THURLES S T P
HOGANS	131TN892	12:22:29	31.50	THURLES S T P

Total Volume : 63.08

Date: 07/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:10:48	31.76	THURLES S T P
HOGANS	131TN892	12:05:29	31.70	THURLES S T P

Total Volume : 63.46

Date: 11/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:13:57	23.34	THURLES S T P
HOGANS	131TN892	11:58:06	23.28	THURLES S T P
HOGANS	131TN892	15:36:49	23.28	THURLES S T P

Total Volume : 69.90

Date: 12/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:14:33	23.34	THURLES S T P
HOGANS	131TN892	12:00:00	23.36	THURLES S T P
HOGANS	131TN892	15:09:23	23.32	THURLES S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 12/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 70.02

Date: 13/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	10:09:37	31.82	THURLES S T P
HOGANS	131TN892	12:47:08	32.06	THURLES S T P

Total Volume : 63.88

Date: 14/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:12:43	31.84	THURLES S T P
HOGANS	131TN892	12:06:20	31.98	THURLES S T P

Total Volume : 63.82

Date: 18/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:11:32	31.32	THURLES S T P
HOGANS	131TN892	11:52:15	31.68	THURLES S T P
HOGANS	131TN892	14:43:41	31.62	THURLES S T P

Total Volume : 94.62

Date: 19/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:13:19	31.54	THURLES S T P
HOGANS	131TN892	12:12:46	31.76	THURLES S T P

Total Volume : 63.30

Date: 25/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 25/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:20	31.92	THURLES S T P
HOGANS	131TN892	12:15:51	31.70	THURLES S T P
HOGANS	131TN892	15:06:24	31.58	THURLES S T P

Total Volume : 95.20

Date: 26/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:25	31.90	THURLES S T P

Total Volume : 31.90

Date: 27/06/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	10:57:22	31.36	THURLES S T P

Total Volume : 31.36

Date: 02/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:10:44	31.34	THURLES S T P
HOGANS	131TN892	11:57:51	31.80	THURLES S T P
HOGANS	131TN892	14:53:39	31.82	THURLES S T P

Total Volume : 94.96

Date: 03/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:18:39	31.92	THURLES S T P
HOGANS	131TN892	12:03:54	31.86	THURLES S T P
HOGANS	131TN892	15:00:38	31.90	THURLES S T P

Total Volume : 95.68

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 04/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:21:20	31.88	THURLES S T P
HOGANS	131TN892	12:16:36	32.20	THURLES S T P
HOGANS	131TN892	14:58:01	31.94	THURLES S T P

Total Volume : 96.02

Date: 05/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:22:07	31.96	THURLES S T P

Total Volume : 31.96

Date: 09/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:13:56	32.00	THURLES S T P
HOGANS	131TN892	12:38:01	32.08	THURLES S T P
HOGANS	131TN892	15:22:31	31.96	THURLES S T P

Total Volume : 96.04

Date: 10/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:52	31.98	THURLES S T P
HOGANS	131TN892	12:13:48	32.26	THURLES S T P
HOGANS	131TN892	15:15:35	32.20	THURLES S T P

Total Volume : 96.44

Date: 11/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:09:52	32.44	THURLES S T P
HOGANS	131TN892	12:01:28	32.08	THURLES S T P

Total Volume : 64.52

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 12/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:11:37	31.70	THURLES S T P
HOGANS	131TN892	11:56:53	32.08	THURLES S T P

Total Volume : 63.78

Date: 16/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:18:41	31.54	THURLES S T P
HOGANS	131TN892	12:00:55	31.98	THURLES S T P
HOGANS	131TN892	14:56:05	31.90	THURLES S T P

Total Volume : 95.42

Date: 17/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:04	32.38	THURLES S T P
HOGANS	131TN892	12:00:28	32.14	THURLES S T P
HOGANS	131TN892	15:01:41	32.18	THURLES S T P

Total Volume : 96.70

Date: 18/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:16	32.06	THURLES S T P
HOGANS	131TN892	12:04:55	32.22	THURLES S T P

Total Volume : 64.28

Date: 19/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:12:38	32.00	THURLES S T P

Total Volume : 32.00

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 24/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:12:54	32.20	THURLES S T P
HOGANS	131TN892	12:05:23	32.50	THURLES S T P
HOGANS	131TN892	15:13:46	32.50	THURLES S T P

Total Volume : 97.20

Date: 25/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:19:58	32.12	THURLES S T P
HOGANS	131TN892	12:00:32	32.40	THURLES S T P

Total Volume : 64.52

Date: 26/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	12:38:04	32.10	THURLES S T P

Total Volume : 32.10

Date: 30/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:58	32.42	THURLES S T P
HOGANS	131TN892	12:00:29	32.14	THURLES S T P
HOGANS	10TN771	13:09:48	12.42	ROSCREA WWTP
HOGANS	10C6587	15:22:09	14.18	NENAGH WWTP

