Comhairle Contae Chiarraí

Kerry County Council

Waste Licence Ref No. W0001-04

Annual Environmental Report for North Kerry Landfill

Reporting Period:

January 2012 – December 2012

10.05.2013 v1

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2.0 Introduction and Reporting Period

Kerry County Council (KCC) operates a municipal solid waste landfill facility at Muingnaminnane, Kielduff, Tralee, Co. Kerry.

It is located approximately 8km northeast of Tralee, in the Stacks Mountains.

The landfill site accepts solid waste for disposal. The landfill is operated under licence W0001-04.

This Annual Environment Report is prepared in accordance with Condition 12.6 and Schedule F of Waste Licence W0001-04.

The reporting period for this Annual Environmental Report is from January 1st 2012 to December 31st 2012.

3.0 Waste Activities carried out at the Facility

Waste disposal activities carried out at North Kerry Landfill are in accordance with Part 1 of Waste Licence W0001-04 which outlines the waste disposal activities licenced in accordance with the Third Schedule of the Waste Management Act 1996-2010.

Licenced activities include;

Class 2	Land treatment, including biodegradation of liquid or sludge discards in soils.
Class 4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
Class 5	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
Class 6	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule.
Class 7	Physico-chemical treatments not referred to elsewhere in this Schedule (including evaporation, drying and calcinations) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule.
Class 11	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
Class 12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
Class 13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.

Waste recovery activities carried out at North Kerry Landfill are in accordance with Part 1 of Waste Licence W0001-04 which outlines the waste recovery activities licenced in accordance with the Fourth Schedule of the Waste Management Acts 1996-2008.

Licenced activities include:

Class 2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
Class 3	Recycling or reclamation of metals and metal compounds.

Class 4 Recycling or reclamation of other inorganic materials.

Class 10 The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.

Class 11 Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.

Class 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.

4.0 Quantity and composition of waste received, disposed and recovered

Waste tonnage disposed of at NKL during the reporting year 2012 increased by 54,461.88 tonnes on the previous year to 71,006.59 tonnes.

This is due mainly to a return of private waste contractors disposing of their collected waste at North Kerry Landfill for the reporting period.

Quantity of Waste disposed at facility

Since opening in May 1994 the total quantity of waste disposed of at the facility is 828,602 tonnes.

Appendix C shows a yearly break down of tonnage from 1994 – 2012.

BMW Percentage Composition of Waste disposed at facility

Total Qty MSW of which the BMW Condition Applies	Total Qty BMW	% BMW
71,006.59	44,689.45	62.94%

Appendix A shows the yearly breakdown of tonnage

Appendix B – shows %BMW entering the landfill site between 1st January – 31st December 2012 as submitted to the Agency.

5.0 Remaining Capacity and Projected Closure Date

Waste disposal/placement is currently being carried out in cell 18. It is estimated at current waste disposal trends that waste disposal/placement in cell 18 will cease in April 2013 after which cell 17 will be opened.

The remaining developed void capacity is 35,923 m^3. This equates making allowance for cover requirements and compaction densities to approximately 32,000 tonnes.

Remaining undeveloped licensed capacity volume is 509,012 m^3 which equates to approximately 450,000 tonnes.

It is not credible to forecast a closure date assuming all undeveloped areas are constructed due to variability in intake volumes and the emergence of other disposal routes.

6.0 Method of Deposition of Waste at North Kerry Landfill

Large vehicle access/private customers with large trailers.

The current arrangement for disposing of waste in cell 18 is carried out on a pre-built pre-planned tip head.

The tip head height is normally kept at a height allowing for adequate working room for plant in the area.

At the latter stage of a cells life, it is not feasible to maintain the purpose built tip head an access road is constructed on top of the placed/compacted waste. A temporary level tip is constructed. Waste is deposited on the flat and a bull dozer is used to push the waste ahead of the compactor for placement and further compaction.

Customers accessing the site with small quantities of waste.

The majority of customers do not access the tip head in order to dispose of their waste. These were directed to the public skip area to place their waste into a series of trailers. These trailers are removed from the public skip area on a regular basis and tipped at the tip head for placement/compaction. The weighbridge supervisor takes note of the weight of each trailer before it emptied and this information is added to the daily tonnage records and the end of every day.

Appendix D outlines the types of waste which are accepted in NKL for removal off site for recycling/recovery/disposal.

The civic amenity area contains a number of receptacles into which members of the public can deposit specific waste types free of charge for recovery/recycling/disposal. In addition to the concrete slab area there is a shed for the housing of WEEE and Hazardous waste collection.

Additionally the civic amenity area includes an area for the deposition of green waste. With the introduction of BMW target in July 2010, all green waste collected on site is being removed to the Bord na Mona licenced site at Kilberry Co Kildare for further processing and reuse.

7.0 Summary Report on Emissions for the Reporting Period.

Emissions to Water.

A full report prepared by the Environmental Laboratory of KCC is included in the Appendix E which covers the emission to water and ecological assessments undertaken.

Emissions to Air.

Gas management practices at North Kerry Landfill is an interlinked system of mutually reinforcing actions no one of which can fully control or manage the generation of LFG from the deposited waste mass. In combination however, they comply fully with the requirements of the licence.

The Systems and operations include:

- Active management of the gas control infrastructure
- Introduction of new gas collection systems
- Odour patrol and consequent reactive measures
- Monitoring and testing of infrastructure

The infrastructure in place at North Kerry Landfill includes the construction of a basal liner and capping system.

Outside the footprint of the landfill is a network of LFG monitoring boreholes. There are constructed in a grid around the footprint of the area that waste has been deposited within. These wells are monitored on a prescribed cycle for the presence of a suite of indicator gases that would signal the possible migration of LFG.

Perimeter Gas Well no 6 continues to show methane and CO2 concentrations above the allowable throughout the year. This is a historically problematic well. In 2004 wells 6a-d were constructed to monitor the gas migration in the vicinity of the gas well. These perimeter gas wells also showed gas concentration levels in excess of the allowable at times during the year.

It is noted however that there is no odour of nuisance issue at the location or evidence of vegetation die back. The permanent capping of the adjacent cell should control this fugitive emission.

In November 2011 the gas to energy project was successfully commissioned. A Genset of nominal rating 300 kW is in operation at the facility.

The demand of the generation plant has been balanced against the generation output of the field. Field balancing and network management are vital components of a successful operation of the gas to energy project. These are actively managed to ensure maximum production.

8.0 Resource and Energy Consumption.

The following is the energy consumption for North Kerry Landfill for the reporting period.

Diesel

The diesel usage for the reporting period was 63,664 litres. This is an increase of 5,167 litres which is due to an increase in plant activity around the active cell because of the increase in tonnage.

Electricity

The total usage for 2012 was 106,350 kWh; This is a decrease in energy consumption of 41,500 kWh.
The gas utilisation engine removed the use of the flare which is the reason for the large decrease in electricity consumption.

9.0 Energy Efficiency and Audit Report Summary

Electricity

The kW hour usage on site for 2012 is set out in the attached table.

Table 8.2, kWh usage 2012

From	To	Day kWh	Night kWh
31/12/2011	28/02/2012	17,200	9,300
28/02/2012	30/04/2012	10,400	6,450
30/04/2012	30/06/2012	8,250	5,050
30/06/2012	31/08/2012	8,750	4,550
31/08/2012	31/10/2012	9,550	5,100
31/10/2012	31/12/2012	14,150	7,600
		68,300	**38,050**

10.0 Proposed Development of the Facility and timescale of the Development

The following projects are proposed for construction at North Kerry Landfill over 2013.

Pilot Integrated Constructed Wetland Project

A pilot trial of a ICW will be built and commissioned in 2013.
The focus of this project will be to determine if ICW can prove a sustainable long term solution to leachate management for the landfill site.

Intermediate Capping of cells 18 and 19

Cells 18 and 19 will be temporarily capped after both reach profile height.
An SEW will be submitted to the agency for approval prior to any permanent capping work being commencing on site.

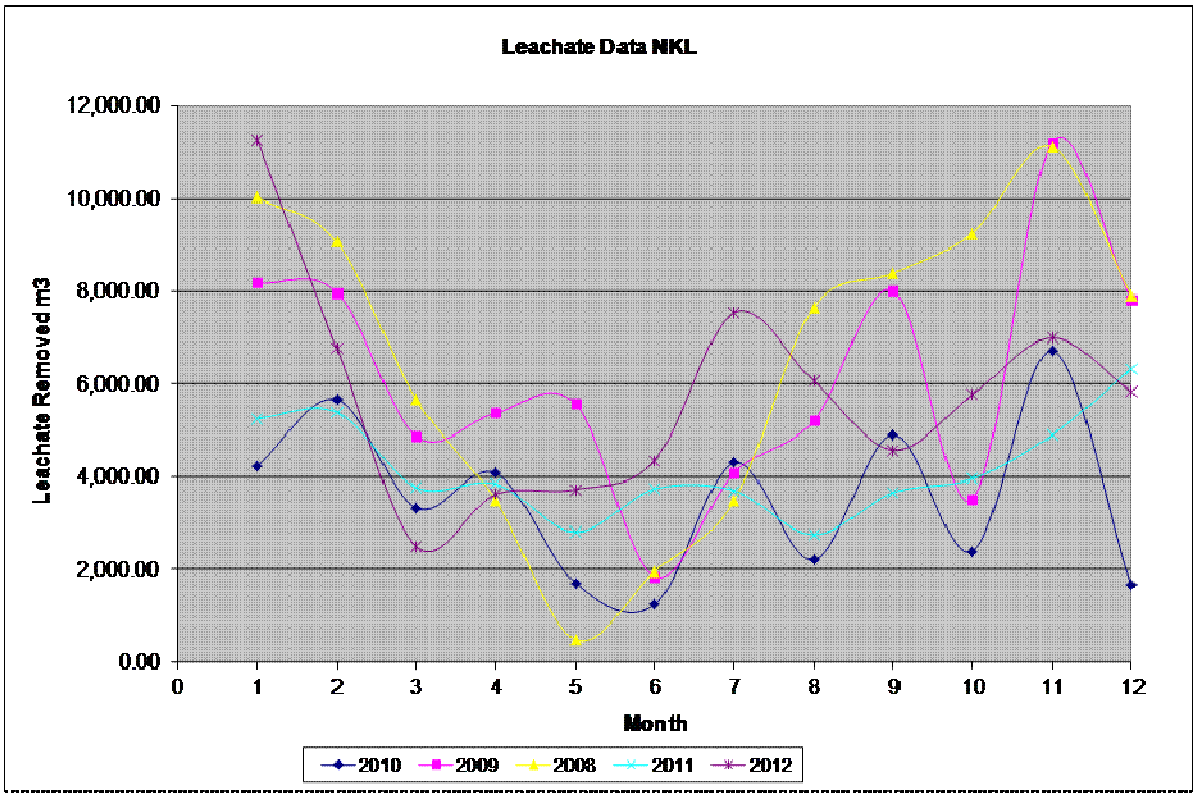
11.0 <u>Volume of leachate produced and volume transported off site.</u>

Over the reporting period 69,063 m^3 of leachate was produced on site.
The total quantity of leachate produced on site since the landfill site opened in May 1994 to the end of the reporting period is 630,079 m^3.
No leachate has been treated on site; all leachate is removed off site for treatment.

<u>Table 10.1, Leachate volumes removed off –site, 2012.</u>

Month	2008	2009	2010	2011	2012
January	10,030.58	8,186.27	4,230.94	5,255.90	11,271.74
February	9,067.30	7,985.36	5,666.38	5,395.38	6,780.04
March	5,678.69	4,881.29	3,324.86	3,768.72	2,502.62
April	3,487.91	5,379.62	4,080.68	3,845.78	3,623.48
May	486.52	5,579.68	1,711.48	2,805.70	3,724.42
June	1,957.40	1,844.61	1,236.44	3,735.13	4,351.31
July	3,483.84	4,084.22	4,304.64	3,698.12	7,551.38
August	7,661.38	5,208.40	2,208.06	2,751.70	6,072.90
September	8,395.60	8,017.22	4,902.34	3,655.51	4,576.09
October	9,261.43	3,508.76	2,393.60	3,956.40	5775.56
November	11,123.44	11,213.14	6,719.70	4,905.12	6997.38
December	7,924.44	7,839.28	1,663.61	6,335.12	5836.08
Total	***78,558.53***	***73,727.85***	***42,442.73***	**50,108.58**	**69,063.00**

Total Quantity of Leachate Removed from Site 2008 – 2012 (Trend Graph)



12.0 Report on Development Works Undertaken during the Reporting Period

Cells 15B and 16 were permanently capped in 2012.

13.0 Report on Restoration of Completed Cells and Phases

Cells 1 to 16 are now fully capped.

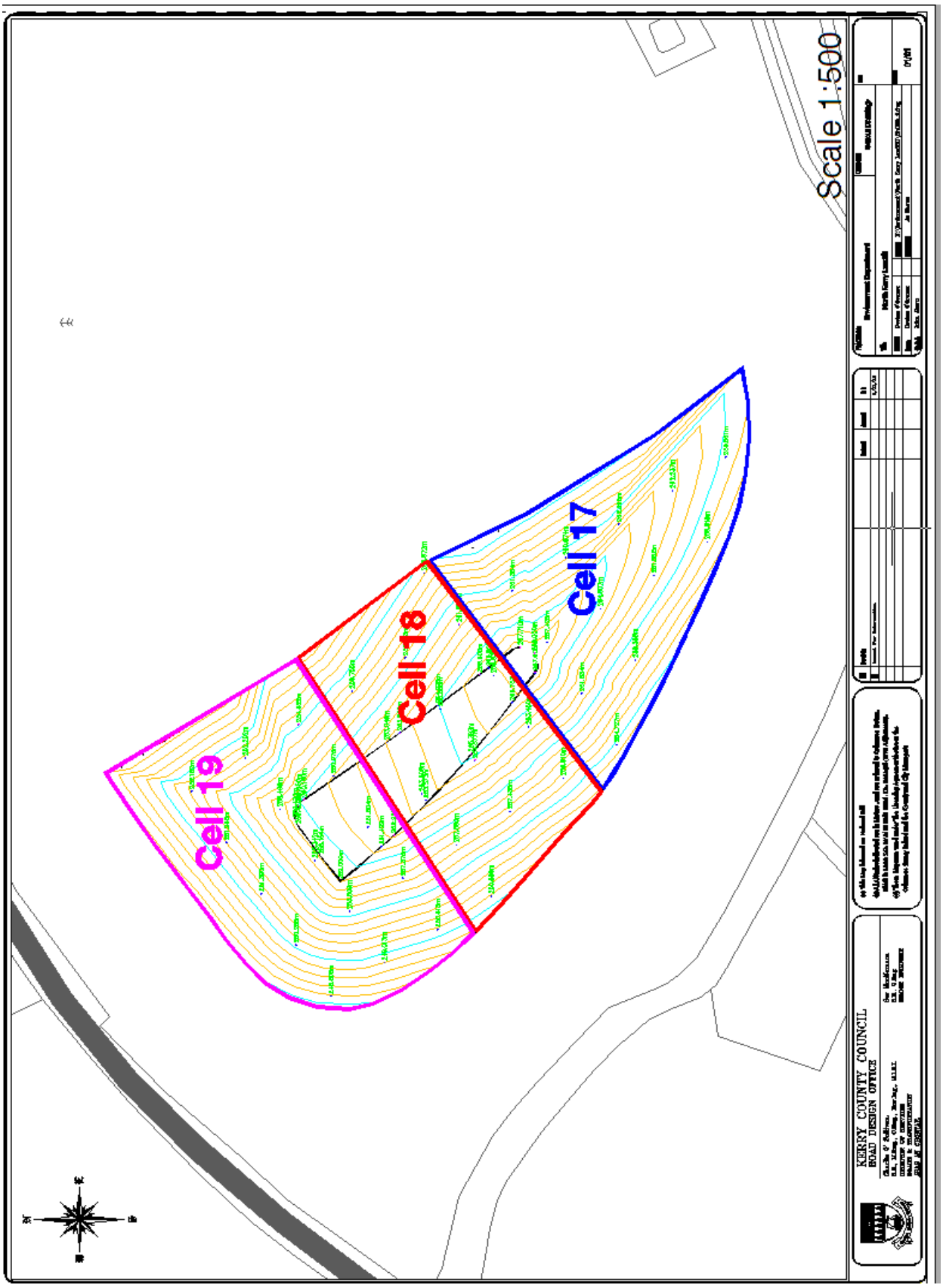
This is phase 1 to 8 (seventeen cells in total) for the site.

Cells 15B and 16 are fully capped.

The active phase is phase 9 which contains three cells (cells 17 -19).

The following page includes the design profile for Cell 17, 18 & 19.

14.0 Site Survey Showing existing Levels



15.0 Estimated Annual and Cumulative quantities of landfill gas emitted from the facility – LandGem NKL

The following table show the landfill input and expected/modelled gas outputs for the landfill site over the design period. These figures were used in the estimation of landfill gas generation over the reporting period and submitted as part of the Landfill Gas Survey 2012 (Appendix H) and the PRTR 2012 (Appendix G).

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1994	16,902	18,592	0	0
1995	23,505	25,856	16,902	18,592
1996	23,722	26,094	40,407	44,448
1997	25,582	28,140	64,129	70,542
1998	33,530	36,883	89,711	98,682
1999	57,873	63,660	123,241	135,565
2000	60,474	66,521	181,113	199,225
2001	63,946	70,341	241,587	265,746
2002	62,822	69,104	305,533	336,086
2003	50,235	55,259	368,354	405,190
2004	48,054	52,860	418,590	460,449
2005	34,431	37,874	466,644	513,309
2006	60,025	66,028	501,075	551,182
2007	56,794	62,474	561,100	617,210
2008	62,413	68,654	617,894	679,684
2009	39,755	43,731	680,307	748,338
2010	20,987	23,086	720,063	792,069
2011	16,546	18,200	741,050	815,155
2012	71,007	78,107	757,595	833,355
2013	11,398	12,538	828,602	911,462
2014	0	0	840,000	924,000
2015	0	0	840,000	924,000
2016	0	0	840,000	924,000
2017	0	0	840,000	924,000
2018	0	0	840,000	924,000
2019	0	0	840,000	924,000
2020	0	0	840,000	924,000
2021	0	0	840,000	924,000
2022	0	0	840,000	924,000
2023	0	0	840,000	924,000
2024	0	0	840,000	924,000
2025	0	0	840,000	924,000
2026	0	0	840,000	924,000
2027	0	0	840,000	924,000
2028	0	0	840,000	924,000
2029	0	0	840,000	924,000
2030	0	0	840,000	924,000
2031	0	0	840,000	924,000
2032	0	0	840,000	924,000
2033	0	0	840,000	924,000

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1994	0	0	0	0	0	0
1995	3.233E+03	2.916E+06	1.960E+02	5.642E+02	8.458E+05	5.683E+01
1996	6.102E+03	5.504E+06	3.698E+02	1.065E+03	1.596E+06	1.072E+02
1997	7.569E+03	6.826E+06	4.587E+02	1.321E+03	1.980E+06	1.330E+02
1998	8.652E+03	7.804E+06	5.243E+02	1.510E+03	2.263E+06	1.521E+02
1999	1.071E+04	9.661E+06	6.491E+02	1.869E+03	2.802E+06	1.882E+02
2000	1.639E+04	1.478E+07	9.933E+02	2.860E+03	4.287E+06	2.881E+02
2001	1.971E+04	1.778E+07	1.194E+03	3.439E+03	5.155E+06	3.464E+02
2002	2.202E+04	1.986E+07	1.334E+03	3.843E+03	5.760E+06	3.870E+02
2003	2.295E+04	2.070E+07	1.391E+03	4.005E+03	6.004E+06	4.034E+02
2004	2.101E+04	1.895E+07	1.273E+03	3.666E+03	5.495E+06	3.692E+02
2005	1.963E+04	1.770E+07	1.189E+03	3.425E+03	5.133E+06	3.449E+02
2006	1.633E+04	1.473E+07	9.898E+02	2.850E+03	4.272E+06	2.870E+02
2007	1.959E+04	1.767E+07	1.187E+03	3.419E+03	5.125E+06	3.444E+02
2008	2.060E+04	1.858E+07	1.248E+03	3.594E+03	5.387E+06	3.619E+02
2009	2.217E+04	1.999E+07	1.343E+03	3.868E+03	5.798E+06	3.896E+02
2010	1.861E+04	1.679E+07	1.128E+03	3.248E+03	4.869E+06	3.271E+02
2011	1.326E+04	1.196E+07	8.035E+02	2.314E+03	3.468E+06	2.330E+02
2012	9.749E+03	8.793E+06	5.908E+02	1.701E+03	2.550E+06	1.713E+02
2013	1.843E+04	1.662E+07	1.117E+03	3.215E+03	4.819E+06	3.238E+02
2014	1.133E+04	1.022E+07	6.866E+02	1.977E+03	2.964E+06	1.991E+02
2015	5.626E+03	5.075E+06	3.410E+02	9.818E+02	1.472E+06	9.888E+01
2016	2.794E+03	2.520E+06	1.693E+02	4.876E+02	7.308E+05	4.910E+01
2017	1.387E+03	1.251E+06	8.408E+01	2.421E+02	3.629E+05	2.438E+01
2018	6.890E+02	6.214E+05	4.175E+01	1.202E+02	1.802E+05	1.211E+01
2019	3.421E+02	3.086E+05	2.073E+01	5.970E+01	8.949E+04	6.013E+00
2020	1.699E+02	1.532E+05	1.030E+01	2.965E+01	4.444E+04	2.986E+00
2021	8.437E+01	7.610E+04	5.113E+00	1.472E+01	2.207E+04	1.483E+00
2022	4.190E+01	3.779E+04	2.539E+00	7.311E+00	1.096E+04	7.363E-01
2023	2.081E+01	1.877E+04	1.261E+00	3.631E+00	5.442E+03	3.657E-01
2024	1.033E+01	9.319E+03	6.261E-01	1.803E+00	2.702E+03	1.816E-01
2025	5.131E+00	4.628E+03	3.109E-01	8.953E-01	1.342E+03	9.017E-02
2026	2.548E+00	2.298E+03	1.544E-01	4.446E-01	6.664E+02	4.478E-02
2027	1.265E+00	1.141E+03	7.667E-02	2.208E-01	3.309E+02	2.224E-02
2028	6.283E-01	5.667E+02	3.807E-02	1.096E-01	1.643E+02	1.104E-02
2029	3.120E-01	2.814E+02	1.891E-02	5.444E-02	8.161E+01	5.483E-03
2030	1.549E-01	1.397E+02	9.389E-03	2.704E-02	4.052E+01	2.723E-03
2031	7.694E-02	6.939E+01	4.663E-03	1.343E-02	2.012E+01	1.352E-03
2032	3.821E-02	3.446E+01	2.315E-03	6.667E-03	9.993E+00	6.714E-04
2033	1.897E-02	1.711E+01	1.150E-03	3.311E-03	4.963E+00	3.334E-04
2034	9.421E-03	8.498E+00	5.710E-04	1.644E-03	2.464E+00	1.656E-04
2035	4.679E-03	4.220E+00	2.835E-04	8.164E-04	1.224E+00	8.222E-05
2036	2.323E-03	2.095E+00	1.408E-04	4.054E-04	6.077E-01	4.083E-05
2037	1.154E-03	1.041E+00	6.992E-05	2.013E-04	3.018E-01	2.028E-05
2038	5.729E-04	5.167E-01	3.472E-05	9.998E-05	1.499E-01	1.007E-05
2039	2.845E-04	2.566E-01	1.724E-05	4.965E-05	7.442E-02	5.000E-06
2040	1.413E-04	1.274E-01	8.562E-06	2.465E-05	3.695E-02	2.483E-06
2041	7.016E-05	6.328E-02	4.252E-06	1.224E-05	1.835E-02	1.233E-06
2042	3.484E-05	3.142E-02	2.111E-06	6.080E-06	9.113E-03	6.123E-07
2043	1.730E-05	1.560E-02	1.048E-06	3.019E-06	4.525E-03	3.040E-07

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2044	8.591E-06	7.749E-03	5.206E-07	1.499E-06	2.247E-03	1.510E-07
2045	4.266E-06	3.848E-03	2.585E-07	7.445E-07	1.116E-03	7.498E-08
2046	2.119E-06	1.911E-03	1.284E-07	3.697E-07	5.541E-04	3.723E-08
2047	1.052E-06	9.489E-04	6.376E-08	1.836E-07	2.752E-04	1.849E-08
2048	5.224E-07	4.712E-04	3.166E-08	9.117E-08	1.366E-04	9.181E-09
2049	2.594E-07	2.340E-04	1.572E-08	4.527E-08	6.786E-05	4.559E-09
2050	1.288E-07	1.162E-04	7.807E-09	2.248E-08	3.370E-05	2.264E-09
2051	6.398E-08	5.770E-05	3.877E-09	1.116E-08	1.673E-05	1.124E-09
2052	3.177E-08	2.865E-05	1.925E-09	5.544E-09	8.310E-06	5.583E-10
2053	1.578E-08	1.423E-05	9.561E-10	2.753E-09	4.126E-06	2.773E-10
2054	7.834E-09	7.066E-06	4.748E-10	1.367E-09	2.049E-06	1.377E-10
2055	3.890E-09	3.509E-06	2.358E-10	6.789E-10	1.018E-06	6.837E-11
2056	1.932E-09	1.742E-06	1.171E-10	3.371E-10	5.053E-07	3.395E-11
2057	9.594E-10	8.653E-07	5.814E-11	1.674E-10	2.509E-07	1.686E-11
2058	4.764E-10	4.297E-07	2.887E-11	8.313E-11	1.246E-07	8.372E-12
2059	2.366E-10	2.134E-07	1.434E-11	4.128E-11	6.188E-08	4.158E-12
2060	1.175E-10	1.060E-07	7.119E-12	2.050E-11	3.073E-08	2.065E-12
2061	5.834E-11	5.262E-08	3.535E-12	1.018E-11	1.526E-08	1.025E-12
2062	2.897E-11	2.613E-08	1.756E-12	5.055E-12	7.577E-09	5.091E-13
2063	1.439E-11	1.298E-08	8.718E-13	2.510E-12	3.763E-09	2.528E-13
2064	7.144E-12	6.443E-09	4.329E-13	1.247E-12	1.869E-09	1.255E-13
2065	3.548E-12	3.200E-09	2.150E-13	6.191E-13	9.279E-10	6.235E-14
2066	1.762E-12	1.589E-09	1.068E-13	3.074E-13	4.608E-10	3.096E-14
2067	8.748E-13	7.890E-10	5.301E-14	1.527E-13	2.288E-10	1.537E-14
2068	4.344E-13	3.918E-10	2.633E-14	7.581E-14	1.136E-10	7.635E-15
2069	2.157E-13	1.946E-10	1.307E-14	3.764E-14	5.643E-11	3.791E-15
2070	1.071E-13	9.662E-11	6.492E-15	1.869E-14	2.802E-11	1.883E-15
2071	5.320E-14	4.798E-11	3.224E-15	9.283E-15	1.391E-11	9.349E-16
2072	2.642E-14	2.383E-11	1.601E-15	4.610E-15	6.910E-12	4.643E-16
2073	1.312E-14	1.183E-11	7.950E-16	2.289E-15	3.431E-12	2.305E-16
2074	6.514E-15	5.876E-12	3.948E-16	1.137E-15	1.704E-12	1.145E-16
2075	3.235E-15	2.918E-12	1.960E-16	5.645E-16	8.461E-13	5.685E-17
2076	1.606E-15	1.449E-12	9.735E-17	2.803E-16	4.202E-13	2.823E-17
2077	7.977E-16	7.195E-13	4.834E-17	1.392E-16	2.087E-13	1.402E-17
2078	3.961E-16	3.573E-13	2.401E-17	6.913E-17	1.036E-13	6.962E-18
2079	1.967E-16	1.774E-13	1.192E-17	3.433E-17	5.145E-14	3.457E-18
2080	9.769E-17	8.811E-14	5.920E-18	1.705E-17	2.555E-14	1.717E-18
2081	4.851E-17	4.375E-14	2.940E-18	8.465E-18	1.269E-14	8.525E-19
2082	2.409E-17	2.173E-14	1.460E-18	4.204E-18	6.301E-15	4.234E-19
2083	1.196E-17	1.079E-14	7.249E-19	2.087E-18	3.129E-15	2.102E-19
2084	5.940E-18	5.358E-15	3.600E-19	1.037E-18	1.554E-15	1.044E-19
2085	2.950E-18	2.661E-15	1.788E-19	5.148E-19	7.716E-16	5.184E-20
2086	1.465E-18	1.321E-15	8.877E-20	2.556E-19	3.832E-16	2.574E-20
2087	7.274E-19	6.561E-16	4.408E-20	1.269E-19	1.903E-16	1.278E-20
2088	3.612E-19	3.258E-16	2.189E-20	6.304E-20	9.449E-17	6.348E-21
2089	1.794E-19	1.618E-16	1.087E-20	3.130E-20	4.692E-17	3.153E-21
2090	8.908E-20	8.034E-17	5.398E-21	1.554E-20	2.330E-17	1.566E-21
2091	4.424E-20	3.990E-17	2.681E-21	7.719E-21	1.157E-17	7.774E-22
2092	2.197E-20	1.981E-17	1.331E-21	3.833E-21	5.746E-18	3.860E-22
2093	1.091E-20	9.839E-18	6.611E-22	1.904E-21	2.853E-18	1.917E-22
2094	5.417E-21	4.886E-18	3.283E-22	9.453E-22	1.417E-18	9.520E-23

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2095	2.690E-21	2.426E-18	1.630E-22	4.694E-22	7.036E-19	4.727E-23
2096	1.336E-21	1.205E-18	8.095E-23	2.331E-22	3.494E-19	2.348E-23
2097	6.633E-22	5.983E-19	4.020E-23	1.158E-22	1.735E-19	1.166E-23
2098	3.294E-22	2.971E-19	1.996E-23	5.748E-23	8.616E-20	5.789E-24
2099	1.636E-22	1.475E-19	9.913E-24	2.854E-23	4.279E-20	2.875E-24
2100	8.123E-23	7.326E-20	4.923E-24	1.417E-23	2.125E-20	1.428E-24
2101	4.034E-23	3.638E-20	2.444E-24	7.039E-24	1.055E-20	7.089E-25
2102	2.003E-23	1.807E-20	1.214E-24	3.495E-24	5.239E-21	3.520E-25
2103	9.947E-24	8.972E-21	6.028E-25	1.736E-24	2.602E-21	1.748E-25
2104	4.940E-24	4.455E-21	2.993E-25	8.620E-25	1.292E-21	8.681E-26
2105	2.453E-24	2.212E-21	1.486E-25	4.280E-25	6.416E-22	4.311E-26
2106	1.218E-24	1.099E-21	7.382E-26	2.126E-25	3.186E-22	2.141E-26
2107	6.049E-25	5.456E-22	3.666E-26	1.056E-25	1.582E-22	1.063E-26
2108	3.004E-25	2.709E-22	1.820E-26	5.242E-26	7.857E-23	5.279E-27
2109	1.492E-25	1.345E-22	9.039E-27	2.603E-26	3.902E-23	2.621E-27
2110	7.407E-26	6.681E-23	4.489E-27	1.293E-26	1.937E-23	1.302E-27
2111	3.678E-26	3.318E-23	2.229E-27	6.419E-27	9.621E-24	6.464E-28
2112	1.827E-26	1.647E-23	1.107E-27	3.187E-27	4.778E-24	3.210E-28
2113	9.071E-27	8.181E-24	5.497E-28	1.583E-27	2.373E-24	1.594E-28
2114	4.504E-27	4.063E-24	2.730E-28	7.860E-28	1.178E-24	7.916E-29
2115	2.237E-27	2.017E-24	1.356E-28	3.903E-28	5.851E-25	3.931E-29
2116	1.111E-27	1.002E-24	6.731E-29	1.938E-28	2.905E-25	1.952E-29
2117	5.516E-28	4.975E-25	3.343E-29	9.625E-29	1.443E-25	9.694E-30
2118	2.739E-28	2.470E-25	1.660E-29	4.780E-29	7.164E-26	4.814E-30
2119	1.360E-28	1.227E-25	8.243E-30	2.374E-29	3.558E-26	2.390E-30
2120	6.754E-29	6.092E-26	4.093E-30	1.179E-29	1.767E-26	1.187E-30
2121	3.354E-29	3.025E-26	2.033E-30	5.853E-30	8.773E-27	5.895E-31
2122	1.666E-29	1.502E-26	1.009E-30	2.907E-30	4.357E-27	2.927E-31
2123	8.271E-30	7.460E-27	5.012E-31	1.443E-30	2.163E-27	1.454E-31
2124	4.107E-30	3.705E-27	2.489E-31	7.167E-31	1.074E-27	7.218E-32
2125	2.040E-30	1.840E-27	1.236E-31	3.559E-31	5.335E-28	3.585E-32
2126	1.013E-30	9.135E-28	6.138E-32	1.767E-31	2.649E-28	1.780E-32
2127	5.030E-31	4.537E-28	3.048E-32	8.777E-32	1.316E-28	8.840E-33
2128	2.498E-31	2.253E-28	1.514E-32	4.359E-32	6.533E-29	4.390E-33
2129	1.240E-31	1.119E-28	7.517E-33	2.164E-32	3.244E-29	2.180E-33
2130	6.159E-32	5.555E-29	3.733E-33	1.075E-32	1.611E-29	1.082E-33
2131	3.059E-32	2.759E-29	1.854E-33	5.337E-33	8.000E-30	5.375E-34
2132	1.519E-32	1.370E-29	9.204E-34	2.650E-33	3.973E-30	2.669E-34
2133	7.542E-33	6.803E-30	4.571E-34	1.316E-33	1.973E-30	1.326E-34
2134	3.745E-33	3.378E-30	2.270E-34	6.536E-34	9.797E-31	6.582E-35

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1994	0	0	0	0	0	0
1995	3.790E+03	2.071E+06	1.391E+02	6.272E+00	1.750E+03	1.176E-01
1996	7.153E+03	3.908E+06	2.626E+02	1.184E+01	3.302E+03	2.219E-01
1997	8.872E+03	4.847E+06	3.257E+02	1.468E+01	4.096E+03	2.752E-01
1998	1.014E+04	5.541E+06	3.723E+02	1.678E+01	4.682E+03	3.146E-01
1999	1.256E+04	6.859E+06	4.609E+02	2.078E+01	5.797E+03	3.895E-01
2000	1.921E+04	1.050E+07	7.052E+02	3.179E+01	8.870E+03	5.960E-01
2001	2.310E+04	1.262E+07	8.480E+02	3.823E+01	1.067E+04	7.166E-01
2002	2.581E+04	1.410E+07	9.475E+02	4.271E+01	1.192E+04	8.007E-01
2003	2.691E+04	1.470E+07	9.876E+02	4.452E+01	1.242E+04	8.346E-01
2004	2.463E+04	1.345E+07	9.039E+02	4.075E+01	1.137E+04	7.639E-01
2005	2.301E+04	1.257E+07	8.444E+02	3.807E+01	1.062E+04	7.136E-01
2006	1.915E+04	1.046E+07	7.027E+02	3.168E+01	8.839E+03	5.939E-01
2007	2.297E+04	1.255E+07	8.431E+02	3.801E+01	1.060E+04	7.124E-01
2008	2.414E+04	1.319E+07	8.861E+02	3.995E+01	1.115E+04	7.489E-01
2009	2.598E+04	1.420E+07	9.538E+02	4.300E+01	1.200E+04	8.060E-01
2010	2.182E+04	1.192E+07	8.009E+02	3.611E+01	1.007E+04	6.768E-01
2011	1.554E+04	8.490E+06	5.705E+02	2.572E+01	7.175E+03	4.821E-01
2012	1.143E+04	6.243E+06	4.195E+02	1.891E+01	5.276E+03	3.545E-01
2013	2.160E+04	1.180E+07	7.928E+02	3.574E+01	9.971E+03	6.700E-01
2014	1.328E+04	7.256E+06	4.875E+02	2.198E+01	6.132E+03	4.120E-01
2015	6.595E+03	3.603E+06	2.421E+02	1.091E+01	3.045E+03	2.046E-01
2016	3.275E+03	1.789E+06	1.202E+02	5.420E+00	1.512E+03	1.016E-01
2017	1.626E+03	8.885E+05	5.970E+01	2.691E+00	7.508E+02	5.045E-02
2018	8.076E+02	4.412E+05	2.965E+01	1.337E+00	3.729E+02	2.505E-02
2019	4.011E+02	2.191E+05	1.472E+01	6.637E-01	1.852E+02	1.244E-02
2020	1.992E+02	1.088E+05	7.310E+00	3.296E-01	9.195E+01	6.178E-03
2021	9.890E+01	5.403E+04	3.630E+00	1.637E-01	4.566E+01	3.068E-03
2022	4.911E+01	2.683E+04	1.803E+00	8.127E-02	2.267E+01	1.523E-03
2023	2.439E+01	1.332E+04	8.952E-01	4.036E-02	1.126E+01	7.565E-04
2024	1.211E+01	6.616E+03	4.445E-01	2.004E-02	5.591E+00	3.757E-04
2025	6.014E+00	3.286E+03	2.208E-01	9.952E-03	2.777E+00	1.866E-04
2026	2.987E+00	1.632E+03	1.096E-01	4.942E-03	1.379E+00	9.264E-05
2027	1.483E+00	8.102E+02	5.444E-02	2.454E-03	6.847E-01	4.600E-05
2028	7.365E-01	4.023E+02	2.703E-02	1.219E-03	3.400E-01	2.284E-05
2029	3.657E-01	1.998E+02	1.342E-02	6.052E-04	1.688E-01	1.134E-05
2030	1.816E-01	9.922E+01	6.666E-03	3.005E-04	8.384E-02	5.633E-06
2031	9.019E-02	4.927E+01	3.310E-03	1.492E-04	4.164E-02	2.798E-06
2032	4.479E-02	2.447E+01	1.644E-03	7.411E-05	2.068E-02	1.389E-06
2033	2.224E-02	1.215E+01	8.163E-04	3.680E-05	1.027E-02	6.899E-07
2034	1.104E-02	6.033E+00	4.054E-04	1.828E-05	5.099E-03	3.426E-07
2035	5.484E-03	2.996E+00	2.013E-04	9.075E-06	2.532E-03	1.701E-07
2036	2.723E-03	1.488E+00	9.996E-05	4.507E-06	1.257E-03	8.448E-08
2037	1.352E-03	7.388E-01	4.964E-05	2.238E-06	6.244E-04	4.195E-08
2038	6.716E-04	3.669E-01	2.465E-05	1.111E-06	3.100E-04	2.083E-08
2039	3.335E-04	1.822E-01	1.224E-05	5.519E-07	1.540E-04	1.034E-08
2040	1.656E-04	9.047E-02	6.079E-06	2.741E-07	7.646E-05	5.137E-09
2041	8.224E-05	4.493E-02	3.019E-06	1.361E-07	3.797E-05	2.551E-09
2042	4.084E-05	2.231E-02	1.499E-06	6.758E-08	1.885E-05	1.267E-09
2043	2.028E-05	1.108E-02	7.444E-07	3.356E-08	9.363E-06	6.291E-10

