31/3/2009

Administration,
Waste Enforcement Section,
Environmental Protection Agency,
McCumiskey House,
Richview,
Clonskeagh Road,
Dublin 14.

Ref: FCC-127-1-2009-09

F.A.O. Mr. Eamonn Merriman.
Ref: Dunsink Waste Licence Register No. W0127-01. Annual Environmental Report (AER) / Pollution Release Transfer Register (PRTR). Condition 11.6.

Dear Mr. Merriman,

Please find attached, EPA correspondence dated 24/2/2009, relating to the licensee's responsibilities *Vis a Vis* AER / PRTR reporting.

As per item 2 on this correspondence please find attached a hard copy of the PRTR spreadsheet which is to be attached to the hard copy AER sent to The Agency on 30/1/2009.

This spreadsheet is to accompany the hard copy AER to be in accordance with *The Agency's* guidance note *'Integrated Pollution Control Licensing Guidance Note For: Annual Environmental Report'*.

If you have any queries please do not hesitate to contact me.

Kind regards,

_____
David Devine

DUNSINK LANDFILL
ANNUAL ENVIRONMENTAL REPORT 2008

REPORTING PERIOD: JANUARY TO DECEMBER 2008

WASTE LICENCE REGISTER NO. W0127-01

FINGAL COUNTY COUNCIL
COUNTY HALL
MAIN STREET
SWORDS
COUNTY DUBLIN

Fingal County Council

Comhairle Contae Fhine Gall

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INTRODUCTION.

The Environmental Protection Agency (EPA) granted a waste licence (register no. 127-1) to this Council in respect of the above facility on 9th January 2004. From July 2006 the register number was changed to W0127-01. This licence is for the closure and restoration of areas previously landfilled. Under its terms, the Council is required to restore and remediate the facility, to install infrastructure to monitor and manage landfill gas and leachate emissions, and to cap previously filled areas using inert materials. These works are to be completed within three years of the date of grant of the licence. In accordance with the requirements of condition 11.6 of the Waste Licence, an Annual Environmental Report (AER) for the facility must be submitted to the Environmental Protection Agency.

1.1. REPORTING PERIOD.

The reporting period for the AER is 1st January to 31st December 2008. This is the fifth AER for the facility as required by the waste licence.

1.2. FACILITY LOCATION.

Fingal County Council has responsibility for the management and operation of the facility. The facility is located at:

Dunsink Landfill,
Dunsink Lane,
Finglas,
County Dublin.
Tel. (01) 8119070

Access to the landfill is now from the Forest Road end of Dunsink Lane only, Irish National Grid 238886 (Northings) 311766 (Eastings). Figure 1 presents a map of the facility and the surrounding locations.

1.3. ENVIRONMENTAL POLICY FOR DUNSINK LANDFILL.

- Comply with the terms of waste licence 127-1 and all other relevant legislation and codes of practice.
- Strive for continuous improvement in the running of the facility; in order to minimise the effects of the landfill on the environment.
- Create better awareness and training for all staff involved in the running of the landfill.

Develop a good relationship with local residents around Dunsink for the betterment of the surrounding area.

FIGURE 1: DUNSINK LANDFILL SITE LOCATION AND SITE ACCESS

2.0. SITE DESCRIPTION.

Dunsink Landfill is situated in Finglas, County Dublin (National Grid Reference 239500E, 310500N). It is bound by Dunsink Lane to the south, Rathoath Road to the east, the M50 motorway to the Northwest and Cappagh Hospital to the North. It is approximately 61ha. The most elevated ground measured this year lies at 100m on the western side of the site. The base of the landfill varies but is estimated to average between 65-70ms.

The landfill opened in 1976. Approximately 4,400,000 tonnes of waste is estimated to have been deposited at the facility to June 1996. The landfill subsequently phased to closure, culminating in the closure of the civic amenity in 2003. A landfill gas utilisation plant was installed on site in 1996.

An original application for a waste licence was submitted to the Environmental Protection Agency in September 1999. An amendment to the original application was sought in February 2003. A Proposed Decision was issued in August 2003. Waste Licence 127-1 was issued in January 2004.

2.1. LICENCED WASTE ACTIVITIES AT THE FACILITY.

On January 9th 2004 Fingal County Council was licensed to carry out the following waste activities at Dunsink Landfill, Finglas, County Dublin subject to twelve conditions.

Licensed Waste Disposal Activities, in accordance with the Third Schedule of the Waste Management Act 1996.

Class 4 Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons:

This activity is limited to:

- The provision and use of a leachate lagoon to temporarily store leachate generated in the landfill, prior to discharge to the public foul sewer; and
- The provision and use of a surface water attenuation pond to control the quality and quantity of the surface water run off from the site.

Licensed Waste Recovery Activities, in accordance with the Fourth Schedule of the Waste Management Act 1996.

Class 2 Recycling or reclamation of organic substances, which are not used as solvents (including composting and other biological transformation processes):
This activity is limited to the composting of green waste, the recycling / reclamation of cardboard, paper and waste oil at the facility.

Class 3 Recycling or reclamation of metals and metal compounds:
This activity is limited to the recycling of ferrous / non-ferrous metals and white goods.

