Annual Environmental Report, 2008 for Marrakesh Ltd., Kilmurry South Landfill, Waste Licence W0048-01

May 2009

Marrakesh Ltd.
Kilmurry,
Kilmacanogue,
Co. Wicklow.

MA0105/AER08

Ultan Downes
Project Manager

Louise O'Donnell
Project Director

Table of Contents

Figures

Appendices

Executive Summary

1. In accordance with Waste Licence Register No. W0048-01, Marrakesh Ltd. are required to submit an AER (Annual Environmental Report) to the EPA (Environmental Protection Agency) for their facility at Kilmurry South, Kilmacanogue, Co. Wicklow. Patel Tonra Ltd. was commissioned to prepare the report on behalf of Marrakesh Ltd.

2. Marrakesh Ltd. aims to provide a recovery and recycling option for the Construction/Demolition sector, whilst conserving landfill void space for those inert materials that are difficult or impractical to recycle.

3. Over 80,000 tonnes of inert material was accepted at the facility during 2008.

4. There was no deposition of materials on land at the site during 2008. All materials accepted at the site were subsequently sold/removed for off-site use (with the exception of a quantity of materials stored on-site from year-to-year, pending sale).

5. Materials accepted at the facility are restricted to Construction & Demolition-type wastes. Materials are subject to screening, sorting and grading at the Marrakesh facility, as appropriate.

6. This report includes an overview of the environmental monitoring carried out throughout the eight Licence year (2008). The results of sampling show that Marrakesh Ltd. are generally in compliance with limits for groundwater, surface water, landfill gas, noise and dust. Any instance of non-conformance is detailed and explained in Chapter 3.

1.0 Introduction

The Annual Environmental Report (AER) for Kilmurry South landfill includes the information specified in Schedule A of Waste Licence W0048-01 - *Content of Annual Environmental Report* and in accordance with the EPA publication *Integrated Pollution Control Licensing – Guidance Note for: Annual Environmental Report*.

1.1 Waste Licence Register Number

The Waste Licence register number is W0048-01.

1.2 Name of Operator, Name and Address of Facility

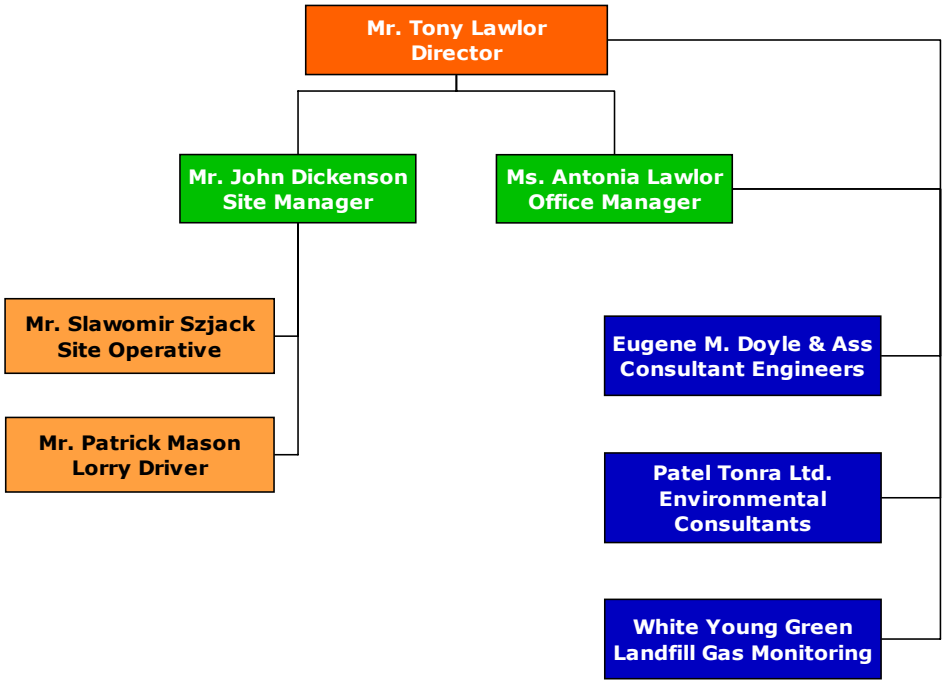
Marrakesh Ltd.,
Kilmurry South Landfill,
Kilmurry,
Kilmacanogue,
Bray,
Co. Wicklow.

1.3 Reporting Period

1st January, 2008 to 31st December, 2008.

1.4 Management Structure

The following is the Management Structure for Marrakesh Ltd. during 2008.



2.0 Site Description

2.1 Waste Activities carried out at the Facility

In accordance with Waste Licence W0048-01 and the Third Schedule of the Waste Management Act, 1996, the following waste activities are licensed at Kilmurry South Landfill:

Class 1: Deposit on, in or under land (including landfill);

Class 13: Storage prior to submission to any activity referred to in a preceding paragraph of the Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced;

In accordance with Waste Licence W0048-01 and the Fourth Schedule of the Waste Management Act, 1996, the following waste recovery activities are licensed at Kilmurry South Landfill:

Class 2: Recycling and reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).

Class 4: Recycling or reclamation of other inorganic materials.

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 a waste is produced.

2.2 Total Quantities of Waste Accepted and Recovered

The tonnage of materials received at the site between January 2008 and December 2008 is calculated from weighbridge records to have been 81,785 tonnes. The tonnage of waste recovered and removed off-site for the year was 91,533 tonnes, which represents a recycling rate of 100%. (There was a net surplus of material removed off site in 2008 due to the sale of some stockpiled materials from previous years)

Please see Tables 2.1 to 2.3 overleaf.

2.3 Composition of Wastes Entering and Exiting the Site

The composition of materials received at the Kilmurry South Landfill is restricted to those inert materials set out in Table F.2 of Waste Licence W0048-01. The tonnages for each material type entering and exiting the site are shown in Tables 2.1 and 2.2. A summary of each material type entering the site annually between 2002 and 2008 is shown in Table 2.3.

Table 2.1: Material Types and Volumes Entering the Site, 2008

Material Type	EWC Code	Tonnes Accepted, 2008
Soil & Stones	17 05 04	24,130
Concrete	17 01 01	45,479
Bituminous Mixtures	17 03 02	8,445
Mixed C&D Waste [Note 1]	17 09 04	3,731
Total Tonnage		**81,785**

[Note 1] Mostly bulk stone, with approx. 1% sand mix, by weight

Table 2.2: Material Types and Volumes Exiting the Site, 2008

Material Type	Tonnes Removed Off-site, 2008
Soil & Stones	16,087
Concrete	45,208
Bituminous Mixtures	7,045
Bulk Stone	22,947
Sand	247
Total Tonnage	**91,534**

Table 2.3: Material Types and Volumes Accepted at the Site, 2002-2008

Material Type	EWC Code	Tonnes 2002	Tonnes 2003	Tonnes 2004*	Tonnes 2005	Tonnes 2006	Tonnes 2007	Tonnes 2008
Soil & Stones	17 05 04	12,864	7,477	29,173	27,521	40,964	31,189	24,130
Concrete	17 01 01	6,077	13,125	34,598	41,909	49,635	44,421	45,479
Bituminous Mixtures	17 03 02	0	1,377	3,426	5,151	5,286	1,992	8,445
Stone	17 05 04	0	275	-	1,913	3,527	-	-
Sand	01 01 02	0	0	52	99	0	-	187
Tiles and Ceramics	17 01 03	0	0	0.4	58	0	-	0
Mixed C&D Waste	17 09 04	-	-	-	-	-	4,062	3,544
Total Tonnage of Inert Material Entering Marrakesh site per year		**18,941**	**22,254**	**67,249**	**76,651**	**99,412**	**81,664**	**81,785**
Total, 2002 – 2008		**447,956 tonnes**						

Note: All tonnages have been obtained from Marrakesh weighbridge records
***: Waste Data for 2004 contains data from November 2003 – December 2004**

2.4 Composition of Wastes Removed Off-site

General waste from the site is removed off site by permitted waste collectors to approved waste facilities. The quantity of waste removed during 2008 was 223.91 tonnes; this is outlined in Table 2.4 below.