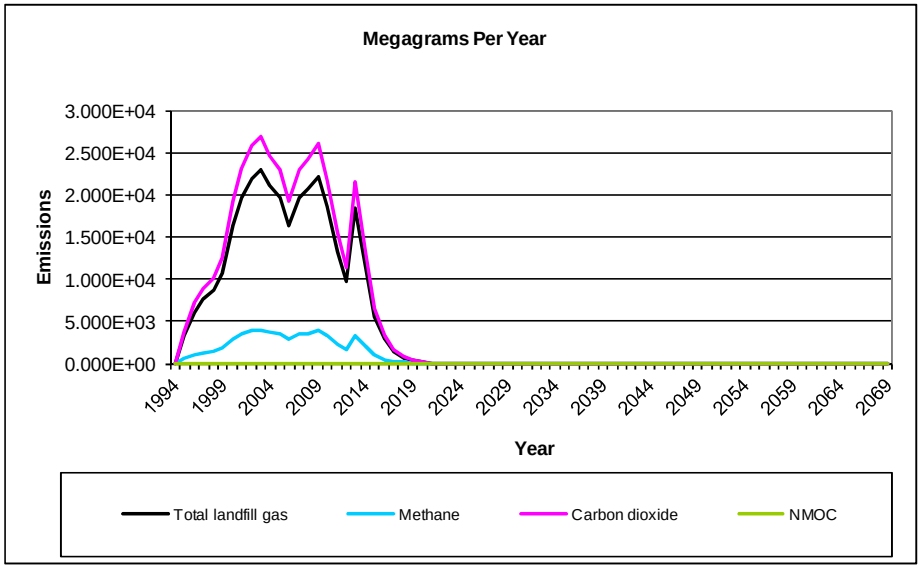
Results (Continued)

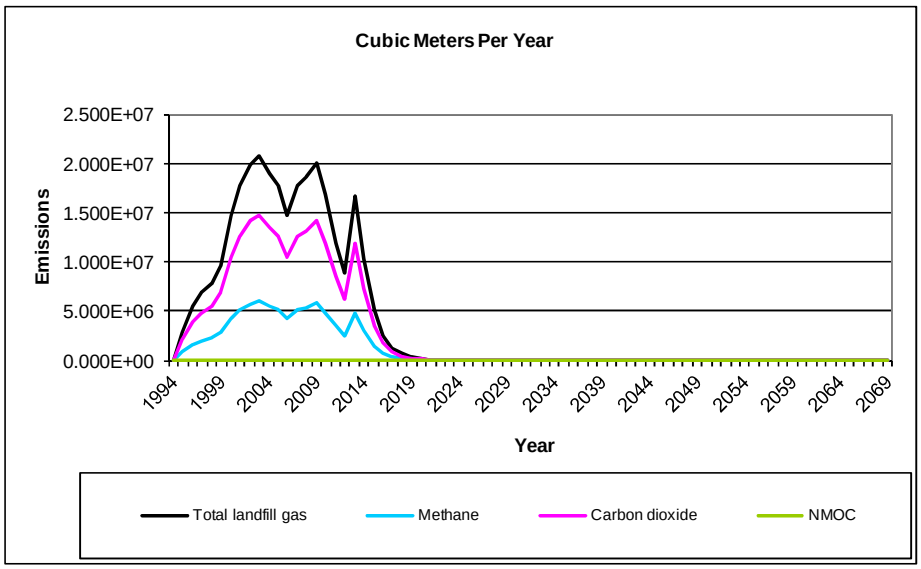
Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2044	1.007E-05	5.502E-03	3.697E-07	1.667E-08	4.649E-06	3.124E-10
2045	5.001E-06	2.732E-03	1.836E-07	8.276E-09	2.309E-06	1.551E-10
2046	2.483E-06	1.357E-03	9.116E-08	4.110E-09	1.147E-06	7.703E-11
2047	1.233E-06	6.737E-04	4.527E-08	2.041E-09	5.693E-07	3.825E-11
2048	6.124E-07	3.346E-04	2.248E-08	1.013E-09	2.827E-07	1.900E-11
2049	3.041E-07	1.661E-04	1.116E-08	5.032E-10	1.404E-07	9.433E-12
2050	1.510E-07	8.250E-05	5.543E-09	2.499E-10	6.972E-08	4.684E-12
2051	7.499E-08	4.097E-05	2.753E-09	1.241E-10	3.462E-08	2.326E-12
2052	3.724E-08	2.034E-05	1.367E-09	6.163E-11	1.719E-08	1.155E-12
2053	1.849E-08	1.010E-05	6.788E-10	3.060E-11	8.538E-09	5.736E-13
2054	9.183E-09	5.017E-06	3.371E-10	1.520E-11	4.240E-09	2.849E-13
2055	4.560E-09	2.491E-06	1.674E-10	7.546E-12	2.105E-09	1.415E-13
2056	2.265E-09	1.237E-06	8.312E-11	3.747E-12	1.045E-09	7.025E-14
2057	1.125E-09	6.143E-07	4.128E-11	1.861E-12	5.192E-10	3.488E-14
2058	5.584E-10	3.051E-07	2.050E-11	9.241E-13	2.578E-10	1.732E-14
2059	2.773E-10	1.515E-07	1.018E-11	4.589E-13	1.280E-10	8.602E-15
2060	1.377E-10	7.523E-08	5.055E-12	2.279E-13	6.358E-11	4.272E-15
2061	6.838E-11	3.736E-08	2.510E-12	1.132E-13	3.157E-11	2.121E-15
2062	3.396E-11	1.855E-08	1.246E-12	5.620E-14	1.568E-11	1.053E-15
2063	1.686E-11	9.212E-09	6.190E-13	2.791E-14	7.785E-12	5.231E-16
2064	8.374E-12	4.575E-09	3.074E-13	1.386E-14	3.866E-12	2.598E-16
2065	4.158E-12	2.272E-09	1.526E-13	6.881E-15	1.920E-12	1.290E-16
2066	2.065E-12	1.128E-09	7.580E-14	3.417E-15	9.533E-13	6.406E-17
2067	1.025E-12	5.602E-10	3.764E-14	1.697E-15	4.734E-13	3.181E-17
2068	5.092E-13	2.782E-10	1.869E-14	8.427E-16	2.351E-13	1.580E-17
2069	2.529E-13	1.381E-10	9.282E-15	4.185E-16	1.167E-13	7.844E-18
2070	1.256E-13	6.860E-11	4.609E-15	2.078E-16	5.797E-14	3.895E-18
2071	6.236E-14	3.407E-11	2.289E-15	1.032E-16	2.879E-14	1.934E-18
2072	3.097E-14	1.692E-11	1.137E-15	5.124E-17	1.430E-14	9.605E-19
2073	1.538E-14	8.401E-12	5.644E-16	2.545E-17	7.099E-15	4.770E-19
2074	7.636E-15	4.172E-12	2.803E-16	1.264E-17	3.525E-15	2.369E-19
2075	3.792E-15	2.072E-12	1.392E-16	6.275E-18	1.751E-15	1.176E-19
2076	1.883E-15	1.029E-12	6.912E-17	3.116E-18	8.693E-16	5.841E-20
2077	9.351E-16	5.108E-13	3.432E-17	1.547E-18	4.317E-16	2.901E-20
2078	4.644E-16	2.537E-13	1.704E-17	7.684E-19	2.144E-16	1.440E-20
2079	2.306E-16	1.260E-13	8.464E-18	3.816E-19	1.065E-16	7.153E-21
2080	1.145E-16	6.256E-14	4.203E-18	1.895E-19	5.286E-17	3.552E-21
2081	5.686E-17	3.106E-14	2.087E-18	9.410E-20	2.625E-17	1.764E-21
2082	2.824E-17	1.543E-14	1.036E-18	4.673E-20	1.304E-17	8.759E-22
2083	1.402E-17	7.660E-15	5.147E-19	2.320E-20	6.474E-18	4.350E-22
2084	6.963E-18	3.804E-15	2.556E-19	1.152E-20	3.215E-18	2.160E-22
2085	3.458E-18	1.889E-15	1.269E-19	5.722E-21	1.596E-18	1.073E-22
2086	1.717E-18	9.381E-16	6.303E-20	2.842E-21	7.927E-19	5.326E-23
2087	8.527E-19	4.658E-16	3.130E-20	1.411E-21	3.937E-19	2.645E-23
2088	4.234E-19	2.313E-16	1.554E-20	7.007E-22	1.955E-19	1.313E-23
2089	2.103E-19	1.149E-16	7.718E-21	3.480E-22	9.708E-20	6.523E-24
2090	1.044E-19	5.704E-17	3.833E-21	1.728E-22	4.821E-20	3.239E-24
2091	5.185E-20	2.833E-17	1.903E-21	8.581E-23	2.394E-20	1.608E-24
2092	2.575E-20	1.407E-17	9.452E-22	4.261E-23	1.189E-20	7.987E-25
2093	1.279E-20	6.985E-18	4.694E-22	2.116E-23	5.903E-21	3.966E-25
2094	6.350E-21	3.469E-18	2.331E-22	1.051E-23	2.931E-21	1.970E-25

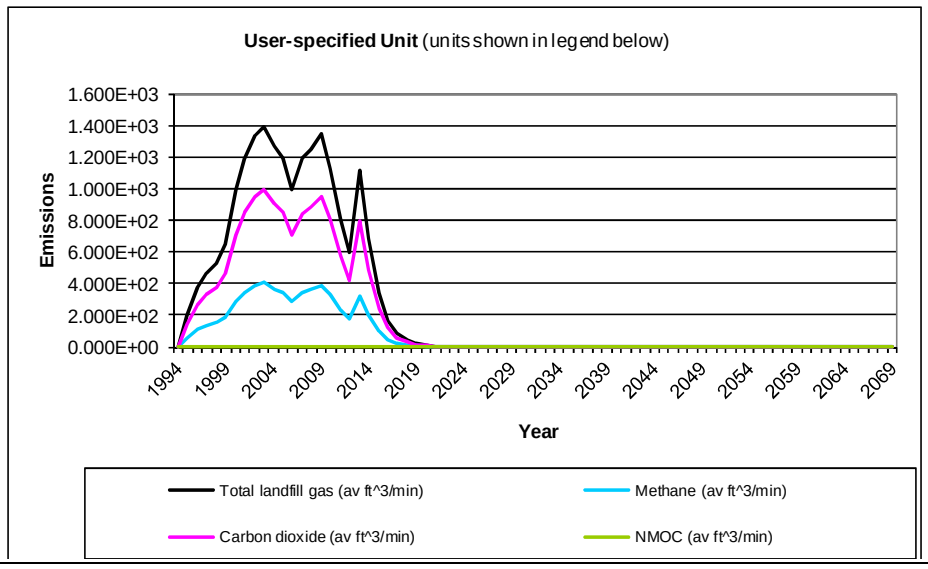
Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2095	3.153E-21	1.723E-18	1.157E-22	5.218E-24	1.456E-21	9.781E-26
2096	1.566E-21	8.554E-19	5.747E-23	2.591E-24	7.229E-22	4.857E-26
2097	7.776E-22	4.248E-19	2.854E-23	1.287E-24	3.590E-22	2.412E-26
2098	3.861E-22	2.109E-19	1.417E-23	6.390E-25	1.783E-22	1.198E-26
2099	1.917E-22	1.048E-19	7.038E-24	3.173E-25	8.852E-23	5.948E-27
2100	9.522E-23	5.202E-20	3.495E-24	1.576E-25	4.396E-23	2.954E-27
2101	4.728E-23	2.583E-20	1.736E-24	7.825E-26	2.183E-23	1.467E-27
2102	2.348E-23	1.283E-20	8.619E-25	3.886E-26	1.084E-23	7.283E-28
2103	1.166E-23	6.370E-21	4.280E-25	1.930E-26	5.383E-24	3.617E-28
2104	5.790E-24	3.163E-21	2.125E-25	9.582E-27	2.673E-24	1.796E-28
2105	2.875E-24	1.571E-21	1.055E-25	4.758E-27	1.327E-24	8.919E-29
2106	1.428E-24	7.800E-22	5.241E-26	2.363E-27	6.592E-25	4.429E-29
2107	7.090E-25	3.874E-22	2.603E-26	1.173E-27	3.273E-25	2.199E-29
2108	3.521E-25	1.924E-22	1.292E-26	5.827E-28	1.626E-25	1.092E-29
2109	1.748E-25	9.552E-23	6.418E-27	2.893E-28	8.072E-26	5.424E-30
2110	8.683E-26	4.743E-23	3.187E-27	1.437E-28	4.008E-26	2.693E-30
2111	4.312E-26	2.355E-23	1.583E-27	7.135E-29	1.991E-26	1.337E-30
2112	2.141E-26	1.170E-23	7.859E-28	3.543E-29	9.885E-27	6.642E-31
2113	1.063E-26	5.809E-24	3.903E-28	1.759E-29	4.909E-27	3.298E-31
2114	5.280E-27	2.884E-24	1.938E-28	8.737E-30	2.438E-27	1.638E-31
2115	2.622E-27	1.432E-24	9.624E-29	4.339E-30	1.210E-27	8.133E-32
2116	1.302E-27	7.113E-25	4.779E-29	2.155E-30	6.011E-28	4.039E-32
2117	6.466E-28	3.532E-25	2.373E-29	1.070E-30	2.985E-28	2.006E-32
2118	3.211E-28	1.754E-25	1.179E-29	5.313E-31	1.482E-28	9.959E-33
2119	1.594E-28	8.710E-26	5.852E-30	2.638E-31	7.361E-29	4.946E-33
2120	7.918E-29	4.325E-26	2.906E-30	1.310E-31	3.655E-29	2.456E-33
2121	3.932E-29	2.148E-26	1.443E-30	6.506E-32	1.815E-29	1.220E-33
2122	1.952E-29	1.067E-26	7.167E-31	3.231E-32	9.014E-30	6.056E-34
2123	9.696E-30	5.297E-27	3.559E-31	1.604E-32	4.476E-30	3.007E-34
2124	4.815E-30	2.630E-27	1.767E-31	7.967E-33	2.223E-30	1.493E-34
2125	2.391E-30	1.306E-27	8.776E-32	3.957E-33	1.104E-30	7.416E-35
2126	1.187E-30	6.486E-28	4.358E-32	1.965E-33	5.481E-31	3.683E-35
2127	5.896E-31	3.221E-28	2.164E-32	9.757E-34	2.722E-31	1.829E-35
2128	2.928E-31	1.599E-28	1.075E-32	4.845E-34	1.352E-31	9.082E-36
2129	1.454E-31	7.943E-29	5.337E-33	2.406E-34	6.712E-32	4.510E-36
2130	7.220E-32	3.944E-29	2.650E-33	1.195E-34	3.333E-32	2.240E-36
2131	3.585E-32	1.959E-29	1.316E-33	5.933E-35	1.655E-32	1.112E-36
2132	1.780E-32	9.726E-30	6.535E-34	2.946E-35	8.220E-33	5.523E-37
2133	8.841E-33	4.830E-30	3.245E-34	1.463E-35	4.082E-33	2.742E-37
2134	4.390E-33	2.399E-30	1.612E-34	7.265E-36	2.027E-33	1.362E-37

Graphs


Megagrams Per Year
Emissions
3.000E+04
2.500E+04
2.000E+04
1.500E+04
1.000E+04
5.000E+03
0.000E+00
1994
1999
2004
2009
2014
2019
2024
2029
2034
2039
2044
2049
2054
2059
2064
2069
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
2.500E+07
2.000E+07
1.500E+07
1.000E+07
5.000E+06
0.000E+00
1994
1999
2004
2009
2014
2019
2024
2029
2034
2039
2044
2049
2054
2059
2064
2069
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
1.600E+03
1.400E+03
1.200E+03
1.000E+03
8.000E+02
6.000E+02
4.000E+02
2.000E+02
0.000E+00
1994
1999
2004
2009
2014
2019
2024
2029
2034
2039
2044
2049
2054
2059
2064
2069
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

16.0 Estimated Annual and Cumulative quantities of Indirect Emissions to Groundwater

None to report.

17.0 Annual Water Balance Calculation and Interpretation

The predicted Water Mass Balance calculation shows predicted leachate production for 2012.

Lo= [ER(A) + LW + IRCA + ER(l)] - [aW]

			1		2		3					
year	Active Phase	Active Area	Active Area infiltration	Restored Phase No.	Liquid Waste	Restored Area	Restored Area Infiltration	Total Water	Absorptive Capacity	Predicted Leachate Produced	Actual Leachate	Difference
		A (m2)	R(A) m3		LW (m3)	RCA (m2)	IRCA (m3)	1 +2+3 (m3)	aW (m3)	Lo (m3)	m3	
2002	5	11,800.00	19918.4	1,2,3	0	22,050.00	2840.04	22,758.44	1770.8075	23,885.63	34,218.23	10,332.60
2003	6	16,100.00	20946.1	1,2,3,4	0	25,450.00	2547.545	23,493.65	879.11758	24,866.78	30,721.59	5,854.81
2004	6	19,500.00	32416.8	1,2,3,4	0	27,550.00	3306	35,722.80	840.95323	37,947.25	45,130.40	7,183.15
2005	6,7	16,200.00	27596.7	1,2,3,4,5	0	29,600.00	4004.88	31,601.58	602.53935	34,155.79	54,784.59	20,628.80
2006	7	28,800.00	27596.7	1,2,3,4,5	0	29,600.00	4025.6	31,622.30	1050.4414	33,361.86	60,922.61	27,560.75
2007	7	14,400.00	24036.48	1,2,3,4,5,6	0	53,340.00	6769.913	30,806.39	1391.4589	33,307.30	55,436.15	22,128.85
2008	8	24,300.00	50,517.27	1,2,3,4,5,6	0	53,340.00	6,931.00	57,448.27	1,528.82	59,811.81	78,558.23	18,746.42
2009	8	32,400.00	62,763.98	1,2,3,4,5,6	0	53,340.00	2997.015	65,761.00	439.04833	66,586.16	73,727.85	7,141.69
2010	8	32,400.00	44,248.68	1,2,3,4,5,6,7	0	63,340.00	3558.885	47,807.56	439.04833	48,632.72	42,442.00	-6,190.72
2011	8	32,400.00	45,392.40	1,2,3,4,5,6,7	0	63,340.00	3558.885	48,951.28	439.04833	49,776.44	50,108.00	331.55
2012	9	33,616.67	61,619.36	1,2,3,4,5,6,7,8	0	95,740.00	5379.34	66998.70	439.04833	67,823.86	69,063.01	1239.15

18.0 Report on the Progress towards Achievement of Environmental Objectives contained in previous AER

Target Area	*Objective*	*Works Carried Out*	*Results*
Odour Management *Reduction in Fugitive Gas Emissions*	Reduction in number of off site odours experienced	Regular patrol of gas collection infrastructure to ensure that there is no blockages on the lines. Adequate intermediate capping on cells prior to final cap Gas extraction of intermediately capped cells.	Odour Complaints increased from 1 in 2011 to 16 in 2012.
Surface Water Emissions	Keep Surface Water Emissions within agreed limits	Proper management of leachate on site. Regular inspection of surface water drains Meters on site. Regular inspection of bunded area for integrity on site	Two ammonia levels exceeded during the reporting period.
Ground Water Emissions	Keep Ground Water Emissions to within agreed limits	Proper management of leachate levels on site. Regular inspection of bunded area for integrity on site.	No licenced limits exceeded
Leachate Management	Reduction in the quantity of leachate produced on site	Capping cells 15B and 16 within 1 year of final placement of waste Reduction in the fill area of cell into which surface water flows.	Increase in leachate produced on site during reporting period due to wetter weather. Phases 1 to 8 are now permanently capped.
Dust	Keep dust deposit limits within allowable level	Regular spray of site roads with water at time of dry and windy weather.	No licenced limits exceeded

Target Area	***Objective***	***Works Carried Out***	***Results***
Vermin	Keep vermin population on site to a minimum	Regular baiting of bait boxes through out the site Particular attention to be paid to area of know or sighted vermin activity	No visible activity of vermin on site
Bird Control	Keep number of crow and sea gulls on site to a minimum	Bird control on site from Dawn to Dusk to aid in the reduction in the number of bird on site during day light.	No bird nuisances during reporting period. Daily report completed.
Flies	Keep the fly population on site down in the active cell	Regular spray of the waste in the active cell at times of heat and particular emphasis on spraying during summer months	New fly spraying procedure introduced on site and report sheets completed after each spray.
Litter – windblown on site	No windblown litter visible outside the active cell area	Proper and complete netting around the active cell Regular litter picking patrols on site to pick up any windblown litter. Stopping the access to the site of rota-press vehicles at times of high winds	No visible wind blown litter on site during reporting period. There are increased litter patrols on phase 9 due to the proximity of the public road.
Litter – On main road to landfill site	Reduction in the number of bags of waste lost from trailer on the way to the landfill	Enforcement of the three strikes and you're out rule in operation on site in relation to uncovered loads entering the landfill site. Quick response to clean up any reported waste on the main road to the landfill	Continued enforcement of covered loads to landfill site and regular litter patrols on main access routes to landfill site

Target Area	***Objective***	***Works Carried Out***	***Results***
Energy Resources	Reduce the quantity of diesel and electricity used on site		Increase in diesel and a reduction in electricity consumption on site. An increase in diesel was due to an increased use of plant on site due to larger volumes of waste disposed over the reporting period.
Reduction of BMW entering the landfill site.	Reduce the percentage of biological municipal waste entering the landfill site to 55%.	Provided organic bin for cold callers to the site and have such material removed for further processing. We have stopped the use of green waste as cover material. Continue to take green waste on site but charge the true cost of treatment for the green waste and have it removed by contractor for further processing.	Removal of green waste from site for further processing during reporting period.

19.0 Schedule of Environmental Objectives and Targets for the Forthcoming Year.

The following tables sets out the environmental objectives for the facility under a range of headings.

Target Area	Objective	Actions to be progressed and methods	By	2013	2014	2015	2016	2017
Odour Management Reduction in Fugitive Gas Emissions	Reduction in number of off site odour experienced	o Regular patrol of gas collection infrastructure to ensure satisfactory operation o Intermediate capping of cell 17,18 and 19. o Permanent gas wells to intermediately capped cells	FM SEE	Ongoing Ongoing Q3/4	Ongoing Q1	Ongoing	Ongoing	Ongoing
Surface Water Emissions	Keep surface water emissions within limits	o Proper management of leachate on site o Regular inspection of surface water drains o Regular inspection of bunded area for integrity on site	FM FM FM	Ongoing Ongoing Ongoing	Ongoing Ongoing Ongoing	Ongoing Ongoing Ongoing	Ongoing Ongoing Ongoing	Ongoing Ongoing Ongoing
Ground Water Emissions	No emissions	o Proper management of leachate on site o Regular inspection of bunded area for integrity on site	FM FM	Ongoing Ongoing	Ongoing Ongoing	Ongoing Ongoing	Ongoing Ongoing	Ongoing Ongoing
Leachate Management	Reduction in the quantity of leachate produced on site	o Capping of intermediately capped cells o Reduction in the fill area of cell into which surface water flows. o ICW trial	SEE FM	Q3/4 Complete Ongoing	 Ongoing			
Dust	Keep dust deposit limits within allowable level	o Regular spray of site roads with water at time of dry and windy weather.	FM	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Vermin	Keep vermin population on site to a minimum	o Regular baiting of bait boxes through out the site o Particular attention to be paid to area of known or sighted vermin activity	FM	Ongoing Ongoing	Ongoing Ongoing	Ongoing Ongoing	Ongoing Ongoing	Ongoing Ongoing
Bird Control	Minimise bird nuisance	o Bird control on site from to aid in the reduction in the number of birds on site.	FM	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Flies	Minimise fly nuisance	o Regular spray of the waste in the active cell at times of heat and particular emphasis on spraying during summer months	FM	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Litter – windblown on site	No windblown litter visible outside the active cell area	o Proper and complete netting around the active cell o Regular litter picking patrols on site to pick up any windblown litter.	 FM	Ongoing Ongoing	 Ongoing	 Ongoing	 Ongoing	 Ongoing

Target Area	Objective	Actions to be progressed and methods	By	2013	2014	2015	2016	2017
Energy Resources	Reduce the quantity of diesel and electricity used on site	o Progress gas to energy project	FM	Ongoing				
Reduction of BMW entering the landfill site	Reduce the percentage of biological municipal waste entering the landfill site to 40%	o Continue to take green waste on site and charge the true cost of treatment for the green waste and have it removed by contractor for further processing.	FM	Ongoing	Ongoing	Ongoing	Ongoing	
Leachate Management	Develop Integrate Constructive Wetland in order to reduce Environmental Emissions and the strength and Volume of Leachate leaving the Facility Site	• Commission ICW • Operate & Monitor ICW • Present Results to EPA of Project	FM	Q2 Ongoing Ongoing	Ongoing Ongoing			

FM – Facility Manager
SEE – SEE Waste Management

20.0 Summary of Procedures Developed by the Licensee

The following are the procedures and documents developed by the licensee:

Procedures

- Waste Acceptance Procedure – Uncovered loads entering landfill site
- Complaints Management Procedure.
- Fly Spraying procedure.

Plans

- No plans developed in 2012.

21.0 Tank, Pipeline and Bund Testing and Inspection Report

None under taken during the reporting period.

Integrity testing completed on leachate lagoon 2 in March 2013.

22.0 Environmental Incidents and Complaints

Environmental Incidents

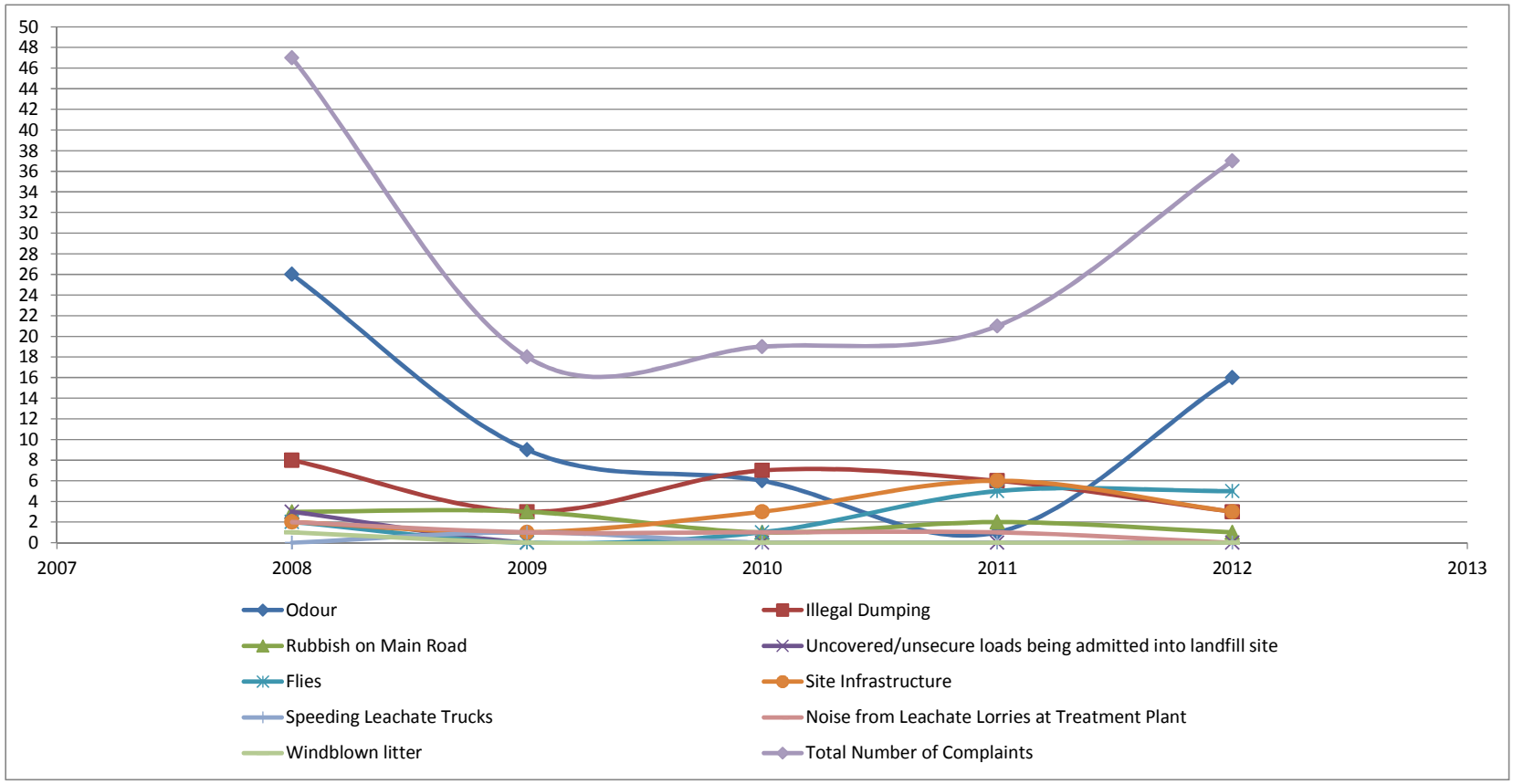
The incidents reported to the agency refer the exceedances experienced in perimeter gas wells. This in the main refers to wells 6, 6A – D..
It is noted that there is no odour nuisance or vegetative die back and it is thought that the readings refer to a sump effect in a rock fill embankment that is at a finished construction height above the original ground level.
There were two incidents of trigger level exceedances in the surface water lagoons during the reporting period

Complaints

There were 37 complaints received for the reporting period (21 in 2011). The complaints can be broken down into the following categories:

Table 18.1: Breakdown of complaints received.

Issue	2008	2009	2010	2011	2012
Odour	26	9	6	1	16
Illegal Dumping	8	3	7	6	3
Rubbish on Main Road	3	3	1	2	1
Uncovered/unsecure loads being admitted into landfill site	3	0	0	0	0
Flies	2	0	1	5	5
Site Infrastructure	2	1	3	6	3
Speeding Leachate Trucks	0	1	0	0	0
Noise from Leachate Lorries at Treatment Plant	2	1	1	1	0
Windblown litter	1	0	0	0	0
Total Number of Complaints	47	18	19	21	37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8
6
4
2
0
2007
2008
2009
2010
2011
2012
2013
Odour
Illegal Dumping
Rubbish on Main Road
Uncovered/unsecure loads being admitted into landfill site
Flies
Site Infrastructure
Speeding Leachate Trucks
Noise from Leachate Lorries at Treatment Plant
Windblown litter
Total Number of Complaints

23.0 Review of Nuisance Controls

Odour.

Significant works have been undertaken on the gas collection network and the entire network is actively managed as part of the gas to energy project.

Connection of the permanent vertical gas wells in cells 15B/16 to the gas utilisation engine will be completed by May 2013.

Illegal Dumping.

Quicker response time to complaints received, closer co-operation with litter warden for the area. The litter warden is immediately notified of the location of the dumping in order to retrieve evidence.

Signage is being erected in (black spot) locations advising of covert camera operations – this is being followed with deployment of the cameras. This is being co-ordinated by the waste enforcement unit.

Regular road side clean ups being carried on main road leading to the landfill site Larger items which have fallen from vehicles carrying waste to the landfill site are removed once a complaint is received in relation to them.

Site Infrastructure.

These complaints referred to the layout of the CAS. Signage has been raised for better visibility and improved.

Fly nuisance.

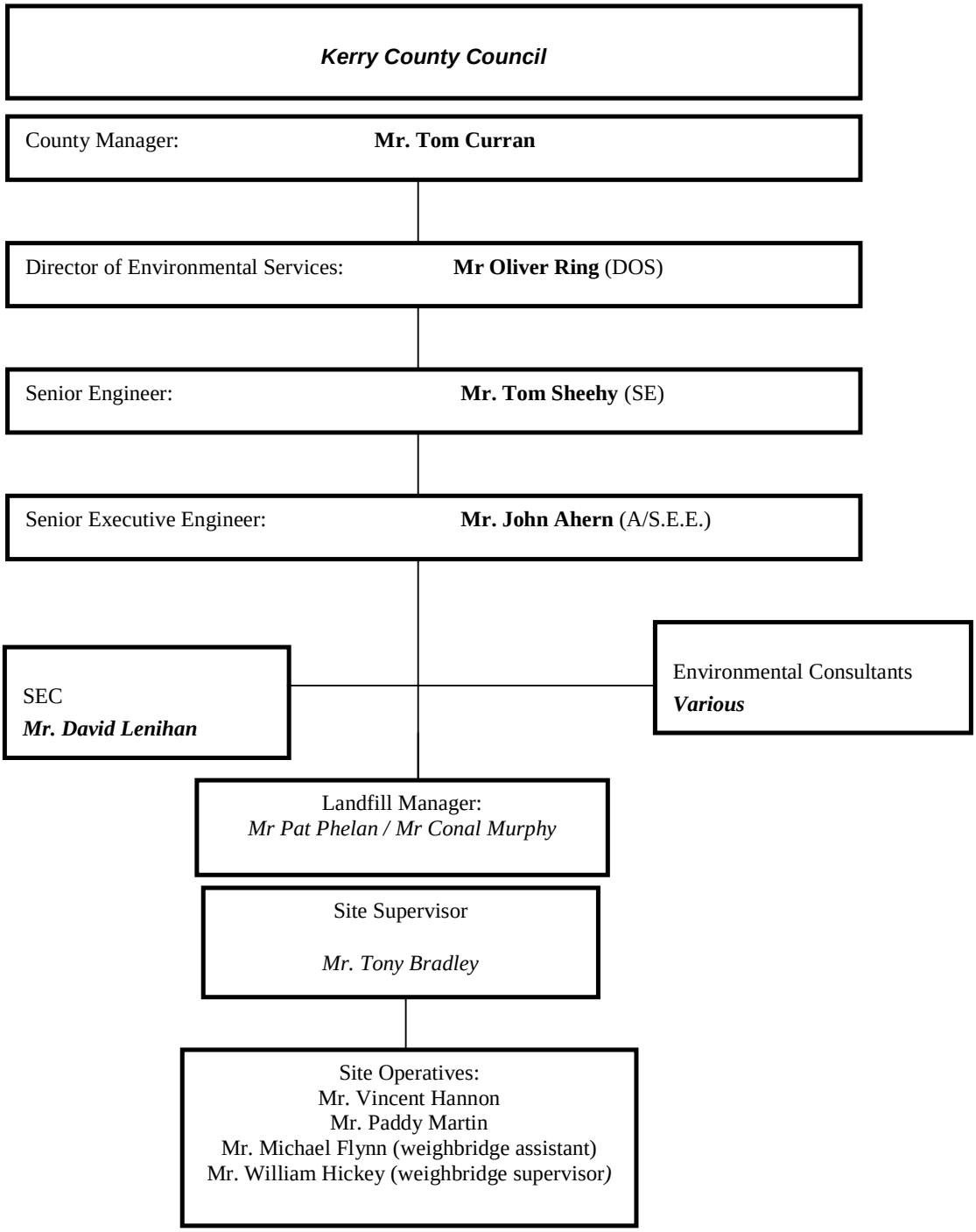
The frame on the sprayer has been modified for 2013 and a procedure in place when spraying. This includes the location, date and amount of fly spray used.

24.0 Report on Financial Provision

Kerry County Council has a Landfill Aftercare and Development Fund.

The CRAMP report as submitted estimates what is required to maintain the landfill site both during its active phase and closed phase. Kerry County Council is well positioned to meet its financial liabilities.

25.0 Management and Staffing Structure at the Facility 2013



26.0 Programme of Public Information

The following files are available for inspection on site by members of the public:

- AER of previous reporting years
- All correspondence with the Agency
- Surface Water Monitoring Results
- Ground Water Monitoring Results
- Perimeter Gas Detection Well Monitoring Results
- Nuisance Control Documentation
- Leachate Chemical Analysis results
- Leachate quantities produced
- Tonnage of waste accepted on site
- Characterisation of waste accepted for landfilling on site
- Operational Procedure Manual
- Waste Acceptance Procedure
- Environmental Management System.

In main office a notice board is on site which contains information in relation to the management structure of the site, emergency procedure in relation to fire or accident on site and other environmental information as required.

27.0 Training of Staff

	SafePass	CSCS Card	Waste Management Certificate	Landfill Compactor Training	Domestic Waste at Civic Amenity Site	Waste Facility Operations	Hazardous Spillage and Chemical Control	Managing Safety in Construction
Facility Manager	X		X					
Supervisor	X	X		X				
Weighbridge Supervisor	X					X		X
Operatives	X	X		X		X	X	

	Safe Use of Pesticides and Herbicides	Banksman	Tractor Driving					
Facility Manager								
Supervisor	X	X	X					
Weighbridge Supervisor	X	X	X					
Operatives		X	X					

28.0 Report on the use of the Community Fund.

The Community Fund is operated under the Local Government Act, 2001 Section 109.-(1) In this section "community initiative" means any project or programme which in the opinion of the local authority will benefit the local community and includes the provision or improvement of amenity, recreational, cultural or heritage facilities, the protection or enhancement of the environment and programmes to promote social inclusion and community development.

Kerry County Council allocated €57,419 (Consumer Index Link) to the Community Fund, which was used varies projects such as establishment of a Sliabh Luachra Community Walk, Refurbishment of St Brendan Community Centre, hedgecutting, provision of transport for senior citizens for the Kielduff Community Centre, and contribution towards the Cill Dubh Brownies.

29.0 Statement on Cost of Landfill

The following table gives a break down of the financial outlay under the recycling and landfilling headings.