Class 4 Recycling or reclamation of other inorganic materials:
This activity is limited to the recycling or reclamation of subsoil and topsoil (for the restoration of the site) and dry recyclables at the bring centre.

Class 9 Use of any waste principally as a fuel or other means to generate energy:
This activity is limited to the utilisation of landfill gas for the generation of electricity.

Class 11 The use of waste obtained from any activity referred to in a preceding paragraph of this Schedule:
This activity is limited to the use of suitable subsoil and topsoil and composted material for the restoration programme.
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:

This activity is limited to the storage of recyclable waste prior to recovery off site and the storage of soil on site for the restoration programme.

Classes 2 and 3 as licensed waste recovery activities, under the Fourth Schedule of the Waste Management Act 1996 are not currently undertaken at the facility.
The Capping Report stated that the area in the centre of the site around the old civic amenity tipping area (Zone C) should be capped in accordance with the specifications given in condition 4.3 of the licence. This zone was the subject of a proposal put to and agreed by *The Agency* FCC-127-1-2005-015. The capping of Zone C commenced in early September 2005 and was completed in late October 2006, during which time see Figure 2. Only localised dressing of topsoil in areas of Zone C occurred in 2007.

3.0 EMISSIONS AND INTERPRETATION OF MONITORING RESULTS.

3.1. GROUNDWATER

There are eight groundwater stations listed in Schedule D.1 of the waste licence. BH28 listed in Table D.1.1 of the licence was not installed however; BH27 was added to the monitoring infrastructure under agreement with the *Environmental Protection Agency*. Borehole monitoring recorded leachate characteristics from BH29 suggesting that it was a potential migration pathway to groundwater for leachate. It was therefore decommissioned on 14th March 2005, upon agreement with *The Agency*. Two additional groundwater stations were added to the sampling programme upon agreement with *The Agency*, these were installed on Dunsink Observatory land between the 14th and 16th March 2005. BH18 was destroyed during slope stability work in August 2006 and was replaced as BH18_R on 7th September 2006. The grid references for these are shown in Table 3.1. The sample locations are illustrated in Figure 3.1

Condition 6.4.1 requires the licensee to submit to the EPA for its agreement, groundwater monitoring trigger levels in accordance with the requirements of Directive 1999/31/EC for one upgradient and two downgradient monitoring Boreholes. This analysis was conducted and trigger levels were proposed to the EPA in February 2005 (Reference: FCC-127-1-2005-006), Appendix I. These were reviewed at the end of 2006, along with an analysis of control and trigger levels for BH33 & BH34. A proposal has been sent to *The Agency* on foot of this review for their approval.

Groundwater Borehole Monitoring Location	Eastings	Northings	Classification
BH3	310665	239505	Deep Groundwater
BH4	310650	239490	Shallow Groundwater
BH16	311340	239085	Deep Groundwater
BH18_R	311180	239115	Deep Groundwater
BH27	310030	238720	Deep Groundwater
BH28	Not Installed		
BH29	310155	239095	Deep Groundwater
BH31	311765	238820	Shallow Groundwater
BH32	311770	238800	Deep Groundwater
BH33	310735	238724	Deep Groundwater
BH34	310719	238725	Shallow Groundwater

TABLE 3.1: GROUNDWATER MONITORING LOCATIONS.

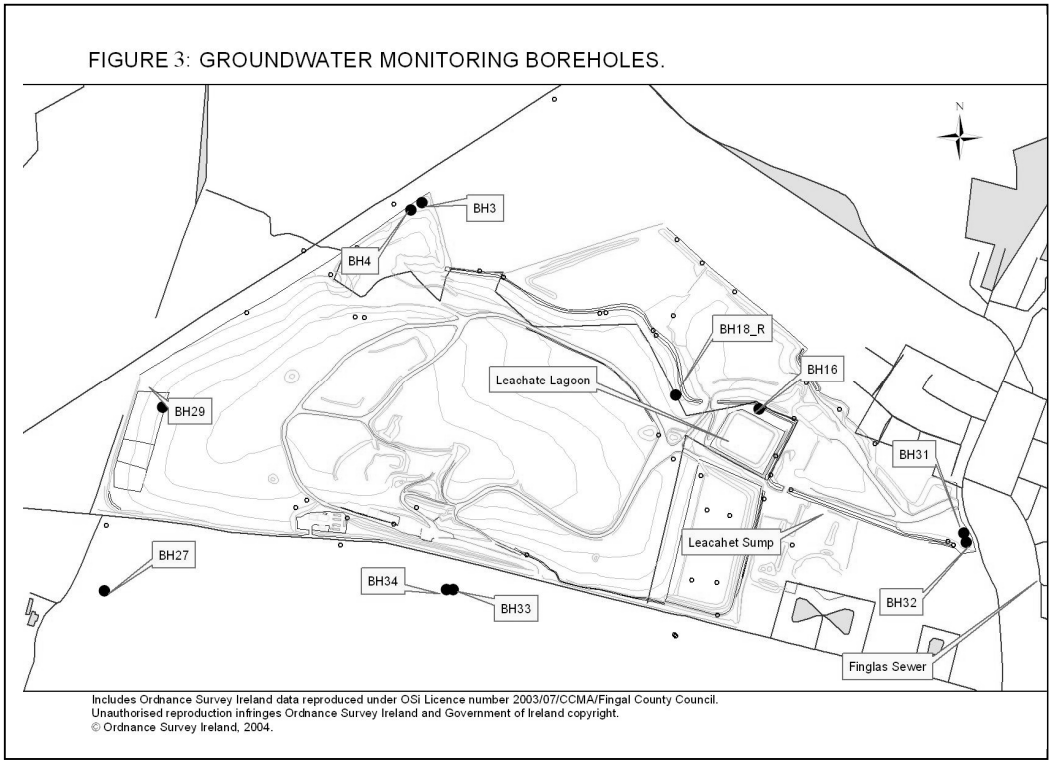

FIGURE 2: GROUNDWATER MONITORING BOREHOLES.