Total Volume : 91.16

Date: 31/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:09:29	32.08	THURLES S T P
HOGANS	10C6587	09:35:49	16.00	THURLES S T P
HOGANS	10TN771	11:45:19	12.68	THURLES S T P
HOGANS	131TN892	12:11:18	32.12	THURLES S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 31/07/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 92.88

Date: 01/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:14:56	32.32	THURLES S T P

Total Volume : 32.32

Date: 09/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:33:48	32.26	THURLES S T P
HOGANS	131TN892	12:17:35	32.06	THURLES S T P

Total Volume : 64.32

Date: 13/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:28:43	28.40	THURLES S T P
HOGANS	131TN892	12:09:38	32.52	THURLES S T P
HOGANS	131TN892	15:10:40	32.56	THURLES S T P

Total Volume : 93.48

Date: 14/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:15:05	32.44	THURLES S T P
HOGANS	131TN892	12:00:16	32.00	THURLES S T P
HOGANS	131TN892	14:55:24	32.60	THURLES S T P

Total Volume : 97.04

Date: 15/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 15/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:22	32.08	THURLES S T P
HOGANS	131TN892	12:01:26	32.50	THURLES S T P

Total Volume : 64.58

Date: 16/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:46	32.28	THURLES S T P
HOGANS	131TN892	12:03:38	31.96	THURLES S T P

Total Volume : 64.24

Date: 20/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:22	31.88	THURLES S T P
HOGANS	131TN892	12:08:44	31.86	THURLES S T P
HOGANS	131TN892	15:08:54	32.56	THURLES S T P

Total Volume : 96.30

Date: 21/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:09:46	32.06	THURLES S T P
HOGANS	131TN892	11:57:15	32.00	THURLES S T P
HOGANS	131TN892	14:50:24	31.86	THURLES S T P

Total Volume : 95.92

Date: 22/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:12:55	31.96	THURLES S T P
HOGANS	131TN892	12:03:33	32.04	THURLES S T P

Total Volume : 64.00

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 23/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:14:50	32.28	THURLES S T P
HOGANS	131TN892	12:10:43	32.34	THURLES S T P

Total Volume : 64.62

Date: 27/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:43	31.98	THURLES S T P
HOGANS	131TN892	12:13:36	32.00	THURLES S T P
HOGANS	131TN892	15:03:26	32.44	THURLES S T P

Total Volume : 96.42

Date: 28/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:14:51	32.14	THURLES S T P
HOGANS	131TN892	13:32:42	32.58	THURLES S T P

Total Volume : 64.72

Date: 29/08/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:13:56	31.74	THURLES S T P
HOGANS	131TN892	12:14:11	32.00	THURLES S T P

Total Volume : 63.74

Date: 03/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:23:40	32.06	THURLES S T P
HOGANS	131TN892	12:13:42	32.06	THURLES S T P
HOGANS	131TN892	15:06:14	32.04	THURLES S T P

Total Volume : 96.16

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 04/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:14:57	32.00	THURLES S T P
HOGANS	131TN892	12:02:32	31.98	THURLES S T P
HOGANS	131TN892	15:05:04	32.14	THURLES S T P

Total Volume : 96.12

Date: 05/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:13:44	31.92	THURLES S T P
HOGANS	131TN892	12:37:06	32.54	THURLES S T P

Total Volume : 64.46

Date: 06/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	10:30:37	31.42	THURLES S T P

Total Volume : 31.42

Date: 10/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:24:31	32.38	THURLES S T P
HOGANS	131TN892	12:10:29	32.40	THURLES S T P
HOGANS	131TN892	15:02:21	32.36	THURLES S T P

Total Volume : 97.14

Date: 11/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:35	32.36	THURLES S T P
HOGANS	131TN892	12:36:27	31.70	THURLES S T P

Total Volume : 64.06

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 17/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:20:31	32.26	THURLES S T P
HOGANS	131TN892	12:13:41	32.42	THURLES S T P
HOGANS	131TN892	15:10:16	32.42	THURLES S T P

Total Volume : 97.10

Date: 18/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:18:05	31.92	THURLES S T P
HOGANS	131TN892	12:06:00	32.08	THURLES S T P

Total Volume : 64.00

Date: 24/09/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	11:56:35	29.18	THURLES S T P
HOGANS	131TN892	14:46:51	29.70	THURLES S T P

Total Volume : 58.88

Date: 02/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:21:39	30.72	THURLES S T P
HOGANS	131TN892	12:10:00	30.32	THURLES S T P

Total Volume : 61.04

Date: 03/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892		30.36	THURLES S T P
HOGANS	131TN892	12:08:24	28.96	THURLES S T P

Total Volume : 59.32

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 09/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:12	29.88	THURLES S T P
HOGANS	131TN892	15:56:20	30.00	THURLES S T P

Total Volume : 59.88

Date: 15/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:19:47	29.96	THURLES S T P
HOGANS	131TN892	12:02:39	29.68	THURLES S T P
HOGANS	131TN892	14:53:30	29.84	THURLES S T P

Total Volume : 89.48

Date: 16/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	12:04:49	29.98	THURLES S T P