Table 22.2 - Financial outlay 2012

Landfill Costs	Total Charge Euro
Wages	118,027.88
Salaries	35,919.52
ER PRSI	23,174.14
Overtime	43,706.54
Arrears	-505.62
Sick Pay	7,293.72
Annual Leave	18,594.86
Bank Holiday Leave	4,830.25
Travel/Subsistence	518.92
Eating on site allowance	1,740.40
Acting Allowance	1,410.50
Minor Contracts- Trade Services & other works	280,944.49
Transfer to/from Cap/Rev (Exp)	75,000.00
Non-Capital Equip Purchase - Fire Services	68.50
Non-Capital Equip Purchase - Other	540.75
Hire (Ext) - Plant/Transport/Machinery & Equipment	64,370.60
Repairs & Maint - Plant	16,890.97
Repairs & Maint -Computer Equip	595.00
Repairs & Maint - Other Equip	997.14
Transfers from Machinery Yard	26,007.00
Other Vehicle Expenses	694.00
Materials	137,765.46
Issues from Stores	5,176.15
Insurance	9,351.23
Staff Travelling & Subsistence Expenses	3,159.74
Computer Software and Maintenance Fees	4,125.00
Communication Expenses	1,853.78
Courier	781.42
Training	1,161.21
Legal Fees and Expenses	462.50
Consultancy/Professional Fees and Expenses	2,354.41
Advertising	403.80
Printing & Office Consumables	923.53
Statutory Contributions to Other Bodies	18,187.43
Rates & Other LA Charges	44,439.12
Cleaning	5,284.00
Energy	90,684.93
Miscellaneous Expenses	100.00
Refunds	20.00
Total	1,047,053.27

Recycling	Total Charge Euro

Wages	29,016.01
Salaries	8,510.25
ER PRSI	5,004.55
Overtime	10,015.11
Arrears	-126.40
Sick Pay	28.44
Annual Leave	592.80
Bank Holiday Leave	619.76
Travel/Subsistence	3,500.52
Eating on site allowance	237.50
Acting Allowance	346.17
Minor Contracts- Trade Services & other works	31,056.08
Non-Capital Equip Purchase - Other	7.03
Repairs & Maint - Plant	564.90
Transfers from Machinery Yard	0.00
Other Vehicle Expenses	0.00
Materials	3,166.37
Issues from Stores	0.00
Insurance	0.00
Staff Travelling & Subsistence Expenses	559.48
Computer Software and Maintenance Fees	0.00
Communication Expenses	264.45
Courier	0.82
Security - Property	0.00
Training	273.89
Consultancy/Professional Fees and Expenses	0.00
Advertising	30.00
Printing & Office Consumables	23.00
Statutory Contributions to Other Bodies	2,020.82
Rates & Other LA Charges	3,349.50
Cleaning	0.00
Energy	7,856.88
Total	106,917.92

30.0 Metrological, Noise and Dust Monitoring Results

Table 23.1, Rainfall data 2011/2012

	2011			2012		
	Rainfall (mm)	True Evaporation (mm)	Effective Rainfall (mm)	Rainfall (mm)	True Evaporation (mm)	Effective Rainfall (mm)
Jan	146.9	108.18	38.72	193.7	-29.20	222.9
Feb	159.5	126.23	33.37	67.9	6.18	61.72
Mar	74.3	47.79	26.51	42.8	31.02	11.78
Apr	74.2	21.8	52.4	169.5	44.66	124.84
May	174.7	140.68	34.02	46.7	44.48	2.54
Jun	No data	No data	No data	215.4	38.88	176.52
Jul	No data	No data	No data	170.3	33.60	136.7
Aug	No data	No data	No data	159.3	43.38	115.92
Sep	155.4	134.22	21.8	118.0	13.58	104.42
Oct	145.2	-153.84	-8.14	152.8	-10.94	163.74
Nov	215.2	-218.26	-3.06	242.5	-4.88	247.38
Dec	251.6	-253.48	-1.88	181.4	-7.08	188.48
Total	*1,401.20*	*1198,98*	*219.9*	*1760.3*	*203.68*	*1556.94*

Noise Monitoring 2012

Southern Scientific were commissioned by Kerry County Council to undertake a noise survey at North Kerry Landfill. The LAeq(30min) levels detected during the survey were within the prescribed limit of 55dB at two of the six monitoring locations. The locations of the two stations which exceeded the 55dB limit are close to the public road and so subject to passing traffic.

Table 23.2, Noise monitoring data

Location	Laeq 30min dB	Laf10 30min	Laf90 30min
N1	38.6	39.0	32.5
N2	39.5	37.8	34.4
N3	38.2	40.6	33.7
E1	38.6	42.4	26.9
E2	59.6	51.4	31.5
E3	57.4	49.3	29.0

Dust Monitoring 2012

Southern Scientific was commissioned by Kerry County Council to carry out dust deposition monitoring at four locations at North Kerry Landfill in 2012.
All of the results were inside the allowable limits.

Table 23.3, Dust Monitoring Results

7/6/12 to 11/6/12	Total particulates, mg/m^2/d	23	166	58	172
	Inorganic particulates, mg/m^2/d	<10	141	<10	118
10/8/12 to 17/8/12	Total particulates, mg/m2/d	133	196	99	87
	Inorganic particulates, mg/m2/d	92	82	27	23
7/6/12 to 11/6/12	Total particulates, mg/m2/d	95	46	34	86
	Inorganic particulates, mg/m2/d	74	39	29	39

31.0 Statement on the Achievement of the Waste Acceptance and Treatment Obligations

BMW Percentage Composition of Waste disposed at facility

Total Qty MSW of which the BMW Condition Applies	Total Qty BMW	% BMW
71,006.59	44,689.45	62.94%

AppendixB shows the yearly breakdown of tonnage and %BMW entering the landfill site between 1st January – 31st December 2012 as submitted to the Agency.

Comment:

Kerry County Council has been carrying out a review of options available for waste collection and disposal during the reporting period. In the interim it is our intention to provide segregation facilities at each of our transfer station and landfill site to facilitate the segregation of organic waste being brought directly to these facilities.

We are currently in a very uncertain policy environment and Kerry County Council are constantly evaluating the options available. In this context every effort is being made to minimise the BMW content of waste entering North Kerry Landfill Site.

Appendix A – Waste Tonnage into NKL for 2012

NATIONAL WASTE REPORT 2012 SURVEY

PART 2 - Wastes Disposed and Recovered at Landfill in 2012

Please complete sections A and B (and C Repatriated Waste, where applicable). Insert more rows as necessary.

This data will be cross-checked against information provided by other waste operators and may be subject to audit.

Tonnage of waste accepted at landfill in 2012 (excluding repatriated waste) *(autocalculates)*	71,006
Tonnage of waste disposed at landfill in 2012 *(autocalculates)*	71,006
Tonnage of waste recovered at landfill in 2012 *(autocalculates)*	0

Section A. Kerbside collections (this means any waste delivered directly from the household, business or other premises where it was first generated, but not from another waste facility)

	Name of EACH collector delivering waste directly from kerbside	Source of waste	Waste description	EWC code	Quantity waste accepted (tonnes)	Quantity waste recovered at the landfill (tonnes)	Recovery/recycling code	Quantity waste disposed of at the landfill (tonnes)	Disposal code	Quantity waste remaining in storage at end of year (tonnes)
1	KTC Refuse	Household	Collection	20 03 01	1	0	SELECT	1	D05	
2	Public Domestic Waste	Household	Weighed Waste	20 03 01	337	0	SELECT	337	D05	
3	Public Commercial	Commercial	Commercial Waste Delivered too landfill site.	20 03 01	220.86	0	SELECT	220.86	D05	
4	Waste Recovery Services	Commercial	Flytipping/Street Cleaning etc.	20 03 01	95.26	0	SELECT	95.26	D05	
5	Higgans	Commercial	Commercial Bin Collection	20 03 01	30.56	0	SELECT	30.56	D05	
6	KWD	Commercial	Commercial bin Collection	20 03 01	10932.24	0	SELECT	10932.24	D05	
7	Wards	Commercial	Commercial bin Collection	20 03 01	464.44	0	SELECT	464.44	D05	
8	KCC Misc.	Household	Housing etc.	20 03 01	95.62	0	SELECT	95.62	D05	
9	LTC Misc.	Household	Housing etc.	20 03 01	5.48	0	SELECT	5.48	D05	
	KCC Road Sweeping	Litter/street sweepings	Road Sweeping	20 03 03	73.02	0		73.02	D05	
	TTC road Sweeping	Litter/street sweepings	Road Sweeping	20 03 03	900.7	0		900.7	D05	
	Graveyard Waste	Park & cemetery	Clean up	20 03 03	7.3	0		7.3	D05	
	LTC Road Sweeping	Litter/street sweepings	Road Sweeping	20 03 03	4.48	0		4.48	D05	
	TC Clean Up	Litter/street sweepings	Clean Up	20 03 03	0.54	0		0.54	D05	
	KCC Clean Up	Litter/street sweepings	Clean Up	20 03 03	188	0		188	D05	
	Greenstar	Litter/street sweepings	Road Sweeping	20 03 03	258.52	0		258.52		
	Dillon Waste	Commercial	Commercial bin Collection	20 03 01	9643.28	0		9643.28	D05	

Greenstar	Commercial	Commercial collection	20 03 01	21924.52	0		21924.52	D05	
Mr.Binman	Commercial	Commercial collection	20 03 01	7100.8	0		7100.8	D05	
Country Clean Recycling	Commercial	Commercial Collection	20 03 01	7699.26	0		7699.26	D05	
South West Bins	Commercial	Commercial Collection	20 03 01	5145.54			5145.54	D05	
Coillte Fly Tipping	Fly-tipped material	Flytipping	20 03 03	11.76	0		11.76	D05	
(To add more rows, select the last row, click 'Insert' and then 'Rows')	SELECT		20 01 01			SELECT		SELECT	

Section B. Waste from waste facilities (this means any waste delivered from another waste facility, whether it was treated there or not)

Name of EACH facility from which waste was delivered and License/ permit no. of this facility	Source of waste	Waste description	EWC code	Quantity waste accepted (tonnes)	Quantity waste recovered at the landfill (tonnes)	Recovery/recycling code	Quantity waste disposed of at the landfill (tonnes)	Disposal code	Quantity waste remaining in storage at end of year (tonnes)
Coolcashlagh Transfer Station W0072-3	Household	KTC Refuse	20 03 01	968		SELECT	968	D05	
Coolcashlagh Transfer Station W0072-3	Household	Public Car	20 03 01	673		SELECT	673	D05	
Coolcashlagh Transfer Station W0072-3	Household	Non weighed/tickets	20 03 01	501		SELECT	501	D05	
Coolcashlagh Transfer Station W0072-3	Commercial	A/C holders Inclusive VAT	20 03 01	35		SELECT	35	D05	
Coolcashlagh Transfer Station W0072-3	Household	KTC Internal Depts	20 03 01	19		SELECT	19	D05	
Coolcashlagh Transfer Station W0072-3	Litter/street sweepings	KCC Road Sweeping	20 03 03	1.88		SELECT	1.88	D05	
Coolcashlagh Transfer Station W0072-3	Litter/street sweepings	KTC Road Sweeping	20 03 03	125.74		SELECT	125.74	D05	
Coolcashlagh Transfer Station W0072-3	Park & cemetery	Graveyard Waste	20 03 03	14.72		SELECT	14.72	D05	
Coolcashlagh Transfer Station W0072-3	Fly-tipped material	KCC Clean Ups	20 03 03	51.34		SELECT	51.34	D05	
Coolcashlagh Transfer Station W0072-3	Fly-tipped material	KUDC Clean ups	20 03 03	13.72			13.72	D05	
Coolcashlagh Transfer Station W0072-4	Commercial	KCC Internal Depts	20 03 01	5.72			5.72	D05	
Milltown Transfer Station W0069-01	Household	KTC Refuse	20 03 01	4		SELECT	4	D05	
Milltown Transfer Station W0069-01	Household	Public Car	20 03 01	645		SELECT	645	D05	

Milltown Transfer Station W0069-01	Household	Non weighed/tickets	20 03 01	592		SELECT	592	D05	
Milltown Transfer Station W0069-01	Commercial	A/C holder Vat exempt	20 03 01	46		SELECT	46	D05	
Milltown Transfer Station W0069-01	Commercial	A/C holders Inclusive VAT	20 03 01	69		SELECT	69	D05	
Milltown Transfer Station W0069-01	Household	KTC Internal Depts	20 03 01	5		SELECT	5	D05	
Milltown Transfer Station W0069-01	Litter/street sweepings	KCC Road Sweeping	20 03 03	64.56		SELECT	64.56	D05	
Milltown Transfer Station W0069-01	Litter/street sweepings	KTC Road Sweeping	20 03 03	0.9		SELECT	0.9	D05	
Milltown Transfer Station W0069-01	Park & cemetery	Graveyard Waste	20 03 03	0		SELECT	0	D05	
Milltown Transfer Station W0069-01	Fly-tipped material	KCC Clean Ups	20 03 03	60.14		SELECT	60.14	D05	
Caherciveen Transfer Station W0087-01	Household	Public Car	20 03 01	290.4			290.4	D05	
Caherciveen Transfer Station W0087-01	Household	Non weighed inclusive of tickets	20 03 01	182.46			182.46	D05	
Caherciveen Transfer Station W0087-01	Commercial	A/C holders Inclusive VAT	20 03 01	25.26			25.26	D05	
Caherciveen Transfer Station W0087-01	Commercial	A/C holder Vat exempt	20 03 01	8.2			8.2	D05	
Caherciveen Transfer Station W0087-01	Household	KCC Internal Depts	20 03 01	4.18			4.18	D05	
Caherciveen Transfer Station W0087-01	Litter/street sweepings	Road Sweeping / Street Cleaning	20 03 03	28.88			28.88	D05	
Caherciveen Transfer Station W0087-01	Park & cemetery	Graveyard Waste	20 03 03	1.98			1.98	D05	
Caherciveen Transfer Station W0087-01	Fly-tipped material	Clean up / fly tipping	20 03 03	16.4			16.4	D05	
Kenmare Transfer Station W0086-01	Household	Public Car	20 03 01	217.24			217.24	D05	
Kenmare Transfer Station W0086-01	Commercial	Public Commercial	20 03 01	17.22			17.22	D05	
Kenmare Transfer Station W0086-01	Household	Non weighed/tickets	20 03 01	454.7			454.7	D05	
Kenmare Transfer Station W0086-01	Commercial	A/C holders Inclusive VAT	20 03 01	182.32			182.32	D05	
Kenmare Transfer Station W0086-01	Commercial	A/C holder Vat exempt	20 03 01	1.7			1.7	D05	
Kenmare Transfer Station W0086-01	Household	KCC Internal Depts	20 03 01	12.6			12.6	D05	
Kenmare Transfer Station W0086-01	Litter/street sweepings	Road Sweeping / Street Cleaning	20 03 03	2.42			2.42	D05	
Kenmare Transfer Station W0086-01	Park & cemetery	Graveyard Waste	20 03 03	2.08			2.08	D05	
Kenmare Transfer Station W0086-01	Fly-tipped material	Clean up / fly tipping	20 03 03	13.86			13.86	D05	

Dingle Civic Amenity Site W0225-01	Household	Public Car	20 03 01	58.68			58.68	D05	
Dingle Civic Amenity Site W0225-01	Household	Non weighed waste inclusive of tickets	20 03 01	167.96			167.96	D05	
Dingle Civic Amenity Site W0225-01	Park & cemetery	Graveyard Waste	20 03 01	0.16			0.16	D05	
Dingle Civic Amenity Site W0225-01	Fly-tipped material	Clean up / fly tipping	20 03 01	16.98			16.98	D05	
NKL Civic Amenity Site	Household	Ticketed Waste	20 03 01	264.01			264.01	D05	
(To add more rows, select the last row, click 'Insert' and then 'Rows')								D05	

Section C. Repatriated Waste (this means any waste accepted from sites in Northern Ireland where RoI waste was illegally dumped)

Name of site from which waste was delivered	Waste description	EWC code	Quantity waste accepted (tonnes)	Quantity waste recovered at the landfill (tonnes)	Recovery/recycling code	Quantity waste disposed of at the landfill (tonnes)	Disposal code
		SELECT			SELECT		SELECT
		SELECT			SELECT		SELECT
		SELECT			SELECT		SELECT
		SELECT			SELECT		SELECT
(To add more rows, select the last row, click 'Insert' and then 'Rows')		SELECT			SELECT		SELECT

Appendix B: % BMW Report 2012

Biodegradable Municipal Waste Reporting
Landfill Submission Report

Waste licence number: W0001-04 North Kerry Landfill Site

Report created on: 08/01/2013 16:02

Submission details

Year: 2012 Quarter: 4

Reporting period: October - December

Reference number: R-W0001-2012-4

Site details

License number: W0001-04

Parent company name: Kerry County Council

Facility name: North Kerry Landfill Site

Facility address: Muingnaminnane, Tralee, Co. Kerry,

Contact details of person who made the return

Contact name: John Ahern Contact position:

Email address: jahern@kerrycoco.ie Telephone number: 0667162000

Mobile number: Fax number:

BMW details

Summary for Q4 2012

Type of MSW	Total Qty MSW	Factor Type	Factor Value	Total Qty BMW	Comment	% BMW
2-bin residual commercial waste	351.3	EPA Approved factor	0.75	263.48		75.00
Other	0.06	Site Specific factor	0.00	0.00	Graveyard Waste	0
Residual MSW from civic amenity facility	140.38	EPA Approved factor	0.63	88.44		63.00
Untreated cleansing waste (fly-tipping, street bins, road sweepings etc.)	568.06	EPA Approved factor	0.65	369.24		65.00
Other	59.12	Site Specific factor	0.63	37.25	Dingle CA	63.01
Other	331	Site Specific factor	0.64	211.84	Milltown TS	64
Other	546.3	Site Specific factor	0.57	311.39	Coolcaslagh TS	57.00
Other	193.54	Site Specific factor	0.65	125.80	Kenmare Transfer Station	65.00
Other	121.26	Site Specific factor	0.63	76.39	Caherciveen Transfer Staion	63.00
Other	6348.6	Site Specific factor	0.60	3809.16	KWD Recycling	60
Other	9576.44	Site Specific factor	0.71	6799.27	Greenstar Ltd	71.00
Other	356.78	Site Specific factor	0.58	206.93	SWB	58.00
Other	4815	Site Specific factor	0.56	2696.40	Dillon Waste	56
Other	7699.28	Site Specific factor	0.60	4619.57	7699.28	60.00
	31107.12			19615.16		63.06

Cumulative report for year

Quarter	Type of MSW	Total Qty MSW	Factor Type	Factor Value	Total Qty BMW	Comment	% BMW
Q1	2-bin residual commercial waste	112.28	EPA Approved factor	0.75	84.21		75.00
Q1	Other	3.50	Site Specific factor	0.00	0.00	Graveyard Waste	0.00
Q1	Residual MSW from civic amenity facility	150.58	EPA Approved factor	0.63	94.87		63.00
Q1	Untreated cleansing waste (fly-tipping, street bins, road sweepings etc.)	240.36	EPA Approved factor	0.65	156.23		65.00
Q1	Other	52.74	Site Specific factor	0.63	33.23	Dingle CA	63.01
Q1	Other	362.02	Site Specific factor	0.64	231.69	Milltown TS	64.00
Q1	Other	679.98	Site Specific factor	0.58	394.39	Coolcaslagh TS	58.00
Q1	Other	220.48	Site Specific factor	0.65	143.31	Kenmare Transfer Station	65.00
Q1	Other	134.48	Site Specific factor	0.64	86.07	Caherciveen Transfer Staion	64.00
Q1	Other	786.40	Site Specific factor	0.60	471.84	KWD Recycling	60.00
Q1	Other	7991.76	Site Specific factor	0.72	5754.07	Greenstar Ltd	72.00
Q1	Other	7100.80	Site Specific factor	0.57	4047.46	Mr Binman Ltd	57.00
Q1	Other	1202.92	Site Specific factor	0.58	697.69	South West Bins	58.00
Q1	Other	1384.24	Site Specific factor	0.56	775.17	Dillon Waste	56.00
Q2	2-bin residual commercial waste	56.82	EPA Approved factor	0.75	42.62		75.01
Q2	Other	3.74	Site Specific factor	0.00	0.00	Graveyard Waste	0.00
Q2	3-bin residual household waste	1.38	EPA Approved factor	0.47	0.65		47.10
Q2	Other	57.56	Site Specific factor	0.63	36.26	Dingle Civic Amenity Site	63.00
Q2	Other	374.70	Site Specific factor	0.64	239.81	Milltown TS	64.00
Q2	Other	590.70	Site Specific factor	0.57	336.70	Coolcaslagh TS	57.00
Q2	Other	240.18	Site Specific factor	0.65	156.12	Kenmare TS	65.00
Q2	Other	147.90	Site Specific factor	0.64	94.66	Caherciveen TS	64.00
Q2	Other	1185.24	Site Specific factor	0.60	711.14	KWD Recycling	60.00
Q2	Other	2307.76	Site Specific factor	0.72	1661.59	Greenstar Ltd	72.00
Q2	Other	1993.22	Site Specific factor	0.58	1156.07	South West Bins	58.00
Q2	Other	1976.86	Site Specific factor	0.56	1107.04	Dillon Waste	56.00
Q2	Residual MSW from civic amenity facility	156.43	EPA Approved factor	0.63	98.55		63.00
Q2	Other	155.70	Site Specific factor	0.63	98.09	Wards	63.00
Q2	Other	9.72	Site Specific factor	0.63	6.12	Higgins	62.96
Q2	Untreated cleansing waste (fly-tipping, street bins, road sweepings etc.)	261.12	EPA Approved factor	0.65	169.73		65.00
Q3	2-bin residual commercial waste	226.40	EPA Approved factor	0.75	169.80		75.00
Q3	Other	74.36	Site Specific factor	0.63	46.85	dingle CA	63.00
Q3	Other	419.98	Site Specific factor	0.64	268.79	milltown ts	64.00
Q3	Other	249.94	Site Specific factor	0.66	164.96	kenmare ts	66.00
Q3	Other	154.12	Site Specific factor	0.64	98.64	caherciveen ts	64.00
Q3	Other	2612.02	Site Specific factor	0.60	1567.21	kwd recycling	60.00
Q3	Other	2048.56	Site Specific factor	0.71	1454.48	Greenstar ltd	71.00
Q3	Other	1592.62	Site Specific factor	0.58	923.72	siouth west bins	58.00
Q3	Other	1467.18	Site Specific factor	0.56	821.62	Dillons Waste	56.00
Q3	Residual MSW from civic amenity facility	153.12	EPA Approved factor	0.63	96.47		63.00
Q3	Untreated cleansing waste (fly-tipping, street bins, road sweepings etc.)	367.44	EPA Approved factor	0.65	238.84		65.00
Q3	Other	592.16	Site Specific factor	0.57	337.53	Coolcaslagh Transfer Station	57.00
Q4	2-bin residual commercial waste	351.30	EPA Approved factor	0.75	263.48		75.00
Q4	Other	0.06	Site Specific factor	0.00	0.00	Graveyard Waste	0.00
Q4	Residual MSW from civic amenity facility	140.38	EPA Approved factor	0.63	88.44		63.00
Q4	Untreated cleansing waste (fly-tipping, street bins, road sweepings etc.)	568.06	EPA Approved factor	0.65	369.24		65.00
Q4	Other	59.12	Site Specific factor	0.63	37.25	Dingle CA	63.01
Q4	Other	331.00	Site Specific factor	0.64	211.84	Milltown TS	64.00
Q4	Other	546.30	Site Specific factor	0.57	311.39	Coolcaslagh TS	57.00
Q4	Other	193.54	Site Specific factor	0.65	125.80	Kenmare Transfer Station	65.00
Q4	Other	121.26	Site Specific factor	0.63	76.39	Caherciveen Transfer Staion	63.00
Q4	Other	6348.60	Site Specific factor	0.60	3809.16	KWD Recycling	60.00
Q4	Other	9576.44	Site Specific factor	0.71	6799.27	Greenstar Ltd	71.00
Q4	Other	356.78	Site Specific factor	0.58	206.93	SWB	58.00

Q4	Other	4815.00	Site Specific factor	0.56	2696.40	Dillon Waste	56.00
Q4	Other	7699.28	Site Specific factor	0.60	4619.57	7699.28	60.00
		71006.59			44689.45		62.94

These figures are as reported by the licensee to the Agency and have not been validated by the EPA

Appendix C: Historic Data

Waste Landfill
Leachate off Site

	Waste Tonnes	Leachate m3	tonnes/m3
1994	16,902	1,494.00	11.31325
1995	23,505	6,475.00	3.630116
1996	23,722	8,496.37	2.792016
1997	25,581.88	12,175.49	2.101097
1998	33,529.67	20,318.09	1.650237
1999	57,872.71	22,822.95	2.535724
2000	60,473.65	36,780.71	1.644168
2001	63,945.91	18,953.85	3.373769
2002	62,821.52	34,218.23	1.835908
2003	50,235.29	30,721.59	1.635179
2004	48,054.47	45,130.40	1.064792
2005	34,430.82	54,784.59	0.628476
2006	60,025.22	60,922.61	0.98527
2007	56,794.24	55,436.15	1.024498
2008	62,412.96	78,558.53	0.794477
2009	39,755.40	73,727.85	0.539218
2010	20,986.80	42,442.73	0.494473
2011	16,545.71	50,108.58	0.330197
2012	71,006.59	69,063.01	1.028142
Total	**828,602**	**722,631**	**1.15**

Appendix D: Waste Recycling and Recovery

Material type	Suggested EWC codes		Household waste	Name of destination facility(ies), or collector(s) if directly exported	Comments (Use the cells in this column to comment on any significant changes in the waste tonnages accepted in 2012 compared to 2011 data)
(If you must depart from this list, please provide details on a separate sheet)	(overwrite as appropriate)	Notes	(tonnes)	(please provide licence/permit number)	
Mixed residual waste	20 03 01		**264**	n/a	Landfilled in North Kerry Landfill
Organic waste (food and garden)			**47**		
if segregated, provide specific information on food and garden waste					
food	*20 01 08*				
garden	*20 02 01*		*47*	Bord na Mona Horticulture W0198-01	Green Waste Weighed and Transported by Bord na Mona
Mixed dry recyclables	20 03 01		**18**	Killarney Waste Disposal W0217	Eco Sense Bags sold for Dry recyclables
Cardboard, newspaper and other paper			**86**		
if segregated, provide the breakdown of cardboard and paper in the rows below					
cardboard packaging	*15 01 01*		*34*	Greenstar Recycling (munster) Glanmire W0136	Material weighed on site
cardboard non-packaging	*20 01 01*				
paper packaging	*15 01 01*				
paper non-packaging	*20 01 01*				
newspaper and magazines	*20 01 01*		*51*	Dillon Waste Ltd. WP/07-30	Material weighed on site
Glass			**36**		
if segregated, provide the breakdown of glass in the next two rows					
glass packaging	*15 01 07*		36	Glassco recycling (jan - March) Dillon Waste Ltd (March - Dec)	
glass non-packaging	*20 01 02*				
Metals			**37**		
if segregated, provide the breakdown of metals in the next four rows					
aluminium cans (packaging)	*15 01 04*		2	Glassco recycling (jan - March) Dillon Waste Ltd (March - Dec)	
steel cans (packaging)	*15 01 04*		5	Glassco recycling (jan - March) Dillon Waste Ltd (March - Dec)	
other metals (non-packaging)	*20 01 40*		30	Hegarty Metals WCP-LK-027/02b	
Plastic			**21**		
if segregated, provide the breakdown of plastic waste in the next two rows					
plastic packaging	*15 01 02*		21	Dillon Waste Ltd. WP/07-30	Plastc Bottles weighed on site
plastic non-packaging	*20 01 39*				
polystyrene	*15 01 02*				
Composite packaging (e.g. tetrapaks)	15 01 05				
Textiles for recovery or disposal	**Do not report on textiles collected for reuse by charities**		**4**		
if segregated, provide the breakdown of textiles in the next two rows					
textiles, packaging	*15 01 09*				
textiles, non-packaging	*20 01 11*		4	Cookstown recycling	Old clothes
Wood			**0**		
if segregated, provide the breakdown of wood waste in the next four rows					
wood packaging	*15 01 03*				
wood non-packaging	*20 01 38*				
mixed, uncontaminated wood packaging and non-packaging	*15 01 03; 20 01 38*				
wood, treated, hazardous	*20 01 37**				
Batteries	*Portable batteries weigh <2kg, are sealed, are not exclusively designed to propel an electrical vehicle, and are not intended to be used for automotive starter, lighting or ignition power.*		**0.96**		
lead acid batteries and accumulators	16 06 01*	portable	0.96	Enva Ireland Limited Portloaise	
		non-portable (automotive and industrial)			
Ni-Cd batteries and accumulators	16 06 02*	portable			
		non-portable (automotive and industrial)			
Other (e.g. alkaline) batteries and accumulators	16 06 04	portable			
		non-portable (automotive and industrial)			
Waste mineral oils	13 02 05*	*lubrication, vehicle, machine, etc.*	5.26	Enva Ireland Limited Portloaise	
Oil filters (vehicles)	16 01 07*		0.29	Enva Ireland Limited Portloaise	
Oil containers (mineral oil) - plastic + metal	15 01 10*/ 15 01 11*		0.11	Enva Ireland Limited Portloaise	
Waste cooking or vegetable oils	20 01 25		0.22	Frylite Cork	
Waste paint and varnish (including containers)	20 01 27*		0.11	Enva Ireland Limited Portloaise	
Tyres	16 01 03				

ANNUAL ENVIRONMENT REPORT

Physio-chemical and Biological Monitoring of North Kerry Landfill

2012

Prepared by:
David Lenihan
Senior Executive Chemist

28th February 2013

INTRODUCTION

As Part of requirements under EPA Licence for North Kerry landfill this laboratory produces a report on a six monthly basis as well as an annual detailed report. This report can thus be interpreted as *Laboratory Contribution to* ***Annual Environment Report.***

Enclosed are:

- Interpretation of results pertaining to three matrices of concern i.e. Groundwater, Surface water and Leachate.
- ***Table 1:*** Outlines trigger values for strategic parameters analysed in groundwater.
- ***Appendix 1:*** Detailing sample locations and associated grid references used in report
- ***Appendix 2:*** Details list of List 1,2 Organics monitored and their associated Limits of Detection (LODs).
- ***Appendix 3****:* Trend Graphs for Total Organic Carbon Results and associated conductivity measurements for each of boreholes.
- ***Appendix 4:*** Invertebrate Assessment of Surface Water Impact Sites conducted by KCC Scientific staff
- ***Appendix 5:*** Results from ELS contract laboratory pertaining to individual List 1 and List 2 organics which were analysed for in Nov 2012 at three groundwater locations.
- **Appendix 6:** Annual Results in spreadsheet format for Leachate, Surface Water and Groundwater as required per monitoring provisions as of licence requirements for 2012.

All except for analysis of ***Total Cyanide, List 1*** and ***List 2 Organic Substances*** was conducted at KCC laboratory. Analysis on these Parameters (italics *and asterix*) was farmed out to ***ELS Laboratories,*** Mahon Industrial Estate, Cork City, Co. Cork.

A summary of Environmental requirements has been prepared by Tobin Consulting Engineers. This is the document we are using. Results are also included for monthly analysis of groundwater as required by provisions of old licence.

In 2012 a total of ***223*** samples were sampled by KCC Laboratory personnel.

Altogether ***2332 tests*** were analysed to satisfy requirements of licence monitoring. Of these

- ***2297*** tests were analysed in KCC laboratory
- ***35*** tests were analysed by *ELS laboratories*. The latter included Cyanide and List1 / 2 organics as required on an annual basis for three groundwater locations It must however be stressed that each test for SVOCs or VOCs comprises analysis for 153 specific compounds

The monitoring locations monitored are as per requirements of new licence. ***Appendix 1*** outlines locations and associated northings and eastings.

Trigger Limits *(Groundwater Regulations 2010)*

Trigger limits are required to be set for certain parameters in groundwater and submitted to EPA. Perhaps the best such limits to use are groundwater threshold values as set out in Groundwater Regulations 2010. Other standards used, correspond to drinking water regulatory standards. However where drinking water limits cannot be adhered to because of natural conditions (non anthropogenic effects) i.e. Ph the trigger value would have to be more flexible. The trigger values for Boreholes 1 to 4 are as highlighted in Table 1. Borehole 5 appears to be monitoring an aquifer which contains a lot of decaying organic matter more than likely from natural sources. Therefore trigger value for ammonia may be too strict.

Table I Parametric Trigger values for Groundwater

Parameter	units	Trigger value (max)	Trigger value(min)
Ammonium	mg/L	0.225	
Nitrite	mg/L	0.38	
Total Oxidised Nitrogen	mg/L (NO_3)	37.5	
Conductivity	Us/cm	800	
Ph	Ph units	10	4.5
Dissolved Oxygen	mg/L O2		1.0
Chloride	mg/L	200	
Flouride	ug/L	1000	
Sodium	mg/L	150	
Potassium	mg/L	10	
Boron	mg/L	0.75	
Copper	mg/L	1.5	
Cadmium	ug/L	3.75	
Chromium	ug/L	37.5	
Arsenic	ug/L	7.5	
Lead	ug/L	10	
Nickel	ug/L	15	

Parameter	units	Trigger value (max)	Trigger value(min)
Mercury	ug/L	0.75	
Total Cyanide	ug/L	37.5	
VOCs			
Benzene	ug/L	0.75	
1,2 dichloroethane	ug/L	2.25	
Tetra chloroethene and Trichloroethene	ug/L	7.5	
Toluene	ug/L	5	
Phenols	mg/L	0.05	
SVOCs			
Atrazine	ug/L	0.075	
Simazine	ug/L	0.075	
Poly aromatic Hydrocarbons[1]	ug/L	0.075	
Pesticides[2,3]	ug/L	0.375	

[1] ***PAHs neasured should include at least benzo(b)Fluoranthene, benzo(k Fluoranthene, benzo(ghi)perylene,indeno(123-cd)pyrene Fluoranthene***

[2] ***the trigger value applies to each individual pesticide measured.***

[3]***Pesticides include organic insecticides, Organic herbicides, Organic nematocides, organic acaricides, organic algicides, organic rodenticides, organic slimicides, related products (inter alia, growth regulators***

List 1 and List 2 Organics

Under the provisions of monitoring requirements we are required to monitor List 1 and List 2 organic compounds in three groundwater locations on an annual basis. These locations have to be agreed with EPA. In this report, we report on three groundwater locations which were monitored for these compounds i.e. ***Borehole 1***, ***4*** and ***5.***

The compounds analysed comprised of two types Volatile Organic Compounds ***(V.O.Cs.)*** and Semi Volatile Organic Compounds ***(SVOCs)***. V.O.Cs. comprise of organic compounds with boiling points close to or less than that of Water i.e. ***Petroleum Products*** and common solvents –up to 83 compounds were screened for using Purge and Trap GC MS.

Semi Volatile Compounds comprise of higher boiling point organics and comprise of classes of compounds such as ***Pesticides, Herbicides, PCBs (****Polychlorinated Biphenyls****)*** and ***PAHs*** *(Poly aromatic Hydrocarbons)* .Up to 63 different compounds in this category were screened for. A list of these compounds, together with limits of detection is given in ***Appendix 2.***

Of the 83 VOCs analysed only one was detected above their respective Limits of detection in each of the three wells i.e. Borehole 1, 2 and 3

The only compound detected was Carbon disulphide 11.2. 3.6 & d 3.2 ug/L respectively These levels are miniscule and are not of significance. No SVOCs were detected in any of samples.

Heavy Metals

As we possess and use *ICP-MS instrument we monitored many more locations for heavy metals than were strictly required i.e. 11 surface water, 6 Leachate, and 8 groundwater locations.

**Inductively coupled Plasma Mass spectrometer*

INTERPRETATION OF RESULTS

Groundwater*: See also trend graphs for Total Organic Carbon (with associated conductivity) for each Borehole (encl)*

All boreholes are showing evidence of surface water contamination to a greater or lesser extent –borehole 2 been least affected. . This is evident from turbidity and Total Organic carbon levels. The source of this surface water contamination, greater than earlier years was undoubtedly exacerbated by abnormally high rainfall particularly in summer months.

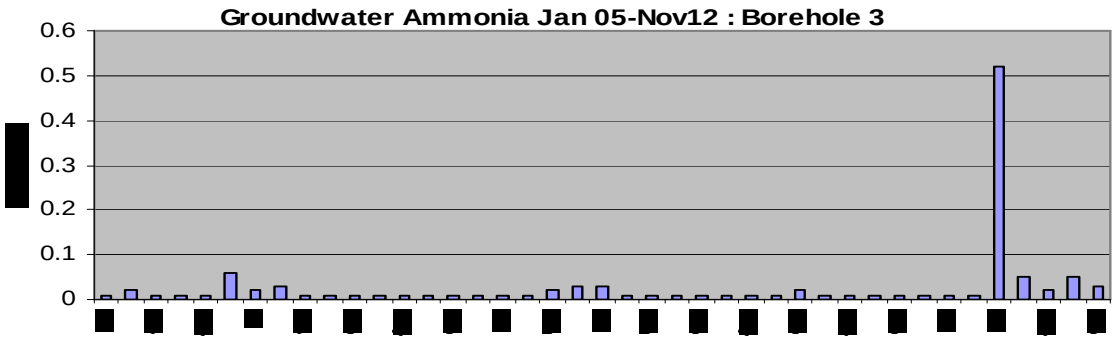
The high Nickel and lead levels experienced in January particularly in Borehole 4 may have been due to inadequate purging of wells at that time. Subsequent investigative analysis reveals normal or close to background levels for most of wells. However Borehole 1 still has high levels of some heavy metals. In the latter case, this may be due to fact that the well was recently bored and thus some leaching of casing is still occurring.

Borehole 4 had two high Ammonia levels in January and March, since then there has been no recurrence. This points to evidence of surface water contamination in period January to March 2012.

Borehole 5 continues pattern of other years i.e. high ammonias coupled with highest levels of colour and molybdate reactive Phosphorous. The primary source of this would appear to be natural decomposition material in peaty soil.