Table 2.4: Composition of Wastes Removed off Site, Jan – Dec 2008

Waste Type	Weight (tonnes)
General Waste	149.91
Scrap Metal	74
Total	**223.91**

2.5 Calculated Remaining Void Capacity of the Site

Year in which final capacity is expected to be reached; Site Survey Showing Existing Levels at End of Reporting Period

The void space of the site is approximately 62,500 m^3. This includes waste material settlement.

Of the 81,785 tonnes total material entering the site in 2008, 100% was recycled, sold and removed off-site. No landfilling was conducted during 2008; therefore site levels were expected to remain the same as those measured previously. Thus it was considered unnecessary to carry out a topographical survey at the site.

Due to a specific request from the Agency (Site Inspection of 6th December 2006), a slope stability review was completed and submitted to the Agency in April 2007.

Marrakesh Ltd. intend to continue to maximise recycling insofar as possible, thereby minimising landfilling in line with national legislation, policy and targets.

2.6 Methods of Deposition of Waste

The landfill facility is used only for the disposal and recovery of inert construction/ demolition waste, although during the reporting period, no disposal was carried out.

Inert waste material is brought to the site in trucks from construction/demolition sites or soil removal operations. The trucks deposit the material. Good quality material is removed from the waste stream and segregated for recycling.

The company targets 100% recovery. In 2008, a 100% recycling rate was achieved based on tonnages of materials received and materials recycled and reused.

3.0 Emissions & Environmental Monitoring

3.1 Summary Report on Emissions

Landfill Gas	Methane, carbon dioxide, oxygen, atmospheric pressure and temperature were monitored once during 2008 in boreholes and site buildings (Schedule D.1). As per Schedule E.2, the limits for methane and carbon dioxide outside the body of waste are 1% $^{v}/_{v}$ and 1.5% $^{v}/_{v}$, respectively.
Surface Water	Surface water monitoring was carried out once during 2008 for the parameters set out in Schedule D of the licence.
Groundwater	Groundwater analysis was carried out once in 2008 in 6 borehole locations and 2 private wells as set out in Schedule D.4.2 of the licence.
Dust	The level of environmental dust deposition was monitored once between 13th January and 12th February 2009 at two pre-determined locations and compared against the limit in Schedule E.3 of 350 mg/m^2/day.
Noise	In accordance with Schedules D.3, noise levels were monitored on an annual basis at 3 locations and compared against the daytime limits outlined in Schedule E.1 of the Waste Licence.

The EPA was contacted in writing on the 10th of February 2004 (REF 48-1/JR/100204), 10th February 2005 (REF 48-1/VSP/100205) and 1st November 2005 (REF MA0105/LOD 01.11.05) regarding a proposed reduction in the monitoring programme. When a response to this submission was not received during Quarter 3, 2004, the EPA were contacted, they verbally instructed Marrakesh Ltd to cease monitoring until they received further notification from them. In the absence of any formal written correspondence from the Agency to date, monitoring was conducted on an annual basis during 2005, 2006, 2007 and 2008.

On 11th of April 2008, Marrakesh Ltd. sought a further reduction in monitoring to a frequency of once in 3 years. A decision from the EPA was pending during 2008; therefore monitoring was not fully completed. The Agency instructed Marrakesh Ltd on 19th November 2008 to complete monitoring on an annual basis. Monitoring of Gas, Groundwater and Surface water was carried out in Q3-Q4, 2008 while monitoring of Noise and Dust was carried out in Q1, 2009 (for the purposes of 2008 monitoring).

3.2 Summary of Results and Interpretations of Environmental Monitoring

The locations of all monitoring points at Kilmurry South Landfill are shown in Figure 1 at the end of this document. Landfill gas results, surface water, groundwater and drinking water analysis are discussed in the following sections. Results were submitted to the EPA in November & December 2008, and February 2009.

3.2.1 Landfill Gas

Landfill gas is one of the main potential hazards from the landfilling of waste materials. It is produced by the microbial decomposition of organic material (a naturally-occurring phenomenon which ensures the breakdown of organic matter) within the landfill. The two main gases that are sampled at the Marrakesh site are methane (CH_4) and carbon dioxide (CO_2). Methane is a gas that has a flammable range of 5-15% by volume in air, which is sometimes referred to as the Lower Explosive Level (LEL).

The risk of landfill gas production at the Marrakesh facility is minimal due to the inert nature of the waste materials accepted at the site.

3.2.1.1 Landfill Gas Monitoring Locations

Ten locations (boreholes/buildings) were monitored in December 2008 for landfill gas, as prescribed under Schedule D.1 of the Waste Licence. Gas monitoring locations are listed in **Table 3.1**. In general, most monitoring locations were close to ambient conditions and the only exceptions are discussed in section 3.2.1.2.

Table 3.1: Landfill Gas Monitoring Locations

Monitoring Location	Location	Grid Ref
BH-1	West of site up-slope from landfill	E324788, N212771
BH-2	Eastern area of site down-slope from landfill	E325058, N212630
BH-3	Eastern area of site down-slope from landfill	E325075, N212737
BH-5	Located on phase 2 of the landfill (Leachate borehole)	E324975, N212629
BH-7	Adjacent to BH-03 – down-slope	E325051, N212638
BH-8	Adjacent to BH-02 – down-slope	E325067, N212744
BH-9	Adjacent to house – north of landfill	E324913, N212914
Workshop	North of landfill	E324865, N212830
Toilet/ Outhouse	North of landfill	E324855, N212821
Site Office	North of landfill	E324861, N212875

3.2.1.2 Landfill Gas in Boreholes

The measurements of landfill gas monitored in the boreholes were within licence limits for methane (CH_4). CH_4 was detected at BH-5 but did not exceed the licence limit.

Table 3.2: Methane Results for Boreholes, 2008

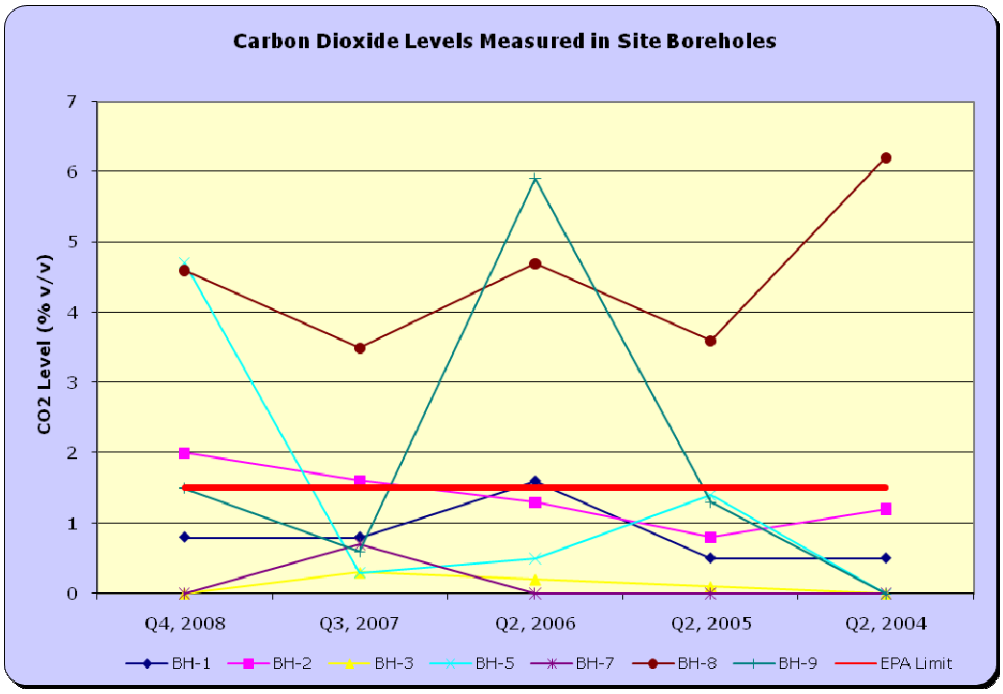
Parameter	BH-1	BH-2	BH-3	BH-5	BH-7	BH-8	BH-9	EPA Limit
Methane, % v/v (Q4, 2008)	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1%
Methane, % v/v (EPA Q4, 2008)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1%