Detailed analysis reports are contained in Appendix I. The results obtained have been compared to the Maximum Admissible Concentration (M.A.C) for drinking water and proposed trigger levels. The following analysis was completed in 2008 (Table 3.2).

Groundwater Borehole Monitoring Location	Q1 Feb/March	Q2 May/June	Q3 September	Q4 November
BH3	Sampled	Sampled	Sampled	Sampled
BH4	Sampled	sampled	Sampled	Sampled
BH16	Sampled	sampled	Sampled	Sampled
BH18_R	Sampled	Sampled	Sampled	Sampled
BH27	Sampled	sampled	Sampled	Sampled
BH28	Not Installed			
BH29	Decommissioned 14th March 2005			
BH31	Sampled	sampled	Sampled	Sampled
BH32	Sampled	sampled	Sampled	Sampled
BH33	Sampled	sampled	Sampled	Sampled
BH34	Sampled	sampled	Sampled	Sampled

TABLE 3.2: GROUNDWATER SAMPLING PROGRAMME 2008.

Methodology

Refer to Schedule D.5 of WL 127-1.

Groundwater Monitoring Quality - Findings (See Appendix I)

Q1 February and March 2008

Results from groundwater sampling during February 2008 and March 2008 indicated generally good quality groundwater beneath the landfill site and environs at all monitoring locations.

Comparison with Control and Trigger Levels

All other parameters at all boreholes were below their respective control and trigger levels during this quarter.

Q2 May and June 2008

Results from groundwater sampling during May 2008 and June 2008 indicated good quality groundwater beneath the landfill site and environs.

Comparison with Control and Trigger Levels

All parameters at all boreholes were below their respective IGVs and trigger levels during this quarter. Slightly elevated conductivity was recorded at BH34 in excess of its control value.

[SI 81/88] & EUROPEAN COMMUNITIES (QUALITY OF SURFACE WATER INTENDED FOR ABSTRACTION OF DRINKING WATER) REGULATIONS 1989 [SI 294/89]

Parameter	Unit	SI 81/88 Drinking Water	SI 294/89 Surface
		M.A.C	M.A.C. - A1
Alkalinity (as CaCO3)	CaCO3 mg/l	-	-
Ammoniacal Nitrogen	N mg/L	0.3	0.2
Arsenic (As)	As mg/l	0.05	50ug/l
Barium (Ba)	Ba mg/l	0.5	0.1
BOD in unfiltered water	O2 mg/L		5
Boron (B)	B mg/l	2	2
Cadmium (Cd)	Cd mg/l	0.005	5 ug/l
Calcium (Ca)	Ca mg/l	200	-
Chloride (Cl)	Cl mg/L	250	250
Chromium (Cr)	Cr mg/l	0.05	0.05
COD on unfiltered water	O2 mg/L		40 (A3)
Conductivity	us/cm	1500	1000
Copper (Cu)	Cu mg/l	0.5	0.5
Cyanide	CN mg/l	0.05	0.05
Dissolved Oxygen (O2)	O2 mg/L	-	.
Fluoride	F mg/l		1
Fluoride (F)	F mg/l	1	1
Iron (Fe)	Fe mg/l	0.05	0.2
Lead (Pb)	Pb mg/l	0.05	0.05
Magnesium (Mg)	Mg mg/l	0.05	-
Manganese	Mn mg/l		0.05
Mercury (Hg)	Hg mg/l	1	0.001
Nickel (Ni)	Ni mg/l	0.05	-
Nitrate (NO3)	NO3 mg/l	50	50
Nitrite (NO2)	NO2 mg/l	0.1	-
PH	units	6.0-9.0	5.5-8.5
Phosphorus (P)	P mg/l	<0.05	-
Potassium (K)	K mg/L	12	-
Selenium (Se)	Se mg/l	0.01	0.01
Silver (Ag)	Ag mg/l	0.01	
Sodium (Na)	Na mg/L	150	-
Sulphate (soluble) (SO4)	SO4 mg/l	250	200
Sulphate in water	mg/l	-	-
Surfactants -react methylene blue	mg/l (laurylsulphate)	0.2	0.2
Temperature	^{o}C	-	25
Total Cyanide (Cn)	Cn mg/l	0.2	0.05
Total Organic Carbon	C mg/L	-	
Total Oxidised Nitrogen (water)	N mg/L	-	-
Total Phenols	mg/l	0.0005	
Total Suspended Solids	mg/l	-	50
Zinc (Zn)	Zn mg/l	1	3

TABLE 4.3: EUROPEAN COMMUNITIES (QUALITY OF WATER INTENDED FOR HUMAN CONSUMPTION) REGULATIONS, 1998.