One of boreholes however i.e. Borehole No 3 does not require purging prior to monitoring as this well is used as source of water for canteen and is thus actively used. Curiously in this case both ammonia (***see Fig 1***) and TOC levels were abnormally high in January which suggests that there may have been some actual contamination of this well at that time. Subsequent investigative and compliance sampling has revealed no elevated levels of ammonia although TOC levels were relatively high
. ***See Fig 1.***

Fig 1



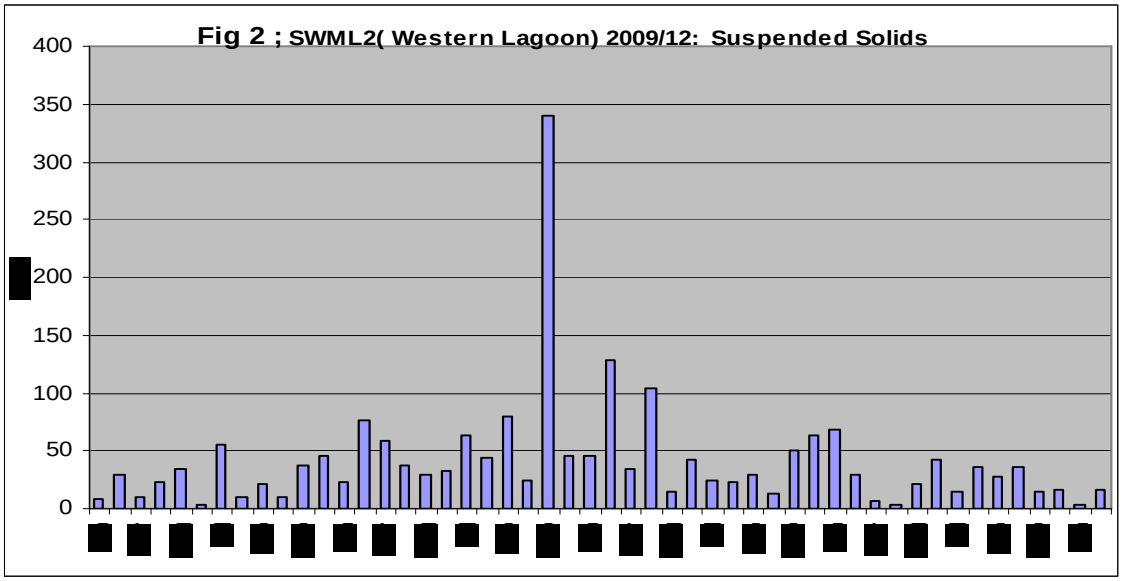
Boreholes 1***, 2*** and ***3*** were tested for list 1, 2 organics. Outside of traces of Carbon disulphide No organics of significance were found here.

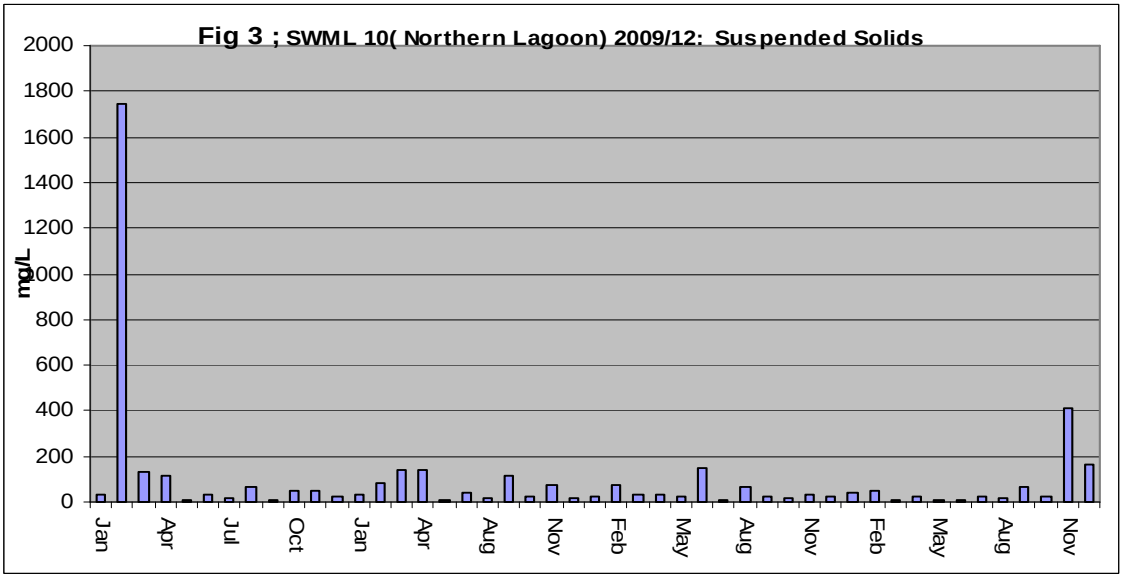
Surface Water:

Impact of Suspended Solids:
Results from monitoring over last 10 years indicates that most significant threat or impact from Landfill activities in surrounding waters is suspended solids
Samples were obtained "in site monitoring" from Stations ***SWML 1,2,3,4,5,10,11 and new lagoon SWMLE1***.

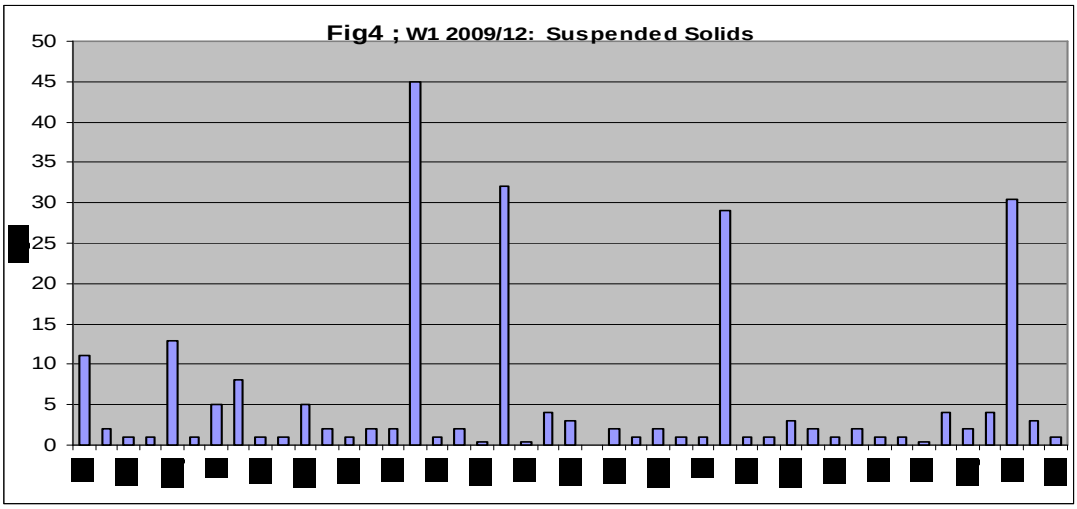
Occasional excesses of suspended solids are noted at on site impact stations i.e. at new surface water lagoon (***SWMLE1***) and SWML 10 in Nov. Figs 3 and 6

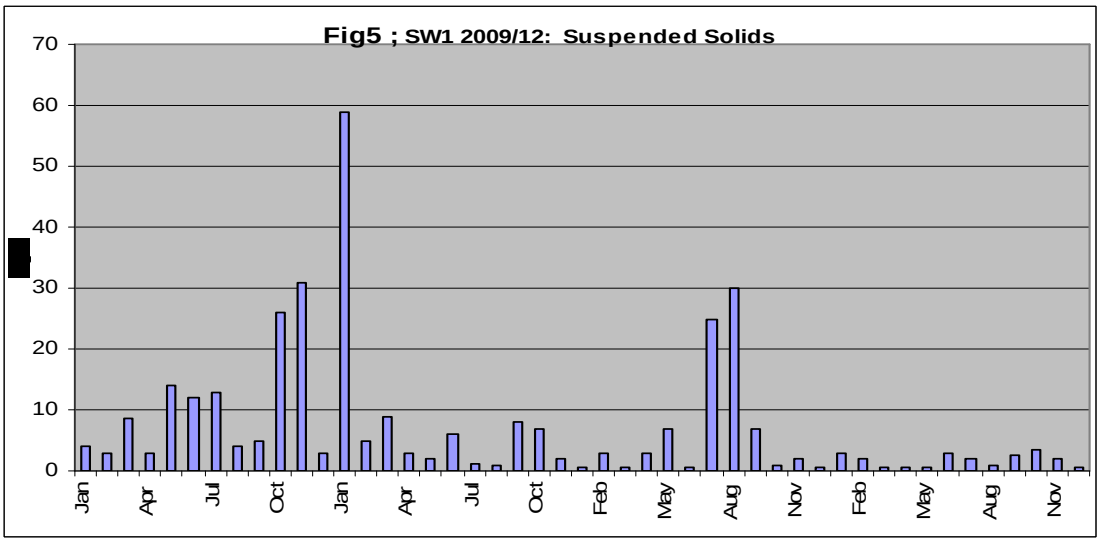
While overall there was a noticeable decrease in suspended solids in receiving waters at W1 during 2012 relative to earlier years- there was a spike observed in October probably exacerbated by heavy rainfall prior to sampling. . *See Fig 4 Suspended solids @ W1 2009/2011.*

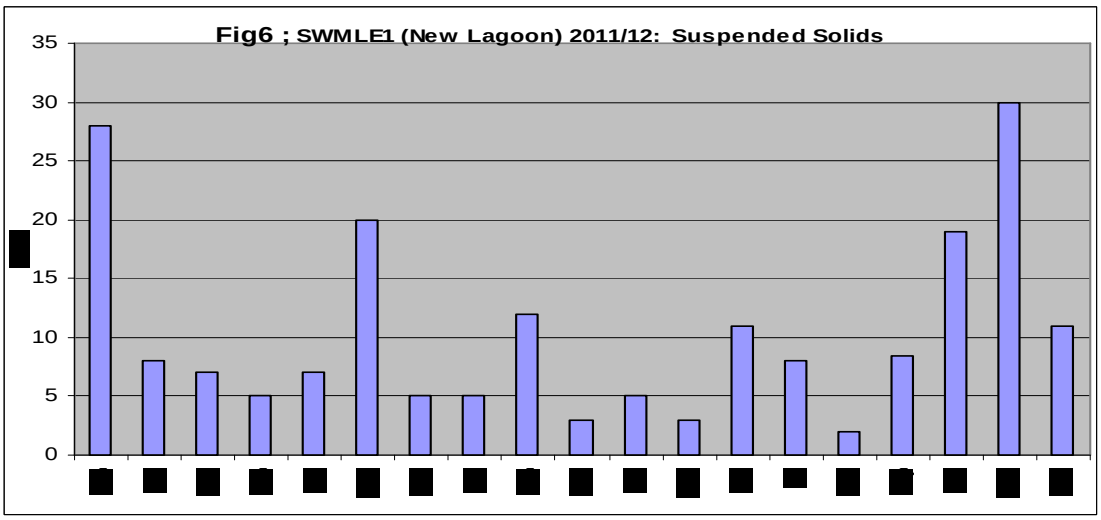




There was also much less significant impact from Suspended Solids on off site SW1 *See Fig 5Suspended solids @ sW1 2008/2011*







High suspended solids in river waters may impair fish spawning grounds particularly in winter and spring. Occasional pulses of suspended matter entering these sites are more than

likely the main contributory factor for unsatisfactory biological quality at this site in the past (see 2011 AER).

Ecological assessment of ***W1*** In 2012 denotes a Q3-5 value (moderate pollution), which still reflects some impact See ***Invertebrate monitoring report 2012***. A slight improvement is noted from last year where same site scored a Q 3. Biological assessment at station on Lee about 3 km downstream W2 (O'Brennans Bridge) indicates a stream of good quality i.e. ***Q = 4-5.***

Because of importance and significance of Suspended solids monitoring of both W1 and SW1 are at a much higher frequency for this parameter than license obligations.

Impact of Ammonia levels on receiving waters
At present as part of operational monitoring instruments for automated monitoring of Ammonia in lagoons is been sourced. In the interim grab samples for this parameter are been taken from lagoons and analyzed in laboratory *(appropriate preservative has been added prior to sampling to sample bottles*). This analysis is reported separately which accompanies this report.

In 2010 some impact was noted from landfill on receiving waters gauged by Ammonia levels at Location W1 (see 2010 AER). However during course of 2011 and 2012 no such impact was observed.

However significant impact judging by Ammonia levels was noted in Nov at new lagoon ***(SWMLE1***), which continued to at least December. ***See sheet of results on investigative monitoring***.

Latest provisional results show that contamination was still continuing at time of writing this report. An intensive investigation and remedial action is underway.

Leachate Results

Leachate was detected in all detection manholes monitored i.e. ***LD1***, ***LD2*** and ***LD3.***

Conclusion

- ***Evidence of surface water contamination noted in all boreholes –marked increase from earlier years***
- ***Biological assessment in 2012 denoted improvement in main surface water impact site i.e. W1 from Q 3 to Q 3-5***
- ***Ammonia detected at significant levels in New surface water lagoon SWML E1***
- ***Evidence of leachate was detected in all three leachate detection manholes***

References:

1. ***Summary of Environmental Monitoring requirements For- Kerry Co Council Landfill, Muingnaminnane, Tralee, Co Kerry -Waste Licence Ref No: 1-3: Tobin Consulting Engineers***
2. ***Biological Invertebrate Monitoring of Surface Waters 2012; Laboratory KCC***

Appendix 1: Monitoring Pts

Appendix1: Details Sampling points referred to in report

Location	comments	old or alternative name	Location Easting	Location Northing
Groundwater				
specified groundwater monitoring pts				
Groundwater - BH-1			94697	117360
Groundwater - BH-2			94814	117306
Groundwater - BH-3			94808	117005
Groundwater - BH-4			95430	117040
Groundwater - BH-5			94917.5	117152.7
Groundwater - BH-6			94843	117658
Private boreholes adjacent to landfill				
borehole: Dennis O Mahony	not specified in new licence		97390.7	118348.7
borehole: Gerry Sugrue	not specified in new licence		93037.8	116489.5
Leachate				
Detection manholes				
LD-1		leachate detection manhole 1	94909	117268
LD-2		leachate detection manhole 2	94894	117298
LD-3		leachate detection manhole from lagoon	94905	117264
Lagoon sampling pts				
LL-1		Leachate in lagoon 1	94904	117237
LL-2		leachate in Lagoon 2	94927	117166
LL-3		lagoon containing run off from compost	94979	117414
Ancillary pts				
Puraflo Treatment Inlet	not specified in new licence			
Puraflo Treatment Outlet	not specified in new licence		94867.2	117332
Wheelwash	Not specified in new licence			
Surface water				
Off site sampling pts				
Surface Water sampling point: W1	not specified in new licence	biological station	94493.3	117107.5
Surface water sampling point: E2	Not specified in new licence	O'Learys farm	95870.6	116575.6
Surface water sampling point: W2	Not specified in new licence		94493.3	117159.9
SW-1		previously E1	95471	117077
SW-2			95143.6	117969.4
SW-3			94853	118263
On site sampling pts				
SWML-1		previously 1	94948.3	117376.4
SWML-2	Western Lagoon	previously 2	94837.9	117263.7
SWML-3			94866	117221
SWML-4		previously 4	94883.9	117092.6
SWML-5			94911	117027
SWML-10	Eastern lagoon		95092	117470
SWML-11		previously 11	95067	117520
SWML-E1	New surface water lagoon		94592	117510

APPENDIX 2: LIST 1, 2 Organics

SVOCs: (Semi Volatile base Neutrals)
Std Method 6410 B Liquid-Liquid Extraction GC/MS.

Parameter	limit of detection	units
1.3 - Dichlorobenzene	1	ug/l
1.4 - Dichlorobenzene	1	ug/l
Hexachloroethane	1	ug/l
bis(2-Chloroethyl) ether	1	ug/l
1,2-Dichlorobenzene	1	ug/l
bis(2-Chloroisopropyl) ether	1	ug/l
N-Nitrosodi-n-propylamine	1	ug/l
Nitrobenzene	1	ug/l
Hexachlorobutadiene	1	ug/l
1,2,4-Trichlorobenzene	1	ug/l
Isophorone	1	ug/l
Naphthalene	1	ug/l
bis(2-Chlororthoxy) methane	1	ug/l
Hexachlorocyclopentadiene	1	ug/l
2-Chloronaphthalene	1	ug/l
Acenaphthylene	1	ug/l
Acenaphthene	1	ug/l
Dimethyl phthalate	1	ug/l
2,6-Dinitrotoluene	1	ug/l
Fluorene	1	ug/l
4-Chlorophenyl phenyl ether	1	ug/l
2,4-Dinitrotoluene	1	ug/l
Diethyl phthalate	1	ug/l
N-Nitrosodiphenylamine	1	ug/l
Hexachlorobenzene	1	ug/l
a-BHC	1	ug/l
4-Bromophenyl phenyl ether	1	ug/l
y-BHC	1	ug/l
Phenanthrene	1	ug/l
Anthracene	1	ug/l
B-BHC	1	ug/l
Heptachlor	1	ug/l
d-BHC	1	ug/l
Aldrin	1	ug/l
Dibutyl phthalate	1	ug/l
Heptachlor epoxide	1	ug/l
Endosulfan I	1	ug/l
Fluoranthene	1	ug/l
Dieldrin	1	ug/l
4,4'-DDE	1	ug/l
Pyrene	1	ug/l
Endrin	1	ug/l
Endosulfan II	1	ug/l
4,4'-DDD	1	ug/l
Benzidine	1	ug/l

VOCs : Std Method 6210 D-Purge and Trap Capillary Column GCMS.Screening per USEPA 524.2 list.

Parameter	limit of detection	units
Dichlorodifluoromethane	10	ug/l
Chloromethane	0.5	ug/l
Ethyl Chloride/Chloroethane	0.5	ug/l
Vinyl Chloride/Chloroethene *(0.5ppb)	0.5	ug/l
Vinyl Chloride/Chloroethene * (25ppb)	0.5	ug/l
Bromomethane	0.5	ug/l
Trichloromonofluoromethane	0.5	ug/l
Ethyl Ether/Diethyl Ether	0.5	ug/l
11 Dichloroethene	0.5	ug/l
Acetone	2	ug/l
Iodomethane/Methyl Iodide	0.5	ug/l
Carbon Disulphide	0.5	ug/l
Allyl Chloride	0.5	ug/l
Methylene Chloride/DCM	5	ug/l
2-Propenenitrile/Acrylonitrile	2	ug/l
Chloroacetonitrile	0.5	ug/l
Nitrobenzene	0.5	ug/l
Propanenitrile	10	ug/l
Hexachlorobutadiene	0.5	ug/l
Trans-1,2 Dichloroethene	0.5	ug/l
MtBE	0.5	ug/l
11 Dichloroethane	0.5	ug/l
22 Dichloropropane	0.5	ug/l
cis-12 Dichloroethene	0.5	ug/l
2-Butanone	5	ug/l
Methyl Acrylate	5	ug/l
Bromochloromethane	0.5	ug/l
Methacrylonitrile	5	ug/l
Tetrahydrofuran	5	ug/l
Chloroform*	1	ug/l
111 Trichloroethane	0.5	ug/l
1-Chlorobutane	0.5	ug/l
Carbon Tetrachloride	0.5	ug/l
11 Dichloropropene	0.5	ug/l
Benzene	0.1	ug/l
12 Dichloroethane)	0.1	ug/l
Trichloroethylene/ Trichloroethene	0.1	ug/l
12 Dichloropropane	0.5	ug/l
Dibromomethane	0.5	ug/l
Methyl Methacrylate	0.5	ug/l
Bromodichloromethane*	2	ug/l
13 Dichloropropene,cis	2	ug/l
MIBK/4 Methyl 2 Pentanone	2	ug/l
Toluene	0.5	ug/l
13 Dichloropropene,trans	2	ug/l

SVOCs: (Semi Volatile base Neutrals)
Std Method 6410 B Liquid-Liquid Extraction GC/MS.

Parameter	limit of detection	units
4,4'-DDT	1	ug/l
Endosulfan sulfate	1	ug/l
Endrin aldehyde	1	ug/l
Butyl benzyl phthalate	1	ug/l
bis(2-Ethylhexyl) phthalate	1	ug/l
Chrysene	1	ug/l
Benzo(a)anthracene	1	ug/l
3,3'-Dichlorobenzidine	1	ug/l
Di-n-octyl phthalate	1	ug/l
Benzo(b)fluoranthene	1	ug/l
Benzo(k)fluoranthene	1	ug/l
Benzo(a)pyrene	1	ug/l
Indeno(1,2,3-cd)pyrene	1	ug/l
Dibenzo(a,h)anthracene	1	ug/l
Benzo(ghi)perylene	1	ug/l
N-Nitrosodimethylamine	1	ug/l
Chlordane	1	ug/l
Toxapene	1	ug/l
PCB 1016	1	ug/l
PCB 1221	1	ug/l
PCB 1232	1	ug/l
PCB 1242	1	ug/l
PCB 1248	1	ug/l
PCB 1254	1	ug/l
PCB 1260	1	ug/l

VOCs : Std Method 6210 D-Purge and Trap Capillary Column GCMS.Screening per USEPA 524.2 list.

Parameter	limit of detection	units
Ethyl Methacrylate	2	ug/l
112 Trichloroethane	0.5	ug/l
Tetrachloroethylene/ Tetrachloroethene*	0.1	ug/l
Tetrachloroethylene/ Tetrachloroethene*	0.1	ug/l
13 Dichloropropane	0.5	ug/l
2-Hexanone	1	ug/l
Dibromochloromethane *	1	ug/l
12 Dibromoethane	0.5	ug/l
Chlorobenzene	0.5	ug/l
1112 Tetrachloroethane	2	ug/l
Ethyl Benzene	0.5	ug/l
m & p Xylene	0.5	ug/l
o Xylene	0.5	ug/l
Styrene	2	ug/l
Bromoform *	1	ug/l
Isopropyl Benzene	0.5	ug/l
Bromobenzene	0.5	ug/l
1122 Tetrachloroethane	0.5	ug/l
123 Trichloropropane	2	ug/l
Trans 14 Dichloro 2 Butene, tran	2	ug/l
Propyl Benzene	0.5	ug/l
2-Chlorotoluene	0.5	ug/l
4 Chlorotoluene	0.5	ug/l
135 Trimethylbenzene	0.5	ug/l
Tert Butyl Benzene	0.5	ug/l
124 Trimethylbenzene	0.5	ug/l
Sec Butyl Benzene	0.5	ug/l
13 Dichlorobenzene	0.5	ug/l
P Isopropyltoluene	0.5	ug/l
14 Dichlorobenzene	0.5	ug/l
12 Dichlorobenzene	0.5	ug/l
N Butyl Benzene	0.5	ug/l
Hexachloroethane	5	ug/l
12 Dibromo 3 Chloropropane	2	ug/l
124 Trichlorobenzene	0.5	ug/l
Napththalene	2	ug/l
123 Trichlorobenzene	0.5	ug/l
Toluene	0.5	ug/l
13 Dichloropropene,trans	2	ug/l
Ethyl Methacrylate	2	ug/l
112 Trichloroethane	0.5	ug/l
Tetrachloroethylene/ Tetrachloroethene*	0.1	ug/l

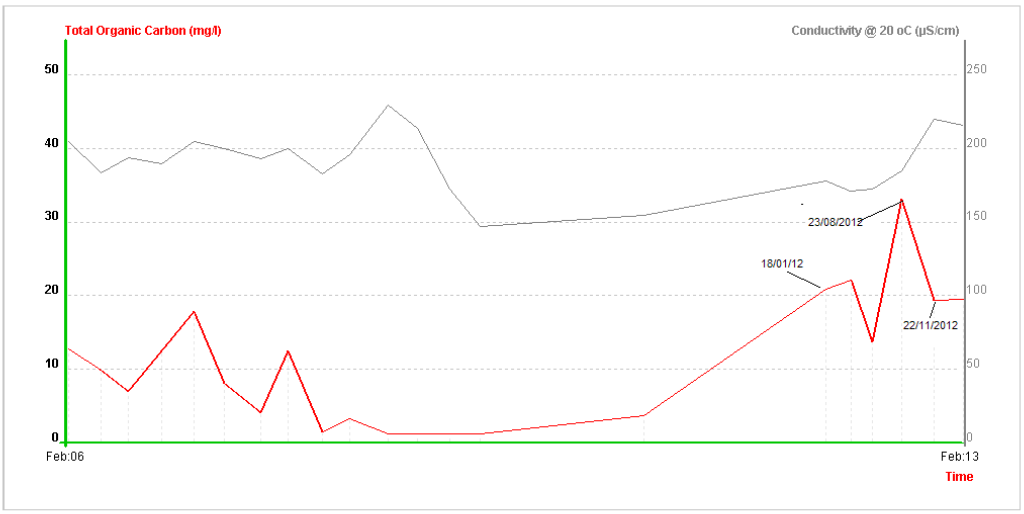
APPENDIX No: 3 Trend Graphs for Total Organic Carbon Results

Borehole 1: TOC vs. Conductivity 2006 to Feb2013

Landfill - North Kerry Landfill

Parameter Trend Graph - Total Organic Carbon (mg/l)

Sample Location : Groundwater :Borehole No 1 : 4 Selected Templates



Summary Statistics :	No. of Samples : 21	Maximum Result : 33	Mean : 10.6
		Minimum Result : < 1	Median : 9.7
			Standard Deviation : 8.96

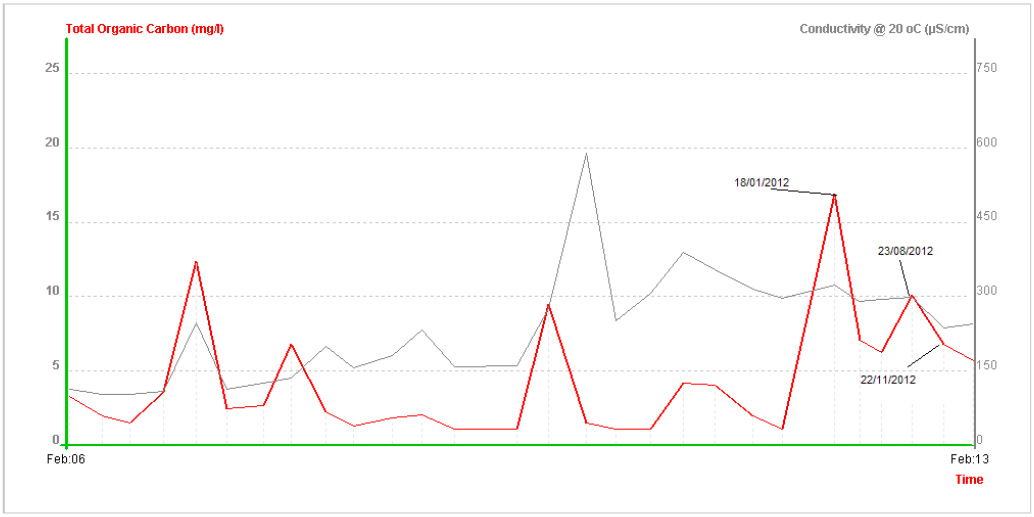
LabWorks *Page 1 of 1* *Print Date : 04/03/2013*

Borehole 2: TOC vs. Conductivity 2006 to Feb 2013

Landfill - North Kerry Landfill

Parameter Trend Graph - Total Organic Carbon (mg/l)

Sample Location : Groundwater :Borehole No 2 : 4 Selected Templates



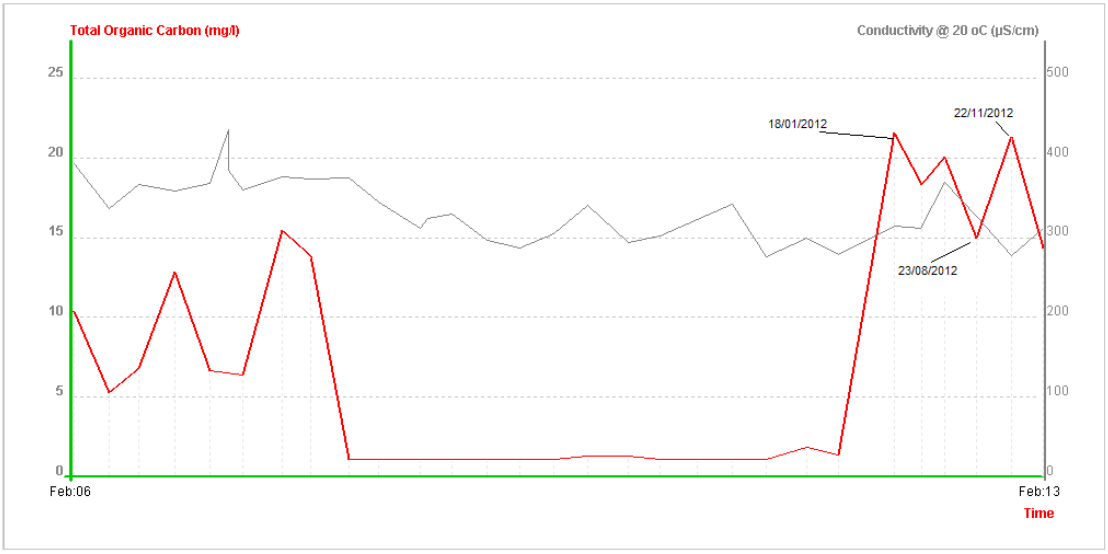
Summary Statistics :	No. of Samples : 28	Maximum Result : 16.8	Mean : 4.21
		Minimum Result : < 1	Median : 2.5
			Standard Deviation : 3.99

Borehole 3: TOC vs. Conductivity 2006 to Feb 2013

Landfill - North Kerry Landfill

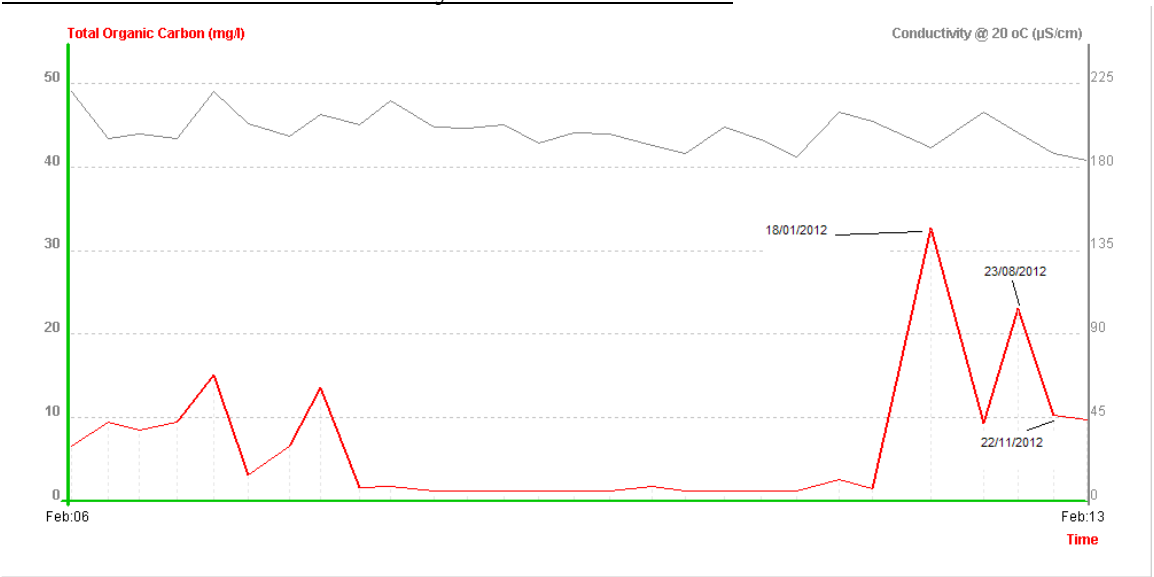
Parameter Trend Graph - Total Organic Carbon (mg/l)

Sample Location : Groundwater :Borehole No 3 : 4 Selected Templates



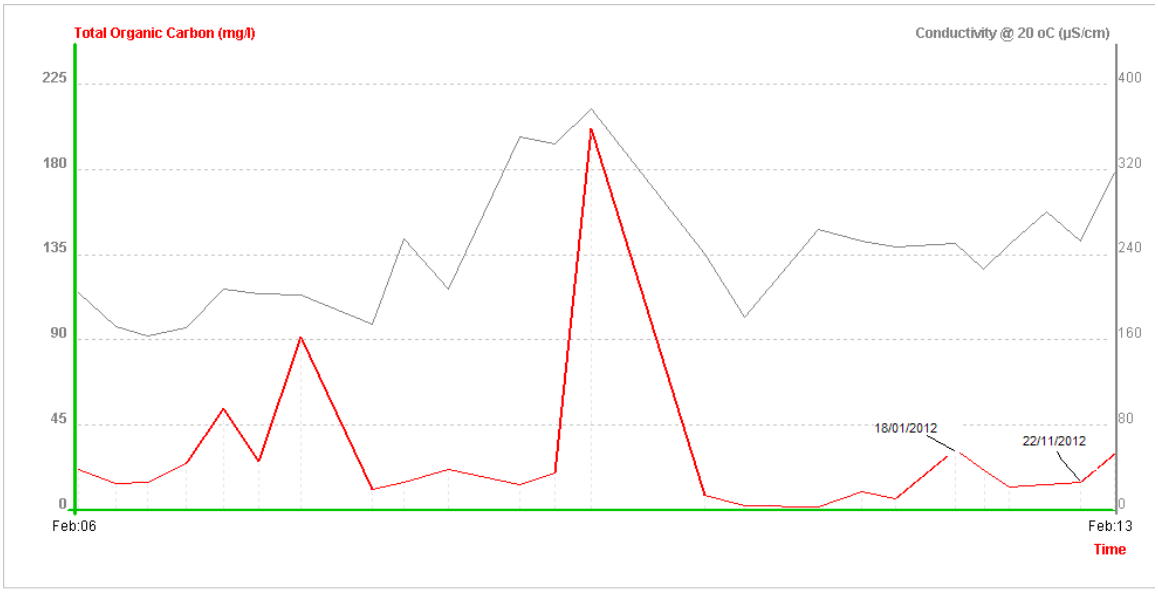
Summary Statistics :	No. of Samples : 29	Maximum Result : 21.5	Mean : 6.84
		Minimum Result : < 1	Median : 1.8
			Standard Deviation : 7.52

Borehole 4: TOC vs. Conductivity 2006 to Feb 2013



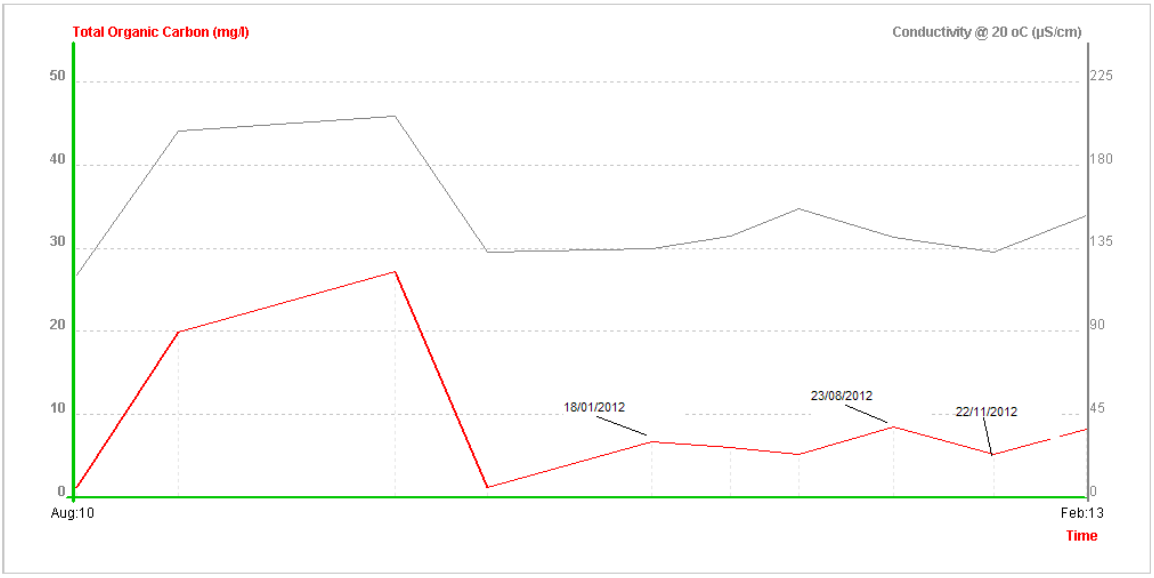
Summary Statistics :	No. of Samples : 28	Maximum Result : 32.6	Mean : 6.06
		Minimum Result : < 1	Median : 2.05
			Standard Deviation : 7.69

Borehole 5: TOC vs. Conductivity 2010 to Feb 2013



Summary Statistics :	No. of Samples	: 23	Maximum Result	: 201	Mean : 28.3
			Minimum Result	: < 1	Median : 14.4
					Standard Deviation : 42.2

Borehole 6: TOC vs. Conductivity 2006 to Feb 2013



Summary Statistics :	No. of Samples	: 10	Maximum Result	: 27.1	Mean : 8.75
			Minimum Result	: < 1	Median : 6.25
					Standard Deviation : 8.35

APPENDIX No.4: Invertebrate Assessment of Surface Water Impact Sites

Biological Invertebrate Monitoring

Of

Surface Waters

Draining North Kerry Landfill

2012

Laboratory KCC
C Markey, C McCaffrey, I McGloin

date of report: 01/12/2012

Introduction:

Under the EPA License granted to North Kerry Landfill at Muingnaminane surface waters draining the from landfill are continually monitored. Condition 9.9 of the EPA waste licence requires biological assessment to be carried out annually. Seven sites are chosen: W1, W2, E1, E2, G1, G2 and N1 (See Map). All sites were sampled on 17th Sept 2012.

Two of these i.e. W1 and W2 were also sampled earlier on 21st and 22nd of May

Biological Q Rating:

The samples were classified using the Biological Quality Rating System for Rivers (Q Rating System) as outlined by the Environmental Protection Agency (EPA). The Biological Quality Rating System for Rivers (Q ratings) ranges from Q1 to Q5 where a Q5 denotes a pristine river and Q1 indicates serious pollution (see Quality Rating Table below). From the point of view of the Water Framework Directive all designated river and stream stations must attain least Good status. i.e.Q4, before 2015. High Status River stations are not allowed to deteriorate. There are different classifications for depositing and eroding substrates. The Q system is aimed particularly at larger streams and rivers and is carried out between May and September. Three-minute kick samples are carried out at each station accompanied by stone examinations and weed sweeps.