The levels of CO_2 measured in site boreholes at Kilmurry Landfill are presented in **Table 3.3**, and are graphically represented in **Figure 3.1** for the period 2004 to 2008. Carbon dioxide levels exceeded the licence limits during gas monitoring carried out in December 2008 at BH-2, BH-5 and BH-8. This is in line with previous monitoring results for CO_2 as shown in table 3.3. In BH-2 and BH-8, the CO_2 measurements in excess of the limits were found in the absence of CH_4 and are therefore thought to be attributable to aerobic microbial activity in the boreholes, which produce CO_2 as a by-product of respiration. CO_2 levels in BH-5 were higher than typically detected at this location. No risks are associated with this, based on 2008 measurements; however ongoing monitoring will confirm if there is an upward trend at this location

Table 3.3: Carbon Dioxide Levels Measured in Site Boreholes in Comparison to the EPA Licence Limits

Borehole	Q4, 2008	CO_2 Level (% $^v/_v$) Previous Results				EPA Limit (CO_2)
		Q3, 2007	Q2, 2006	Q2, 2005	Q2, 2004	(% $^v/_v$)
BH-1	0.8	0.8	1.6	0.5	0.5	1.5
BH-2	2.0	1.6	1.3	0.8	1.2	1.5
BH-3	0.0	0.3	0.2	0.1	0	1.5
BH-5	4.7	0.3	0.5	1.4	0	1.5
BH-7	0.0	0.7	0.0	0.0	0	1.5
BH-8	4.6	3.5	4.7	3.6	6.2	1.5
BH-9	1.5	0.6	5.9	1.3	0	1.5

Figure 3.1: Carbon Dioxide Levels Measured in Site Boreholes



3.2.1.3 Landfill Gas in Buildings

Landfill gas was monitored in the on-site buildings during December 2008. The buildings in which landfill gas was measured are listed in **Table 3.4**. All measurements taken in the buildings for CH_4 and CO_2 were 0% $^{v}/_{v}$, thus were in compliance with licence requirements.

Table 3.4: Methane and CO_2 Monitoring Results for Site Office Buildings, Quarter 4, 2008

Parameter	Toilet	Workshop	Site Office	Drain	EPA Limit
Methane, % v/v	0.0	0.0	0.0	0.0	1%
Carbon Dioxide, % v/v	0.0	0.0	0.0	0.0	1.5%

3.2.2 Surface Water

Surface water is monitored on an annual basis for a range of parameters according to Waste Licence, Table D.4.4. Surface water monitoring was carried out during Quarter 3, 2008.

3.2.2.1 Surface Water Monitoring Locations

Surface water monitoring locations are listed in **Table 3.5** below.

Table 3.5: Surface Water Monitoring Locations

Surface Water Monitoring Ref.	Location
SW-1	North of landfill, adjacent to house, *ca*. 100m upstream from site entrance
SW-2	West of landfill, down-slope
SW-3	Surface water channel – eastern area of site down-slope from landfill

3.2.2.2 Chemical Analysis

Surface water analytical results were compared against the Salmonid Water Regulations, SI No. 293 of 1988 – The European Communities (Quality of Salmonid Waters) Regulations and the Surface Water Regulations, SI No. 294 of 1989 – The European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations.

Results of surface water monitoring conducted during Q3, 2008 are presented in **Tables 3.6 - 3.7**. SW-1 was found to be dry at the time of sampling. The results obtained for SW-2 indicated pH exceeded the limit set down by the Surface Water Regulations, 1989 and the Salmonid Water Regulations, 1988. This was attributed to soil and rock conditions through which the stream passes. Other results obtained showed that it was in compliance with Class A3 Waters set by the Surface Water Regulations, 1989.

Table 3.6: Surface Water Monitoring Results SW-2

Parameter	Reference Limit Values			2008 SW2	Previous Results		
	Surface Water Regs (A1)	Surface Water Regs (A3)	Salmonid Water Regs		2007 SW2	2006 SW2	2005 SW2
BOD[1] (mg/l)	5	7	≤5	<2	<2	<2	<2
COD[2] (mg/l)	No Limit	40	-	<15	<15	<15	<15
Chloride (mg/l)	250	250	-	12	9	11	12
DO[3] (mg/l)	5.52	-	>9	6.89	5.4	6.1	6.6
Conductivity (mS/cm)	1,000	1.0	-	0.81	0.074	0.599	0.095
pH	5.5 – 8.5	5.5 – 9.0	6 – 9	9.57	7.08	6.2	7.20
TSS[4] (mg/l)	50	-	>25	<10	<10	<10	241
Calcium (mg/l)	25	-	-	2.55	100.1	4.1	3.066
Sulphate (mg/l)	No Limit	200	-	9	6	5	17
Sodium (mg/l)	200	-	-	6.6	7.5	7.5	7.4

Table 3.7: Surface Water Monitoring Results SW-3

Parameter	Reference Limit Values			2008 SW3	Previous Results	
	Surface Water Regs (A1)	Surface Water Regs (A3)	Salmonid Water Regs		2007 SW3	2006 SW3
BOD[1] (mg/l)	5	7	≤5	<2	Dry	Dry
COD[2] (mg/l)	No Limit	40	-	<15	Dry	Dry
Chloride (mg/l)	250	250	-	11	Dry	Dry
DO[3] (mg/l)	5.52	-	>9	0.34	Dry	Dry
Conductivity (mS/cm)	1,000	1.0	-	0.84	Dry	Dry
pH	5.5 – 8.5	5.5 – 9.0	6 – 9	7.73	Dry	Dry
TSS[4] (mg/l)	50	-	>25	<10	Dry	Dry
Calcium (mg/l)	25	-	-	8.46	Dry	Dry
Sulphate (mg/l)	No Limit	200	-	12	Dry	Dry
Sodium (mg/l)	200	-	-	20.5	Dry	Dry

SW1 was dry at the time of PTL sampling
BOD[1]: Biological Oxygen Demand
COD[2]: Chemical Oxygen Demand
DO[3]: Dissolved Oxygen
TSS[4]: Total Suspended Solids

3.2.3 Groundwater

Groundwater levels and analysis for the parameters outlined in Table D.4.4 of the Waste Licence are monitored on an annual basis. Groundwater monitoring was carried out during Quarter 3, 2008.

3.2.3.1 Groundwater Monitoring Locations

Table 3.8 indicates the location of groundwater monitoring boreholes and private wells.