Q3 September 2008

Results from the annual round of groundwater sampling during September 2008, indicated moderate quality groundwater beneath the landfill site and environs.

Results at BH18R have consistently recorded slightly contaminated water quality since its installation. BH18R is located on the landfill side of the northern leachate interceptor drain.

All VOCs, SVOCs and pesticides were recorded below the laboratory detection limit with the exception of trace levels of pesticide alpha – BHC (lindane) at BH3.

Comparison with Control and Trigger Levels

A slightly elevated level of ammoniacal nitrogen were recorded at BH3. BH18, BH33 and BH34 above the control level but below the recommended trigger level. A slightly elevated level of chloride was recorded at BH3, BH4 and BH27.

An elevated level of potassium was recorded at BH4 below control and trigger levels. Levels of iron were recorded at above their trigger value but below their IGV in BH3, BH4 and BH18.

An elevated level of sodium was recorded above its trigger level at BH32 but below the IGV and an elevated level of nickle was recorded above its control value at BH18 but below the trigger level and IGV.

BH16 and BH31 indicated good groundwater quality with all parameters below the IGV values.

List I/List II Analysis of Groundwaters

In accordance with the requirements of Waste Licence W0127-01, a number of monitoring boreholes were also analysed for concentrations of List I/List II dangerous substances e.g. volatile and semi volatile organic compounds as well as pesticides. Samples for organic and pesticide analysis were collected from BH3, BH4, BH31, BH32, BH33 and BH34.

All VOCs, SVOCs and pesticides were recorded below the laboratory detection limit with the exception of trace levels of pesticide alpha – BHC (lindane) at BH3.

Q4 November 2008

Results from groundwater sampling during November 2008 indicated good quality groundwater beneath the landfill site and environs at the majority of monitoring stations. BH18_R was the exception to this with an elevated level of ammoniacal nitrogen above the recommended IGV but below its trigger and control value respectively.

Comparison with Control and Trigger Levels

BH18_R was the exception to this with an elevated level of ammoniacal nitrogen above the recommended IGV but below its trigger and control value respectively. All other parameters at all boreholes were below their respective control and trigger levels for this quarter.

Groundwater Levels

Groundwater levels were recorded from each borehole during each quarter and the results are displayed in Table 4.4.

Groundwater Borehole Monitoring Location	Q1 February (M)	Q2 May (M)	Q3 August (M)	Q4 November
BH3	3.7	4.2	3.06	3.53
BH4 Shallow	3.35	3.4	3.3	3.3
BH16	0.9	1.1	0.67	0.5
BH18R	6.25	6.5	6.33	5.73
BH27	1.77	3.9	1.69	1.6
BH31 Shallow	3.75	4	3.69	3.55
BH32	1.9	1.2	0.82	1.02
BH33	2.5	3.2	3.98	2.38
BH34 Shallow	1.7	2.1	1.46	1.84

TABLE 4.4: GROUNDWATER BOREHOLES WATER LEVELS

Groundwater – Discussion

A hydrogeological Assessment of the facility was forwarded to the Agency in November 2004 (FCC-127-1-2004-065). It determined an up gradient / down gradient trending of groundwater from West-North-West to East-South-East beneath the landfill and surrounds. This pattern is generally consistent with the regional drainage pattern.

Results from groundwater sampling during 2008 generally indicated generally good quality groundwater beneath the landfill site and environs with some boreholes occasionally showing slightly elevated levels of ammoniacal nitrogen and/or conductivity. Generally these elevated readings were more prevalent at boreholes closest to the facility (BH18_R). Boreholes closest to the landfill body (BH18_R) have the highest levels of ammoniacal nitrogen.

Deep Groundwater

Ammoniacal nitrogen and conductivity levels have been consistently stable and within limits over this period at BH16 & BH33. BH18_R record elevated levels of ammoniacal nitrogen during Q3 and Q4. The elevated parameters at this location reflect it's position close to the waste body.

No elevated levels of ammoniacal nitrogen were recorded in BH27 or BH32 during 2008 which is consistent with 2007.

Shallow Groundwater

Shallow groundwater at BH 4 upgradient was of good quality apart from a slightly elevated iron value above the trigger level but below the IGV value. of the facility and BH31 to the east and downgradient tend to be of good quality.

Apart from occasional elevated levels of conductivity, ammoniacal nitrogen and fluoride BH34 to the south and downgradient of the facility indicated relatively good water quality as well.

Using ammoniacal nitrogen as a guide to trends in groundwater quality, a pattern of improved groundwater quality is discernable from 2005 onwards.

Conclusion & Annual Assessment
The annual assessment suggests that there has been a general improvement in groundwater quality at Dunsink Landfill. The landfill however, still appears to be having a slight impact on the deep groundwater quality mainly close to the waste body itself.

Using ammoniacal nitrogen as a guide to trends in groundwater quality, a pattern of improved or sustained groundwater quality is discernable from 2005 in BH3, BH4, BH16, BH18, BH31, BH32 & BH34. However, using ammoniacal nitrogen as a guide to trends in groundwater quality, the pattern of reduced groundwater quality discernable from 2005 at BH27 has been halted. Elevated levels of ammoniacal nitrogen was recorded once at BH33.