Table 1: Q Invertebrate Status Rating vs. Water Framework Directive (WFD) Quality Status

Biotic Index	Water Quality	WFD Quality Status
Q5	pristine	High
Q4-5	Very good	
Q4	Good	Good
Q3-4	Slightly Polluted	Moderate
Q3	Moderately Polluted	Poor
Q2-3	Moderate to Poor	
Q2	Poor	
Q1-2	Poor to bad	
Q1	Bad	

Results:

Table 2: Biological Q Rating (Final Results and comparison with 2011)

Biological Station	Lab Ref No	Date	Result
W1	2012 / 2448	22/05/2012	**4**
	2012 / 4517	17/09/2012	**3-4**
	2011 / 3450	03/08/2011	**3**
W2	2012 / 2419	21/05/2012	**4-5**
	2012 / 4518	17/09/2012	**4-5**
E1	2012 / 4519	17/09/2012	**4-5**
E2	2012 / 4570	19/09/2012	**3-4**
G1	2012 / 4556	18/09/2012	**4-5**
G2	2012 / 4557	18/09/2012	**4-5**
N1	2012 / 4558	18/09/2012	**3-4**

Table 3: Chemical results

			Parameter	Ammonia	pH	Conductivity	Chloride	Dissolved Oxygen	Suspended solids	Temp	Total Oxidised nitrogen	Molybdate Reactive Phosphorous
				N			Cl	O2			N	P
			Max.	--	9	--	--	15	--	--	--	--
			Target	--	--	--	--	--	--	--	--	--
			Min.	--	6	--	--	5	--	--	--	--
Location	**Lab Ref no.**	**Date**	**Comments**	mg/l	pH units	µS/cm	mg/l	mg/l	mg/l	Degrees C	mg/l	mg/l
W1	2012/2448	22-May-12		< 0.02	6.9	124		10.2	2	12.1	0.04	0.005
W1	2012/4517	17-Sep-12		< 0.02	6.6	77		9.9	4	11.8	< 0.005	0.017
W2	2012/2419	21-May-12		0.02	8	148		10.5	5	12.6	0.84	0.014
W2	2012/4518	17-Sep-12		< 0.02	7	110		10	1	12.2	0.504	0.02
E1	2012/4519	17-Sep-12		< 0.02	6.6	77		8.8	3	11.9	< 0.005	0.019
E2	2012/4556	18-Sep-12		< 0.02	6.4	58		10.2	8	10.5	< 0.005	0.016
G1	2012/4557	18-Sep-12		< 0.02	6.7	65		10	5	11.8	< 0.005	0.015
G2	2012/4558	18-Sep-12		< 0.02	6.4	67		10.2	9	12.7	< 0.005	0.038
N1	2012/4570	19-Sep-12		0.02	5	57	13.6	10.3	3	11.3	< 0.005	0.032

Discussion: *See Map in **Appendix 1** and detailed field sheets in **Appendix1***

W1:

W1 - Biological Station drains the western side of North Kerry Landfill and is the principle impact site from the facility. It is a very small stream just downstream of the landfill. The terrain is very steep, the stream is very narrow and the water flows over a series of small falls. Consequently, the very nature of the stream makes it difficult to classify with certainty under the EPA Q Rating System. As this stream begins just below the landfill it is not possible to have an upstream control site. The site is awarded a **Q 3-4**. One A Group species (Taeniopterygidae) was found in scarce abundance and the more tolerant Group C species were superabundant. Almost four months earlier in May 2012 this site merited a ***Q 4*** with the same A Group species of Taeniopterygidae found in greater abundance and the C Group in lesser numbers. A prolonged dry spell preceded May sample. The September sample was preceded by one of wettest summers in record.

However, there was a significant improvement relative to 2011 where this site only scored a Q3 denoting moderate pollution conditions.

Results of chemical parameters denote water which complies with standards for high water quality in accordance with surface water regulations.

W2: R Lee at O'Brennans Bridge

W2 - Biological Station is at O'Brennan's Br on the River Lee about 3km downstream of W1. It also drains the Western side of the landfill including many of the surface water drains. This site merited a Q rating of 4-5 denoting very clean unpolluted conditions. Six species of the very sensitive A Group were found in very good numbers. A biological assessment carried out here in May also obtained a ***Q4-5.*** This site is a designated station as per Water Framework Directive.

Results of chemical parameters denotes a water which complies with standards for high water quality in accordance with surface water regulations

E1:

E1 - Biological Station is a small stream draining the Eastern side of the landfill. It runs through bog land and appears to have naturally occurring iron oxide. It merits a Q rating of ***4-5*** suggesting extremely good quality and unpolluted conditions. Three species of the tolerant A group were found in "numerous" abundance, with a relatively low abundance in the very diverse C Group. The more tolerant D and E groups were scarce and absent respectively giving rise to the high Q rating. This site is **not** a designated station as per Water Framework Directive.

Results of chemical parameters denote water which complies with standards for high water quality in accordance with surface water regulations.

E2

E2 - Biological Station also drains the Eastern side of the landfill. It is a tributary of the Smearlagh River. It obtains a Q ***3-4*** rating indicating slight pollution. Group A are present although in very small numbers. This site is **not** a designated station as per Water Framework Directive.

Results of chemical parameters denote water which complies with standards for high water quality in accordance with Surface Water Regulations.

G1

G1 - Biological Station is on the Glashoreag River upstream of the Northern stream confluence. It scores a **Q4-5** indicating very clean unpolluted conditions. Sensitive A species were found in very good density and diversity, with a total absence of the most tolerant D and E group species. This site is **not** a designated station as per Water Framework directive. Results of chemical parameters denote water which complies with standards for high water quality in accordance with Surface Water Regulations.

N1

N1 - Biological Station is situated on a small stream which drains forestry on the northern side of the landfill**.** It is a tributary **of** the Glashoreag**,** its confluence lying between biological stations G1 and G2. It scores a biological Q rating of ***3-4*** indicating slight pollution. This site is **not** a designated station as per Water Framework Directive.

Results of chemical parameters denote water which complies with standards for good water quality status in accordance with surface water regulations. The elevated level of MRP (0.038) may be as a result of forestry activities.

G2 - Glashoreag

G2 - Biological Station is located on the Glashoreag River downstream of the N1 confluence. It scores a ***Q 4-5*** indicating very clean unpolluted conditions. This site is very similar in spread to G1 with a high abundance of sensitive species and absence of tolerant ones. This site is **not** a designated station as per Water Framework Directive.

The elevated level of MRP may be as a result of forest activities as highlighted for N1.

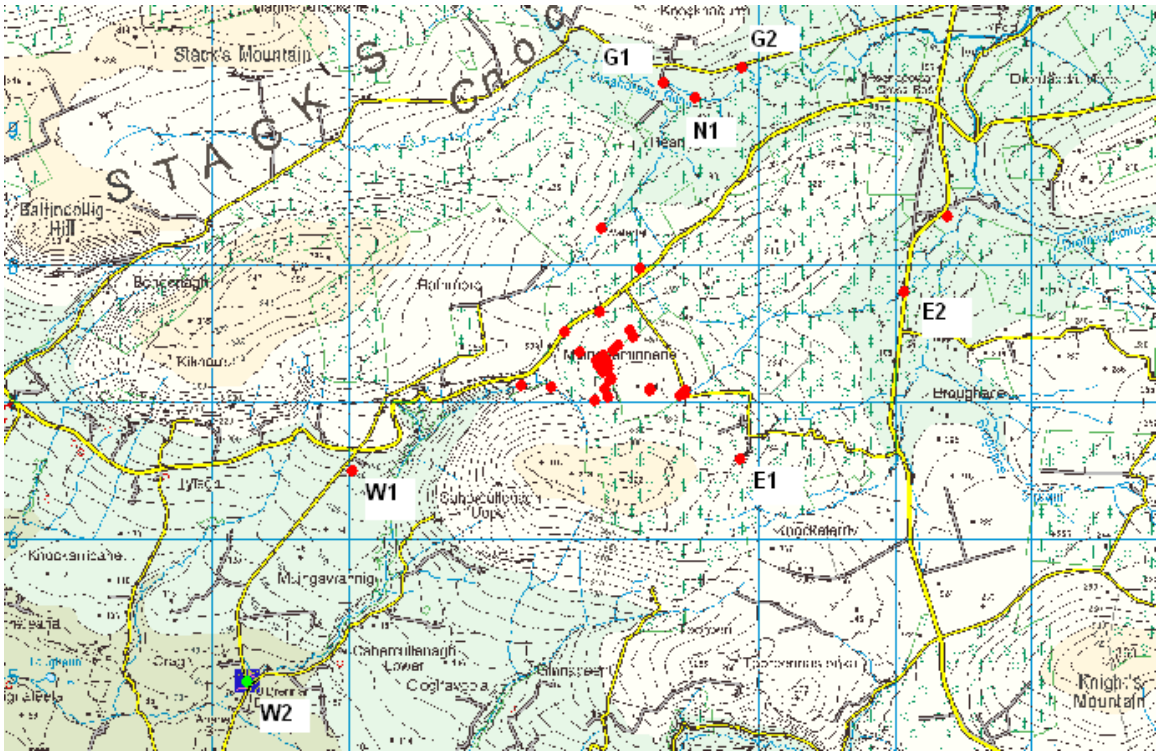
Conclusion:

- On the Western side of North Kerry Landfill W1 station shows deterioration between May and September from ***Q4*** to ***Q3-4.*** However there is an improvement from earlier years i.e. ***Q3*** in 2011 further downstream at W2, which is only designated river station site under Water framework Directive, a Q ***4-5*** indicates very high water quality. Th**e**re is good improvement moving downstream.

- On the Eastern side the quality deteriorates from a Q4-5 at E1 to a Q 3-4 at E2.

- The Northern stream drains forestry to the North of the landfill and its 3-4 Q rating suggests slight pollution. However water quality in the Glashoreag River upstream and downstream of the Northern stream confluence is of very high quality. Both sites, G1 (upstream) and G2 (downstream) score a Q4-5 indicating very clean unpolluted conditions and would suggest that the northern stream is not having a significant impact.

Appendix 1: Map of Sampling Stations



APPENDIX 2: Field Biological Sheets

River Code: Headwaters of Lee	Date: 17/09/12	Time: 11:10	Grid: 94472 16728
DO%	93.9	**Location:**	**Stream flow:**
DO mg/l	9.91	NKL Biological Site W1	
Temp degC	11.8		Riffle
Conductivity			Riffle/glide
pH		**Substratum Condition:**	
Bank width (m)	1m		
Wet width (m)	1m	Cobble 70%	**Shading**: H-M-L-N
Avg depth (m)	0.25m	Gravel 20%	
Velocity:	**Colour:**	Silt 10%	**Cattle access:**
			Y u/s-d/s or N
Torrential	None		
Fast	Slight		**Litter:** NO-P-M-A
Moderate	Moderate		
Slow	High	**Main land use u/s**	**Photo:** Y -N
Very slow			5
Clarity:	**Discharge:**	Pasture	
		Bog	**Chemical Sample taken:**
Very Clear	Flood	Forestry	
Clear	Normal	Urban	Y-N 2012/4517
Slightly Turbid	Low	Tillage	
Highly Turbid	Recent flood	Other: Landfill	
	Very low		
	Dry		

Macrophyte Type & Abundance:

Group	No. of Species	Abundance & Percentage		Abundance Category
A	1	1	< 1%	**scarce**
B	2	17	12%	**Common**
C	6	113	78%	**Superabundant/Excessive**
D	0	0	0%	**Absent**
E	2	10	7%	**Fair numbers**

Comments: Only 1 Taeniopterygidae in sample 7 in May 2012

Q Rating: **Q3_4**

Analyst: Caroline Markey & Claire McCaffrey

River & Location: NKL Biol St W1						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**				
	Chloroperla	**A**				
	Protonemura	**A**				
	Amphinemura	**A**				
	Taeniopterygidae	**A**			1	
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**				
	Rhithrogena	**A**				
	Ephemera danica	**A**				
						1
Plecoptera	Leuctra	**B**			2	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**			15	
	Sericostomatidae	**B**				
	Goeridae	**B**				
	Glossosomatidae	**B**				
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						17
Ephemeroptera	Baetis rhodani	**C**			31	
	Caenis	**C**				
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**				
	Polycentropus	**C**			4	
	Rhyacophila	**C**				
	Philopotamus	**C**				
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**				
Diptera	Chironomidae	**C**			1	
	Simuliidae	**C**			44	
	Tipulidae	**C**			2	
Hydracarina	Hydracarina	**C**				
Crustacea	Gammarus	**C**			31	
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**				
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						113
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**				**0**
Diptera	Chironomus	**E**				

River Code:	Date: 17/09/12	Time: 14:15	Grid: 92265 14959
River: Lee			
DO%	93.6	**Location:**	**Stream flow:**
DO mg/l	9.98	NKL Biological Site W2	
Temp degC	20.2	O'Brennan's Br	Riffle
Conductivity	12.2		Riffle/glide
pH		**Substratum Condition:**	
Bank width (m)	6.5	Cobble 45%	
Wet width (m)	4.5	Gravel 50%	**Shading**: H-M-L-N
Avg depth (m)	0.15	Fine gravel 5%	
Velocity:	**Colour:**		**Cattle access:**
			Y u/s-d/s or N
Torrential	None		
Fast	Slight		**Litter:** NO-P-M-A
Moderate	Moderate		
Slow	High	**Main land use u/s**	**Photo:** Y -N
Very slow			6
Clarity:	**Discharge:**	Pasture	**Chemical Sample taken:**
		Bog	
Very Clear	Flood	Forestry	
Clear	Normal	Urban	Y-N 2012/4518
Slightly Turbid	Low	Tillage	
Highly Turbid	Recent flood	Other	
	Very low		
	Dry		

phyte Type & Abundance:

Group	No. of Species	Abundance & Percentage		Abundance Category
A	6	70	28%	**Numerous**
B	3	31	13%	**Common**
C	12	146	59%	**Superabundant/Excessive**
D	0	0	0%	**Absent**
E	0	0	0%	**Absent**

Comments:

Q Rating: **4_5**

Analyst: Claire McCaffrey & Caroline Markey

River & Location: NKL Biol St W2 O'Brennan's br						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**			3	
	Chloroperla	**A**			2	
	Protonemura	**A**			3	
	Amphinemura	**A**				
	Taeniopterygidae	**A**			3	
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**			2	
	Rhithrogena	**A**			57	
	Ephemera danica	**A**				
						70
Plecoptera	Leuctra	**B**			20	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**				
	Sericostomatidae	**B**			6	
	Goeridae	**B**				
	Glossosomatidae	**B**			5	
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						31
Ephemeroptera	Baetis rhodani	**C**			22	
	Caenis	**C**			1	
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**			1	
	Polycentropus	**C**			1	
	Rhyacophila	**C**			8	
	Philopotamus	**C**			1	
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**			7	
Diptera	Chironomidae	**C**			32	
	Simuliidae	**C**			40	
	Tipulidae	**C**			1	
Hydracarina	Hydracarina	**C**			1	
Crustacea	Gammarus	**C**			31	
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**				
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						146
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**			2	
						2
Diptera	Chironomus	**E**				
	Eristalis	**E**				
Oligochaeta	Tubificidae	**E**				
	Lumbriculus	**E**				
	Eiseniella	**E**				
Overall Total						**249**

River Code:	Date:17/09/12	Time: 12:50	Grid: 95471 17058
Eastern stream ; upsream of landfill			

DO%	84%	**Location:**	**Stream flow:**
DO mg/l	8.85	NKL Biological Site	
Temp degC	11.9	E1	Riffle
Conductivity			Riffle/glide
pH		**Substratum Condition:**	
Bank width (m)	0.8m		
Wet width (m)	0.8m	Cobble 70 %	**Shading**: H-M-L-N
Avg depth (m)	0.15m	Gravel 25 %	
Velocity:	**Colour:**	Silt 5%	**Cattle access:**
			Y u/s-d/s or N
Torrential	None		
Fast	Slight		**Litter:** NO-P-M-A
Moderate	Moderate		
Slow	High	**Main land use u/s**	**Photo:** Y -N
Very slow			7
Clarity:	**Discharge:**	Pasture	**Chemical Sample taken:**
		Bog	
Very Clear	Flood	Forestry	
Clear	Normal	Urban	Y-N 2012/4519
Slightly Turbid	Low	Tillage	
Highly Turbid	Recent flood	Other Landfill Windfarm	
	Very low		
	Dry		

Macrophyte Type & Abundance:

Group	No. of Species	Abundance & Percentage		Abundance Category
A	3	49	32%	**Common**
B	2	38	25%	**Fair numbers**
C	6	65	44%	**Abundant/Dominant**
D	1	2	1%	**Scarce**
E	0	0	0%	**Absent**

Comments: stream more suited to SSRS
Phenolic smell from landfill

Q Rating: **4_5**

Analyst: Caroline Markey and Claire McCaffrey

River & Location: NKL Biol St E1						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**				
	Chloroperla	**A**				
	Protonemura	**A**				
	Amphinemura	**A**				
	Taeniopterygidae	**A**			30	
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**			10	
	Rhithrogena	**A**			9	
	Ephemera danica	**A**				
						49
Plecoptera	Leuctra	**B**			37	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**				
	Sericostomatidae	**B**			1	
	Goeridae	**B**				
	Glossosomatidae	**B**				
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						38
Ephemeroptera	Baetis rhodani	**C**			17	
	Caenis	**C**				
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**				
	Polycentropus	**C**			11	
	Rhyacophila	**C**				
	Philopotamus	**C**				
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**				
Diptera	Chironomidae	**C**			1	
	Simuliidae	**C**			3	
	Tipulidae	**C**			32	
Hydracarina	Hydracarina	**C**				
Crustacea	Gammarus	**C**				
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**			1	
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						65
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**			2	
						2
Diptera	Chironomus	**E**				
	Eristalis	**E**				
Oligochaeta	Tubificidae	**E**				
	Lumbriculus	**E**				
	Eiseniella	**E**				
Overall Total						**154**

C	5	74/129	57%
D	0	0	0
E	1	6/129	5%

Comments: Moss on stones

Q Rating: **3_4**

Analyst: CM & CMc C

River & Location:Eastern stream E2						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**				
	Chloroperla	**A**				
	Protonemura	**A**			1	
	Amphinemura	**A**				
	Taeniopterygidae	**A**			2	
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**				
	Rhithrogena	**A**				
	Ephemera danica	**A**				
						3
Plecoptera	Leuctra	**B**			41	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**			5	
	Sericostomatidae	**B**				
	Goeridae	**B**				
	Glossosomatidae	**B**				
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						46
Ephemeroptera	Baetis rhodani	**C**			36	
	Caenis	**C**				
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**			3	
	Polycentropus	**C**				
	Rhyacophila	**C**				
	Philopotamus	**C**				
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**			3	
Diptera	Chironomidae	**C**			3	
	Simuliidae	**C**			32	
	Tipulidae	**C**				
Hydracarina	Hydracarina	**C**				
Crustacea	Gammarus	**C**				
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**				
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						74
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**				
						0
Diptera	Chironomus	**E**				
	Eristalis	**E**				
Oligochaeta	Tubificidae	**E**			6	
	Lumbriculus	**E**				
	Eiseniella	**E**				
						6
Overall Total						**129**

River Code:	Date:18/09/12	Time: 12:10	Grid: 95402 /19242
River.Northern Stream us confluence w Glashoreag			
DO%	93.90%	**Landfill Location Code:**	**Stream flow:**
DO mg/l	10.16	NKL N1	
Temp degC	11.3		Riffle
Conductivity			Riffle/glide
pH		**Substratum Condition:**	
Bank width (m)	2m		
Wet width (m)	2m	Boulder 30%	**Shading**: H-M-L-N
Avg depth (m)	25cm	Cobble 65%	
Velocity:	**Colour:**	Gravel 5%	**Cattle access:**
			Y u/s-d/s or N
Torrential	None	Some compaction	
Fast	Slight		**Litter:** NO-P-M-A
Moderate	Moderate		
Slow	High	**Main land use u/s**	**Photo:** Y -N No 6
Very slow			
Clarity:	**Discharge:**	Pasture	
		Bog	**Chemical Sample taken:**
Very Clear	Flood	Forestry	
Clear	Normal	Urban	Y-N 2012/4558
Slightly Turbid	Low	Tillage	
Highly Turbid	Recent flood	Other	
	Very low		
	Dry		

Macrophyte Type & Abundance:

Group	No. of Species	Abundance & Percentage		Abundance Category
A	1	1/65	1.5%	**Small nos**
B	2	5/65	8%	**Fair nos**
C	7	53/65	82%	**Superabundant / Excessive**
D	0	0	0	**Absent**
E	3	6/65	9%	**Fair Nos**

Comments: Lot of black peat like sediment on bed of river and stones

Q Rating: **3_4**

Analyst: Claire Mc Caffery and Caroline Markey

River & Location: NKL N 1						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**				
	Chloroperla	**A**				
	Protonemura	**A**			1	
	Amphinemura	**A**				
	Taeniopterygidae	**A**				
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**				
	Rhithrogena	**A**				
	Ephemera danica	**A**				
						1
Plecoptera	Leuctra	**B**			1	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**				
	Sericostomatidae	**B**				
	Goeridae	**B**			4	
	Glossosomatidae	**B**				
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						5
Ephemeroptera	Baetis rhodani	**C**			32	
	Caenis	**C**				
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**			3	
	Polycentropus	**C**				
	Rhyacophila	**C**			1	
	Philopotamus	**C**				
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**			1	
Diptera	Chironomidae	**C**			5	
	Simuliidae	**C**			3	
	Tipulidae	**C**			8	
Hydracarina	Hydracarina	**C**				
Crustacea	Gammarus	**C**				
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**				
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						53
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**				
Diptera	Chironomus	**E**				
	Eristalis	**E**				
Oligochaeta	Tubificidae	**E**			2	
	Lumbriculus	**E**			2	
	Eiseniella	**E**			2	
						6
Overall Total						**65**

Clarity:	Discharge:		
		Pasture	
		Bog	**Chemical Sample taken:**
Very Clear	Flood	Forestry	
Clear	Normal	Urban	Y-N 2012/4556
Slightly Turbid	Low	Tillage	
Highly Turbid	Recent flood	Other	
	Very low		
	Dry		

Macrophyte Type & Abundance:

Group	No. of Species	Abundance & Percentage		Abundance Category
A	3	27/114	24%	**Common**
B	2	22/114	19%	**Common**
C	9	65/114	57%	**Abun/Dominant**
D	0	0	0	**Absent**
E	0	0	0	**Absent**

Comments:

Q Rating: **4_5**

Analyst: Claire Mc Caffery & Caroline Markey

River & Location: NKL G1						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**				
	Chloroperla	**A**				
	Protonemura	**A**			12	
	Amphinemura	**A**				
	Taeniopterygidae	**A**				
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**			7	
	Rhithrogena	**A**			8	
	Ephemera danica	**A**				
						27
Plecoptera	Leuctra	**B**			17	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**				
	Sericostomatidae	**B**			5	
	Goeridae	**B**				
	Glossosomatidae	**B**				
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						22
Ephemeroptera	Baetis rhodani	**C**			30	
	Caenis	**C**				
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**			6	
	Polycentropus	**C**			4	
	Rhyacophila	**C**			2	
	Philopotamus	**C**				
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**			1	
Diptera	Chironomidae	**C**			10	
	Simuliidae	**C**			3	
	Tipulidae	**C**			5	
Hydracarina	Hydracarina	**C**			4	
Crustacea	Gammarus	**C**				
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**				
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						65
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**				
						0
Diptera	Chironomus	**E**				
	Eristalis	**E**				
Oligochaeta	Tubificidae	**E**				
	Lumbriculus	**E**				
	Eiseniella	**E**				
						0
Overall Total						**114**

River Code:	Date: 18/09/12	Time: 14:15	Grid: 95821 / 119390
River. Glashoreag			
DO%	94.7	Location: NKL G2	Stream flow:
DO mg/l	99		
Temp degC	12.7		Riffle
Conductivity			Riffle/glide
pH		Substratum Condition:	
Bank width (m)	3.5	Boulder 10%	
Wet width (m)	3.5	Cobble 60%	Shading: H-M-L-N
Avg depth (m)	20cm	Gravel 20%	
Velocity:	Colour:	Silt 10%	Cattle access:
			Y u/s-d/s or N
Torrential	None		
Fast	Slight		Litter: NO-P-M-A
Moderate	Moderate		
Slow	High	Main land use u/s	Photo: Y -N
Very slow			
Clarity:	Discharge:	Pasture	Chemical Sample taken:
		Bog	
Very Clear	Flood	Forestry	
Clear	Normal	Urban	Y-N 2012/4557
Slightly Turbid	Low	Tillage	
Highly Turbid	Recent flood	Other	
	Very low		
	Dry		
hyte Type & Abundance:			

Group	No. of Species	Abundance & Percentage		Abundance Category
A	3	42/142	30%	Numerous
B	5	12/142	12%	Common
C	8	83/142	58%	Abun /Dominant
D	0	0	0	Absent
E	0	0	0	Absent

Comments: Parked at grid ref 95826 / 19437 opp site. Very difficult to access site due to terraine , boggy with decidious tree planting. Lot of dykes and overgrown brambles near river.

Q Rating: 4_5

Analyst: Caroline Markey& Claire Mc Caffery

River & Location: NKL G2						
Taxa	**Species**	**Group**	**Abundance**	**Ind Total**	**Combined Total**	**Group Total**
Plecoptera	Perla	**A**				
	Isoperla	**A**				
	Chloroperla	**A**				
	Protonemura	**A**			9	
	Amphinemura	**A**				
	Taeniopterygidae	**A**				
Ephemeroptera	Heptagenia	**A**				
	Ecdyonurus	**A**			22	
	Rhithrogena	**A**			11	
	Ephemera danica	**A**				
						42
Plecoptera	Leuctra	**B**			5	
Ephemeroptera	Baetidae	**B**				
	Paraleptophlebia	**B**				
Trichoptera	Limnephilidae	**B**			1	
	Sericostomatidae	**B**			1	
	Goeridae	**B**			9	
	Glossosomatidae	**B**			1	
Odonata	All taxa	**B**				
Hemiptera	Aphelocheirus aestivalis	**B**				
						17
Ephemeroptera	Baetis rhodani	**C**			53	
	Caenis	**C**				
	Ephemerella	**C**				
Trichoptera	Hydropsyche	**C**			9	
	Polycentropus	**C**				
	Rhyacophila	**C**			1	
	Philopotamus	**C**			2	
Hemiptera	All except A. aestivalis	**C**				
Coleoptera	Coleoptera	**C**			7	
Diptera	Chironomidae	**C**			3	
	Simuliidae	**C**			2	
	Tipulidae	**C**			5	
Hydracarina	Hydracarina	**C**			1	
Crustacea	Gammarus	**C**				
Gastropoda	Potamopyrgus	**C**				
	Planorbis	**C**				
	Ancylidae	**C**				
Hirudinea	Piscicola	**C**				
Platyhelminthes	All Spp	**C**				
						83
Megaloptera	Sialidae	**D**				
Crustacea	Asellus	**D**				
Gastropoda	Lymnea peregra	**D**				
	Physa	**D**				
Hirudinea	All except Piscicola	**D**				
Diptera	Chironomus	**E**				
	Eristalis	**E**				
Oligochaeta	Tubificidae	**E**				
	Lumbriculus	**E**				
	Eiseniella	**E**				
Overall Total						**142**

Appendix 5: Environmental Laboratory Services Results

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Tel: +353 21 453 6141
Fax: +353 21 453 6149
Web: www.irishwatertesting.com

Contact Name	Tim Supple	Report Number	61982 - 1
Address	Kerry County Council County Buildings, Tralee,	Sample Number	61982/001
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	Received or Collected	An Post
Fax No		Condition on Receipt	Good
Customer PO	400305176	Date of Report	29/11/2012
Quotation No	QN001579	Sample Type	Waste Water
Customer Ref	2012/5699		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OC
Cyanide-Free									
Cyanide-Free			EW154M	25.0		<25.0	ug/L		

Signed : _____ 29/11/2012

Technical Manager (or Deputy): Brendan Murray

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Contact Name	Tim Supple	Report Number	61982 - 1
Address	Kerry County Council County Buildings, Tralee,	Sample Number	61982/002
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	Received or Collected	An Post
Fax No		Condition on Receipt	Good
Customer PO	400305176	Date of Report	29/11/2012
Quotation No	QN001579	Sample Type	Waste Water
Customer Ref	2012/5700		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	25.0		<25.0	ug/L		

Signed : _____ 29/11/2012

Technical Manager (or Deputy): Brendan Murray

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Contact Name	Tim Supple	**Report Number**	**61982 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61982/003 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Waste Water
Customer Ref	2012/5701		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW1540d	25.0		<25.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61982 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61982/004 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Waste Water
Customer Ref	2012/5702		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	25.0		52.1	ug/L		

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Contact Name	Tim Supple	Report Number	61982 - 1
Address	Kerry County Council County Buildings, Tralee,	Sample Number	61982/005
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	Received or Collected	An Post
Fax No		Condition on Receipt	Good
Customer PO	400305176	Date of Report	29/11/2012
Quotation No	QN001579	Sample Type	Waste Water
Customer Ref	2012/5703		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	25.0		<25.0	ug/L		

Signed : _____ 29/11/2012

Technical Manager (or Deputy): Brendan Murray

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Contact Name	Tim Supple	**Report Number**	**61982 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61982/006 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Waste Water
Customer Ref	2012/5704		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	25.0		<25.0	ug/L		

Signed : _____ 29/11/2012

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61983/001 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5690		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	5.000		<5.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/002
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5691		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW1540d	5.000		<5.0	ug/L		

Signed : _____ 29/11/2012

Technical Manager (or Deputy): Brendan Murray

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/003
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5692		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
Cyanide-Free			EW154M	5.000		<5.0	ug/L		

Signed : _____ 29/11/2012

Technical Manager (or Deputy): **Brendan Murray**

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/004
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5693		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	5.000		<5.0	ug/L		

Signed : _____ 29/11/2012

Technical Manager (or Deputy): **Brendan Murray**

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/005
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5694		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
Cyanide-Free			EW154M	5.000		<5.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee.	**Sample Number**	61983/006
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5695		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	5.000		<5.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/007
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5696		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	5.000		<5.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/008
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5697		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	5.000		<5.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61983 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61983/009
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	29/11/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5698		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	5.000		<5.0	ug/L		

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1117

Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/001
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5690		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)									
	1,2,4-Trichlorobenzene	*	Default	1.0		<4.0	ug/L	YES	
	1,2-Dichlorobenzene	*	Default	1.0		<4.0	ug/L	YES	
	1,3-Dichlorobenzene	*	Default	1.0		<4.0	ug/L	YES	
	1,4-Dichlorobenzene	*	Default	1.0		<4.0	ug/L	YES	
	2,4,5-Trichlorophenol	*	Default	1.0		<4.0	ug/L	YES	
	2,4,6-Trichlorophenol	*	Default	1.0		<4.0	ug/L	YES	
	2,4-Dichlorophenol	*	Default	1.0		<4.0	ug/L	YES	
	2,4-Dimethylphenol	*	Default	1.0		<4.0	ug/L	YES	
	2,4-Dinitrotoluene	*	Default	1.0		<4.0	ug/L	YES	
	2,6-Dinitrotoluene	*	Default	1.0		<4.0	ug/L	YES	
	2-Chloronaphthalene	*	Default	1.0		<4.0	ug/L	YES	
	2-Chlorophenol	*	Default	1.0		<4.0	ug/L	YES	
	2-Methylnaphthalene	*	Default	1.0		<4.0	ug/L	YES	
	2-Methylphenol	*	Default	1.0		<4.0	ug/L	YES	
	2-Nitrophenol	*	Default	1.0		<4.0	ug/L	YES	
	3&4-Methylphenol	*	Default	1.0		<4.0	ug/L	YES	
	4-Bromophenyl Phenyl Ether	*	Default	1.0		<4.0	ug/L	YES	
	4-Chloro-3-methylphenol	*	Default	1.0		<4.0	ug/L	YES	
	4-Chlorophenyl phenyl ether	*	Default	1.0		<4.0	ug/L	YES	
	4-Nitrophenol	*	Default	5.0		<20.0	ug/L	YES	
	Acenaphthene	*	Default	1.0		<4.0	ug/L	YES	
	Acenaphthylene	*	Default	1.0		<4.0	ug/L	YES	
	Anthracene	*	Default	1.0		<4.0	ug/L	YES	
	Benzo(a)anthracene	*	Default	1.0		<4.0	ug/L	YES	
	Benzo(a)pyrene	*	Default	1.0		<4.0	ug/L	YES	
	Benzo(b)fluoranthene	*	Default	1.0		<4.0	ug/L	YES	
	Benzo(g,h,i)perylene	*	Default	1.0		<4.0	ug/L	YES	
	Benzo(k)fluoranthene	*	Default	1.0		<4.0	ug/L	YES	
	Benzyl Butyl Phthalate	*	Default	1.0		<4.0	ug/L	YES	
	Bis(2-chloroethoxy)methane	*	Default	1.0		<4.0	ug/L	YES	
	Bis(2-chloroethyl)ether	*	Default	1.0		<4.0	ug/L	YES	
	Bis(2-chloroisopropyl)ether	*	Default	1.0		<4.0	ug/L	YES	
	Bis(2-ethylhexyl)phthalate	*	Default	5.0		<20.0	ug/L	YES	
	Chrysene	*	Default	1.0		<4.0	ug/L	YES	
	Dibenz(a,h)anthracene	*	Default	1.0		<4.0	ug/L	YES	
	Dibenzofuran	*	Default	1.0		<4.0	ug/L	YES	

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/001
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5690		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)									
	Diethylphthalate	*	Default	1.0		<4.0	ug/L	YES	
	Dimethylphthalate	*	Default	1.0		<4.0	ug/L	YES	
	di-n-Butylphthalate	*	Default	1.0		<4.0	ug/L	YES	
	Di-n-octylphthalate	*	Default	1.0		<4.0	ug/L	YES	
	Diphenylamine	*	Default	1.0		<4.0	ug/L	YES	
	Fluoranthene	*	Default	1.0		<4.0	ug/L	YES	
	Fluorene	*	Default	1.0		<4.0	ug/L	YES	
	Hexachlorobenzene	*	Default	1.0		<4.0	ug/L	YES	
	Hexachlorobutadiene	*	Default	1.0		<4.0	ug/L	YES	
	Hexachloroethane	*	Default	1.0		<4.0	ug/L	YES	
	Indeno(1,2,3-c,d)pyrene	*	Default	1.0		<4.0	ug/L	YES	
	Isophorone	*	Default	1.0		<4.0	ug/L	YES	
	Naphthalene	*	Default	2.0		<8.0	ug/L	YES	
	Nitrobenzene	*	Default	1.0		<4.0	ug/L	YES	
	n-Nitrosodi-n-propylamine	*	Default	1.0		<4.0	ug/L	YES	
	Pentachlorophenol	*	Default	1.0		<4.0	ug/L	YES	
	Phenanthrene	*	Default	1.0		<4.0	ug/L	YES	
	Phenol	*	Default	1.0		<4.0	ug/L	YES	
	Pyrene	*	Default	1.0		<4.0	ug/L	YES	
	Analyst QC Comment: Raised reporting limits for SVOC's due to sample matrix.								
VOC Full Suite									
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
	Chloromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
	Vinyl Chloride		EO025	0.5		<0.5	ug/L		
	Bromomethane		EO025	0.500		<0.5	ug/L	INAB	
	Trichlorofluoromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Ether/Diethyl Ether		EO025	0.500		<0.5	ug/L	INAB	
	11 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
	Acetone		EO025	2.0		<2.0	ug/L		
	Iodomethane/Methyl Iodide		EO025	0.500		<0.5	ug/L	INAB	
	Carbon Disulphide		EO025	0.500		11.2	ug/L	INAB	
	Allyl Chloride		EO025	0.500		<0.5	ug/L	INAB	
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
	Chloromethyl Cyanide/Chloroacetonitrile		EO025	0.500		<0.5	ug/L	INAB	
	Nitrobenzene		EO025	0.5		<0.5	ug/L		
	Propanenitrile		EO025	10.0		<10.0	ug/L		

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Contact Name	Tim Supple	**Report Number**	**61979 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61979/001 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5690		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Hexachlorobutadiene		EO025	0.500		<0.5	ug/L	INAB	
	Trans-1,2 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
	MIBE		EO025	0.500		<0.5	ug/L	INAB	
	1,1-dichloroethane		EO025	0.500		<0.5	ug/L	INAB	
	2,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
	cis-12 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
	2-Butanone		EO025	5.0		<5.0	ug/L		
	Methyl Acrylate		EO025	0.500		<0.5	ug/L	INAB	
	Bromochloromethane		EO025	0.500		<0.5	ug/L	INAB	
	Methacrylonitrile		EO025	5.0		<5.0	ug/L		
	Tetrahydrofuran		EO025	0.500		<0.5	ug/L	INAB	
	Chloroform		EO025	1.000		<1.0	ug/L	INAB	
	1,1,1-trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
	1-Chlorobutane		EO025	0.500		<0.5	ug/L	INAB	
	Carbon Tetrachloride		EO025	0.500		<0.5	ug/L	INAB	
	11 Dichloropropene		EO025	0.500		<0.5	ug/L	INAB	
	Benzene		EO025	0.100		<0.1	ug/L	INAB	
	1,2 dichroethane		EO025	0.1		<0.1	ug/L	INAB	
	Trichloroethene		EO025	0.100		<0.1	ug/L	INAB	
	1,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
	Dibromomethane		EO025	0.500		<0.5	ug/L	INAB	
	Methyl Methacrylate		EO025	0.500		<0.5	ug/L	INAB	
	Bromodichloromethane		EO025	2.000		<2.0	ug/L	INAB	
	13 Dichloropropene,cis		EO025	2.000		<2.0	ug/L	INAB	
	MIBK/4 Methyl 2 Pentanone		EO025	2.000		<2.0	ug/L	INAB	
	Toluene		EO025	0.500		<0.5	ug/L	INAB	
	13 Dichloropropene,trans		EO025	2.000		<2.0	ug/L	INAB	
	Ethyl Methacrylate		EO025	2.000		<2.0	ug/L	INAB	
	112 Trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
	Tetrachloroethane		EO025	0.100		<0.1	ug/L	INAB	
	1,3-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
	2-Hexanone		EO025	1.000		<1.0	ug/L	INAB	
	Dibromochloromethane		EO025	1.000		<1.0	ug/L	INAB	
	1,2-dibromoethane		EO025	0.500		<0.5	ug/L	INAB	
	Chlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,1,1,2-tetrachloroethane		EO025	2.000		<2.0	ug/L	INAB	
	Ethylbenzene		EO025	0.500		<0.5	ug/L	INAB	