Table 3.8: Groundwater Monitoring Locations

Borehole /Well ID	Location	Grid Ref
BH-1	West of site up-slope from landfill	E324788, N212771
BH-2	Eastern area of site down-slope from landfill	E325058, N212630
BH-3	Eastern area of site down-slope from landfill	E325075, N212737
BH-5*	Located on phase 2 of the landfill (Leachate borehole)	E324975, N212629
BH-6	West of site up-gradient from landfill	E324597, N212619

Borehole /Well ID	Location	Grid Ref
BH-7	Eastern area of site down-slope from landfill (adjacent to BH-3)	E325051, N212638
BH-8	Eastern area of site down-slope from landfill (adjacent to BH-2)	E325067, N212744
PW-2	Jones Water Supply (East of Site)	E325376, N212938
PW-3	Murphy Water Supply (East of Site)	E325246, N212792
PW-4**	Hollingsworth Water Supply (East of Site)	E325117, N213066

* BH-1 & BH-5 were found to be dry and no sample was obtainable
**Please note that PW-4 (Hollingsworth Water Supply (East of Site)) was removed from the 2008 sampling round as this household connected to mains drinking water

3.2.3.2 Chemical Analysis

The analysis of all groundwater samples taken as part of the Kilmurry South Landfill waste licence compliance have been assessed in relation to the EC Drinking Water Directive 98/83/EC. Results are presented in **Tables 3.9** to **3.16**; non–conformances are highlighted in red.

Table 3.9: Groundwater Monitoring Results at BH-1 during Q3, 2008 (Dry)

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3, 2007	Q2 2006	Q2 2005
Potassium	mg/l	N/A	Dry	Dry	Dry	0.6
Sodium	mg/l	200	Dry	Dry	Dry	6.9
Calcium	mg/l	N/A	Dry	Dry	Dry	5.904
Chloride	mg/l	250	Dry	Dry	Dry	11
Sulphate	mg/l	250	Dry	Dry	Dry	21
Total Oxidised Nitrogen	mg/l	N/A	Dry	Dry	Dry	0.9
Conductivity	mS/cm	2.5	Dry	Dry	Dry	0.102
pH	pH units	6.5 - 9	Dry	Dry	Dry	6.66
Ammoniacal Nitrogen	mg/l	0.39	Dry	Dry	Dry	<0.2
Faecal Coliforms	cfus/100ml	0	Dry	Dry	Dry	<1
Total Coliforms	cfus/100ml	0	Dry	Dry	Dry	<1
Water Level	m below ToC	-	Dry	Dry	Dry	2.01

Table 3.10: Groundwater Monitoring Results at BH-2 during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3, 2007	Q2 2006	Q2 2005
Potassium	mg/l	N/A	0.3	0.7	0.7	0.6
Sodium	mg/l	200	6.1	12.5	12.5	11
Calcium	mg/l	N/A	118.1	103	122	103.9
Chloride	mg/l	250	18	14	17	19
Sulphate	mg/l	250	42	44	40	52
Total Oxidised Nitrogen	mg/l	N/A	2.0	0.4	1.3	1.2
Conductivity	mS/cm	2.5	0.526	0.666	0.574	0.721
pH	pH units	6.5 - 9	7.12	7.1	7.45	7.71
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	0.6	<0.2
Faecal Coliforms	cfus/100ml	0	3	<1	<1	3
Total Coliforms	cfus/100ml	0	39	128	<1	3
Water Level	m below ToC	-	2.93	3.24	4.93	-

Table 3.11: Groundwater Monitoring Results at BH-3 during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3 2007	Q2 2006	Q2 2005
Potassium	mg/l	N/A	0.5	1	0.7	0.8
Sodium	mg/l	200	12.8	16	15.5	14
Calcium	mg/l	N/A	115.9	110	131	114.5
Chloride	mg/l	250	20	17	15	17
Sulphate	mg/l	250	91	115	94	98
Total Oxidised Nitrogen	mg/l	N/A	1.5	0.7	2.7	1.4
Conductivity	mS/cm	2.5	0.582	0.682	0.629	0.837
pH	pH units	6.5 - 9	7.01	7.52	7.37	7.87
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	2.3	<0.2
Faecal Coliforms	cfus/100ml	0	3	<1	<1	<1
Total Coliforms	cfus/100ml	0	200	163	48	25
Water Level	m below ToC	-	5.20	5.59	5.94	5.94

Table 3.12: Groundwater Monitoring Results at BH-6 during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3 2007	Q2 2006	Q2 2005
Potassium	mg/l	N/A	0.8	0.9	0.7	0.6
Sodium	mg/l	200	8.4	9	8.5	11
Calcium	mg/l	N/A	4.13	35	4	2.039
Chloride	mg/l	250	14	11	12	14
Sulphate	mg/l	250	10	8	8	18
Total Oxidised Nitrogen	mg/l	N/A	4.9	2.3	3.2	1.7
Conductivity	mS/cm	2.5	0.0935	0.108	0.833	0.106
pH	pH units	6.5 - 9	6.22	5.59	5.88	6.07
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	1.2	<0.2
Faecal Coliforms	cfus/100ml	0	22	<1	<1	<1
Total Coliforms	cfus/100ml	0	34	9	2	<1
Water Level	m below ToC	-	6.58	6.62	6.35	6.73

Table 3.13: Groundwater Monitoring Results at BH-7 during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3, 2007	Q2, 2006	Q2, 2005
Potassium	mg/l	N/A	0.6	0.8	0.5	0.4
Sodium	mg/l	200	13.7	17	16	16
Calcium	mg/l	N/A	184.1	112	155	122.6
Chloride	mg/l	250	21	24	27	28
Sulphate	mg/l	250	182	89	87	85
Total Oxidised Nitrogen	mg/l	N/A	<0.3	1.3	1.6	0.6
Conductivity	mS/cm	2.5	0.844	0.742	0.710	0.864
pH	pH units	6.5 - 9	6.21	7.2	7.07	7.43
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	0.5	<0.2
Faecal Coliforms	cfus/100ml	0	8	<1	<1	<1
Total Coliforms	cfus/100ml	0	23	130	2	12
Water Level	m below ToC	-	2.55	2.05	7.07	2.08

Table 3.14: Groundwater Monitoring Results at BH-8 during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3, 2007	Q2, 2006	Q2, 2005
Potassium	mg/l	N/A	0.7	1.3	0.5	0.6
Sodium	mg/l	200	9.8	26.5	8.5	32
Calcium	mg/l	N/A	123.7	118	203	189.7
Chloride	mg/l	250	25	21	23	16
Sulphate	mg/l	250	71	238	213	259
Total Oxidised Nitrogen	mg/l	N/A	2.4	<0.3	0.6	<0.3
Conductivity	mS/cm	2.5	0.570	1.031	0.930	1.518
pH	pH units	6.5 - 9	6.79	7.46	7.17	7.58
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	3.5	<0.2
Faecal Coliforms	cfus/100ml	0	19	NDP	<1	Insuffic-ient Sample
Total Coliforms	cfus/100ml	0	42	NDP	22	Insuffic-ient Sample
Water Level	m below ToC	-	1.86	3.38	7.17	3.09

Table 3.15: Groundwater Monitoring Results at PW-2 (Jones) during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3, 2007	Q2, 2006	Q2, 2005
Potassium	mg/l	N/A	1.2	2.3	2.2	1.8
Sodium	mg/l	200	6.8	10.0	9	10
Calcium	mg/l	N/A	314.6	71	60	64.04
Chloride	mg/l	250	12	13	12	15
Sulphate	mg/l	250	11	21	18	16
Total Oxidised Nitrogen	mg/l	N/A	0.7	1.4	1.2	1.2
Conductivity	mS/cm	2.5	0.181	0.364	0.310	0.457
pH	pH units	6.5 - 9	7.34	7.23	7.35	8.09
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	<0.2	<0.2
Faecal Coliforms	cfus/100ml	0	1	<1	<1	<1
Total Coliforms	cfus/100ml	0	48	4	11	<1