Total Volume : 29.98

Date: 17/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	11:17:45	29.48	THURLES S T P

Total Volume : 29.48

Date: 22/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:53	29.54	THURLES S T P
HOGANS	131TN892	12:15:34	29.70	THURLES S T P

Total Volume : 59.24

Date: 23/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 23/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:10:28	29.66	THURLES S T P
HOGANS	131TN892	12:10:13	29.52	THURLES S T P

Total Volume : 59.18

Date: 24/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:38:40	30.04	THURLES S T P

Total Volume : 30.04

Date: 31/10/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:19:31	29.78	THURLES S T P
HOGANS	131TN892	12:09:03	29.74	THURLES S T P

Total Volume : 59.52

Date: 06/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:09:13	29.70	THURLES S T P
HOGANS	131TN892	11:50:11	30.24	THURLES S T P

Total Volume : 59.94

Date: 07/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:15:12	30.00	THURLES S T P
HOGANS	131TN892	11:53:46	30.28	THURLES S T P

Total Volume : 60.28

Date: 12/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 12/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:12:47	30.22	THURLES S T P
HOGANS	131TN892	12:18:41	30.20	THURLES S T P

Total Volume : 60.42

Date: 14/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:14:37	29.88	THURLES S T P
HOGANS	131TN892	11:50:09	30.20	THURLES S T P

Total Volume : 60.08

Date: 19/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:17:45	29.52	THURLES S T P
HOGANS	131TN892	13:31:37	29.52	THURLES S T P

Total Volume : 59.04

Date: 20/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:02:01	30.42	THURLES S T P

Total Volume : 30.42

Date: 21/11/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	12:25:21	30.06	THURLES S T P

Total Volume : 30.06

Date: 19/12/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	09:33:17	28.64	KILKENNY S T P

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

Form No. F7

LEACHATE REGISTER

Date: 19/12/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination

Total Volume : 28.64

Date: 20/12/2013

Haulier Name	Vehicle Reg	Romoval Time	Volume M3	Destination
HOGANS	131TN892	07:46:03	27.08	KILKENNY S T P

Total Volume : 27.08

Name and Address of Wastewater Treatment Plant to which the Leachate was transported

Any Incidents or Spillages of Leachate during Removal or Transport

Consignment Logged By: _____

APPENDIX 6

Unit 32 De Granville Court, Dublin Rd, Trim, Co. Meath

Tel: +353 46 9437922
Mobile: +353 87 6829011
E-mail: info@odourireland.com
john@odourireland.ie
Website: www.odourireland.com

W0078-03-VOC/SURFACEEMISSIONS/2014/1 LANDFILL GAS SURFACE EMISSIONS SURVEY AT BALLAGHVENY LANDFILL, BALLYMACKEY, CO. TIPPERARY

PERFORMED BY ODOUR MONITORING IRELAND ON BEHALF OF TIPPERARY COUNTY COUNCIL

PREPARED BY:	Dr. John Casey
ATTENTION:	Ms. Olga Doyle
LICENCE NUMBER:	WL0078-3
LICENCE HOLDER:	Tipperary County Council
FACILITY NAME:	Ballaghveny Landfill Facility
DATE OF MONITORING VISIT:	30th Jul. 2014
NAME AND ADDRESS OF CLIENT ORGANISATION:	Ballaghveny Landfill, Ballymackey, Co. Tipperary
NAME AND ADDRESS OF MONITORING ORGANISATION:	Odour Monitoring Ireland, Unit 32 DeGranville Court, Dublin Road, Trim, Co. Meath
DATE OF REPORTING:	13th Aug. 2014
NAME AND THE FUNCTION OF THE PERSON APPROVING THE REPORT:	Dr. Brian Sheridan, Managing Partner, Odour Monitoring Ireland
REPORT NUMBER:	2014327
REVIEWERS:	Dr. Brian Sheridan

TABLE OF CONTENTS

DOCUMENT AMENDMENT RECORD

Client: ***Tipperary County Council***

Title: W0078-03-VOC/SurfaceEmissions/2014/1 Landfill Gas Surface emissions Survey at Ballaghveny Landfill, Ballymackey, Co. Tipperary.

Project Number: 2014327			**Document Reference:** W0078-03-VOC/SurfaceEmissions/2014/1		
2014327(1)	Document for review	JWC	BAS	JWC	13/08/2014
Revision	**Purpose/Description**	**Originated**	**Checked**	**Authorised**	**Date**

Executive Summary

Tipperary County Council commissioned Odour Monitoring Ireland to perform a landfill gas surface emissions survey of Ballaghveny landfill facility (i.e. Waste licence number W0078-03) in order to ascertain any likely sources of landfill gas surface emissions from the operating landfill. Landfill gas surface emissions are the predominant source of odour emissions from landfills in Ireland. The survey was carried out on the 30th July 2014.

During the surface emissions survey, the following tasks were performed on site:

1. Identification the key mechanisms that lead to the release of landfill gas surface emissions from the site.
2. Identify geographically on a site map, the locations of landfill gas surface emissions in order to perform remediation of the identified surface emissions areas.