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/001
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5690		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Xylene P&M		EO025	0.500		<0.5	ug/L	INAB	
	Xylene -o		EO025	0.500		<0.5	ug/L	INAB	
	Styrene		EO025	2.000		<2.0	ug/L	INAB	
	Bromoform		EO025	1.000		<1.0	ug/L	INAB	
	Isopropylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	Bromobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,1,2,2-tetrachloroethane		EO025	0.500		<0.5	ug/L	INAB	
	1,2,3-trichloropropane		EO025	2.000		<2.0	ug/L	INAB	
	Trans 14 Dichloro 2 Butene, trans		EO025	2.0		<2.0	ug/L		
	Propylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	2-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
	4-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
	1,3,5-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	Tert Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
	1,2,4-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	sec-butylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,3-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	P Isopropyltoluene		EO025	0.500		<0.5	ug/L	INAB	
	1,4-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,2-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	N Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
	Hexachloroethane		EO025	5.000		<5.0	ug/L	INAB	
	1,2-dibromo-3-chloropropane		EO025	2.000		<2.0	ug/L	INAB	
	1,2,4-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	Naphthalene		EO025	2.0		<2.0	ug/L		
	1,2,3-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	

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Web: www.irishwatertesting.com

Contact Name	Tim Supple	**Report Number**	**61979 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61979/002 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5691		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)									
	1,2,4-Trichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,2-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,3-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,4-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	2,4,5-Trichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4,6-Trichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dimethylphenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dinitrotoluene	*	Default	1.0		<1.0	ug/L	YES	
	2,6-Dinitrotoluene	*	Default	1.0		<1.0	ug/L	YES	
	2-Chloronaphthalene	*	Default	1.0		<1.0	ug/L	YES	
	2-Chlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2-Methylnaphthalene	*	Default	1.0		<1.0	ug/L	YES	
	2-Methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	2-Nitrophenol	*	Default	1.0		<1.0	ug/L	YES	
	3&4-Methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	4-Bromophenyl Phenyl Ether	*	Default	1.0		<1.0	ug/L	YES	
	4-Chloro-3-methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	4-Chlorophenyl phenyl ether	*	Default	1.0		<1.0	ug/L	YES	
	4-Nitrophenol	*	Default	5.0		<5.0	ug/L	YES	
	Acenaphthene	*	Default	1.0		<1.0	ug/L	YES	
	Acenaphthylene	*	Default	1.0		<1.0	ug/L	YES	
	Anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(a)anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(a)pyrene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(b)fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(g,h,i)perylene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(k)fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Benzyl Butyl Phthalate	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroethoxy)methane	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroethyl)ether	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroisopropyl)ether	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-ethylhexyl)phthalate	*	Default	5.0		<5.0	ug/L	YES	
	Chrysene	*	Default	1.0		<1.0	ug/L	YES	
	Dibenz(a,h)anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Dibenzofuran	*	Default	1.0		<1.0	ug/L	YES	
	Diethylphthalate	*	Default	1.0		<1.0	ug/L	YES	

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Technical Manager (or Deputy): Brendan Murray

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/002
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5691		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)									
	Dimethylphthalate	*	Default	1.0		<1.0	ug/L	YES	
	di-n-Butylphthalate	*	Default	1.0		<1.0	ug/L	YES	
	Di-n-octylphthalate	*	Default	1.0		<1.0	ug/L	YES	
	Diphenylamine	*	Default	1.0		<1.0	ug/L	YES	
	Fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Fluorene	*	Default	1.0		<1.0	ug/L	YES	
	Hexachlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	Hexachlorobutadiene	*	Default	1.0		<1.0	ug/L	YES	
	Hexachloroethane	*	Default	1.0		<1.0	ug/L	YES	
	Indeno(1,2,3-c,d)pyrene	*	Default	1.0		<1.0	ug/L	YES	
	Isophorone	*	Default	1.0		<1.0	ug/L	YES	
	Naphthalene	*	Default	2.0		<2.0	ug/L	YES	
	Nitrobenzene	*	Default	1.0		<1.0	ug/L	YES	
	n-Nitrosodi-n-propylamine	*	Default	1.0		<1.0	ug/L	YES	
	Pentachlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	Phenanthrene	*	Default	1.0		<1.0	ug/L	YES	
	Phenol	*	Default	1.0		<1.0	ug/L	YES	
	Pyrene	*	Default	1.0		<1.0	ug/L	YES	
VOC Full Suite									
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
	Chloromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
	Vinyl Chloride		EO025	0.5		<0.5	ug/L		
	Bromomethane		EO025	0.500		<0.5	ug/L	INAB	
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Ether/Diethyl Ether		EO025	0.500		<0.5	ug/L	INAB	
	11 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
	Acetone		EO025	2.0		<2.0	ug/L		
	Iodomethane/Methyl Iodide		EO025	0.500		<0.5	ug/L	INAB	
	Carbon Disulphide		EO025	0.500		3.6	ug/L	INAB	
	Allyl Chloride		EO025	0.500		<0.5	ug/L	INAB	
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
	Chloromethyl Cyanide/Chloroacetonitrile		EO025	0.500		<0.5	ug/L	INAB	
	Nitrobenzene		EO025	0.5		<0.5	ug/L		
	Propanenitrile		EO025	10.0		<10.0	ug/L		
	Hexachlorobutadiene		EO025	0.500		<0.5	ug/L	INAB	
	Trans-1,2 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1117

Contact Name	Tim Supple	**Report Number**	**61979 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/002
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5691		

CERTIFICATE OF ANALYSIS

TEST ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite								
MIBE		EO025	0.500		<0.5	ug/L	INAB	
1,1-dichloroethane		EO025	0.500		<0.5	ug/L	INAB	
2,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
cis-12 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
2-Butanone		EO025	5.0		<5.0	ug/L		
Methyl Acrylate		EO025	0.500		<0.5	ug/L	INAB	
Bromochloromethane		EO025	0.500		<0.5	ug/L	INAB	
Methacrylonitrile		EO025	5.0		<5.0	ug/L		
Tetrahydrofuran		EO025	0.500		<0.5	ug/L	INAB	
Chloroform		EO025	1.000		<1.0	ug/L	INAB	
1,1,1-trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
1-Chlorobutane		EO025	0.500		<0.5	ug/L	INAB	
Carbon Tetrachloride		EO025	0.500		<0.5	ug/L	INAB	
11 Dichloropropene		EO025	0.500		<0.5	ug/L	INAB	
Benzene		EO025	0.100		<0.1	ug/L	INAB	
1,2 dichloroethane		EO025	0.1		<0.1	ug/L	INAB	
Trichloroethene		EO025	0.100		<0.1	ug/L	INAB	
1,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
Dibromomethane		EO025	0.500		<0.5	ug/L	INAB	
Methyl Methacrylate		EO025	0.500		<0.5	ug/L	INAB	
Bromodichloromethane		EO025	2.000		<2.0	ug/L	INAB	
13 Dichloropropene,cis		EO025	2.000		<2.0	ug/L	INAB	
MIBK/4 Methyl 2 Pentanone		EO025	2.000		<2.0	ug/L	INAB	
Toluene		EO025	0.500		<0.5	ug/L	INAB	
13 Dichloropropene,trans		EO025	2.000		<2.0	ug/L	INAB	
Ethyl Methacrylate		EO025	2.000		<2.0	ug/L	INAB	
112 Trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
Tetrachloroethene		EO025	0.100		<0.1	ug/L	INAB	
1,3-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
2-Hexanone		EO025	1.000		<1.0	ug/L	INAB	
Dibromochloromethane		EO025	1.000		<1.0	ug/L	INAB	
1,2-dibromoethane		EO025	0.500		<0.5	ug/L	INAB	
Chlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
1,1,1,2-tetrachloroethane		EO025	2.000		<2.0	ug/L	INAB	
Ethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
Xylene P&M		EO025	0.500		<0.5	ug/L	INAB	
Xylene -o		EO025	0.500		<0.5	ug/L	INAB	

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61979/002 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5691		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Styrene		EO025	2.000		<2.0	ug/L	INAB	
	Bromoform		EO025	1.000		<1.0	ug/L	INAB	
	Isopropylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	Bromobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,1,2,2-tetrachloroethane		EO025	0.500		<0.5	ug/L	INAB	
	1,2,3-trichloropropane		EO025	2.000		<2.0	ug/L	INAB	
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L		
	Propylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	2-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
	4-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
	1,3,5-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	Tert Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
	1,2,4-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	sec-butylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,3-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	P Isopropyltoluene		EO025	0.500		<0.5	ug/L	INAB	
	1,4-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,2-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	N Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
	Hexachloroethane		EO025	5.000		<5.0	ug/L	INAB	
	1,2-dibromo-3-chloropropane		EO025	2.000		<2.0	ug/L	INAB	
	1,2,4-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	Naphthalene		EO025	2.0		<2.0	ug/L		
	1,2,3-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 7117

Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61979/003 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5692		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)									
	1,2,4-Trichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,2-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,3-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,4-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	2,4,5-Trichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4,6-Trichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dimethylphenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dinitrotoluene	*	Default	1.0		<1.0	ug/L	YES	
	2,6-Dinitrotoluene	*	Default	1.0		<1.0	ug/L	YES	
	2-Chloronaphthalene	*	Default	1.0		<1.0	ug/L	YES	
	2-Chlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2-Methylnaphthalene	*	Default	1.0		<1.0	ug/L	YES	
	2-Methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	2-Nitrophenol	*	Default	1.0		<1.0	ug/L	YES	
	3&4-Methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	4-Bromophenyl Phenyl Ether	*	Default	1.0		<1.0	ug/L	YES	
	4-Chloro-3-methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	4-Chlorophenyl phenyl ether	*	Default	1.0		<1.0	ug/L	YES	
	4-Nitrophenol	*	Default	5.0		<5.0	ug/L	YES	
	Acenaphthene	*	Default	1.0		<1.0	ug/L	YES	
	Acenaphthylene	*	Default	1.0		<1.0	ug/L	YES	
	Anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(a)anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(a)pyrene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(b)fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(g,h,i)perylene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(k)fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Benzyl Butyl Phthalate	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroethoxy)methane	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroethyl)ether	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroisopropyl)ether	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-ethylhexyl)phthalate	*	Default	5.0		<5.0	ug/L	YES	
	Chrysene	*	Default	1.0		<1.0	ug/L	YES	
	Dibenz(a,h)anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Dibenzofuran	*	Default	1.0		<1.0	ug/L	YES	
	Diethylphthalate	*	Default	1.0		<1.0	ug/L	YES	

Signed : _____ 10/12/2012

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 7177

Contact Name	Tim Supple	**Report Number**	**61979 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/003
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5692		

CERTIFICATE OF ANALYSIS

TEST ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)								
Dimethylphthalate	*	Default	1.0		<1.0	ug/L	YES	
di-n-Butylphthalate	*	Default	1.0		<1.0	ug/L	YES	
Di-n-octylphthalate	*	Default	1.0		<1.0	ug/L	YES	
Diphenylamine	*	Default	1.0		<1.0	ug/L	YES	
Fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
Fluorene	*	Default	1.0		<1.0	ug/L	YES	
Hexachlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
Hexachlorobutadiene	*	Default	1.0		<1.0	ug/L	YES	
Hexachloroethane	*	Default	1.0		<1.0	ug/L	YES	
Indeno(1,2,3-c,d)pyrene	*	Default	1.0		<1.0	ug/L	YES	
Isophorone	*	Default	1.0		<1.0	ug/L	YES	
Naphthalene	*	Default	2.0		<2.0	ug/L	YES	
Nitrobenzene	*	Default	1.0		<1.0	ug/L	YES	
n-Nitrosodi-n-propylamine	*	Default	1.0		<1.0	ug/L	YES	
Pentachlorophenol	*	Default	1.0		<1.0	ug/L	YES	
Phenanthrene	*	Default	1.0		<1.0	ug/L	YES	
Phenol	*	Default	1.0		<1.0	ug/L	YES	
Pyrene	*	Default	1.0		<1.0	ug/L	YES	
VOC Full Suite								
Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
Chloromethane		EO025	0.5		<0.5	ug/L		
Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
Vinyl Chloride		EO025	0.5		<0.5	ug/L		
Bromomethane		EO025	0.500		<0.5	ug/L	INAB	
Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L		
Ethyl Ether/Diethyl Ether		EO025	0.500		<0.5	ug/L	INAB	
11 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
Acetone		EO025	2.0		<2.0	ug/L		
Iodomethane/Methyl Iodide		EO025	0.500		<0.5	ug/L	INAB	
Carbon Disulphide		EO025	0.500		3.2	ug/L	INAB	
Allyl Chloride		EO025	0.500		<0.5	ug/L	INAB	
Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
Chloromethyl Cyanide/Chloroacetonitrile		EO025	0.500		<0.5	ug/L	INAB	
Nitrobenzene		EO025	0.5		<0.5	ug/L		
Propanenitrile		EO025	10.0		<10.0	ug/L		
Hexachlorobutadiene		EO025	0.500		<0.5	ug/L	INAB	
Trans-1,2 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	

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Technical Manager (or Deputy): Brendan Murray

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Contact Name	Tim Supple	**Report Number**	**61979 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/003
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5692		

CERTIFICATE OF ANALYSIS

TEST ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite								
MtBE		EO025	0.500		<0.5	ug/L	INAB	
1,1-dichloroethane		EO025	0.500		<0.5	ug/L	INAB	
2,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
cis-12 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
2-Butanone		EO025	5.0		<5.0	ug/L		
Methyl Acrylate		EO025	0.500		<0.5	ug/L	INAB	
Bromochloromethane		EO025	0.500		<0.5	ug/L	INAB	
Methacrylonitrile		EO025	5.0		<5.0	ug/L		
Tetrahydrofuran		EO025	0.500		<0.5	ug/L	INAB	
Chloroform		EO025	1.000		<1.0	ug/L	INAB	
1,1,1-trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
1-Chlorobutane		EO025	0.500		<0.5	ug/L	INAB	
Carbon Tetrachloride		EO025	0.500		<0.5	ug/L	INAB	
11 Dichloropropene		EO025	0.500		<0.5	ug/L	INAB	
Benzene		EO025	0.100		<0.1	ug/L	INAB	
1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB	
Trichloroethene		EO025	0.100		<0.1	ug/L	INAB	
1,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
Dibromomethane		EO025	0.500		<0.5	ug/L	INAB	
Methyl Methacrylate		EO025	0.500		<0.5	ug/L	INAB	
Bromodichloromethane		EO025	2.000		<2.0	ug/L	INAB	
13 Dichloropropene,cis		EO025	2.000		<2.0	ug/L	INAB	
MIBK/4 Methyl 2 Pentanone		EO025	2.000		<2.0	ug/L	INAB	
Toluene		EO025	0.500		<0.5	ug/L	INAB	
13 Dichloropropene,trans		EO025	2.000		<2.0	ug/L	INAB	
Ethyl Methacrylate		EO025	2.000		<2.0	ug/L	INAB	
112 Trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
Tetrachloroethene		EO025	0.100		<0.1	ug/L	INAB	
1,3-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
2-Hexanone		EO025	1.000		<1.0	ug/L	INAB	
Dibromochloromethane		EO025	1.000		<1.0	ug/L	INAB	
1,2-dibromoethane		EO025	0.500		<0.5	ug/L	INAB	
Chlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
1,1,1,2-tetrachloroethane		EO025	2.000		<2.0	ug/L	INAB	
Ethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
Xylene P&M		EO025	0.500		<0.5	ug/L	INAB	
Xylene -o		EO025	0.500		<0.5	ug/L	INAB	

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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/003
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5692		

CERTIFICATE OF ANALYSIS

TEST ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite								
Styrene		EO025	2.000		<2.0	ug/L	INAB	
Bromoform		EO025	1.000		<1.0	ug/L	INAB	
Isopropylbenzene		EO025	0.500		<0.5	ug/L	INAB	
Bromobenzene		EO025	0.500		<0.5	ug/L	INAB	
1,1,2,2-tetrachloroethane		EO025	0.500		<0.5	ug/L	INAB	
1,2,3-trichloropropane		EO025	2.000		<2.0	ug/L	INAB	
Trans 14 Dichloro 2 Butene, trans		EO025	2.0		<2.0	ug/L		
Propylbenzene		EO025	0.500		<0.5	ug/L	INAB	
2-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
4-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
1,3,5-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
Tert Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
1,2,4-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
sec-butylbenzene		EO025	0.500		<0.5	ug/L	INAB	
1,3-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
P Isopropyltoluene		EO025	0.500		<0.5	ug/L	INAB	
1,4-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
1,2-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
N Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
Hexachloroethane		EO025	5.000		<5.0	ug/L	INAB	
1,2-dibromo-3-chloropropane		EO025	2.000		<2.0	ug/L	INAB	
1,2,4-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
Naphthalene		EO025	2.0		<2.0	ug/L		
1,2,3-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/004
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5698		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)									
	1,2,4-Trichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,2-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,3-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	1,4-Dichlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
	2,4,5-Trichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4,6-Trichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dichlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dimethylphenol	*	Default	1.0		<1.0	ug/L	YES	
	2,4-Dinitrotoluene	*	Default	1.0		<1.0	ug/L	YES	
	2,6-Dinitrotoluene	*	Default	1.0		<1.0	ug/L	YES	
	2-Chloronaphthalene	*	Default	1.0		<1.0	ug/L	YES	
	2-Chlorophenol	*	Default	1.0		<1.0	ug/L	YES	
	2-Methylnaphthalene	*	Default	1.0		<1.0	ug/L	YES	
	2-Methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	2-Nitrophenol	*	Default	1.0		<1.0	ug/L	YES	
	3&4-Methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	4-Bromophenyl Phenyl Ether	*	Default	1.0		<1.0	ug/L	YES	
	4-Chloro-3-methylphenol	*	Default	1.0		<1.0	ug/L	YES	
	4-Chlorophenyl phenyl ether	*	Default	1.0		<1.0	ug/L	YES	
	4-Nitrophenol	*	Default	5.0		<5.0	ug/L	YES	
	Acenaphthene	*	Default	1.0		<1.0	ug/L	YES	
	Acenaphthylene	*	Default	1.0		<1.0	ug/L	YES	
	Anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(a)anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(a)pyrene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(b)fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(g,h,i)perylene	*	Default	1.0		<1.0	ug/L	YES	
	Benzo(k)fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
	Benzyl Butyl Phthalate	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroethoxy)methane	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroethyl)ether	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-chloroisopropyl)ether	*	Default	1.0		<1.0	ug/L	YES	
	Bis(2-ethylhexyl)phthalate	*	Default	5.0		<5.0	ug/L	YES	
	Chrysene	*	Default	1.0		<1.0	ug/L	YES	
	Dibenz(a,h)anthracene	*	Default	1.0		<1.0	ug/L	YES	
	Dibenzofuran	*	Default	1.0		<1.0	ug/L	YES	
	Diethylphthalate	*	Default	1.0		<1.0	ug/L	YES	

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61979/004 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5698		

CERTIFICATE OF ANALYSIS

TEST ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
SVOC (sub)								
Dimethylphthalate	*	Default	1.0		<1.0	ug/L	YES	
di-n-Butylphthalate	*	Default	1.0		<1.0	ug/L	YES	
Di-n-octylphthalate	*	Default	1.0		<1.0	ug/L	YES	
Diphenylamine	*	Default	1.0		<1.0	ug/L	YES	
Fluoranthene	*	Default	1.0		<1.0	ug/L	YES	
Fluorene	*	Default	1.0		<1.0	ug/L	YES	
Hexachlorobenzene	*	Default	1.0		<1.0	ug/L	YES	
Hexachlorobutadiene	*	Default	1.0		<1.0	ug/L	YES	
Hexachloroethane	*	Default	1.0		<1.0	ug/L	YES	
Indeno(1,2,3-c,d)pyrene	*	Default	1.0		<1.0	ug/L	YES	
Isophorone	*	Default	1.0		<1.0	ug/L	YES	
Naphthalene	*	Default	2.0		<2.0	ug/L	YES	
Nitrobenzene	*	Default	1.0		<1.0	ug/L	YES	
n-Nitrosodi-n-propylamine	*	Default	1.0		<1.0	ug/L	YES	
Pentachlorophenol	*	Default	1.0		<1.0	ug/L	YES	
Phenanthrene	*	Default	1.0		<1.0	ug/L	YES	
Phenol	*	Default	1.0		<1.0	ug/L	YES	
Pyrene	*	Default	1.0		<1.0	ug/L	YES	
VOC Full Suite								
Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
Chloromethane		EO025	0.5		<0.5	ug/L		
Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
Vinyl Chloride		EO025	0.5		<0.5	ug/L		
Bromomethane		EO025	0.500		<0.5	ug/L	INAB	
Trichlorofluoromethane		EO025	0.5		<0.5	ug/L		
Ethyl Ether/Diethyl Ether		EO025	0.500		<0.5	ug/L	INAB	
1,1 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
Acetone		EO025	2.0		<2.0	ug/L		
Iodomethane/Methyl Iodide		EO025	0.500		<0.5	ug/L	INAB	
Carbon Disulphide		EO025	0.500		<0.5	ug/L	INAB	
Allyl Chloride		EO025	0.500		<0.5	ug/L	INAB	
Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
Chloromethyl Cyanide/Chloroacetonitrile		EO025	0.500		<0.5	ug/L	INAB	
Nitrobenzene		EO025	0.5		<0.5	ug/L		
Propanenitrile		EO025	10.0		<10.0	ug/L		
Hexachlorobutadiene		EO025	0.500		<0.5	ug/L	INAB	
Trans-1,2 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	

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Contact Name	Tim Supple	**Report Number**	61979 - 1
Address	Kerry County Council County Buildings, Tralee,	**Sample Number** **Date of Receipt** **Date Started**	61979/004 23/11/2012 23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5698		

CERTIFICATE OF ANALYSIS

TEST ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite								
MIBE		EO025	0.500		<0.5	ug/L	INAB	
1,1-dichloroethane		EO025	0.500		<0.5	ug/L	INAB	
2,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
cis-12 Dichloroethene		EO025	0.500		<0.5	ug/L	INAB	
2-Butanone		EO025	5.0		<5.0	ug/L		
Methyl Acrylate		EO025	0.500		<0.5	ug/L	INAB	
Bromochloromethane		EO025	0.500		<0.5	ug/L	INAB	
Methacrylonitrile		EO025	5.0		<5.0	ug/L		
Tetrahydrofuran		EO025	0.500		<0.5	ug/L	INAB	
Chloroform		EO025	1.000		<1.0	ug/L	INAB	
1,1,1-trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
1-Chlorobutane		EO025	0.500		<0.5	ug/L	INAB	
Carbon Tetrachloride		EO025	0.500		<0.5	ug/L	INAB	
11 Dichloropropene		EO025	0.500		<0.5	ug/L	INAB	
Benzene		EO025	0.100		<0.1	ug/L	INAB	
1,2 dichloroethane		EO025	0.1		<0.1	ug/L	INAB	
Trichloroethene		EO025	0.100		<0.1	ug/L	INAB	
1,2-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
Dibromomethane		EO025	0.500		<0.5	ug/L	INAB	
Methyl Methacrylate		EO025	0.500		<0.5	ug/L	INAB	
Bromodichlormmethane		EO025	2.000		<2.0	ug/L	INAB	
13 Dichloropropene,cis		EO025	2.000		<2.0	ug/L	INAB	
MIBK/4 Methyl 2 Pentanone		EO025	2.000		<2.0	ug/L	INAB	
Toluene		EO025	0.500		<0.5	ug/L	INAB	
13 Dichloropropene,trans		EO025	2.000		<2.0	ug/L	INAB	
Ethyl Methacrylate		EO025	2.000		<2.0	ug/L	INAB	
112 Trichloroethane		EO025	0.500		<0.5	ug/L	INAB	
Tetrachloroethene		EO025	0.100		<0.1	ug/L	INAB	
1,3-dichloropropane		EO025	0.500		<0.5	ug/L	INAB	
2-Hexanone		EO025	1.000		<1.0	ug/L	INAB	
Dibromochloromethane		EO025	1.000		<1.0	ug/L	INAB	
1,2-dibromoethane		EO025	0.500		<0.5	ug/L	INAB	
Chlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
1,1,1,2-tetrachloroethane		EO025	2.000		<2.0	ug/L	INAB	
Ethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
Xylene P&M		EO025	0.500		<0.5	ug/L	INAB	
Xylene -o		EO025	0.500		<0.5	ug/L	INAB	

Signed : _____ 10/12/2012

Technical Manager (or Deputy): Brendan Murray

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5.ACCRED=Indicates matrix accreditation for the test,a blank field indicates not accredited

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Contact Name	Tim Supple	**Report Number**	**61979 - 1**
Address	Kerry County Council County Buildings, Tralee,	**Sample Number**	61979/004
		Date of Receipt	23/11/2012
		Date Started	23/11/2012
Tel No	066-7183592	**Received or Collected**	An Post
Fax No		**Condition on Receipt**	Good
Customer PO	400305176	**Date of Report**	10/12/2012
Quotation No	QN001579	**Sample Type**	Ground Waters
Customer Ref	2012/5698		

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Styrene		EO025	2.000		<2.0	ug/L	INAB	
	Bromoform		EO025	1.000		<1.0	ug/L	INAB	
	Isopropylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	Bromobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,1,2,2-tetrachloroethane		EO025	0.500		<0.5	ug/L	INAB	
	1,2,3-trichloropropane		EO025	2.000		<2.0	ug/L	INAB	
	Trans 14 Dichloro 2 Butene, trans		EO025	2.0		<2.0	ug/L		
	Propylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	2-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
	4-chlorotoluene		EO025	0.500		<0.5	ug/L	INAB	
	1,3,5-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	Tert Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
	1,2,4-trimethylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	sec-butylbenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,3-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	P Isopropyltoluene		EO025	0.500		<0.5	ug/L	INAB	
	1,4-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	1,2-dichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	N Butyl Benzene		EO025	0.500		<0.5	ug/L	INAB	
	Hexachloroethane		EO025	5.000		<5.0	ug/L	INAB	
	1,2-dibromo-3-chloropropane		EO025	2.000		<2.0	ug/L	INAB	
	1,2,4-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	
	Naphthalene		EO025	2.0		<2.0	ug/L		
	1,2,3-trichlorobenzene		EO025	0.500		<0.5	ug/L	INAB	

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Appendix 6 – Surface Water Monitoring Results

	A	B	C	E	G	H	I	J	K	L	M	N	O	P
1						Parameter	Appearance	Colour	Flow	Ammonium	pH	BOD (5day)	Conductivity @ 20 dC	Chemical Oxygen Demand
2										NH4		O2		O2
3						Max.	–	–		0.06(Impact sites)				
4						Min.	–	–						
5	Location	Location Reference	Sample Template	Sample Date	Sampled By	Comments	Descriptive	Descriptive		mg/l	pH units	mg/l	µS/cm	mg/l
6														
7														
8	Lhs of M.H. (surface water along by cell 13)		General Landfill: Surface water	19-Jun-12	Tim Supple	f M.H. Surface water flowing along the outer rim of C				0.02	7.2		312	30
9	Lhs of M.H. (surface water along by cell 13)		General Landfill: Surface water	22-Jun-12	Tim Supple	ph cond NH4 COD Cl				0.04	7.1		201	38
10														
11	Rhs of M.H. (surface water along by cell 12)		General Landfill: Surface water	19-Jun-12	Tim Supple	f M.H. Surface water flowing along the outer rim of C				0.12	6.9		357	29
12	Rhs of M.H. (surface water along by cell 12)		General Landfill: Surface water	22-Jun-12	Tim Supple	ph cond NH4 COD Cl				0.06	7.1		157	51
13														
14														
15														
23	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA: North kerry: Surface Water monthly	18-Jan-12	Tómas Ó Sullivan	E1 New SWML Sampling point	clear	ND			7.9		139	
24	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Slight Colour	ND						
25	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA:North kerry: Surface water Quarterly	29-Mar-12	Tómas Ó Sullivan		clear	ND		0.02	7.2	< 1	224	< 10
26	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA: North kerry: Surface Water monthly	27-Apr-12	Tómas Ó Sullivan	suspended solids	clear	N.D						
27	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA:North kerry: Surface water Quarterly	30-May-12	Tim Supple		clear	N.D		0.05	7.4	< 1	262	< 10
28	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon		Cloudy	ND						
29	Surface water: SWML-E1(Northern Lagoon)	new Surface water Lagoon	EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Clear	ND		0.11				
30	Surface water: SWML-E1(Northern Lagoon)	new surface water l	EPA:North kerry: Surface water Quarterly	23-Aug-12	Tim Supple		clear/sl/cloudy	ND		0.03	7.6	< 1	147	< 10
31	Surface water: SWML-E1(Northern Lagoon)	new surface water l	EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Slightly Cloudy	ND						
32	Surface water: SWML-E1(Northern Lagoon)	new surface water l	EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Sl. cloudy	ND						
33	Surface water: SWML-E1(Northern Lagoon)	new surface water l	EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Cloudy	ND		2.87	7.5	> 24	273	80
34	Surface water: SWML-E1(Northern Lagoon)	new surface water l	EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Slightly Cloudy	ND		3.25				
37														
42														
97	Surface Water sampling point: W1	biological station	EPA: North kerry: Surface Water monthly	18-Jan-12	Andrew Scanlon		Slight brown colour	N.D			7		101	
98	Surface Water sampling point: W1	biological station	EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Clear	ND		< 0.02				
99	Surface Water sampling point: W1	biological station	EPA:North kerry: Surface water Quarterly	29-Mar-12	Tómas Ó Sullivan		clear	ND		< 0.02	7.1	< 1	129	10
100	Surface Water sampling point: W1	biological station	EPA: North kerry: Surface Water monthly	27-Apr-12	Tómas Ó Sullivan	suspended solids	coloured light brown	N.D						
101	Surface Water sampling point: W1	biological station	EPA:North kerry: Surface water Quarterly	30-May-12	Tómas Ó Sullivan		clear	N.D		< 0.02	6.8	< 1	140	< 10
102	Surface Water sampling point: W1	biological station	EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon		Clear	ND						
103	Surface Water sampling point: W1	biological station	EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Slight Brown Colour	ND						
104	Surface Water sampling point: W1	Biological station	EPA:North kerry: Surface water Quarterly	23-Aug-12	Michael O Sullivan	Bio st.	clear/coloured	ND		0.02	6.9	< 1	86	44
105	Surface Water sampling point: W1	Biological station	General Landfill: Surface water	14-Sep-12	Tim Supple					< 0.02				
106	Surface Water sampling point: W1		General Landfill: Surface water	17-Sep-12	Caroline Markey					< 0.02	6.6		77	
107	Surface Water sampling point: W1	Biological station	EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Clear	ND						
108	Surface Water sampling point: W1	Biological station	EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Cloudy	ND		< 0.02				
109	Surface Water sampling point: W1	Biological station	EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Clear	ND		< 0.02	7	1	90	24
110	Surface Water sampling point: W1	Biological station	EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Clear	ND						
111	Surface Water sampling point: W1	Biological station	EPA: North kerry: Surface Water monthly	04-Jan-13	Tim Supple		Clear	ND		0.02				
114														
115	Surface water: W2(O'Brennan's Br. R.Lee)		General Landfill: Surface water	14-Sep-12	Tim Supple	O'Brennan's Br				0.04				
116	Surface water: W2(O'Brennan's Br. R.Lee)		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Clear	ND						
117	Surface water: W2(O'Brennan's Br. R.Lee)		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Clear	ND		< 0.02				
118	Surface water: W2(O'Brennan's Br. R.Lee)		General Landfill: Surface water	17-Sep-12	Caroline Markey					< 0.02	7		110	
119	Surface water: W2(O'Brennan's Br. R.Lee)		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Clear	ND		0.02	7.2	< 1	121	25
120	Surface water: W2(O'Brennan's Br. R.Lee)		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Clear	ND						
124														
125	Biological station E1		General Landfill: Surface water	17-Sep-12	Caroline Markey					< 0.02	6.6		77	
126	Biological Station E2		General Landfill: Surface water	19-Sep-12	Claire Mc Caffrey					0.02	5		57	
127	Biological Station G1		General Landfill: Surface water	18-Sep-12	Claire Mc Caffrey					< 0.02	6.4		58	
128	Biological Station G2		General Landfill: Surface water	18-Sep-12	Claire Mc Caffrey					< 0.02	6.7		65	
129	Biological Station N1		General Landfill: Surface water	18-Sep-12	Claire Mc Caffrey					< 0.02	6.4		67	
130														
131														
180	Surface water: SW-1	previously e1	EPA: North kerry: Surface Water monthly	18-Jan-12	Tómas Ó Sullivan		Slight brown colour	N.D			6.8		80	
181	Surface water: SW-1	previously e1	EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Clear	ND						
182	Surface water: SW-1	previously e1	EPA:North kerry: Surface water Quarterly	29-Mar-12	Tómas Ó Sullivan		sl coloured	ND		< 0.02	7.4	< 1	113	20
183	Surface water: SW-1	previously e1	EPA: North kerry: Surface Water monthly	27-Apr-12	Tómas Ó Sullivan	suspended solids	coloured light brown	N.D						
184	Surface water: SW-1	previously e1	EPA:North kerry: Surface water Quarterly	30-May-12	Tim Supple		Slightly coloured/clear	N.D		< 0.02	7.5	< 1	129	10
185	Surface water: SW-1	previously e1	EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon		Clear	ND						
186	Surface water: SW-1		EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Slight Brown Colour	ND						
187	Surface water: SW-1		EPA:North kerry: Surface water Quarterly	23-Aug-12	Michael O Sullivan		clear/coloured	ND		< 0.02	6.9	1.1	80	88
188	Surface water: SW-1		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Slight Brown Colour	ND						
189	Surface water: SW-1		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Brownish/rivverlike	ND						
190	Surface water: SW-1		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Slight Brown Colour	ND		0.11	6.2	1.2	46	37
191	Surface water: SW-1		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Clear	ND						
194														
195														
237	Surface water: SW-2		EPA: North kerry: Surface Water monthly	18-Jan-12	Tómas Ó Sullivan		Slight brown colour	N.D			4		109	
238	Surface water: SW-2		EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Brown Colour	ND		0.02				
239	Surface water: SW-2		EPA:North kerry: Surface water Quarterly	29-Mar-12	Tómas Ó Sullivan	No sample			No Flow					
240	Surface water: SW-2		EPA: North kerry: Surface Water monthly	27-Apr-12	Tómas Ó Sullivan	suspended solids	coloured light brown	peaty						
241	Surface water: SW-2		EPA:North kerry: Surface water Quarterly	30-May-12	Tim Supple	Dry No Sample			No Flow					
242	Surface water: SW-2		EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon		Brown Colour	ND						
243	Surface water: SW-2		EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Slight Brown Colour	ND						