Table 3.16: Groundwater Monitoring Results at PW-3 (Murphy) during Q3, 2008

Parameter	Units	Drinking Water Limit	Q3, 2008	Previous Results		
				Q3, 2007	Q2, 2006	Q2, 2005
Potassium	mg/l	N/A	0.8	1.0	0.9	0.8
Sodium	mg/l	200	13.0	14.5	14	7
Calcium	mg/l	N/A	205.8	95	44	68.41
Chloride	mg/l	250	17	13	16	17
Sulphate	mg/l	250	13	13	16	13
Total Oxidised Nitrogen	mg/l	N/A	0.8	0.6	1.6	1.4
Conductivity	mS/cm	2.5	0.296	0.358	0.342	0.417
pH	pH units	6.5 - 9	7.21	7.79	7.93	7.89
Ammoniacal Nitrogen	mg/l	0.39	<0.2	<0.2	4.8	<0.2
Faecal Coliforms	cfus/100ml	0	10	72	<1	<1
Total Coliforms	cfus/100ml	0	100	158	38	9

3.2.3.3 Groundwater Non-Conformances

pH

The pH values are low historically in BH-6. It is considered that the water that passes through peaty upland in this part of the site, may contribute to the low values observed. pH was also low at BH-7 during 2008 monitoring (6.21 pH units0 although pH is typically approximately 7 pH at this point.

Coliforms

The high level of coliforms found in the groundwater and private wells is likely to be due to human or animal waste polluting the water from either failure of domestic septic tanks or from the entry of animal based fertilisers washing into the groundwater. This type of contamination can not be attributed to the operation of an inert landfill as no materials which could give rise to the heightened coliform levels are deposited at the site.

3.2.4 Dust

Dust was measured using a Bergerhoff dust gauge, which was exposed over a 30-day period to collect bulk dust deposition. The method employed is based on the German Standard Method VDI 2119 and collects total particulate matter. The gauge consists of a gauge bottle supported on a stand of approximately 1.5 metres high (Plate 3.2). The gauges were located at two positions as outlined in **Table 3.18**.

The apparatus consists of a collection vessel with an open mouth of 90mm diameter with a collection sample bottle of 1.5 litres volume (**Plate 3.1**). It was set up in the areas outlined in Schedule D of the waste licence. The gauges were left for a period of 30 days. When the sample period had elapsed the sample bottles were checked for the presence of any unusual deposits such as leaves or insects and these were removed before analysis of the samples took place.

The samples collected were then transferred to a laboratory for gravimetric (weight) analysis to determine the concentration of deposited material in each gauge bottle.

Plate 3.1: Dust Bottle

The dust bottle used as part of the Bergerhoff Dust Deposition Gauge; note the neck of the dust bottle has a diameter of 90 mm.

Plate 3.2: Bergerhoff Dust Gauge

The Bergerhoff Dust Gauge apparatus as used to measure the level of dust deposition.

3.2.4.1 Dust Monitoring Locations

Dust monitoring locations, in accordance with Table D.2.1 of the Waste Licence, are listed in **Table 3.18** below.

Table 3.18: Dust Monitoring Locations

Monitoring Location	Location	Grid Ref
DS-1	Southern boundary	E324849, N212646
DS-3	South-eastern boundary	E325058, N212630

3.2.4.2 Dust Monitoring Results

A dust deposition survey was carried out at the site over a 30-day period between 13th January and 12th February 2009 (for the purposes of 2008 monitoring). It was previously agreed by the EPA that dust monitoring at the site could be reduced to once during the licence year and at two monitoring locations DS-1 and DS-3. The results for the dust deposition monitoring are given in **Table 3.19** below.

Results from the survey showed that the level of dust measured at DS-1 were in compliance with the emission limit of 350 mg/m^2/day as defined in the Waste Licence. DS-3 was rendered an invalid sample due to damage sustained to the dust gauge during the monitoring period. The laboratory confirmed that the dust bottle was empty and no dust analysis was possible.

Table 3.19: Results of Dust Deposition sampling at Marrakesh Site in 2008

Location		Dust Level (mg/m^2/day)				
		Previous Results				EPA Licence Limit
	2008	2007	2006	2005	2004	
DS-1	**176.37**	83	65	79	95	350
DS-3	**N/A**	187	65	257	457	350

3.2.5 Noise

Noise levels are monitored to determine the impact of site operations on noise sensitive receptors.

3.2.5.1 Noise Monitoring Locations

Noise monitoring locations are listed in **Table 3.20**.

Table 3.20: Noise Monitoring Locations

Monitoring Location	Location	Grid Ref
NSL1	North-western boundary	E324675, N212744
NSL2	Northeast of landfill	E325075, N212931
NSL3	East of landfill	E325258, N212652

3.2.5.2 Noise Monitoring Results

An environmental noise survey conducted at Kilmurry South Landfill on the 12th of January 2009 (for the purposes of 2008 monitoring) concluded that the site does not contribute significantly to environmental noise conditions at the locations assessed. The noise measurements taken during site operational hours at the three pre-determined monitoring positions confirmed that noise emissions from the Kilmurry South landfill site are at or below the EPA guidance values for L_{Aeq} of 55 dB(A) for daytime noise levels at noise sensitive locations. Results of the noise survey are presented in **Table 3.21**.

Table 3.21: Daytime Noise Readings at Kilmurry South Landfill

Location		Noise Level (L_{Aeq} dB(A))		
		Previous Results	Previous Results	EPA Limit
	2008	2007	2006	
NSL1	47.9	52	45	55
NSL2	49.7	55	45	55
NSL3	51.8	55	51	55

The limits for L_{Aeq} as set down in schedule E.1 of the waste licence is 55 dB(A) for daytime readings. The L_{Aeq} is the measurement of steady continuous sound which has been corrected to allow for the non linearity of human hearing.

All readings were at or below the limits set in Schedule E.1. The highest noise levels recorded was at NSL3, measuring 51.8 dB(A). Site plant was not audible at these locations and the main noise source was traffic movement on the N11 main road.

There are no night-time operations at the Marrakesh facility.

3.2.6 Meteorological Data

Meteorological data was obtained from the meteorological station situated at Dublin Airport, the parameters obtained were: precipitation, temperature (average), wind speed and direction, relative humidity and atmospheric pressure (as per Schedule D.5). **Figures 3.1** to **3.4** represent temperature, precipitation and atmospheric pressure throughout the reporting period.