The following conclusions were drawn from survey:

- Three zones of surface emissions were identified within the landfill facility that exceeded recommended trigger levels. These zones are identified geographically on a site map contained in *Appendix I* of this report.
- There were 2 surface emissions zones greater than or equal to 500 ppm around identified features. There was 1 surface emissions zone greater than or equal to 100 ppm instantaneous reading on open surfaces within the landfill footprint.
- Seven zones of surface emissions were identified within the landfill facility that exceeded recommended trigger levels on the 21st Feb. 2013. There were 7 surface emissions zones greater than or equal to 500 ppm around identified features. There was 0 surface emissions zone greater than or equal to 100 ppm instantaneous reading on open surfaces within the landfill footprint.

1. Introduction

1.1. Background to work

Odour Monitoring Ireland was commissioned by Tipperary County Council to perform a specified independent Volatile organic compound surface emissions survey at Ballaghveny landfill facility. The assessment involved a Volatile organic compound (VOC) surface emissions survey of the landfill facility in order to ascertain the VOC emission points and mark them upon a map for remediation. This report presents a summary of the findings of a VOC surface emissions survey at Ballaghveny Landfill, Ballymackey, Co. Tipperary. The report is based on scientific measurements and observations made during a site visit conducted on the 30th July 2014.

1.2. Scope of work

The main aims of the survey included:

- Surface emissions monitoring in accordance with AG6 requirements.
- Discussion meeting with landfill manager once survey was complete in order to communicate main surface emissions areas for immediate remediation, where necessary.

2. Techniques used

This section describes the techniques used throughout the study. The surface emissions surveying and reporting was performed by Dr. John Casey, Odour Monitoring Ireland. Dr. John Casey has preformed surface emissions monitoring survey's on behalf of Odour Monitoring Ireland for regulatory bodies in Ireland and Northern Ireland, local authorities in Ireland, private waste operators in Ireland and borough councils in Northern Ireland. A full documented list of previous survey's is available upon request.

2.1. "Odour hog" monitoring within the landfill

The "Odour hog" (i.e. Version 2, 4 years old with less than 3.5 second response time for the FID) VOC analyser is a portable, intrinsically safe, survey VOC dual monitor, which provides fast and accurate readings of organic and inorganic vapours. A Photo ionisation detector (PID) uses an Ultraviolet (UV) light source (*photo*) to ionise a gas sample and detect its concentration. Ionisation occurs when a molecule absorbs the high energy UV light, ejecting a negatively charged electron and forming of positively charged molecular ion. The gas becomes electrically charged. These charged particles produce a current that is easily measured at the sensor electrodes. Only a small fraction of the VOC molecules are ionised. A PID does not respond to methane. A FID is similar to a flame thermocouple detector, but measures the ions from the flame instead of the heat generated. The FID detects the methane fraction, which provides greater sensitivity in terms of methane surface emissions detection but not necessarily odour hence why the PID data is also interpreted. The FID/PID analyser was calibrated with certified reference material isobutylene and methane before commencement of the survey, see calibration certificates for gases used in Appendix II. The calibration readings were rechecked in accordance with AG6 requirements.

Using the continuous kinematic "Odour hog" with integrated GPS (i.e Magellan Professional with sub centimetre accuracy post processed), the capping of the landfill was surveyed for potential surface emissions areas. Those areas identified were geo-referenced and highlighted for remediation. This technique is useful for comparison in surface emissions area within the same landfill facility on different survey's. The surface emissions maps generated for the particular facility can be used to assess the effectiveness of implemented mitigation techniques and to qualitatively assess the nature of surface emissions from the facility. All surface emissions surveying was carried out in accordance with "Surface VOC Emissions Monitoring on Landfill Facilities (AG6).

Efforts should be made to attain surface emissions <100 ppm from open surfaces and <500 ppm around features such as vertical wells, leachate collection sumps, leachate slope risers and other projections out of the waste body (Casey et al., 2008). These are minimum standards, which should lead to greater landfill collection efficiencies thus reducing the impact on the general environment.

2.2. Meteorological conditions

Table 2.1 illustrates the predominant wind direction during the monitoring exercise. The meteorological conditions were characterised for the day of monitoring and were as follows:

Table 2.1. Meteorological conditions during Ballaghveny landfill facility TVOC survey.

30th Jul. 2014	
Average wind speed 3 m s^{-1}	Wind direction SW
Temperature 25^0C	1025 mbar
Dry weather	Capping moisture content low

During the TVOC and gas field survey, wind deviated from an southerly direction. Capping moisture content was very low.

2.3 Current landfill gas collection infrastructure on the facility

There are a total of 26 vertical wells, 3 horizontal lines and 4 pumped / 4 gravity condensate knock out pots on the facility. Horizontal and Vertical landfill gas abstraction is employed in the facility. There is one operational installed landfill gas enclosed flare. The flare was in operation on the date of the survey. The facility is permanently capped see Figure 6.1.