The commissioning of the sump/pump leachate infrastructure in July 2005 may be improving the environmental performance of the facility in relation to groundwater quality.

4.2. SURFACE WATER

Schedule D.1 of the waste licence requires the monitoring of surface water at six locations (SW1, SW2, SW4, SW7, SW9 & SW10). Three sampling points are required for biological sampling (KS1, KS2 and KS3) and additional station at the settlement pond and outlet points was added as a fourth monitoring location in 2008 (See Table 4.5 and Figure 3).

SW 11 was incorporated as an additional sampling location under instruction from *The Agency* following Q1 Monitoring Report 2004. A Biological Sampling Programme was undertaken on 3rd of December 2008. Surface water sampling points were established at the discharge from the wheelwash to the open channel WWSW1 and from the open channel to the Scribblestown Stream WWSW2. SW1 is located downstream of the facility and sampling at this point monitors the effect of the facility on water quality. SW1 is located some distance downstream of the facility and a breakers yard lies adjacent to the stream and illegal dumping occurs between the facility and SW1. A case was put to *The Agency* to move SW1 further upstream to avoid these potential sources of surface water contamination and provide a truer picture of the effect of the facility on surface water quality. During the annual audit of the licence *The Agency* agreed and from 15th August 2005 a new downstream monitoring point, SW17, was used instead of SW1. SW4 was replaced on 27/2/2006 by SW18 as the upstream sampling point as agreed with *The Agency* (127-1/AK11EM).

Surface Water Monitoring Location	Eastings	Northings
SW1	311800	238460
SW2	311380	238980
SW4	310480	239365
SW7	311120	239220
SW9	310885	238795
SW10	311350	239100
SW11*	311360	238915
SW12**	310424	239410
SW13**	310829	239356
SW14**	311173	239277
SW15**	311417	239069
SW16**	311410	238926
SW17***	311687	238826
SW18****	310464	239394
KS1*****	310781	239373
KS2*****	311145	239242
KS3*****	311739	238812
WWSW1******	311616	238921
WWSW2******	311644	238835

* Additional sampling location for monitoring programme.
** Enhanced monitoring programme undertaken 30th July 2004.
*** New downstream sampling point agreed during EPA audit August 2005.
**** New upstream sampling point agreed with *The Agency*.
***** Biological Sampling Programme.
****** Sampling points at discharge from wheelwash to open channel and from open channel to Scribblestown Stream. Only sampled when clay is imported onto the Landfill.

TABLE 4.5: SURFACE WATER MONITORING LOCATIONS 2008.

FIGURE 4: SURFACE WATER MONITORING LOCATIONS.

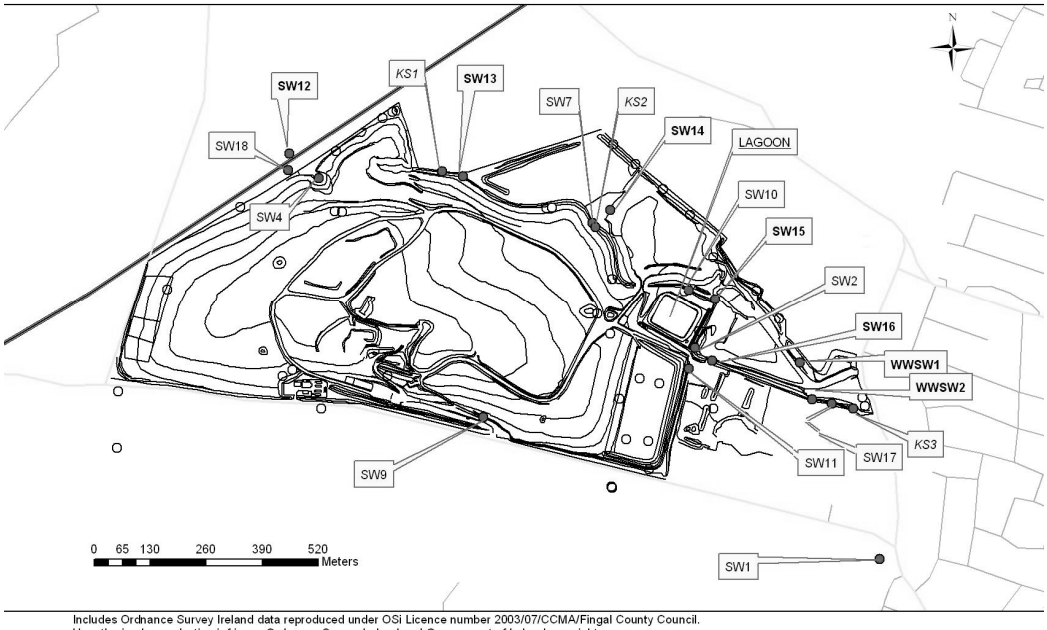

FIGURE 3: SURFACE WATER MONITORING LOCATIONS 2008**.**

See Table 4.6 for analysis completed in 2008.

Methodology
Refer to Schedule D.5 of waste licence 127-1

Surface Water Monitoring Quality - Findings (See Appendix II)
Surface water quality was monitored in the drainage network within the landfill and it's immediate environs. All the surface water sampling locations stipulated in the waste licence were sampled (Table 4.6). The results of the biological sampling programme are discussed later in the report.