Figure 3.2: Rainfall and Relative Humidity during 2008

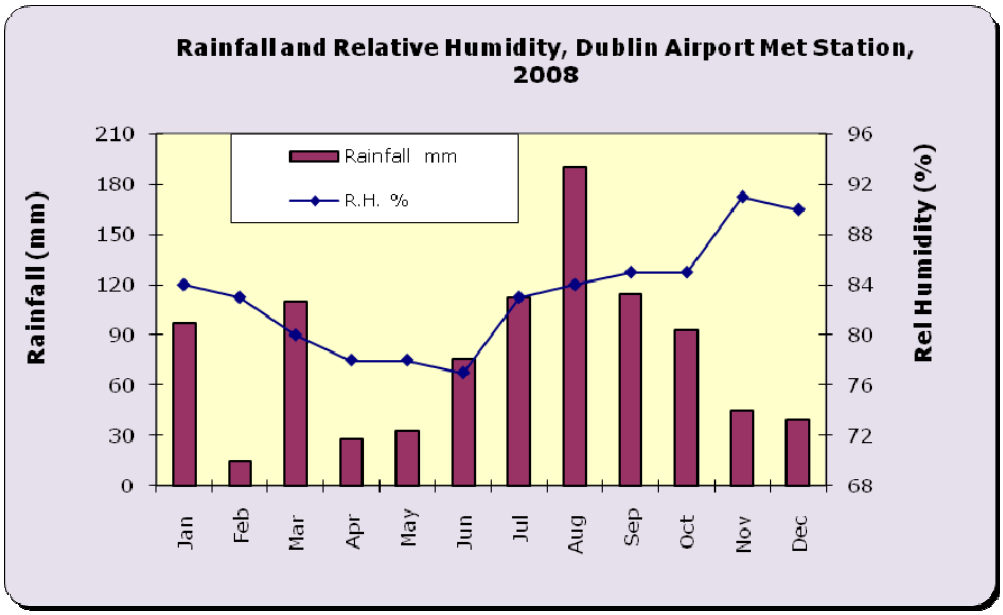


Figure 3.3: Average Minimum and Maximum Temperatures during 2008

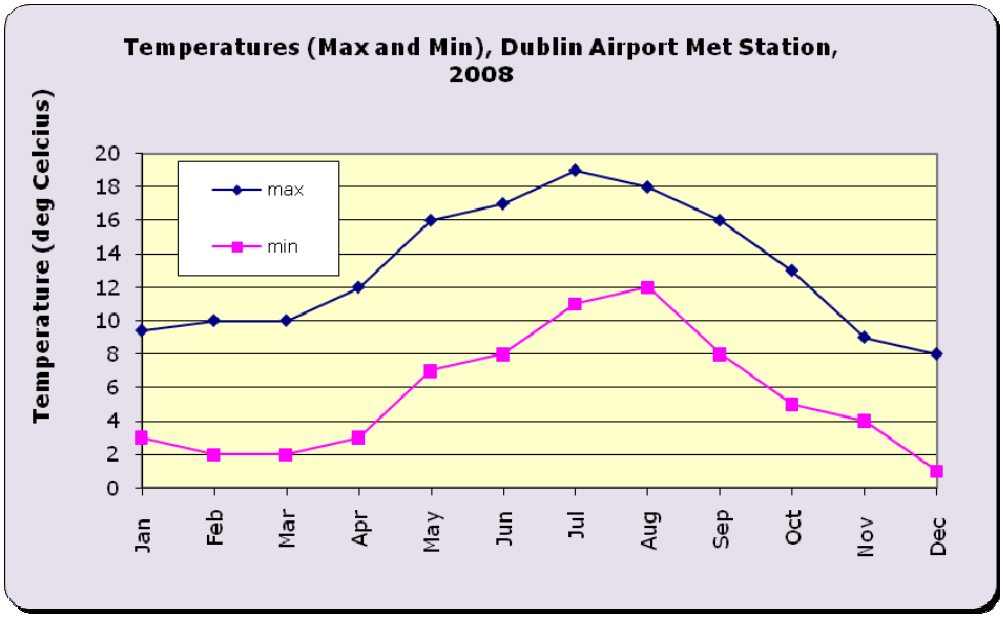


Figure 3.4: Mean Sea Pressure during 2008

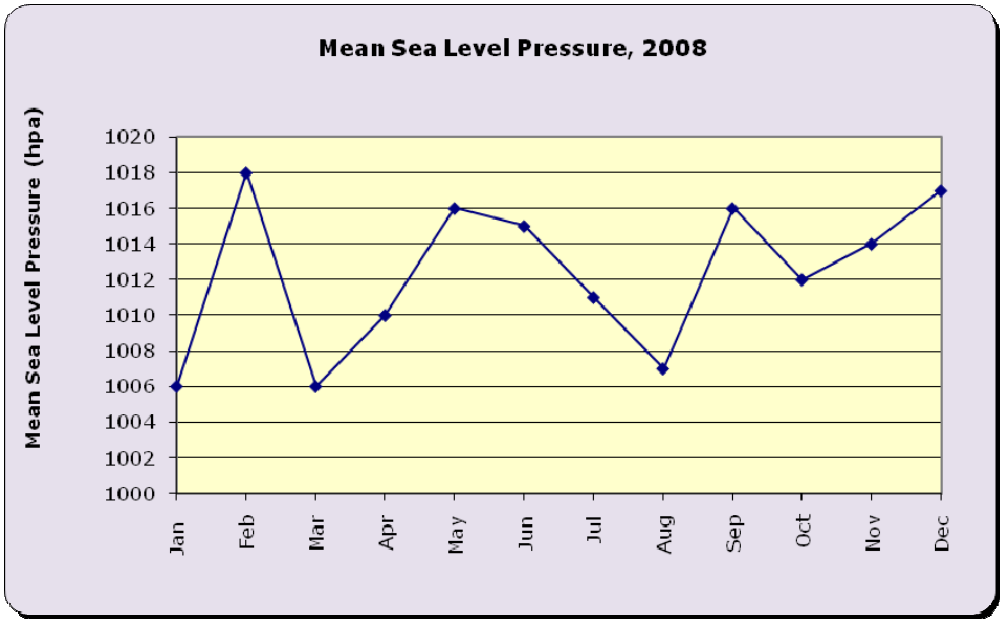
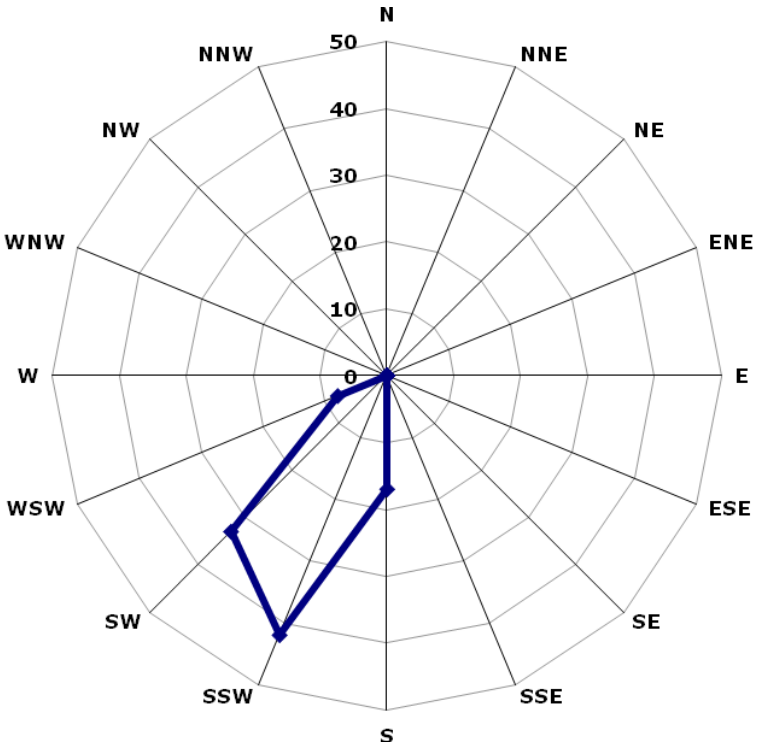


Figure 3.5: Wind Rose for 2008



3.2.7 Resource and Energy Consumption Summary

3.2.7.1 Electricity

Based on ESB bills, the estimated energy consumption for the period January 2008 to December 2008 was 4,976 kWh.