3. Results

3.1. Volatile organic compound surface emissions locations identified within Ballaghveny landfill facility

Figure 6.2 and Table 3.1 illustrates the results obtained for the capping surface emissions survey. A total of 3 individual surface emissions zones were identified. Each surface emissions zone is discussed separately in this manner in order to allow for the development of remediation strategies to mitigate the individual surface emissions areas.

Table 3.1. Capping VOC surface emissions locations results with source identities correlating with *Figure 6.2 (see Appendix I)*.

Location ID	Easting (m)	Northing (m)	Max VOC conc. (ppm)	Identification and Mitigation	Recommended trigger levels
B1	197049	182326	129	Discrete Location: Permanent Cap, Surface Area. Landfill gas leakage from area in the vicinity of the flank. Investigate and remediate the cause of the surface emissions.	<100ppm
B2	197034	182302	724	Discrete Feature: Permanent Cap, Gas Well LFG22. Landfill gas leakage from area in the vicinity of the vertical well. Investigate and remediate the cause of the surface emissions.	<500ppm
B3	197069	182261	1,085	Discrete Feature: Permanent Cap, Gas Well LFG20. Landfill gas leakage from area in the vicinity of the vertical well. Investigate and remediate the cause of the surface emissions.	<500ppm

Three sources of landfill gas surface emissions were identified (*see Figures 6.2 and Table 3.1*) within the landfill.

There were 2 surface emissions zones greater than or equal to 500 ppm around identified features. There was 1 surface emissions zone greater than or equal to 100 ppm instantaneous reading on open surfaces within the landfill footprint.

3.2. Close out meeting with landfill manager

Following completion of the surface emissions survey, the surface emissions team and the landfill management discussed all aspects and general conclusions of the survey. The landfill management was informed of the potential areas of surface emissions.

4. Conclusions

The following conclusions were drawn from the survey of Ballaghveny landfill facility:

- The surface emissions contour map generated from the kinematic Volatile organic compound (VOC) survey illustrated surface areas of landfill gas surface emissions.
- There were 2 surface emissions zones greater than or equal to 500 ppm around identified features. There was 1 surface emissions zone greater than or equal to 100 ppm instantaneous reading on open surfaces within the landfill footprint.

5. References

- Casey, J.W., Sheridan, B.A., Henry, M., Reynolds, K., (2008). Effective tools for managing odours from landfill facilities. International Conference on Environmental Odour Monitoring and Control, Rome, Italy, July 6-8, 2008.

6. *Appendix I*- Volatile organic compound surface emissions contour map & Cell capping outline & LFG infrastructure map

Figure 6.1. Cell capping outline & LFG infrastructure on the facility.