	A	B	C	E	G	H	I	J	K	L	M	N	O	P
244	Surface water: SW-2		EPA: North kerry: Surface water Quarterly	23-Aug-12	Tim Supple		clear/coloured	ND		0.03	4.9	1	45	131
245	Surface water: SW-2		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Brown Colour	ND						
246	Surface water: SW-2		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Brownish/riverlike	ND						
247	Surface water: SW-2		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Brown Colour	ND		0.05	3.8	< 1	69	149
248	Surface water: SW-2		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Brown Colour	ND						
251														
252														
381														
454	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA: North kerry: Surface Water monthly	18-Jan-12	Andrew Scanlon		cloudy	N.D			7		259	
455	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Cloudy	ND		0.02				
456	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA:North kerry: Surface water Quarterly	29-Mar-12	Tim Supple		sl coloured/cloudy	ND		< 0.02	8.2	5.4	236	23
457	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA: North kerry: Surface Water monthly	27-Apr-12	Tomas Ó Sullivan	suspended solids and NH4	clear	N.D		0.02				
458	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA:North kerry: Surface water Quarterly	30-May-12	Tomas Ó Sullivan	Taken From Lagoon	clear	N.D		< 0.02	8.1	2.2	278	16
459	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon		Slight Sediment	ND		0.02				
460	Surface water: SWML-2(Western Lagoon outlet)	previously 2 lagoon	EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Clear	ND		0.02				
461	Surface water: SWML-2(Western Lagoon outlet)		EPA:North kerry: Surface water Quarterly	23-Aug-12	Michael O Sullivan	Taken from Lagoon — not flowing	Cloudy	ND		0.02	8	2.4	198	19
462	Surface water: SWML-2(Western Lagoon outlet)		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Slight Sediment	ND		0.03				
463	Surface water: SWML-2(Western Lagoon outlet)		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Cloudy	ND		< 0.02				
464	Surface water: SWML-2(Western Lagoon outlet)		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Slightly Cloudy	ND		< 0.02	6.8	< 1	199	19
465	Surface water: SWML-2(Western Lagoon outlet)		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Clear	ND		< 0.02				
468														
469														
505	Surface water: SWML-3		General Landfill: Surface water	06-Jan-12	Iona Mc Gloin					0.04				
506	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	18-Jan-12	Andrew Scanlon		Cloudy	N.D			7.1		260	
507	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Cloudy	ND		0.02				
508	Surface water: SWML-3		EPA:North kerry: Surface water Quarterly	29-Mar-12	Tim Supple	No sample			no flow					
509	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	27-Apr-12	Tomas Ó Sullivan	suspended solids and NH4	clear	N.D						
510	Surface water: SWML-3		EPA:North kerry: Surface water Quarterly	30-May-12	Tomas Ó Sullivan	Dry No Sample								
511	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon	Slow Flow	Clear	ND		0.02				
512	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Clear	ND		0.02				
513	Surface water: SWML-3		EPA:North kerry: Surface water Quarterly	23-Aug-12	Michael O Sullivan		clear	ND		0.04	7.6	< 1	292	< 10
514	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Clear	ND		< 0.02				
515	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple	No Sample— not flowing								
516	Surface water: SWML-3		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Clear	ND		0.03	7.3	< 1	202	27
517	Surface water: SWML-3		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Clear	ND		< 0.02				
520														
521														
560	Surface water: SWML-4	previously 4	General Landfill: Surface water	18-Jan-12	Andrew Scanlon	Not Flowing			low for s					
561	Surface water: SWML-4	previously 4	EPA:North kerry: Surface water Quarterly	29-Mar-12	Tim Supple	No sample			no flow					
562	Surface water: SWML-4	previously 4	EPA: North kerry: Surface Water monthly	27-Apr-12	Tomas Ó Sullivan	No Sample(dry)			no flow					
563	Surface water: SWML-4	previously 4	EPA:North kerry: Surface water Quarterly	30-May-12	Tomas Ó Sullivan	Dry No Sample			no flow					
564	Surface water: SWML-4	previously 4	EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon	Not Flowing - No Sample	Clear	ND	no flow					
565	Surface water: SWML-4	previously 4	EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Clear	ND						
566	Surface water: SWML-4		General Landfill: Surface water	23-Aug-12	Tim Supple	No sample— not flowing								
567	Surface water: SWML-4		General Landfill: Surface water	27-Sep-12	Andrew Scanlon	Not Flowing - No Sample			no flow					
568	Surface water: SWML-4		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple	No Sample— not flowing								
569	Surface water: SWML-4		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Clear	ND		0.02	6.8	< 1	172	10
570	Surface water: SWML-4		General Landfill: Surface water	10-Dec-12	Andrew Scanlon	No Sample								
573														
574														
602	Surface water: SWML-5		General Landfill: Surface water	18-Jan-12	Andrew Scanlon	Not Flowing			w too lov					
603	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Clear	ND						
604	Surface water: SWML-5		EPA:North kerry: Surface water Quarterly	29-Mar-12	Tim Supple	No sample			no flow					
605	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	27-Apr-12	Tomas Ó Sullivan	suspended solids	clear	N.D						
606	Surface water: SWML-5		EPA:North kerry: Surface water Quarterly	30-May-12	Tomas Ó Sullivan	Dry No Sample			no flow					
607	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon	Slow Flow	Clear	ND						
608	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Clear	ND						
609	Surface water: SWML-5		General Landfill: Surface water	23-Aug-12	Tim Supple	No sample— not flowing			no flow					
610	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Clear	ND						
611	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple	No Sample— not flowing								
612	Surface water: SWML-5		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Clear	ND		0.04	7.5	< 1	185	15
613	Surface water: SWML-5		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Clear	ND						
616														
618														
666	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA: North kerry: Surface Water monthly	18-Jan-12	Tomas Ó Sullivan		Cloudy	N.D			7.6		211	
667	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA: North kerry: Surface Water monthly	21-Feb-12	Andrew Scanlon		Cloudy	ND		< 0.02				
668	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA:North kerry: Surface water Quarterly	29-Mar-12	Tim Supple		sl cloudy/coloured	ND		< 0.02	8.3	1.8	254	25
669	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA: North kerry: Surface Water monthly	27-Apr-12	Tomas Ó Sullivan	suspended solids	cloudy	N.D		0.08				
670	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA:North kerry: Surface water Quarterly	30-May-12	Tomas Ó Sullivan	Taken From Lagoon	clear	N.D		< 0.02	8	< 1	302	25
671	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA: North kerry: Surface Water monthly	15-Jun-12	Andrew Scanlon		Clear	ND		0.1				
672	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	General Landfill: Surface water	22-Jun-12	Tim Supple	ph cond NH4 COD Cl				0.02	7.6		217	43
673	Surface water: SWML-10(Eastern Lagoon outlet)	NE lagoon	EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Slightly Cloudy	ND						
674	Surface water: SWML-10(Eastern Lagoon outlet)		EPA:North kerry: Surface water Quarterly	23-Aug-12	Tim Supple		cloudy	ND		< 0.02	7.4	1.1	235	21
675	Surface water: SWML-10(Eastern Lagoon outlet)		EPA: North kerry: Surface Water monthly	27-Sep-12	Andrew Scanlon		Cloudy	ND		< 0.02				
676	Surface water: SWML-10(Eastern Lagoon outlet)		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple		Sl. cloudy	ND		0.04				
677	Surface water: SWML-10(Eastern Lagoon outlet)		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Cloudy/Sediment	ND		0.33	7.6	2.6	205	105
678	Surface water: SWML-10(Eastern Lagoon outlet)		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Cloudy/Sediment	ND						
679	Surface water: SWML-10(Eastern Lagoon outlet)		EPA: North kerry: Surface Water monthly	04-Jan-13	Tim Supple		Cloudy/Dirty	ND		0.14				
681														
682														
723	Surface water: SWML-11	previously 11	EPA: North kerry: Surface Water monthly	15-Dec-11	Tim Supple		cloudy	ND						
724	Surface water: SWML-11		EPA: North kerry: Surface Water monthly	02-Jul-12	Andrew Scanlon		Slightly Cloudy	ND						
725	Surface water: SWML-11		EPA:North kerry: Surface water Quarterly	23-Aug-12	Michael O Sullivan		clear/sl/coloured	sl/musty/earthy		0.02	7.1	< 1	234	21
726	Surface water: SWML-11		General Landfill: Surface water	27-Sep-12	Andrew Scanlon	Not Flowing - No Sample			no flow					
727	Surface water: SWML-11		EPA: North kerry: Surface Water monthly	24-Oct-12	Tim Supple	No Sample— not flowing								
728	Surface water: SWML-11		EPA: North kerry: Surface water annual	21-Nov-12	Andrew Scanlon		Clody/Sediment	ND		0.31	7.6	2.7	208	105
729	Surface water: SWML-11		EPA: North kerry: Surface Water monthly	10-Dec-12	Andrew Scanlon		Cloudy/Sediment	ND						

	A	B	C	E		Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
1					1	Chloride	Dissolved Oxygen	Suspended Solids	Temperature	Potassium	Total Organic Carbon	Cadmium	boron	Chromium	Sodium	iron	Calcium	zinc	Nickel	Lead	Arsenic	Antimony	Selenium	Magnesium	manganese	Copper	Mercury	Alkalinity	Total Oxidised Nitrogen (TON)	Sulphate	Molybdate Reactive Phosphorous	Q Biological Rating
2					2	Cl	O2			K	C	Cd	B	Cr	Na	Fe	Ca	Zn	Ni	Pb	As	Sb	Se	Mg	Mn	Cu	Hg	CaCO3	NO3	SO4	P	Biol
3					3																											
4					4																											4
5	Location	Location Reference	Sample Template	Sample Date	5	mg/l	mg/l	mg/l	Degrees C	mg/l	mg/l	ug/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l	Rating
6					6																											
7					7																											
8	Lhs of M.H. (surface water along by cell 13)		General Landfill: Surface water	15-Jun-12	8	10.7																										
9	Lhs of M.H. (surface water along by cell 13)		General Landfill: Surface water	25-Jun-12	9	8.2	7.7		17.2																							
10					10																											
11	Rhs of M.H. (surface water along by cell 12)		General Landfill: Surface water	15-Jun-12	11	11.9																										
12	Rhs of M.H. (surface water along by cell 12)		General Landfill: Surface water	25-Jun-12	12	10.9	8.8		15.5																							
13					13																											
14					14																											
15					15																											
23	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA: North kerry: Surface Water monthly	15-Jan-12	23			5	9																							
24	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA: North kerry: Surface Water monthly	21-Feb-12	24			12	7.6																							
25	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA:North kerry: Surface water Quarterly	25-Mar-12	25	15.6	10.1	3	9.5																							
26	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA: North kerry: Surface Water monthly	27-Apr-12	26		10.8	5	10.9																							
27	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA:North kerry: Surface water Quarterly	30-May-12	27	14.2	8.6	3	14.4																							
28	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA: North kerry: Surface Water monthly	15-Jun-12	28			11																								
29	Surface water: SWM-E1(Northern Lagoon)	new Surface water Lagoon	ESA: North kerry: Surface Water monthly	02-Jul-12	29			8																								
30	Surface water: SWM-E1(Northern Lagoon)	new surface water1	ESA:North kerry: Surface water Quarterly	23-Aug-12	30	5.6	9.2	2	16.6																							
31	Surface water: SWM-E1(Northern Lagoon)	new surface water1	ESA: North kerry: Surface Water monthly	27-Sep-12	31			8.5	12.5																							
32	Surface water: SWM-E1(Northern Lagoon)	new surface water1	ESA: North kerry: Surface Water monthly	24-Oct-12	32			19	11.4																							
33	Surface water: SWM-E1(Northern Lagoon)	new surface water1	ESA: North kerry: Surface water annual	21-Nov-12	33	15.4	9.6	30	7	4.05		0.023	0.017	1.555	13.5	0.98	39.2	0.01	2.301	1.304	0.65			3.94	0.85	< 0.025	< 0.009	111	4.01	5.7	0.018	
34	Surface water: SWM-E1(Northern Lagoon)	new surface water1	ESA: North kerry: Surface Water monthly	10-Dec-12	34			11																								
37					37																											
42					42																											
97	Surface Water sampling point: W1	biological station	ESA: North kerry: Surface Water monthly	15-Jan-12	97			2	8.6																							
98	Surface Water sampling point: W1	biological station	ESA: North kerry: Surface Water monthly	21-Feb-12	98			1	7.8																							
99	Surface Water sampling point: W1	biological station	ESA:North kerry: Surface water Quarterly	25-Mar-12	99	23.1	11.1	2	9																							
100	Surface Water sampling point: W1	biological station	ESA: North kerry: Surface Water monthly	27-Apr-12	100		11.1	1	8.1																							
101	Surface Water sampling point: W1	biological station	ESA:North kerry: Surface water Quarterly	30-May-12	101	22.1	9.8	1	12.4																							
102	Surface Water sampling point: W1	biological station	ESA: North kerry: Surface Water monthly	15-Jun-12	102			< 1																								
103	Surface Water sampling point: W1	biological station	ESA: North kerry: Surface Water monthly	02-Jul-12	103			4																								
104	Surface Water sampling point: W1	Biological station	ESA:North kerry: Surface water Quarterly	23-Aug-12	104	15.6	10.5	2	13.5																							
105	Surface Water sampling point: W1	biological station	General Landfill: Surface water	14-Sep-12	105		9.7		12.2																							
106	Surface Water sampling point: W1		General Landfill: Surface water	17-Sep-12	106		9.9	4	11.8																				< 0.02		0.017	3.5
107	Surface Water sampling point: W1	Biological station	ESA: North kerry: Surface Water monthly	27-Sep-12	107			2	10.4																							
108	Surface Water sampling point: W1	Biological station	ESA: North kerry: Surface Water monthly	24-Oct-12	108			30.5	10.3																							
109	Surface Water sampling point: W1	Biological station	ESA: North kerry: Surface water annual	21-Nov-12	109	16.7	11.7	3	7.2	< 0.5		< 0.02	0.006	< 1.1	11.1	1.02	5.2	< 0.01	1.219	0.682	< 0.5			2	0.18	< 0.025	< 0.009	15	0.8	< 2	0.008	
110	Surface Water sampling point: W1	Biological station	ESA: North kerry: Surface Water monthly	10-Dec-12	110			1																								
111	Surface Water sampling point: W1	Biological station	ESA: North kerry: Surface Water monthly	04-Jan-13	111			1																								
114					114																											
115	Surface water: NQ(O'Brennans Br. R.Lee)		General Landfill: Surface water	14-Sep-12	115		9.8		13.5																							
116	Surface water: NQ(O'Brennans Br. R.Lee)		ESA: North kerry: Surface Water monthly	27-Sep-12	116			3.5	10.9																							
117	Surface water: NQ(O'Brennans Br. R.Lee)		ESA: North kerry: Surface Water monthly	24-Oct-12	117			< 1	11.4																							
118	Surface water: NQ(O'Brennans Br. R.Lee)		General Landfill: Surface water	17-Sep-12	118		10	1	12.2																				2.23		0.02	4.5
119	Surface water: NQ(O'Brennans Br. R.Lee)		ESA: North kerry: Surface water annual	21-Nov-12	119	18.1	11.6	1	8	1.98		< 0.02	0.007	< 1.1	11.6	0.46	8.7	< 0.01	0.987	< 0.2	< 0.5			3.01	0.024	< 0.025	< 0.009	24	3.8	5.3	0.012	
120	Surface water: NQ(O'Brennans Br. R.Lee)		ESA: North kerry: Surface Water monthly	10-Dec-12	120			< 1																								
124					124																											
125	Biological station E1		General Landfill: Surface water	17-Sep-12	125		8.8	3	11.9																				< 0.02		0.019	4.5
126	Biological Station E3		General Landfill: Surface water	19-Sep-12	126	13.6	10.3	3																					< 0.02		0.032	3.5
127	Biological Station G1		General Landfill: Surface water	19-Sep-12	127		10.2	6																					< 0.02		0.016	4.5
128	Biological Station G2		General Landfill: Surface water	19-Sep-12	128		10	5																					< 0.02		0.015	4.5
129	Biological Station W1		General Landfill: Surface water	19-Sep-12	129		10.2	9																					< 0.02		0.038	3.5
130					130																											
131					131																											
180	Surface water: SWM-1	previously e1	ESA: North kerry: Surface Water monthly	15-Jan-12	180			3	8.7																							
181	Surface water: SWM-1	previously e1	ESA: North kerry: Surface Water monthly	21-Feb-12	181			2	7.4																							
182	Surface water: SWM-1	previously e1	ESA:North kerry: Surface water Quarterly	25-Mar-12	182	16.5	10.9	< 1	8.7																							
183	Surface water: SWM-1	previously e1	ESA: North kerry: Surface Water monthly	27-Apr-12	183		10.5	< 1	9																							
184	Surface water: SWM-1	previously e1	ESA:North kerry: Surface water Quarterly	30-May-12	184	15.2	9.1	< 1	13.6																							
185	Surface water: SWM-1	previously e1	ESA: North kerry: Surface Water monthly	15-Jun-12	185			3																								
186	Surface water: SWM-1		ESA: North kerry: Surface Water monthly	02-Jul-12	186			2																								
187	Surface water: SWM-1		ESA:North kerry: Surface water Quarterly	23-Aug-12	187	12.6	8.2	1	14.6																							
188	Surface water: SWM-1		ESA: North kerry: Surface Water monthly	27-Sep-12	188			2.5	11																							
189	Surface water: SWM-1		ESA: North kerry: Surface Water monthly	24-Oct-12	189			3.5	10.3																							
190	Surface water: SWM-1		ESA: North kerry: Surface water annual	21-Nov-12	190	9.4	10.9	2	8.4	< 0.5		< 0.02	0.003	< 1.1	6.9	0.96	2.4	< 0.01	< 0.8	0.482	< 0.5			0.97	0.049	< 0.025	0.029	8	0.83	< 2	0.008	
191	Surface water: SWM-1		ESA: North kerry: Surface Water monthly	10-Dec-12	191			< 1																								
194					194																											
195					195																											
237	Surface water: SWM-2		ESA: North kerry: Surface Water monthly	15-Jan-12	237			2	8.8																							
238	Surface water: SWM-2		ESA: North kerry: Surface Water monthly	21-Feb-12	238			5	7.5																							
239	Surface water: SWM-2		ESA:North kerry: Surface water Quarterly	25-Mar-12	239																											
240	Surface water: SWM-2		ESA: North kerry: Surface Water monthly	27-Apr-12	240		10.4	< 1	7.2																							
241	Surface water: SWM-2		ESA:North kerry: Surface water Quarterly	30-May-12	241																											
242	Surface water: SWM-2		ESA: North kerry: Surface Water monthly	15-Jun-12	242			14																								
243	Surface water: SWM-2		ESA: North kerry: Surface Water monthly	02-Jul-12	243			3																								

Appendix 6 – Leachate Monitoring Lab Results

			Odour	Ammenium	pH	BOD (5day)	Conductivity @ 20 oC	Chemical Oxygen Demand	Chloride	Dissolved Oxygen	Temperature	Potassium	Cadmium	Boron	Chromium	Sodium	Iron	Calcium	zinc	Nickel	Lead	Arsenic	Magnesium	manganese	Copper	Mercury	Total Oxidised Nitrogen(TON)	Sulphate	Molybdate Reactive Phosphorous	Total Cyanide^^	Fluoride
				NH4		O2		O2	Cl	O2		K	Cd	B	Cr	Na	Fe	Ca	Zn	Ni	Pb	As	Mg	Mn	Cu	Hg	NO3	SO4	P	Cn	F
			--																											Varies	Varies
			--																											--	--
Location	Sample Date	Sampled By	Descriptive	mg/l	pH units	mg/l	µS/cm	mg/l	mg/l	mg/l	Degrees C	mg/l	ug/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l	ug/l
Leachate: LD-1	29-Mar-12	Tim Supple	phenolic								11.6																					
Leachate: LD-1	30-May-12	Tómas Ó Sullivan	N.D								13																					
Leachate: LD-1	23-Aug-12	Michael O Sullivan	sl.phenolic								12.5																					
Leachate: LD-1	21-Nov-12	Andrew Scanlon	ND	20.08	6.5	1.5	347	32	26.1	< 1	12.3	12.15	< 0.02	0.06	1.121	25.4	4.7	17.9	0.01	1.351	0.537	3.44	3.22	0.77	< 0.025	0.045	3.28	4.2	0.013	< 0.025	< 200
Leachate: LD-2	29-Mar-12	Tim Supple	sl phenolic								10.1																					
Leachate: LD-2	30-May-12	Tómas Ó Sullivan	earthy								14																					
Leachate: LD-2	23-Aug-12	Michael O Sullivan	ND								13																					
Leachate: LD-2	21-Nov-12	Andrew Scanlon	ND	27.08	7.5	1.2	682	47	48.5	< 1	12.2	25.18	< 0.02	0.117	1.955	40	3.1	65.1	0.01	2.432	< 0.2	3.23	6.49	0.91	< 0.025	0.294	12.88	< 2	0.018	< 0.025	< 200
Leachate: LD-3	29-Mar-12	Tim Supple	ND/earthy								9.4																					
Leachate: LD-3	30-May-12	Tómas Ó Sullivan	sulphur/musty								13																					
Leachate: LD-3	23-Aug-12	Michael O Sullivan	ND								14.5																					
Leachate: LD-3	21-Nov-12	Andrew Scanlon	ND	193.76	7.8	9.8	2510	181	207.9	< 1	8.8	100.84	0.091	0.479	8.283	188.9	2.7	91.3	0.01	13.567	0.207	3.7	22.21	4.35	< 0.025	0.045	14.66	81.2	0.086	< 0.025	< 200
Leachate: LL 1	18-Jan-12	Tómas O'Sullivan	Leachate smell	2.97	7.2	58	3320	318	332.5	< 2	12.1	133	0.034	0.77	16	259	24.5	84	0.04	27	1.48		32.17	3.51	< 0.025	0.611	12.19	23.3	0.173	< 0.025	< 200
Leachate: LL 1	29-Mar-12	Tim Supple	phenolic								12.9																					
Leachate: LL 1	30-May-12	Tómas Ó Sullivan	foul/leachy								16																					
Leachate: LL 1	23-Aug-12	Michael O Sullivan	phenolic								16.8																					
Leachate: LL 1	21-Nov-12	Andrew Scanlon	Strong Leachate Smell	361.25	7.5	840	4280	1700	380.1	< 1	10.5	217.1	0.129	0.999	69.746	354.4	9.2	124.9	0.09	37.389	2.88	21.61	55.36	3.61	< 0.025	0.055	6.8	< 2	1.044	0.052	< 200
Leachate: LL 2	29-Mar-12	Tim Supple	phenolic								14.4																					
Leachate: LL 2	30-May-12	Tómas Ó Sullivan	dark brown								16.5																					
Leachate: LL 2	23-Aug-12	Tim Supple	phenolic								18																					
Leachate: LL 2	21-Nov-12	Andrew Scanlon	Slight Leachate Smell	26.78	8	12.3	2020	231	178.3	8.2	6.5	92.2	< 0.02	0.574	17.809	155.5	3.6	41.4	0.02	20.21	1.242	6.33	18.78	0.86	< 0.025	0.072	0.32	23.2	0.588	< 0.025	< 200
Leachate: LL 3	29-Mar-12	Tim Supple	musty								11.6																					
Leachate: LL 3	30-May-12	Tómas Ó Sullivan	earthy								15																					
Leachate: LL 3	23-Aug-12	Tim Supple	earthy								16.5																					
Leachate: LL 3	21-Nov-12	Andrew Scanlon	Earthy	0.6	7.5	6.1	174	72	14.3	6.1	7	19.8	0.099	0.016	< 1.1	5.9	0.57	21	0.04	1.545	2.985	0.75	1.83	0.075	< 0.025	0.018	0.66	2.3	1.094	< 0.025	< 200

Appendix 6 – Ground Water Monitoring Lab Results

				Ammonium	pH	Conductivity @ 20 oC	Chloride	Dissolved Oxygen	Temperature	Potassium	Total Organic Carbon	Colour	Cadmium	boron	Chromium	Sodium	iron	Calcium	zinc	Nickel	Lead	Magnesium	manganese	Copper	Mercury	Arsenic	Hardness	Alkalinity	Total Oxidised Nitrogen(TON)	Sulphate	Molybdate Reactive Phosphorous	Semi-Volatile Carbon (SVOC)^^	Volatile Organic carbon (VOC)^^	Carbon Disulphide	Total Cyanide^^	Fluoride (old units)	Dry Residues	Total Dissolved Solids	Turbidity
				NH4			Cl	O2		K	C	Hz	Cd	B	Cr	Na	Fe	Ca	Zn	Ni	Pb	Mg	Mn	Cu	Hg	As	CaCO3	CaCO3	NO3	SO4	P	SVOC	VOC	VOC	Cn	F		TDS	SiO2
				0.225	*10*	*1000*	*187.5*					--	*5*	*0.75*	*50*	*200*				*15*	*10*				*1*		--		*50*		0.03	--	--		*0.05*		--	--	
				--	*4.5*	--	--	*1*				--	--	--	--	--				--	--				--		--		--			--	--		--	--	--	--	--
Location	Sample Date	Sample Time	Sampled By	mg/l	pH units	µS/cm	mg/l	mg/l	Degrees C	mg/l	mg/l	Hazen	ug/l	mg/l	ug/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	mg/l	mg/l	mg/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	mg/l	ug/l	mg/l	mg/l	T.U.'s
Groundwater :Borehole No 1	18-Aug-10	13:52	Andrew Scanlon	< 0.02	5.7	154	32	1.2	10.6		3.5									13.6	***33.6***	5.38	2.58	< 0.025	< 0.1			30	14.25	5.4	***0.12***				< 0.005	< 200	4810		
Groundwater :Borehole No 1	29-Mar-12	10:40	Tómas Ó Sullivan	< 0.02	5.8	170	35.2	3.2	10.5	2.79	22		0.54	< 0.1	3.1	36.3	0.98	12	0.05	7.0	11.0	9.2	4.48	0.033		5													
Groundwater :Borehole No 1	30-May-12	10:10	Tim Supple	< 0.02	5.7	172	31.3	2.7	10.2		13.6	1500	0.01														46												1980
Groundwater :Borehole No 1	23-Aug-12	11:00	Tim Supple	0.03	6.9	184	24.5	2.4	11.1		33	526															72												***5840***
Groundwater :Borehole No 1	22-Nov-12	09:30	Andrew Scanlon	< 0.02	6.7	219	27.2	5.6	9.4	2.44	19.2	1390	0.56	0.009	29.3	11.8	23.6	34.9	0.09	***39.2***	***52.3***	5.1	1.36	0.058	0.012	2.92	107	116	8.68	12.6	***0.15***	< 20	11.2	11.2	< 0.005	< 200	6206	1358	***3200***
Groundwater :Borehole No 2	18-Jan-12	11:57	Tómas Ó Sullivan	0.04	6.8	321	49.8	10.1	9.5	0.93	16.8		0.08	0.067	< 1.1	21.9	1.17	44.7	0.03	1.3	1.6	6.43	0.34	< 0.025	0.11			107	2.05	< 2	0.009				< 0.005	< 200	230		
Groundwater :Borehole No 2	29-Mar-12	10:25	Tómas Ó Sullivan	< 0.02	6.3	289	66.2	10.8	10.2	1.1	7		0.01	< 0.1	< 1.1	32.1	0.19	25.6	0.03	< 1	< 2	5.99	0.06	< 0.025		< 2													
Groundwater :Borehole No 2	30-May-12	11:15	Tómas Ó Sullivan	< 0.02	6.5	292	63.7	9.5	12.7		6.2	55															84												9.11
Groundwater :Borehole No 2	23-Aug-12	11:30	Tim Supple	< 0.02	6.5	297	53.3	8.5	11.8		10	45															117												***12.3***
Groundwater :Borehole No 2	22-Nov-12	11:22	Andrew Scanlon	< 0.02	5.9	235	61.6	6.8	9.4	0.85	6.7	129	0.14	0.004	< 1.1	27	0.79	14	0.02	3.5	1.1	5.56	0.62	< 0.025	0.052	< 0.5	63	24		< 2	0.011	< 20	< 10	3.6	< 0.005	< 200	237	208	***26.6***
Groundwater :Borehole No 2	10-Jan-13	16:20	Tim Supple																										2.46										
Groundwater :Borehole No 3	18-Jan-12	12:15	Tómas Ó Sullivan	***0.52***	6.8	313	22.1	2.6	8.5	2.26	21.5		< 0.02	0.055	< 1.1	18.1	8.87	38	0.03	3.7	1.3	12.47	0.99	< 0.025	0.12			159	2.13	2.8	0.008	< 1	< 10		< 0.005	< 200	216		
Groundwater :Borehole No 3	29-Mar-12	09:40	Tim Supple	0.047	6.6	310	17.5	6.8	9.2	1.62	18.3		0.02	< 0.1	< 1.1	24.7	6.42	22.4	0.04	< 1	2.0	19	2.27	< 0.025		4													
Groundwater :Borehole No 3	30-May-12	11:45	Tómas Ó Sullivan	0.02	6.7	368	18.6	4.2	12.4		20	297															152												51.4
Groundwater :Borehole No 3	23-Aug-12	11:35	Tim Supple	0.05	6.7	326	19.6	4.1	14.7		14.9	169															3												***28.6***
Groundwater :Borehole No 3	22-Nov-12	09:41	Andrew Scanlon	0.03	6.5	276	19.3	4.7	8.8	1.46	21.3	59	< 0.02	0.012	< 1.1	21.3	1.81	19.4	0.02	1.7	1.8	17.43	1.91	< 0.025	0.336	1.23	122	132	< 0.02	< 2	0.008	< 20	< 10	3.2	< 0.005	< 200	194	189	***11.3***
Groundwater :Borehole No 4	18-Jan-12	14:40	Tómas Ó Sullivan	***8.55***	7.3	190	17.9	2.8	8.3	1.35	32.6		0.13	0.02	1.2	9.5	13.23	23.6	0.05	***51.1***	2.6	1.49	0.65	0.04	< 0.1			80	3.02	< 2	0.027	< 1	11.6		< 0.005	< 200	203		
Groundwater :Borehole No 4	29-Mar-12	11:15	Tómas Ó Sullivan	***1.19***	6.7	160	18	3.9	9.5	0.97	20.4		0.08	< 0.1	< 1.1	10.2	4.7	25.2	0.04	36.0	2.0	1.44	0.27	0.042		< 2													
Groundwater :Borehole No 4	02-Apr-12	15:20	Andrew Scanlon	0.03						1.01	10.6		0.07	< 0.1	< 1.1	14.4	0.78	10.2	0.02	5.8	< 2	10.08	3.27	< 0.025														
Groundwater :Borehole No 4	02-Apr-12	15:30	Andrew Scanlon	0.02						1	8.2		0.05	< 0.1	< 1.1	14.6	1.45	11.3	< 0.02	6.2	< 2	10.42	3.57	< 0.025														
Groundwater :Borehole No 4	02-Apr-12	15:40	Andrew Scanlon	0.02						1	9.3		< 0.05	< 0.1	< 1.1	14.7	1.54	12.6	< 0.02	6.0	< 2	10.48	3.64	< 0.025														
Groundwater :Borehole No 4	02-Apr-12	15:50	Andrew Scanlon	0.02						1.02	9.1		< 0.05	< 0.1	< 1.1	14.7	2	12.3	< 0.02	5.7	< 2	10.45	3.65	< 0.025														
Groundwater :Borehole No 4	02-Apr-12	16:00	Andrew Scanlon	0.02						1	8.2		< 0.05	< 0.1	< 1.1	14.5	1.46	12.2	< 0.02	5.5	< 2	10.44	3.55	< 0.025														
Groundwater :Borehole No 4	02-Apr-12	16:10	Andrew Scanlon	0.03						1.03	4.7		< 0.05	< 0.1	< 1.1	15.2	1.5	10.9	< 0.02	6.4	< 2	10.81	3.80	< 0.025														
Groundwater :Borehole No 4	02-Apr-12	16:20	Andrew Scanlon	0.03						1.04	12.7		0.09	< 0.1	< 1.1	13.8	2.87	9.1	0.02	6.1	6.0	11.11	3.68	< 0.025														
Groundwater :Borehole No 4	30-May-12	11:25	Tim Supple	0.02	5.9	209	18.7	1.4	10		9.2	80															59												12
Groundwater :Borehole No 4	23-Aug-12	15:10	Tim Supple	0.02	5.9	198	18.8	1.5	10.4		22.9	54															9												***12.6***
Groundwater :Borehole No 4	21-Nov-12	14:35	Andrew Scanlon	0.05	6	187	19.5	1.5	9.6	1	10.2	34	< 0.02	0.004	< 1.1	14.6	0.84	9.2	0.02	7.2	0.4	10.12	4.03	< 0.025	0.111	< 0.5	90	80	0.2	< 2	< 0.005				< 0.005	< 200	140	137	***4.76***
Groundwater :Borehole No 5	18-Jan-12	12:50	Tómas Ó Sullivan	***1.46***	6.4	249	38.3	4.6	10.1	1.35	31.1		0.04	0.006	2.2	19.4	34.61	25.9	0.04	9.9	5.3	2.72	7.40	< 0.025	< 0.1			1.99	2.3	0.008	< 1	11.2		< 0.005	< 200	559		
Groundwater :Borehole No 5	29-Mar-12	11:10	Tim Supple	***1.14***	6.1	225	36	4.1	10.7	1.8	20.3		< 2	< 0.1	2.0	20.9	27.67	10.8	0.02	< 1	< 2	2.18	1.52	< 0.025		2													
Groundwater :Borehole No 5	30-May-12	12:30	Tómas Ó Sullivan	***1.02***	6.1	248	30.1	2.7	10.7		11.6	1820															54												637
Groundwater :Borehole No 5	30-Aug-12	15:25	Andrew Scanlon	***1.29***	6.3	279	37.5	2.2	14.5			542															19												***55***
Groundwater :Borehole No 5	21-Nov-12	15:25	Andrew Scanlon	***1.25***	6.2	251	27.4	2.1	10.3	1.12	14.3	1476	< 0.02	0.002	3.9	17.8	61.6	5.4	0.02	6.9	2.7	2.1	0.40	< 0.025	0.013	9.54	25	76	< 0.02	4.1	***0.036***				< 0.005	< 200	624	209	***228***
Groundwater :Borehole No 6	18-Jan-12	13:35	Andrew Scanlon	< 0.02	6.2	134	22.6	6.5	9.7	0.73	6.6		0.08	0.002	< 1.1	13.9	0.28	6.3	0.1	9.2	2.2	5.84	0.20	< 0.025	< 0.1			34	2.39	2.3	0.006				< 0.005	< 200	112		
Groundwater :Borehole No 6	29-Mar-12	10:00	Tómas Ó Sullivan	0.023	6	141	22.4	6.3	8.2	1.01	5.9		0.08	< 0.1	< 2	14.6	< 0.04	5.5	0.06	4.0	< 2	6.42	0.11	< 0.025		< 2													
Groundwater :Borehole No 6	30-May-12	10:40	Tim Supple	< 0.02	6	156	22.3	5.1	10.8		5	35															45												5.09
Groundwater :Borehole No 6	23-Aug-12	11:15	Tim Supple	0.02	5.9	140	22.1	4.8	11.9		8.4	32															59												***7.01***
Groundwater :Borehole No 6	22-Nov-12	10:02	Andrew Scanlon	< 0.02	5.7	132	22	2.1	9.5	0.82	5.1	35	0.06	0.004	< 1.1	14.7	0.21	5.4	0.02	4.6	1.0	6.63	0.24	< 0.025	< 0.009	< 0.5	45	35	3.33	2.3	0.01				< 0.005	< 200	104	97	***6.67***
Groundwater :Dennis O'Mahony	18-Jan-12	15:54	Tómas Ó Sullivan	< 0.02	5.7	89	13.6	4.2	8.9	< 0.5	11.2		0.09	0.005	< 1.1	8.2	0.53	6.3	0.02	1.6	1.1	2.91	0.21	0.035	< 0.1			27	0.39	< 2	0.006				< 0.005	< 200	68		
Groundwater :Dennis O'Mahony	29-Mar-12	11:30	Tómas Ó Sullivan	0.021	5.6	101	11.9	2.7	8.5		11.5																													
Groundwater :Dennis O'Mahony	30-May-12	11:55	Tim Supple	0.05	5.6	109	13.1	2.3	12.6		5.7	80															33												7.16
Groundwater :Dennis O'Mahony	23-Aug-12	15:20	Tim Supple	0.04	5.7	78	8	4.3	13.9		18.6	93															35												2.29
Groundwater :Dennis O'Mahony	21-Nov-12	14:53	Andrew Scanlon	0.15	5.5	67	9.3	2.8	8.3	< 0.5	9.1	123	0.05	0.004	< 1.1	6.7	0.91	4.9	0.03	2.6	2.7	2.08	0.15	0.067	0.04	1.04	26	20	1.89	< 2	0.007				< 0.005	< 200	72	68	***6.12***
Groundwater :Gerry Sugrue	18-Jan-12	14:27	Andrew Scanlon	< 0.02	5.8	158	25.3	8.5	9	0.67	7.8		0.09	0.008	< 1.1	12.1	0.03	9.1	0.1	5.2	3.1	6.8	0.04	0.16	< 0.1			28	11.25	5.1	0.006				< 0.005	< 200	113		
Groundwater :Gerry Sugrue	29-Mar-12	12:15	Tim Supple	< 0.02	5.6	157	24.2	9.2	12.1		6.3																													
Groundwater :Gerry Sugrue	30-May-12	13:30	Tómas Ó Sullivan	< 0.02	5.7	193	23.3	6.4	14.3		4.6	< 5															65												0.32
Groundwater :Gerry Sugrue	23-Aug-12	16:15	Tim Supple	< 0.02	6.2	197	23.1	7	16.1		9.2	< 5															74												0.75
Groundwater :Gerry Sugrue	21-Nov-12	14:05	Andrew Scanlon	***0.31***	6.1	185	23.6	6.5	10	0.79	5.7	< 5	0.05	0.008	< 1.1	13	0.13	14.8	0.13	5.1	3.4	7.7	0.03	0.14	0.345	< 0.5	68	43	14.05	5.8	0.006				< 0.005	< 200	148	148	1.11
Groundwater :Gerry Sugrue	10-Jan-13	16:50	Tim Supple																										10.63										

Appendix F: PRTR 2012

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.16

REFERENCE YEAR	2012

1. FACILITY IDENTIFICATION

Parent Company Name	Kerry County Council
Facility Name	North Kerry Landfill Site
PRTR Identification Number	W0001
Licence Number	W0001-04

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.
3.11	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.
3.6	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.
3.7	Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.
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	Muingnaminnane
Address 2	Tralee
Address 3	Co. Kerry
Address 4	
	Kerry
Country	Ireland
Coordinates of Location	-6.85099 54.1736
River Basin District	IEGBNISH
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Tara Ocarroll
AER Returns Contact Email Address	tara.ocarroll@kerrycoco.ie
AER Returns Contact Position	Assistant Engineer
AER Returns Contact Telephone Number	0667162020
AER Returns Contact Mobile Phone Number	0879129535
AER Returns Contact Fax Number	0667162001
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	6
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

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

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

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

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

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

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

4.1 RELEASES TO AIR Link to previous years emissions data | PRTR# : W0001 | Facility Name : North Kerry Landfill Site | Filename : Copy of Copy of w0001_2012.das | Return Year : 2012 | 10/05/2013 14:15

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	C	OTH	Total estimated generated minus total utilised on site	1332874.0	1332874.0	0.0	0.0
03	Carbon dioxide (CO2)	C	OTH	LandGem Model 3.02	11430.0	11430.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO 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: North Kerry Landfill Site

Please enter summary data on the quantities of methane flared and / or utilised	T (Total) kg/Year	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Facility Total Capacity m3 per hour	
Total estimated methane generation (as per site model)	1701000.0	C	other	LandGem Model 3.02	N/A	
Methane flared	2645.0	M	Other	Landfill Gas Survey 2012	180.0	(Total Flaring Capacity)
Methane utilised in engine/s	365481.0	C	Other	Landfill Gas Survey 2012	143.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	1332874.0	C	Other	LandGem Model 3.02 minus Landfill Gas Survey	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**	69063.01	landfill leachate other than those mentioned in 19 07 02	D8	M	Weighed	Offsite in Ireland	Finucane Burke Haulage,WCP-CK-09-0691-01	Tralee Wastewater Treatment Plant,The Kerries,Tralee ,Co Kerry,Ireland		
Within the Country	20 03 01	No	264.0	mixed municipal waste	D5	M	Weighed	Onsite of generatio	North Kerry Landfill Site,W0001	Mulingnaminnane,Kielduff,Tralee,Kerry,Ireland		
Within the Country	20 03 01	No	18.0	mixed municipal waste	R3	M	Weighed	Offsite in Ireland	KWD Recycling,W0217-01	Aughacureen,Aghadoe,Killarney,Co Kerry,Ireland		
Within the Country	20 02 01	No	47.0	biodegradable waste	R3	M	Weighed	Offsite in Ireland	Bord Na Mona,W0198-01	Kilberry ,Co Kildare,,,,Ireland		
Within the Country	15 01 01	No	34.0	paper and cardboard packaging	R3	M	Weighed	Offsite in Ireland	Greenstar Recycling (Munster),W0136	Glanmire,Cork,,,,Ireland		
Within the Country	20 01 01	No	51.0	paper and cardboard	R3	M	Weighed	Offsite in Ireland	Dillon Waste and Recycling,WCP-LK-08-0077-04	Dillon Waste and Recycling,The Kerries,Tralee,Co Kerry,Ireland		
Within the Country	15 01 07	No	36.0	glass packaging	R3	M	Weighed	Offsite in Ireland	Dillon Waste and Recycling,WCP-LK-08-0077-04	Dillon Waste and Recycling,The Kerries,Tralee,Co Kerry,Ireland		
Within the Country	15 01 04	No	7.0	metallic packaging	R4	M	Weighed	Offsite in Ireland	Dillon Waste and Recycling,WCP-LK-08-0077-04	Dillon Waste and Recycling,The Kerries,Tralee,Co Kerry,Ireland		
Within the Country	20 01 40	No	30.0	metals	R4	M	Weighed	Offsite in Ireland	Hegarty Metals,wcp-lk-027-02	Ballysimon Road,Limerick,,,,Ireland		
Within the Country	15 01 02	No	21.0	plastic packaging	R3	M	Weighed	Offsite in Ireland	Dillon Waste and Greenstar Sarsfield Court,WCP-LK-08-0077-04	Dillon Waste and Recycling The Kerries Tralee (91.94 tonnes),Greenstar Sarsfield Court Cork (12.68 tonnes),,,,Ireland		
To Other Countries	20 01 11	No	4.0	textiles	R3	M	Weighed	Abroad	Cookstown Textile Recyclers,roc 1929 wmez 01/11	36 Maheralane Rd,Randalstown,Co Antrim,,,United Kingdom		
To Other Countries	13 02 05	Yes	5.26	mineral-based non-chlorinated engine, gear and lubricating oils	R9	C	Volume Calculation	Abroad	ENVA Ireland,WCP-LK-052-08d	Clonminam Ind,Portlaoise ,Co Laois,,,Ireland	ENVA,WCP-LK_052/08d,Lindensomldt,Accurec,Germany,,,Germany	Lindensomldt,Accurec,Germany,,,Germany
To Other Countries	16 01 07	Yes	0.29	oil filters	R9	C	Volume Calculation	Abroad	ENVA Ireland,WCP-LK-052-08d	Clonminam Ind,Portlaoise ,Co Laois,,,Ireland	ENVA,WCP-LK_052/08d,Lindensomldt,Accurec,Germany,,,Germany	Lindensomldt,Accurec,Germany,,,Germany
To Other Countries	15 01 10	Yes	0.11	packaging containing residues of or contaminated by dangerous substances	R7	C	Volume Calculation	Abroad	ENVA Ireland,WCP-LK-052-08d	Clonminam Ind,Portlaoise ,Co Laois,,,Ireland	ENVA,WCP-LK_052/08d,Lindensomldt,Accurec,Germany,,,Germany	Lindensomldt,Accurec,Germany,,,Germany
Within the Country	20 01 25	No	0.22	edible oil and fat	R9	M	Weighed	Offsite in Ireland	Fryrite,WCP-DC-10-1297	Fryrite Cork,Unit 1 GB Business Pk,Little Island,Cork,Ireland		
To Other Countries	20 01 27	Yes	0.11	paint, inks, adhesives and resins containing dangerous substances	R2	C	Volume Calculation	Abroad	ENVA Ireland,WCP-LK-052-08d	Clonminam Ind,Portlaoise ,Co Laois,,,Ireland	ENVA,WCP-LK_052/08d,Lindensomldt,Accurec,Germany,,,Germany	Lindensomldt,Accurec,Germany,,,Germany
To Other Countries	16 06 01	Yes	0.96	lead batteries	R4	C	Volume Calculation	Abroad	ENVA Ireland,WCP-LK-052-08d	Clonminam Ind,Portlaoise ,Co Laois,,,Ireland	ENVA,WCP_LK_052/08d ,ENVA,Campine,MLVA/05-173/gvda,Belgium,Belgium	ENVA,Campine,MLVA/05-173/gvda,Belgium,Belgium
To Other Countries	14 06 01	Yes	0.28	chlorofluorocarbons, HCFC, HFC	R7	C	Volume Calculation	Abroad	ENVA Ireland,WCP-LK-052-08d	Clonminam Ind,Portlaoise ,Co Laois,,,Ireland	ENVA,WCP-LK_052/08d,Lindensomldt,Accurec,Germany,,,Germany	Lindensomldt,Accurec,Germany,,,Germany

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

Appendix G: Landfill Gas Survey]

Environmental Protection Agency

A survey of landfill sites to determine the quantity of methane flared and or recovered in utilisation plants for 2012

Please choose from the drop down menu the license number for your site	W0004
Please choose from the drop down menu the name of the landfill site	North Kerry
Please enter the number of flares operational at your site in 2012	1
Please enter the number of engines operational at your site in 2012	1
Total methane flared	5,184 kg/year
Total methane utilised in engines	365,481 kg/year

Please note that the closing date for reciept of completed surveys is 31/03/2013

Introduction

The Office of Climate Licensing and Resource Use (OCLR) of the Environmental Protection Agency acts as the inventory agency in Ireland with responsibility for compiling and reporting national greenhouse gas inventories to the European Commission and the United Nations Framework Convention on Climate Change. In addition to meeting international commitments Ireland's national greenhouse gas inventory informs national agencies and Government departments as they face the challenge to curb emissions and meet Ireland's targets under the Kyoto Protocol. The national inventory also informs data suppliers, making them aware of the importance of their contributions to the inventory process and a means of identifying areas where input data may be improved.