The water quality results have been compared to SI 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988 (Appendix II). It should be noted that the limit of detection in laboratories used for analysis of Ammoniacal Nitrogen is 0.2mg/l. The standard for Salmonid rivers for Non-Ionised Ammonia is >0.02 mg/l. The results for this parameter, do not lend themselves, given the resolution of the test, to comparison with the standard. The standard for Total Ammonium (Ionised Ammonia) is > 1mg/l the conversion factor for Ammoniacal Nitrogen to Total Ammonium is 1.28.

Surface Water Monitoring Location	Q1	Q2	Q3	Q4	Weekly Visual[1]	Monthly	Annual	Once-Off
SW2	Y	Y	Y	Y	Y	N	Y	N
SW4	N	N	N	N	N	N	N	N
SW7	Y	Y	Y	Y	Y	N	Y	N
SW9	Y	Y	Y	Y	Y	N	Y	N
SW10	Y	Y	Y	Y	Y	N	Y	N
SW11*	Y	Y	Y	Y	Y	N	Y	N
SW12**	N	N	N	N	N	N	N	N
SW13**	N	N	N	N	N	N	N	N
SW14**	N	N	N	N	N	N	N	N
SW15**	N	N	N	N	N	N	N	N
SW16**	N	N	N	N	N	N	N	N
SW17****	Y	Y	Y	Y	Y	N	Y	N
SW18****	Y	Y	Y	Y	Y	N	Y	N
KS1*****	N	N	Y	N	N	N	N	N
KS2*****	N	N	N	N	N	N	N	N
KS3*****	N	N	Y	N	N	N	N	N
WWSW1******	Y	Y	Y	Y	Y	Y	Y	N
WWSW2******	Y	Y	Y	Y	Y	Y	Y	N

* Additional sampling location for monitoring programme.
** Enhanced monitoring programme undertaken 30th July 2004.
*** New downstream sampling point agreed during EPA audit August 2005.
**** New upstream sampling point agreed with *The Agency*.
***** Biological Sampling Programme.
****** Sampling points at discharge from wheelwash to open channel and from open channel to Scribblestown Stream when wheelwash becomes operational. Sampling at the two wheelwash locations ceased in November 2007 and will continue only on a needs be basis. From February 2006 SW18 Till February 2006 SW4.

TABLE 4.6: SURFACE WATER MONITORING PROGRAMME 2008.

Reporting protocols were altered for Ammoniacal nitrogen. Previously for the purposes of reporting, the Ammoniacal nitrogen result reported as N by the laboratory was converted to total ammonia NH4 and comparing it to the standard for ionised ammonia. It should be noted that the limit of detection in laboratories used for analysis of Ammoniacal Nitrogen is 0.2 mg/l, however the detection limit has recently been improved to <0.01 mg/l and this improves the resolution of ammoniacal nitrogen results.

The Environmental Protection Agency's document "Parameters of Water Quality – Interpretation and Standards" details concentrations of total ammonia NH4 in fresh water which contain an unionised ammonia concentration of 0.02 mg/l at their given pH and temperature. Unionised ammonia is the component of total ammonia which at "the value of 0.02 mg/l is a long term toxic effect level for fish both salmonid and cyprinid. Lethal levels are about ten times greater".

Using this data, concentrations of ammoniacal nitrogen determined during the sampling carried out in February 2008 indicated that the concentrations of unionized ammonia at all locations would have been below 0.02mg/l.

Q1 February 2008
Surface water was reported to be of generally good quality. All parameters were below the recommended Salmonid limits with the exception of SW18 with slightly elevated levels of ammonia.

Q2 May 2008
Surface water across the site was reported to be of good quality. All monitoring locations recorded all parameters below the recommended Salmonid limits.

Q3 September 2008
Surface water quality at SW2, SW9 and SW10 was of good quality as these monitoring locations recorded all parameters below the Salmonid limits.

Slightly elevated levels of total suspended solids were recorded at SW11, SW17, and SW18. All remaining parameters at these locations were below Salmonid Limits. Heavy rainfall was recorded in the period preceding and during sampling and it is considered that this is likely to have been the primary cause of the elevated levels of suspended solids recorded.

Q4 November 2008
Surface water results indicated generally good water quality during Q4 2008 with the exception of SW10. Slightly elevated levels of total suspended solids were recorded at SW2 and SW17. An elevated level of BOD, ammoniacal nitrogen and temperature were recorded at SW10 on November 17th 2008. Results of additional sampling at SW10 indicated reduced levels of BOD, however, elevated ammoniacal nitrogen was recorded again at locations upstream and downstream of SW10 as well as SW10 itself. All remaining parameters at these locations were below the Salmonid limits.

Monthly Wheelwash Sampling
Monthly sampling ceased in November 2007 as it was agreed with *the Agency* that future sampling of WWSW1 and WWSW2 will occur on a needs be basis.

Conclusion & Annual Assessment
The 2008 annual assessment suggests that there was a general improvement in surface water quality at Dunsink Landfill.

The initial slightly elevated ammonia and conductivity levels recorded at SW18 in Q1 were not repeated Q2, Q3 and Q4.