3.2.7.2 Fuel

Based on delivery dockets, the total diesel usage at the site between January 2008 and December 2008 was estimated at 67,930 litres.

4.0 Site Development Works

4.1 Development Works Undertaken During the Reporting Period

No major infrastructural projects were undertaken during 2008.

4.2 Site Stability and Site Survey

No landfilling has been conducted at the facility since the last site survey was submitted to the Agency, therefore there were no changes in levels. A slope stability review was completed and submitted to the Agency in April 2007, again no changes to slopes/levels have occurred since that time.

4.3 Progress on Restoration of Completed Phases

Proposed Restoration of the Site and Timescale of such Development

Due to the high level of recycling carried out on site, the two phases at the Marrakesh site have not yet been completed. The restoration of the completed phases will only be carried out when the required levels have been reached.

The restoration and aftercare of the facility shall be carried out in accordance with EPA guidance.

5.0 Environmental Incidents and Complaints

5.1 Environmental Incidents

Table 5.1: Reported Incidents, January 2008 to December 2008

Date	Incident				Likely Cause
	Parameter	Monitoring Location	Level Detected	DW Limit	
18th November 2008	Boron	PW-2	1.555	1.0	Previous results at PW-2 have not indicated high levels of metals. 2008 samples showed levels of boron and iron slightly in excess of the Drinking Water limit values. Barium was also relatively high; however, the levels detected are not a cause for concern. Metal results at PW-2 appear to be unrelated to sample results from on-site and surrounding monitoring locations.
18th November 2008	Iron	PW-2	246	200	
18th November 2008	Barium	PW-2	469	No limit	
18th November 2008	pH	BH-6	6.22	6.5 – 9	pH values at BH-6 and BH-7 indicate slightly acidic conditions. This trend is apparent in BH-6 from historic results. It is considered likely that acidic peaty soil is contributing to pH readings here.
		BH-7	6.21	6.5 – 9	
		SW-2	9.57	6.5 – 9	pH results demonstrate alkaline conditions at SW-2. This may be associated with soil and rock conditions through which the stream passes.

Date	Incident				Likely Cause
	Parameter	Monitoring Location	Level Detected	DW Limit	
18th November 2008	Total Coliforms (cfus/ 100ml)	BH-2	39	0	Coliform levels in breach of DW limits are thought to be due to human or animal waste polluting the water from either the failure of domestic septic tanks or from the entry of animal-based fertiliser washing into the groundwater. This type of contamination is not associated with the operation of an inert construction and demolition waste recovery operation.
		BH-3	200		
		BH-6	34		
		BH-7	23		
		BH- 8	42		
		PW-2	48		
		PW-3	100		
18th November 2008	Faecal Coliforms (cfus/ 100ml)	BH-2	3	0	
		BH-3	3		
		BH-6	22		
		BH-7	8		
		BH- 8	19		
		PW-2	1		
		PW-3	10		

5.2 Complaints Received

On 9th June 2008 the Agency provided Marrakesh Ltd. with copies of correspondence from Wicklow County Council to the Office of Environmental Enforcement in relation to Waste activities at the Marrakesh Facility. The concerns raised in the Agency's letter were duly noted.

6.0 Environmental Management Programme

6.1 Environmental Objectives and Targets, 2008

Progress on the schedule of objectives and targets for 2008 is summarised in Table 6.1 below.

Table 6.1: Objectives & Targets 2008

Objective / Target	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Progress
Prepare a Schedule of Environmental Monitoring		◎											**
Submit AER to the Agency			◎										**
Check monitoring infrastructure and replace as required						◎							**
Carry out daily meteorological monitoring	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	**
Carry out litter and nuisance checks	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	**
Carry out septic tank inspections	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	**
Review site files and ensure that they are up to date		◎		◎		◎		◎		◎		◎	**
Review any complaints received and ensure that they are dealt with adequately						◎						◎	**
Ensure that adequate measures are taken to control the generation of dust during dry periods.	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	**
Maintenance of site roads				◎									**
Establish appropriate and designated metal storage area		◎											**
Check tare weights of all incoming vehicles on a six-monthly basis					◎						◎		**

KEY: ** = achieved in 2008; * = carried forward to 2009; ! = not achieved; ◎ = target date

6.2 Environmental Objectives & Targets 2009

Objectives and targets for 2009 are outlined in Table 6.2 below.

Table 6.2: Objectives & Targets 2009

Objective / Target	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Prepare a Schedule of Environmental Monitoring		◎										
Submit AER to the Agency			◎									
Check monitoring infrastructure and replace as required						◎						
Carry out daily meteorological monitoring	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Carry out litter and nuisance checks	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Carry out septic tank inspections	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Review site files and ensure that they are up to date		◎		◎		◎		◎		◎		◎
Review any complaints received and ensure that they are dealt with adequately						◎						◎
Ensure that adequate measures are taken to control the generation of dust during dry periods.	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Maintenance of site roads				◎								
Check tare weights of all incoming vehicles on a six-monthly basis					◎						◎	
KEY: ◎ = Targets to be completed during 2009												

6.3 Tank, Pipeline and Bund Testing

No tank, pipeline or bund testing has been conducted during the reporting period. All old fuel tanks that were on site have been removed and replaced with double skinned tanks located in a metal container for protection.

6.4 Review of Nuisance Controls

The facility has not recorded any environmental nuisances. Roads in the vicinity of the site are serviced by a facility roadsweeper and the installation of a new wheel cleaner further reduces any potential mud generation on roads. Vermin, birds, flies and odours have not caused a nuisance at the facility. Dust and noise associated with the operation of the facility have not been of any concern.

Nuisance controls will be reviewed on an ongoing basis at the site, in order that the operation meets with the requirements of its neighbours and the Agency. Should any problems arise, a procedure to alleviate or mitigate such nuisances will be drawn up without delay.

6.5 Public Information

Marrakesh Ltd. regularly communicates with site neighbours and site records are available for inspection with prior appointment. Residents are notified if there any exceedances of Drinking Water guideline limit values in their wells.