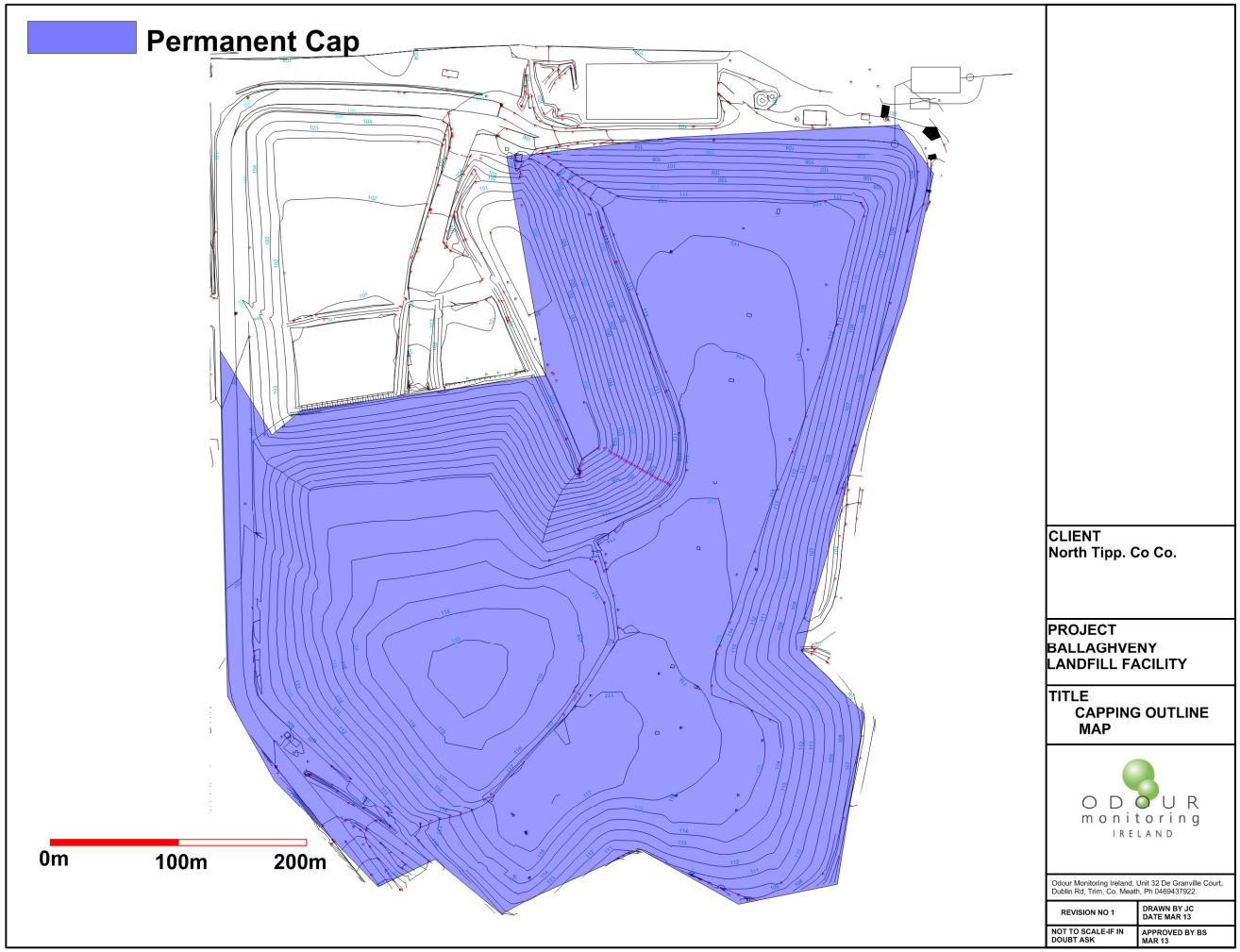
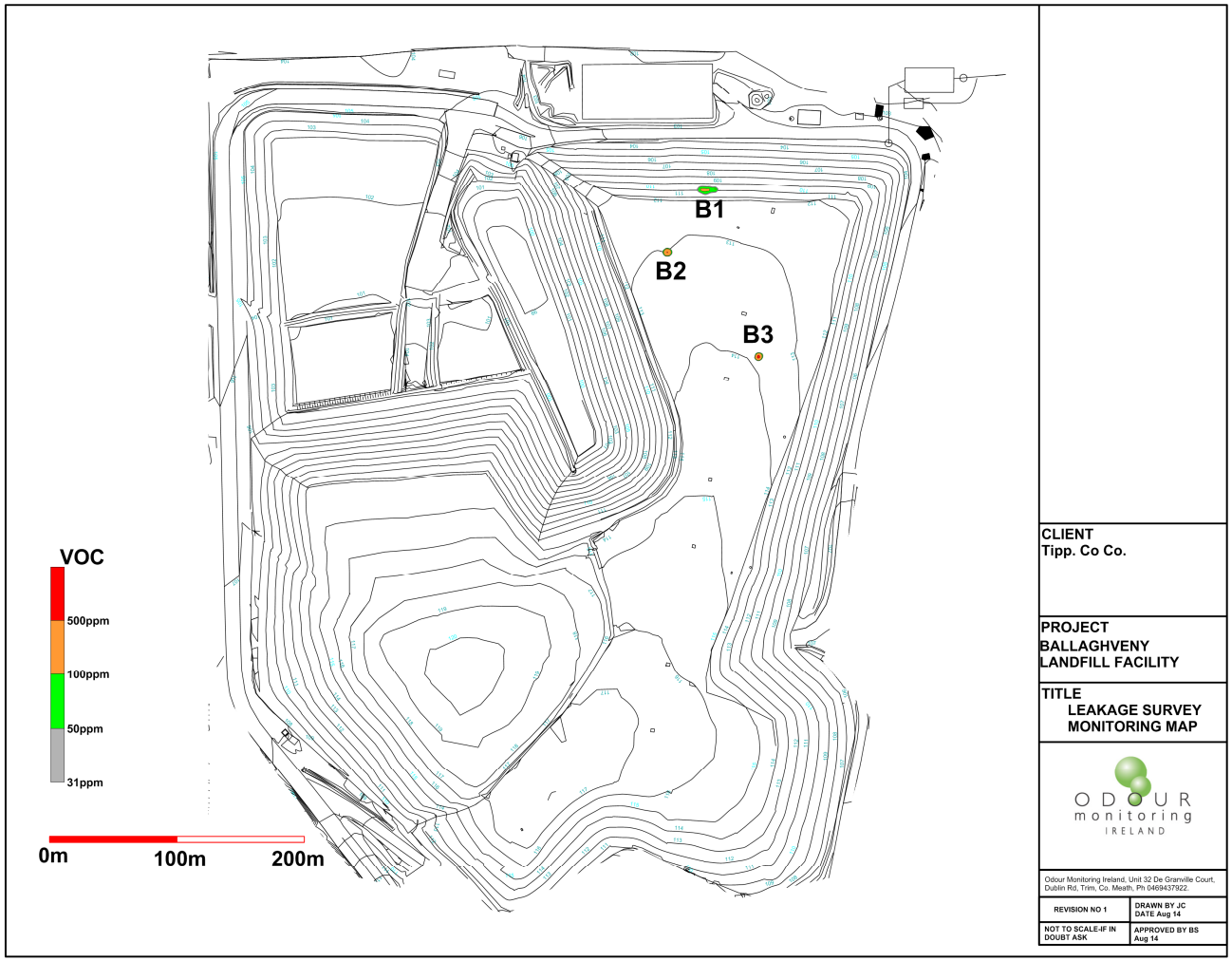