In general the surface water sampling indicated good water quality over the 4quarters of the year with the exception of SW10 in the 4th Quarter.

SW10 will be monitored closely in the first quarter of 2009. Further investigations will be conducted if elevated levels of ammoniacal nitrogen persist.

New leachate pumping infrastructure (pumps, sump and leachate valve configuration) was commissioned in June 2005. Leachate interceptor drains have been installed to the West and South of the Lagoon, to intercept leachate seepages from the landfill. It is believed that these initiatives have been responsible for the general improvement in water quality at the facility.

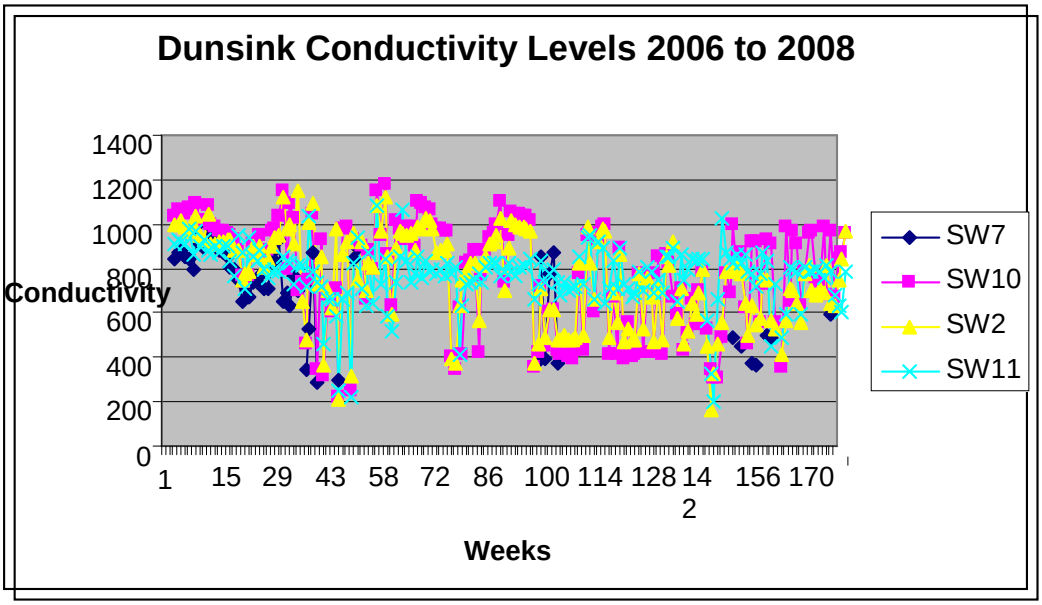

FIGURE 3.1: CONDUCTIVITY DATA TRENDS THROUGH 2006 TO 2008 AT SURFACE WATER MONITORING LOCATIONS SW 7, 10, 2 & 11.

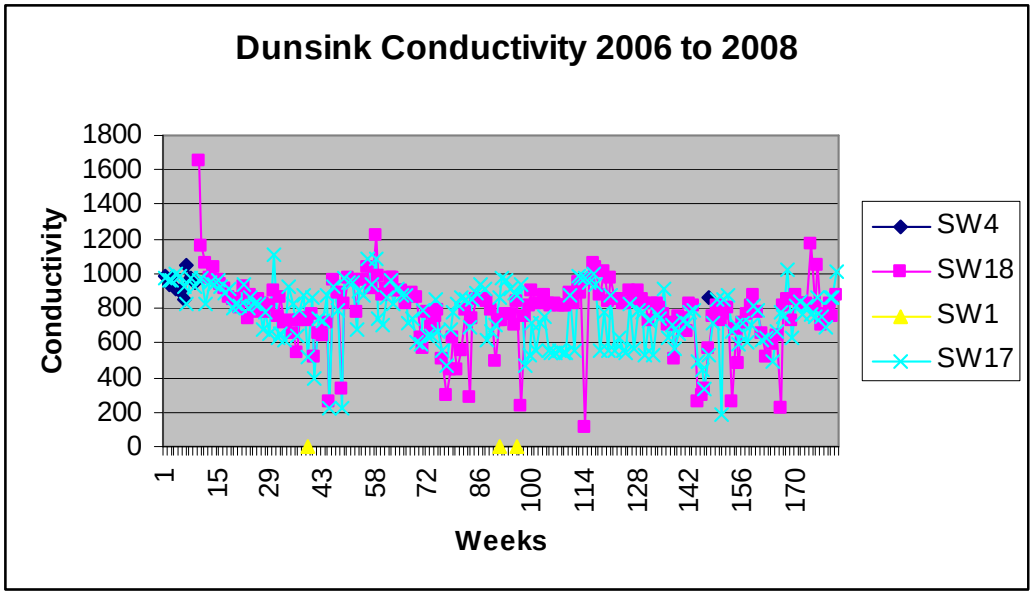

FIGURE 3.2: CONDUCTIVITY DATA TRENDS THROUGH 2006 TO 2008 AT SURFACE WATER MONITORING LOCATIONS SW4, 18, 1 & 17.

4.3. LEACHATE

Schedule D of the waste licence requires the monitoring of leachate at the station "north-east lagoon", Table 4.7. A monitoring station which facilitates the obtaining of representative grab and / or continuous samples in accordance with condition 8.4 is provided at the sump.