It is on this basis that the Environmental Protection Agency is asking landfill operators to partake in this survey so that the most uptodate information on methane flaring and recovery in utilisation plants at landfills sites is used in calculating the contribution of the waste sector to national greenhouse gas emissions

The Environmental Protection Agency wishes to thank you for partaking in this survey. If you have any questions about the survey and how to complete it please view the "Help sheet" worksheet. If however, your query is not answered by viewing the "Help sheet" worksheet please contact:
LFGProject@epa.ie

Once completed please send the completed file as an attachment clearly stating the name and or license number of the landfill site (e.g. W000 Xanadu landfill_2012) to:
LFGProject@epa.ie

	to be filled in by licensee		calculated by spreadsheet	

Engine No. 1

Engine type ?	Other	**Jenbacher J208 GS**
Month /year comissioned ?	November / 2011	
Month decomissioned if decomissioned in 2012 ?	Select	

Monthly	Method M/C/E	Runtime days/month	Runtime hrs/day	Downtime hrs	Total runtime hrs/month	Average Inlet Pressure (mbg)	Average Flow Rate (m^3/hr)	Average CH_4 %v/v	Average CO_2 %v/v	Average O_2 %v/v	Combustion efficiency (%)	Total CH_4 m^3	Total CH_4 kgs
January	M	31	24	21	723	-60	100	52.60	34.00	2.70	98.0	37,269	24,209
February	M	28	24	19	653	-58	145	50.50	34.30	1.80	98.0	46,860	30,502
March	M	31	24	36	708	-70	150	45.50	33.00	1.70	98.0	47,355	30,437
April	M	30	24	8	712	-57	135	43.50	33.00	1.30	98.0	40,976	26,700
May	M	31	24	13	731	-56	130	37.80	30.70	1.70	98.0	35,203	22,963
June	M	30	24	19	701	-44	130	39.80	32.50	1.00	98.0	35,544	23,476
July	M	31	24	20	724	-34	145	41.50	34.10	1.00	98.0	42,695	28,490
August	M	31	24	28	716	-44	140	41.00	34.10	1.00	98.0	40,276	26,601
September	M	30	24	2	718	-49	135	39.80	32.00	1.00	98.0	37,807	24,841
October	M	31	24	6	738	-40	145	45.00	36.70	1.00	98.0	47,191	31,297
November	M	30	24	31	689	-26	180	58.70	42.00	1.00	98.0	71,344	47,995
December	M	31	24	73	671	-22	180	60.00	40.00	1.00	98.0	71,019	47,970
Total					8,484							553,539	365,481

Please note: Only fill the "Yearly" table if data is not availabe or cannot be calculated nor estimated on a monthly basis

Yearly	Method M/C/E	Runtime days/year	Runtime hrs/day	Downtime hrs	Total runtime hrs/year	Average Inlet Pressure (mbg)	Average Flow Rate m^3/hr	Average CH_4 %v/v	Average CO_2 %v/v	Average O_2 %v/v	Combustion efficiency (%)	Total CH_4 m^3	Total CH_4 kgs
2012					0						98.0	0	0

	to be filled in by licensee		calculated by spreadsheet	

Flare No. 1

Flare type ?	Biogas BG2468	**Biogas 500m3/hr modular ground flare**	
Is the flare an open or enclosed flare ?	Enclosed	**Rated flare capacity ?**	500 **m3/hr**
Month /year comissioned ?	January 2001		
Month decomissioned if decomissioned in 2012 ?	Select		
What is the function of the flare ?	Back-up to engines	**If "other" enter flare function here**	

Monthly	Method M/C/E	Runtime days/month	Runtime hrs/day	Downtime hrs	Total runtime hrs/month	Average Inlet Pressure (mbg)	Average Flow Rate (m^3/hr)	Average CH_4 %v/v	Average CO_2 %v/v	Average O_2 %v/v	Combustion efficiency (%)	Total CH_4 m^3	Total CH_4 kgs
January					0						98.0	0	0
February					0						98.0	0	0
March					0						98.0	0	0
April					0						98.0	0	0
May					0						98.0	0	0
June					0						98.0	0	0
July					0						98.0	0	0
August					0						98.0	0	0
September					0						98.0	0	0
October					0						98.0	0	0
November					0						98.0	0	0
December	M	3	24.0	0.0	72	-15	180	60.00	40.00	1.00	98.0	7,620	5,184
Total					72							7,620	5,184

Please note: Only fill the "Yearly" table if data is not availabe or cannot be calculated nor estimated on a monthly basis

Yearly	Method M/C/E	Runtime days/year	Runtime hrs/day	Downtime hrs	Total runtime hrs/year	Average Inlet Pressure (mbg)	Average Flow Rate m^3/hr	Average CH_4 %v/v	Average CO_2 %v/v	Average O_2 %v/v	Combustion efficiency (%)	Total CH_4 m^3	Total CH_4 kgs
2012					0						98.0	0	0

Appendix H: Fish Survey

FISH SURVEY IN THE VICINITY OF NORTH KERRY LANDFILL AT MUINGNAMINNANE, COUNTY KERRY

September 2012

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

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APPENDIX 1 HABITAT ASSESSMENT AND FISH DATA AT SAMPLING SITES

1 INTRODUCTION

As part of the ongoing monitoring of water quality in the vicinity of North Kerry Landfill site at Muingnaminnane, Conservation Services, Ecological & Environmental Consultants have been commissioned by Kerry County Council to carry out qualitative fish assessment at five locations adjacent to the landfill site. Sampling was carried out on 29 September 2012.

2 METHODOLOGY

2.1 SITE SELECTION

The fish survey was carried out at five sites specified by Kerry County Council. These sites were most recently assessed by Conservation Services in September 2012 (Conservation Services 2012). 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. The sites were assessed in terms of:

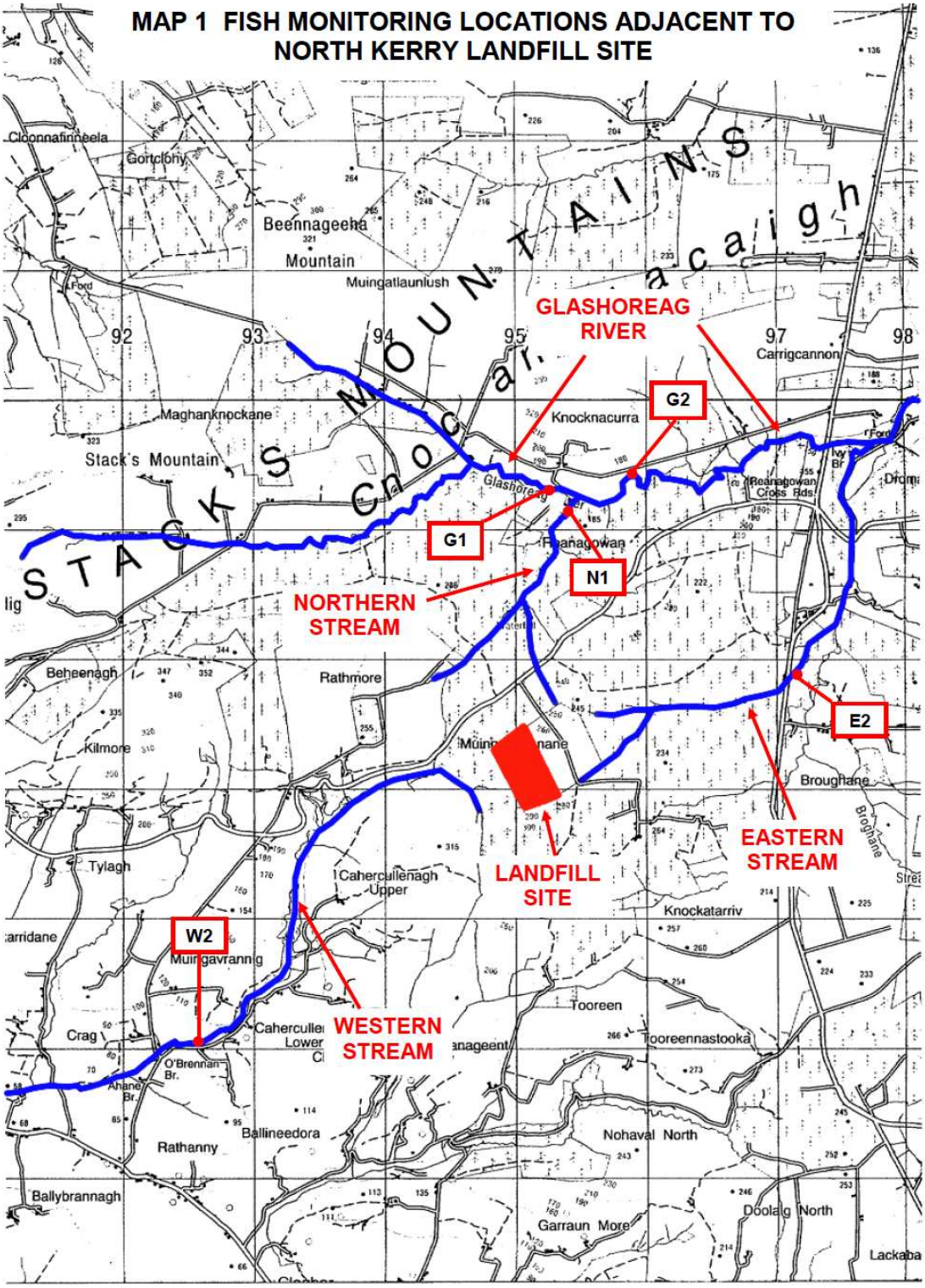
- Stream width and depth
- Substrate type, listing substrate fractions in order of dominance, i.e. large rocks, cobble, gravel, sand, mud etc.
- Flow type, listing percentage of riffle, glide and pool in the sampling area
- Instream vegetation, listing plant species occurring and their percentage coverage 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 potential 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 ASSESSMENT OF FISH STOCK

Timed electrofishing was carried out at sites shown on Map 1, to provide a Catch Per Unit Effort (CPUE) index of the salmonid population density. The area fished was measured to provide a minimum estimate of salmonid population density. Fish were captured using a Safari Research Surveyor pulsed direct current backpack electrofisher. Prior to handling, fish were anaesthetised in a benzocaine solution to reduce handling stress. Fork length of salmonids and length of other fish species was measured to the nearest mm. Salmonid age was determined by length frequency distribution combined with scale reading using a high power binocular microscope. Data from all sites electrofished are presented in Appendix 1. Summary data are presented in Tables 1-3.

MAP 1 FISH MONITORING LOCATIONS ADJACENT TO NORTH KERRY LANDFILL SITE



3 RESULTS AND DISCUSSION

Results of electrofishing are detailed in Appendix 1, summarised in Tables 1-3, and illustrated in Figs. 1-3 (Catch per Unit Effort) and 4-6 (Minimum Density). It should be noted that actual fish density will be greater than minimum density, which is based on a single electrofishing pass without stop nets. Salmonid length-frequency distributions are shown in Figs. 7 & 8.

3.1 WESTERN STREAM

A catch per unit effort (CPUE) of 1 juvenile trout per 5 minutes fishing time (minimum density 0.014 m^{-2}) was recorded at site W2, representing a small trout population. Small numbers of eels were also recorded. The results indicate a decrease in the trout population since 2005, when monitoring indicated a good population of juvenile trout.

3.2 NORTHERN STREAM AND GLASHOREAG RIVER

Results of electrofishing indicate a moderate population of juvenile brown trout and a moderate population of juvenile salmon in the Northern Stream upstream of the confluence with the Glashoreag River, with a CPUE of 4 juvenile trout and 7 juvenile salmon per 5 minutes at Site N1 (minimum density 0.064 m^{-2} juvenile trout and 0.096 m^{-2} juvenile salmon). A small number of adult trout (CPUE 1 per 5 minutes, minimum density 0.016 m^{-2}) and a small number of eels were also recorded.

Results of electrofishing indicate a moderate population of brown trout and a good population of juvenile salmon in the Glashoreag River upstream of the confluence with the Northern Stream, with a CPUE of 2 juvenile trout, 3 adult trout and 11 juvenile salmon per 5 minutes fishing time at Site G1 (minimum density 0.016 juvenile trout m^{-2}, 0.022 adult trout m^{-2} and 0.084 juvenile salmon

m^{-2}); a small number of eels were also recorded. At Site G2, downstream of the confluence with the Northern Stream, small numbers of brown trout and good numbers of juvenile salmon were recorded, with a CPUE of 1 juvenile trout and 12 juvenile salmon per 5 minutes fishing time (minimum density 0.009 juvenile and 0.003 adult trout m^{-2} and 0.109 salmon m^{-2}). Results indicate little change in salmonid populations at Site G1 compared with 2005, while at Site G2 they indicate a slight decrease in juvenile trout and a significant increase in juvenile salmon since 2005.

(Note: With regard to the minimum density results, it would be expected that the proportion of the total fish population captured would be very much greater in the Northern Stream, which is 2-3m wide and up to 25cm deep, than in the main Glashoreag River, which is 5-8m wide and up to 50cm deep. Actual salmonid densities in the main channel of the Glashoreag River may be more than double the minimum densities, whereas in the Northern Stream a high proportion of the fish present are likely to have been captured in the single pass electrofishing.)

3.3 EASTERN STREAM

No fish were captured at site E2 in the Eastern Stream. As no fish were recorded at this site in 2001, and small numbers of trout were recorded in the years 2002-2005, this result does not necessarily indicate a significant change at this site.

3.4 SUMMARY OF FISH DATA

TABLE 1 SUMMARY OF FISH CATCH AT EACH SITE

Numbers caught are given for salmonids; where non-salmonid species were taken, their presence is recorded.

	0+ trout	1+ trout	2+ and older trout	0+ salmon	1+ salmon	Eels
Site W2	-	3	-	-	-	3
Site N1	2	6	2	5	7	2
Site G1		8	11	16	26	3
Site G2	1	2	1	28	8	-
Site E2	-	-	-	-	-	-

TABLE 2 SUMMARY OF SALMONID CATCH PER UNIT EFFORT AT EACH SITE

To calculate catch per unit effort, the catch figures and fishing time are combined to calculate the theoretical catch per 5 minutes fishing.

	0+ trout	1+ trout	2+ and older trout	0+ salmon	1+ salmon	Eels
Site W2	-	1	-	-	-	+
Site N1	1	3	1	3	4	+
Site G1	-	2	3	4	7	+
Site G2	-	1	-	9	3	-
Site E2	-	-	-	-	-	-

TABLE 3 SUMMARY OF MINIMUM SALMONID DENSITIES

Minimum density is based on single pass electrofishing without stop nets; actual density will be higher.

		Minimum Densities per m^2				
	Area fished M^2	0+ trout	1+ trout	2+ and older trout	0+ salmon	1+ salmon
Site W2	210	0.000	0.014	0.000	0.000	0.000
Site N1	125	0.016	0.048	0.016	0.040	0.056
Site G1	500	0.000	0.016	0.022	0.032	0.052
Site G2	330	0.003	0.006	0.003	0.085	0.024
Site E2	130	0.000	0.000	0.000	0.000	0.000

Fig. 1 Salmonid catch per unit effort

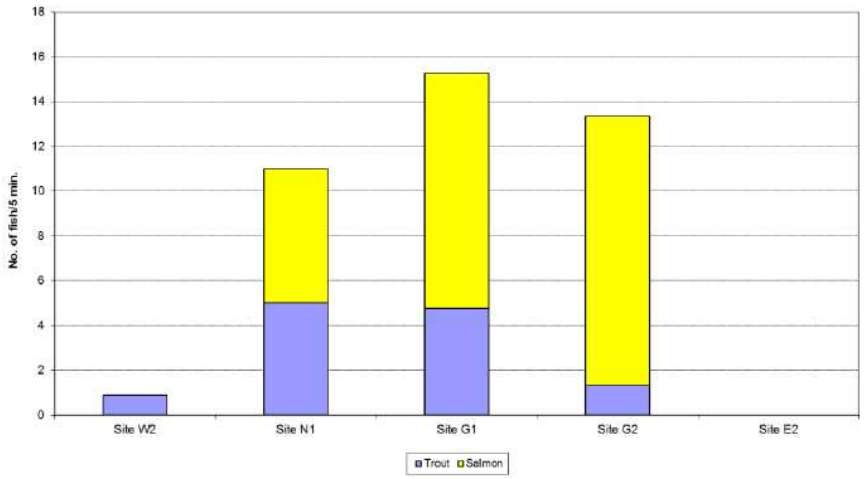


Fig. 2 Trout catch per unit effort

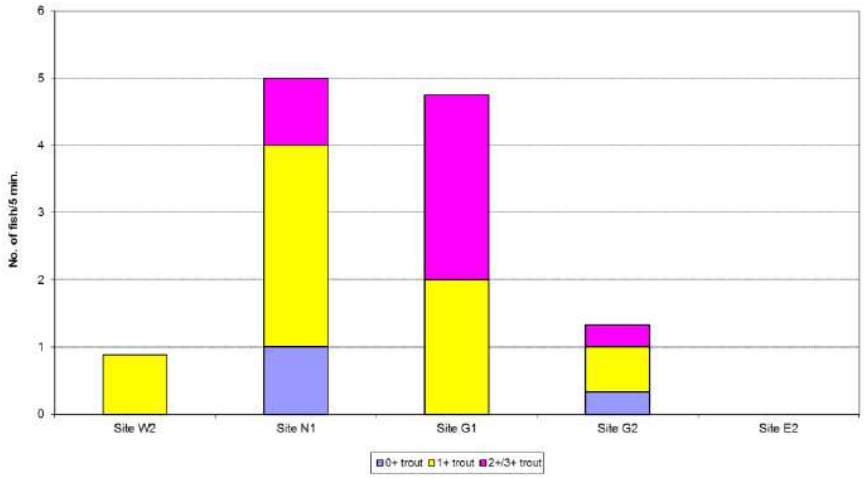


Fig. 3 Salmon catch per unit effort

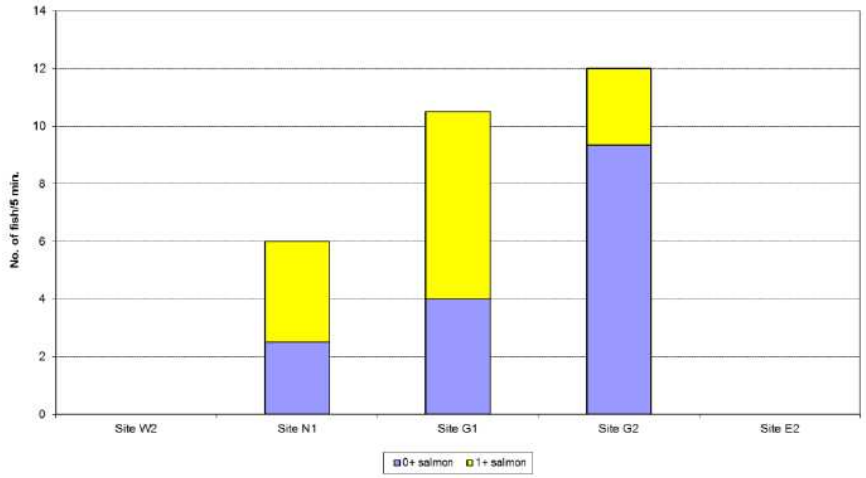


Fig. 4 Salmonid Minimum Density

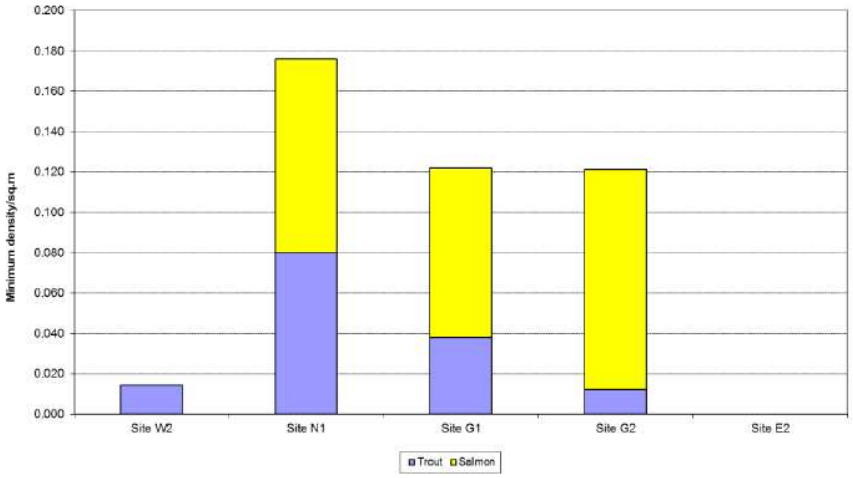


Fig. 5 Trout Minimum Density

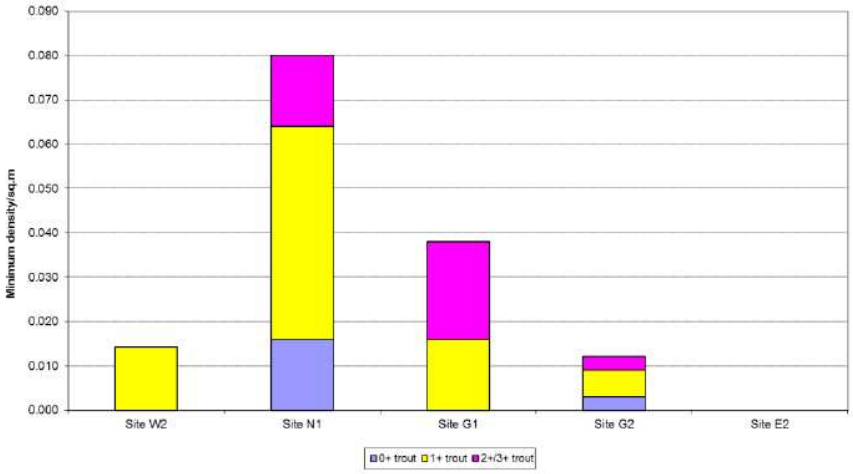


Fig. 6 Salmon Minimum Density

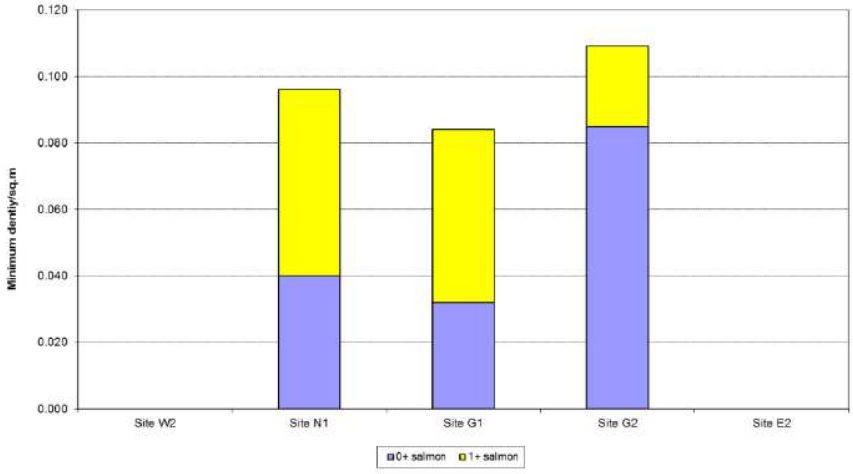


Fig. 7 Trout length-frequency distribution

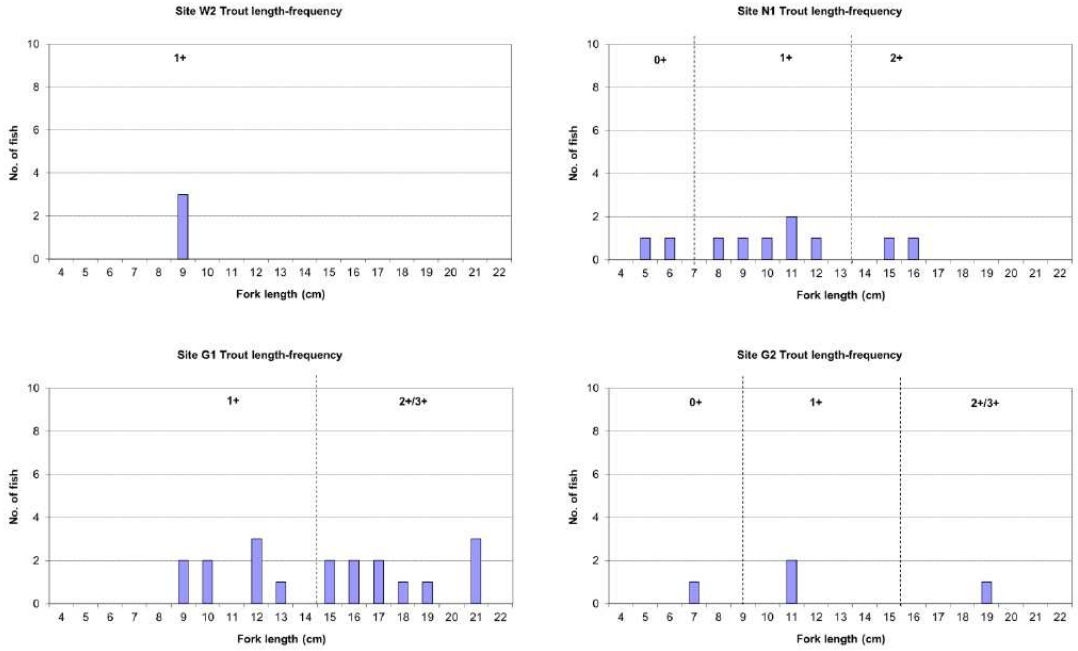
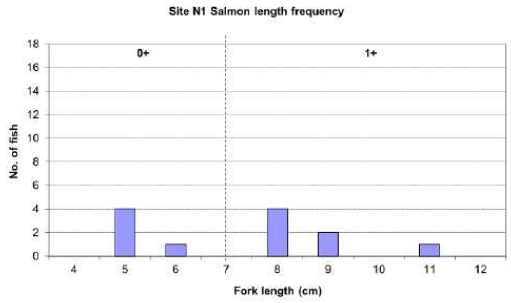
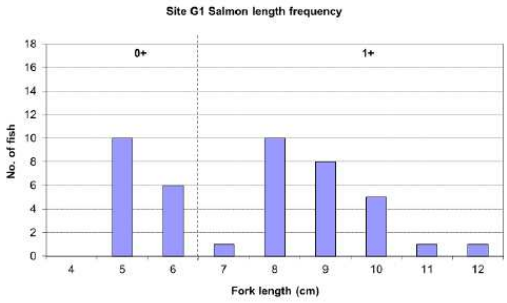
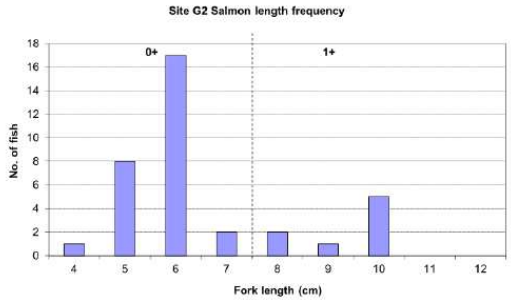


Fig. 8 Salmon length-frequency distribution







4 REFERENCES

Conservation Services (September 2005) Biological Monitoring of Surface Water Quality in the vicinity of North Kerry Landfill at Muingnaminnane, County Kerry. Unpublished Report to Kerry County Council

APPENDIX 1

HABITAT ASSESSMENT AND FISH DATA AT SAMPLING SITES

Site Code	W2
Grid Ref u/s	Q 92605 15049
Grid Ref d/s	Q 92556 15055
Site Photograph	
Width (m)	3
Depth (cm)	40
Water clarity	Slightly coloured
Substrate	Cobble, Gravel, Large rocks, Sand
Flow Type	Riffle 65% Glide 30% Pool 5%
Instream Vegetation	None
Dominant Bankside Vegetation	Hazel, Ash, Willow
Estimated % summer Cover of Stream by Bankside Vegetation	65%
Trout Adult Habitat	Good-Fair
Trout Nursery Habitat	Good
Trout Spawning Habitat	Fair

Area fished	3m x 70m
Fishing time (min)	17
Fish species recorded	Brown Trout, Eel

Brown Trout Fork Length (cm)	Age
9.0	
9.1	1+
9.7	

Note: One further c. 9cm trout was seen but not captured

Eel Length (cm)
23.0
25.5
33.0

Site Code	N1
Grid Reference u/s	Q 95478 19251
Grid Reference d/s	Q 95510 19233
Site Photograph	
Width (m)	2-3
Depth (cm)	5-25
Water clarity	Highly coloured
Substrate	Cobble, Large rocks, Gravel, Mud, Sand
Flow Type	Riffle 20% Glide 80%
Instream Vegetation	Bryophyta 50% Filamentous algae 5%
Dominant Bankside Vegetation	Grass, Willow, Rush, Bramble
Estimated % summer Cover of Stream by Bankside Vegetation	8%
Trout Adult Habitat	Fair
Trout Nursery Habitat	Good-Fair
Trout Spawning Habitat	Fair-Poor
Length fished	Area 2.5m x 50m

Fishing time (min)	10
Fish species recorded	Brown Trout, Salmon, Eel

Brown Trout Fork Length (cm)	Age
5.3	0+
6.6	
8.9	
9.2	
10.5	
11.8	1+
11.8	
12.3	
15.4	2+
16.9	

Salmon Fork Length (cm)	Age
5.1	
5.2	
5.3	0+
5.5	
6.5	
8.0	
8.6	
8.7	
8.9	
9.2	1+
9.5	
11.4	

Eel Length (cm)	Age
17.5	
34.5	

Site Code	G1
Grid Reference u/s	Q 95264 19310
Grid Reference d/s	Q 95345 19324
Site Photograph	
Width (m)	5-8
Depth (cm)	12-50
Water Clarity	Highly coloured
Substrate	Cobble, Gravel, Sand, Mud, Large Rocks (Soft mud to 12cm deep in parts u/s with thin layer of gravel where bank excavations has recently been carried out)
Flow Type	Riffle 25% Glide 75%
Instream Vegetation	Filamentous algae 25% (where undisturbed)
Dominant Bankside Vegetation	Willow (None in upstream section)
Estimated % summer Cover of Stream by Bankside Vegetation	<5%
Trout Adult Habitat	Fair - Good
Trout Nursery Habitat	Good - Very Good
Trout Spawning Habitat	Fair

Area fished	5m x 100m
Fishing time (min)	20
Fish species recorded	Brown Trout, Salmon, Eel

Brown Trout Fork Length (cm)	Age
9.8	
9.9	
10.7	
10.9	
12.4	1+
12.6	
12.7	
13.3	
15.6	
15.6	
16.6	
16.8	2+
17.1	
17.8	
18.2	
19.8	
21.2	2+/3+
21.3	
21.9	

Salmon Fork Length (cm)	Age
5.5	
5.5	
5.5	
5.5	
5.6	
5.7	
5.7	
5.8	
5.9	0+
5.9	
6.0	
6.1	
6.1	
6.2	
6.5	
6.7	
7.8	
8.0	1+

Salmon Fork Length (cm)	Age
8.1	
8.2	
8.2	
8.2	
8.3	
8.4	
8.4	
8.7	
8.9	
9.0	
9.1	
9.3	1+
9.4	
9.7	
9.8	
9.8	
9.9	
10.0	
10.3	
10.4	
10.6	
10.8	
11.3	
12.1	

Eel Length (cm)	Age
19.5	
25.0	
39.0	

Site Code	G2
Grid Reference u/s	Q 95807 19361
Grid Reference d/s	Q 95829 19401
Site Photograph	
Width (m)	5-7
Depth (cm)	5-30
Water Clarity	Highly coloured
Substrate	Cobble, Gravel
Flow Type	Riffle 60% Glide 40%
Instream Vegetation	Filamentous algae 35%
Dominant Bankside Vegetation	Bramble, Willow, Grass
Estimated % summer Cover of Stream by Bankside Vegetation	<5%
Trout Adult Habitat	Fair
Trout Nursery Habitat	Very Good-Good
Trout Spawning Habitat	Poor
Area fished	6m x 55m
Fishing time (min)	15

Fish species recorded	Brown Trout, Salmon

Brown Trout Fork Length (cm)	Age
7.3	0+
11.3	
11.9	1+
19.0	2+/3+

Salmon Fork Length (cm)	Age
4.9	
5.4	
5.5	
5.6	
5.7	
5.7	
5.8	
5.8	
5.9	
6.0	
6.0	
6.1	0+
6.1	
6.2	
6.2	
6.3	
6.3	
6.3	
6.3	
6.3	
6.3	
6.4	
6.4	
6.4	
6.5	
6.6	
7.0	
7.3	
8.5	
8.9	
9.4	
10.1	
10.2	1+
10.7	
10.7	
10.9	

Site Code	E2
Grid Reference u/s	Q 97088 17833
Grid Reference d/s	Q 97144 17880
Site Photograph	
Width (m)	2-3
Depth (cm)	8
Water clarity	Highly coloured
Substrate	Cobble, Gravel, Sand, Large Rocks
Flow Type	Glide 50% Riffle 50%
Instream Vegetation	Bryophyta 30%
Dominant Bankside Vegetation	Willow, Grass, Bramble
Estimated % summer Cover of Stream by Bankside Vegetation	20%
Trout Adult Habitat	Poor
Trout Nursery Habitat	Good-Fair
Trout Spawning Habitat	Fair
Length fished	2m x 65m
Fishing time (min)	10

Fish species recorded	None

Appendix I: Air Emission Testing of Stabilised Gas Engine

This is will be forward to the Agency separately as it is not possible to copy into the back of this report.