Permanent Cap
0m
100m
200m
CLIENT
North Tipp. Co Co.
PROJECT
BALLAGHVENY
LANDFILL FACILITY
TITLE
CAPPING OUTLINE
MAP
ODOUR
monitoring
IRELAND
Odour Monitoring Ireland, Unit 32 De Granville Court, Dublin Rd, Trim, Co. Meath. Ph 0469437922
REVISION NO 1
DRAWN BY JC
DATE MAR 13
NOT TO SCALE-IF IN DOUBT ASK
APPROVED BY BS
MAR 13

Figure 6.2. Landfill gas surface emissions monitoring within the operating landfill facility (colour scale area indicating TVOC gas colour scale).


B1
B2
B3
VOC
500ppm
100ppm
50ppm
31ppm
0m
100m
200m
CLIENT
Tipp. Co Co.
PROJECT
BALLAGHVENY
LANDFILL FACILITY
TITLE
LEAKAGE SURVEY
MONITORING MAP
ODOUR
monitoring
IRELAND
Odour Monitoring Ireland, Unit 32 De Granville Court, Dublin Rd, Trim, Co. Meath, Ph 046943722.
REVISION NO 1
DRAWN BY JC
DATE Aug 14
NOT TO SCALE-IF IN DOUBT ASK
APPROVED BY BS
Aug 14

7. Appendix II-Calibration certificates and procedures.

7.1 Span & Calibration procedure

Necessary Calibration gases: Zero gas (0ppm), 100ppm and 500ppm methane (Calibration certificates below).

Calibration is carried out in accordance with manufacturers guidelines.

Location: Zero span instrument onsite.

Frequency: Before, midway through, and after the surface emissions survey, typically therefore at 3-4 hour intervals. If the survey only last 2 to 3 hours the instrument is checked before and after the event.

Instrument settling: The FID is switched on and left to settle for a period of 30 minutes minimum.

Span Procedure: The zero and span gases shall be introduced under the same flow and pressure conditions using the sample probe at the end of the sample line. The adjustment procedure shall be as follows:

a) Feed the zero gas (0ppm) into the FID and set the zero;

b) Feed the span gas (100ppm) and adjust the instrument accordingly;

c) Feed the zero gas into the FID once more and check that the reading returns to zero; if not repeat steps a) to c).

d) repeat procedure A to C to verify

Equipment is maintained and operated as specified by the manufacturer.

Scientific & Technical
[redacted] Gases Ltd [redacted]

Certificate of Composition 29485-6-2

Order No E-MAIL Cylinder No Customer ODOUR MONITORING I

Cylinder Valve C10 Our Ref 29485 Cylinder Size 112DA Nett Wt

(Kg) 0.12 Gross Wt (Kg) 1.2

Component	Requested Value	Certified Value
METHANE	500PPM	500PPM
AIR (ZERO GRADE)	BALANCE	BALANCE

Pressure 1000PSI Volume 112LTR Valid Until *February 2015*

Please note all units are in *MOL%* and accuracy is +/-2%. Relative mixtures traceable to standards calibrated at the National Physics Labratory, Teddington, Middlesex, England

Certified by S. Banks UN NO 1956 Date 10/02/2013

Scientific & Technical
[redacted] Gases Ltd [redacted]

Certificate of Composition 29485-1-2

Order No E-MAIL Cylinder No Customer ODOUR MONITORING I Cylinder Valve C10 Our Ref 29485 Cylinder Size 112DA Nett Wt (Kg) 0.12 Gross Wt (Kg) 1.2

Component	Requested Value	Certified Value
AIR ZERO GRADE	ZERO GRADE	

Pressure 1000PSI Volume 1000PSI Valid Until *February 2015*

Please note all units are in *MOL%* and accuracy is +/-2%. Relative mixtures traceable to standards calibrated at the National Physics Labratory, Teddington, Middlesex, England

Certified by S. Banks UN NO 1002 Date 10/02/2013

Scientific & Technical
[redacted] Gases Ltd [redacted]

Certificate of Composition 29485-5-8

Order No E-MAIL Cylinder No Customer ODOUR MONITORING I

Cylinder Valve C10 Our Ref 29485 Cylinder Size 112DA Nett Wt

(Kg) 0.12 Gross Wt (Kg) 1.2

Component	Requested Value	Certified Value
METHANE	100PPM	100PPM
AIR (ZERO GRADE)	BALANCE	BALANCE

Pressure 1000PSI Volume 112LTR Valid Until *February 2015*

Please note all units are in *MOL%* and accuracy is +/-2%. Relative mixtures traceable to standards calibrated at the National Physics Labratory, Teddington, Middlesex, England