6.6 Procedures Developed

No new procedures were developed in 2008

6.7 Off-site Waste Disposal Facilities

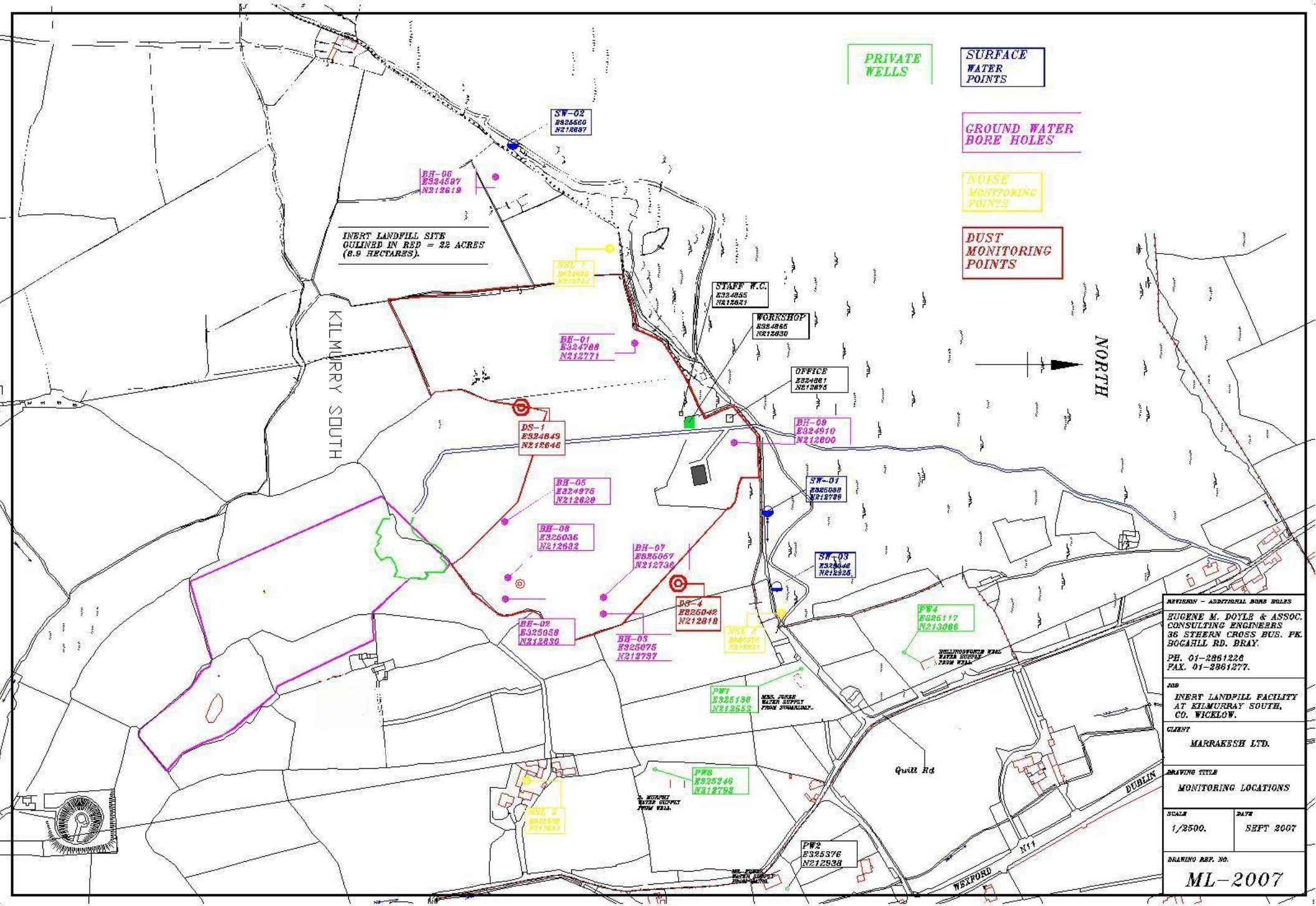
During 2008 the following facilities were used for the off-site removal of wastes and materials (See Table 6.3). All facilities were agreed in advance with the Agency.

Table 6.3: Off-site Disposal Facilities, 2008

Waste Company	Registration number of the permit or licence	Waste Collection Permit(s)	Copy of the collection permit on file
Greenstar	W0053-03	WCP/WW/68/06B	Yes
Enva	W0184-01	WCP/WW/40	Yes
Leon Recycling	WCC WP 164 WCC WP 148	WCP/WW/33	Yes
Hegarty Metal Processors Ltd	LCC WP 05-04	WCP/WW/19/05B	Yes
Green King	W0218-01	N/A*	N/A*
Marrakesh Ltd	WCC WP 141 (The Downs, Kilpedder)	WCP/WW/05 DCC/CP21/5	Yes

*Note: Please be advised that Marrakesh only deliver waste to this site, waste is not collected from Marrakesh by this contractor.

Figure 1: Monitoring Location Map


PRIVATE WELLS
SURFACE WATER POINTS
GROUND WATER BORE HOLES
NOISE MONITORING POINTS
DUST MONITORING POINTS
SW-02 E325620 N212637
BH-06 E324587 N212619
INERT LANDFILL SITE OULINED IN RED = 22 ACRES (8.9 HECTARES).
KILMURRY SOUTH
STAFF W.C. E324855 N212621
WORKSHOP E324865 N212630
OFFICE E324861 N212675
BH-01 E324788 N212771
DS-1 E324849 N212646
BH-09 E324910 N212800
SW-01 E325098 N212786
BH-05 E324976 N212629
BH-08 E326036 N212632
BH-07 E325057 N212736
SW-03 E325048 N212525
DS-4 E325042 N212818
BH-02 E325058 N212630
BH-03 E325075 N212737
PW4 E325117 N213066
PW1 E325198 N212653
PW5 E325246 N212792
PW2 E325376 N212938
Quilt Rd
DUBLIN
WEXFORD
N11
NORTH
REVISION - ADDITIONAL BORE HOLES
EUGENE M. DOYLE & ASSOC. CONSULTING ENGINEERS
36 STHERN CROSS BUS. PK. BOGAHLL RD. BRAY.
PH. 01-2861226
FAX. 01-2861277.
JOB
INERT LANDFILL FACILITY AT KILMURRAY SOUTH, CO. WICKLOW.
CLIENT
MARRAKESH LTD.
DRAWING TITLE
MONITORING LOCATIONS
SCALE 1/2500.
DATE SEPT 2007
DRAWING REF. NO.
ML-2007

Appendix 1: PRTR

| PRTR# : W0048 | Facility Name : Kilmurry South | Filename : W0048_2008.xls | Return Year : 2008 |

AER Returns Worksheet

Version 1.1.04

REFERENCE YEAR	2008

1. FACILITY IDENTIFICATION

Parent Company Name	Marrakesh Limited
Facility Name	Kilmurry South
PRTR Identification Number	W0048
Licence Number	W0048-01

Waste or IPPC Classes of Activity

No.	class_name
3.1	Deposit on, in or under land (including landfill).
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.
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.4	Recycling or reclamation of other inorganic materials.
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.

Address 1	Bray
Address 2	Co. Wicklow
Address 3	
Address 4	
Country	Ireland
Coordinates of Location	537700.000
River Basin District	IEEA
NACE Code	382
Main Economic Activity	Waste treatment and disposal
AER Returns Contact Name	Antonia Lawlor
AER Returns Contact Email Address	marrakeshltd@gmail.com
AER Returns Contact Position	Office Manager
AER Returns Contact Telephone Number	(01) 2868119
AER Returns Contact Mobile Phone Number	087 6641866
AER Returns Contact Fax Number	(01) 2868119
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

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

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

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

4.1 RELEASES TO AIR

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR								
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR								
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								
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: Kilmurry South

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

4.2 RELEASES TO WATERS

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as t

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

4.3 RELEASES TO WASTEWATER OR SEWER

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

4.4 RELEASES TO LAND

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND							
POLLUTANT		METHOD			QUANTITY		
			Method Used				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

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

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO LAND							
POLLUTANT		METHOD			QUANTITY		
			Method Used				
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR# : W0048 | Facility Name : Kilmurry South | Filename : W0048_2008.xls | Return Year : 2008 |

29/05/2009 09:52

9

Transfer Destination	European Waste Code	Hazardous	Quantity T/Year	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Name and Licence / Permit No. of Recoverer / Disposer / Broker	Address of Recoverer / Disposer / Broker	Name and Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)	Licence / Permit No. of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
				Mostly bulky stone with approx 1% sand mix								
Within the Country	**17 09 04**	**No**	3731.0	by weight.	R5	M	Weighed	Onsite in Ireland	Various	Various		
Within the Country	17 03 02	No	8445.0	Butuminous Mixtures	R5	M	Weighed	Onsite in Ireland	Various	Various		
Within the Country	17 01 01	No	45479.0	Concrete	R5	M	Weighed	Onsite in Ireland	Various	Various		
Within the Country	17 05 04	No	24130.0	Soil & Stones	R5	M	Weighed	Onsite in Ireland	Various	Various		

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