Certified by S. Banks UN NO 1956 Date 10/02/2013

APPENDIX 7

er Balance Calculation - Ballaghveny Landfill (March 2011)

	Year	Active Cell	Active area (m^2)	Annual Rainfall (mm)	P.E. (mm)	A.E. (mm)	Effective Rainfall (mm)	Active area infiltration (m^3)	Restored Phase No.	Liquid Waste (m^3)	Restored area (m^2)	Infiltration to restored area (%)	Restored area infiltration (m^3)	Annual Leachate (m^3)	Cumulative leachate (m^3)
07	4	6,7,8,9,10, W	50,459	804	0	0	804	40,569	3,4,5	0	13,070	20	2,102	42,671	132,153
08	5	(50% 6,7,8) 9,10,W	40,468	804	0	0	804	32,536	3,4,5 (50% 6,7,8)	0	23,062	20	3,708	36,244	168,397
09	6	9,10,W	30,476	804	0	0	804	24,503	3,4,5,6,7,8	0	33,053	20	5,315	29,818	198,214
10	7	9,10,W	30,476	804	0	0	804	24,503	3,4,5,6,7,8,	0	33,053	20	5,315	29,818	198,214
10	7	9, 10 (50%)	19,738	804	0	0	804	15,869	3,4,5,6,7,8, W	0	55,417	20	8,911	24,780	222,995
11	8	10 (50%)	4,056	804	0	0	804	3,261	3,4,5,6,7,8,9, W	0	39,735	20	6,389	9,650	232,645
12	9	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	242,209
13	10	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	251,772
14	11	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	261,335
15	12	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	270,898
16	13	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	280,462
17	14	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	290,025
18	15	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	299,588
19	16	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	309,151
20	17	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	318,715
21	18	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	328,278
22	19	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	337,841
23	20	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	347,404
24	21	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	356,968
25	22	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	366,531
26	23	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	376,094
27	24	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	385,657
28	25	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	395,221
29	26	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	404,784
30	27	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	414,347
31	28	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	423,910
32	29	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	433,474
33	30	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	443,037
34	31	none	0	804	0	0	804	0	3,4,5,6,7,8,9,10 (50%), W	0	59,473	20	9,563	9,563	452,600

ual Rainfall (mm):	804	mm	
: The above Water Balance calculation has been updated to take account of the temporary closure			
of the landfill in February 2011 and assumes no filling of waste after this date. Should a landfilling			
programme recommence, this water balance calculation will be updated accordingly			
chate Lagoon volume:	694	m^3	

Cell Areas (measured in plan)		
Cell 3,4,5	13,070	m^2
Cells 6,7,8	19,983	m^2
Cell 9	15,682	m^2
Cell 10	8,112	m^2
Cell 11	6,849	m^2
Wedge Area (W)	6,682	m^2

APPENDIX 8

Curtin Pest Control
Ballysimon Road, Limerick

Olga Doyle
Facility Manager
Ballaghveney Landfill Site.
8th September 2014

Olga,

The following is a progress report on the Pest Management Plan at Ballaghveney Landfill facility for the previous twelve months.

The service agreement provides for:

- Eight rodent control service visits per year at regular intervals the facility and three adjoining properties.
- Any emergency calls to be responded to on the day at no extra charge.
- Each service visit to be documented in a service report folder, which will also contain a computer generated plan of all bait points and material safety data sheets for each product used.
- A signed copy of each service report and an annual report on the performance of the pest management plan.

The products used to control rodent activity are "Sakarat" a warfarin based anticoagulant rodenticide used in external tamper resistant bait stations and "Klerat" a brodificoum based anticoagulant in tamper resistant bait stations used only in the main office.

Annual update:
Since the closure and sealing of the landfill in 2012, there has been a general decline in the levels of rodent activity experienced in previous years.
Fly activity has generally declined except when the weather is particularly warm. the sealing of the landfill and strategic treatment sprays have also significantly helped control high levels of this activity.
There was a slight increase in mouse activity in the compound area and two of the adjoining properties towards the end of 2013 and this was dealt with by increasing the amount of bait and carrying out follow up servicing until control was maintained.
We have again this year installed new replacement external tamper resistant bait stations. Two at the covered landfill area and one at the lagoon area where there had bait stations had been accidently damaged.
Low levels of rat activity were also evident on occasion at the lagoon area and on the adjoining properties but were effectively controlled by increasing and refreshing rodent bait.

Rodent activity continues to be controlled by the regular servicing and the service reports show that where activity occurs, it is dealt with before an infestation develops and is quickly controlled.
The pest management plan at this facility is working well and the effective cooperation between site staff and pest control technicians ensure this.

Qualifications:
Curtin Pest Control is a founder member of the Irish Pest Control Association and each technician holds an IPCA diploma.
We hold a Diploma in Environmental Pest Management from UCC..
We also offer a presentation to staff on practical pest management precautions.
If you have any further queries please contact me at 061 419901 or 087 6484119 or email curtinpestcontrol@gmail.com

John Roche
Managing Director,
Sean Curtin Pest Control Ltd.