Leachate Monitoring Location	Eastings	Northings
Northeast Lagoon	311323	239031
Sump	311417	238895

TABLE 4.7: LEACHATE MONITORING LOCATION 2008.

Table D.5.1 of Schedule D of the waste licence sets down the parameters and frequency for leachate monitoring. Table 4.8 below outlines the sampling programme for leachate undertaken in 2008.

Leachate Monitoring Location	Q1	Q2	Q3	Q4	Annual
North East Lagoon	Sampled	Sampled	Sampled	Sampled	Sampled
Sump	Sampled	Sampled	Sampled	Sampled	Sampled

TABLE 4.8: LEACHATE MONITORING PROGRAMME 2008.

Leachate - Methodology
Refer to Schedule D.5 of waste licence 127-1

Leachate Monitoring - Findings (See Appendix II)

Q1 February 2008
Results from leachate sampling at the lagoon during February measured pH of 8.23, conductivity of 1,243µS and dissolved methane levels of 0.001mg/l.

Results from leachate sampling at the leachate sump during February measured pH of 7.35, Conductivity of 3,425µS and Dissolved Methane levels of 1.2mg/l.

Table C.6. of the waste licence dictates that Emission Limits for Dissolved Methane (sampled in December) in Leachate Being Discharged to Sewer as 0.14mg/l. The results indicate that emission limit values for dissolved methane are exceeded for leachate in the lagoon, however, the results indicate that emission limit values for dissolved methane are exceeded for leachate in the sump. This incident was notified to Dublin City Council and the Environmental Protection Agency (Reference W0127-01 Version 13-2008).

Q2 May 2008
Results from leachate sampling at the lagoon during May recorded pH of 7.77, conductivity of 2634µS/cm and dissolved methane levels of <0.012mg/l.

Results from sampling at the leachate sump during May recorded pH of 7.21, conductivity of 3,730µS and dissolved methane levels of 0.013mg/l.

Table C.6. of the waste licence dictates that Emission Limits for Dissolved Methane (Sampled in August) in Leachate Being Discharged to Sewer as 0.14mg/l. The results indicate that emission limit values for dissolved methane are compliant for leachate in the sump and lagoon.

Q3 September 2008
Results from leachate sampling at the lagoon on 2nd September measured pH of 9.11 Conductivity of 1,360µS and Dissolved Methane levels of <0.001mg/l.

Results from leachate sampling at the leachate sump on 2nd September measured pH of 6.96 Conductivity of 3,180µS and Dissolved Methane levels of 2.034mg/l

Table C.6. of the waste licence dictates that Emission Limits for Dissolved Methane in Leachate Being Discharged to Sewer as 0.14mg/l. The results indicate that emission limit values for dissolved methane are not exceeded for leachate in the lagoon, however, the results indicate that emission limit values for dissolved methane are exceeded for leachate in the sump.

Q4 November 2008
Results from leachate sampling at the lagoon on the 9th November recorded a pH of 8.34, conductivity of 1,140µS and Dissolved Methane levels of 0.003mg/l.

Results from leachate sampling at the leachate sump during November measured pH of 7.19, Conductivity of 3,522µS and Dissolved Methane levels of 0.085mg/l.

Table C.6. of the waste licence dictates that Emission Limits for Dissolved Methane (sampled in August) in Leachate Being Discharged to Sewer as 0.14mg/l. The results indicate that emission limit values for dissolved methane are not exceeded for leachate in the lagoon, or for leachate in the sump. This incident was notified to Dublin City Council and the Environmental Protection Agency.

Leachate – Discussion.
The results from quarterly visual inspections and annual monitoring of metals for the leachate lagoon and sump are typical of leachate quality. The lagoon is naturally lower for many parameters due to the diluting effect of rainwater and passive aeration associated with the fall of leachate into the lagoon.

The issue of dissolved methane in the leachate is of concern. Dublin City Council have been informed of this issue and have in consultation with Fingal County Council made recommendations which have been forwarded to *The Agency* (Ref: FCC-W0127-01-2006-029). Under this proposal, weekly monitoring of Methane, Carbon dioxide and Oxygen is being carried out at the headspace of the sump and the point of discharge to public sewer in Finglas. The results are being sent to The Agency through weekly notifications and are also being compiled for Dublin City Council.

4.3.1. Continuous monitoring of Dissolved Methane in Leachate
Continuous monitoring of dissolved methane at the sump commenced during Q1 2006. Table C.6.of the waste licence dictates that Emission Limits for Dissolved Methane in Leachate Being Discharged to Sewer as 0.14mg/l.

A dissolved methane probe was installed in the leachate sump during the last quarter of 2005. It was not connected to a datalogger until the second quarter of 2006 and when results emerged the probe was deemed to be faulty. A warranty replacement was installed during the last quarter of 2006.

Continuous monitoring of dissolved Methane has been working from 3rd October 2006 to present.

4.3.2 Results from Continuous monitoring of Dissolved Methane in Leachate

Q1 February 2008

This quarter reporting is as per protocols specified in condition 6.3.3.1.

(a) No 24 hour mean value shall exceed the ELV;

91 of 91 or 100% of 24hr means exceeded the 0.14mg/l ELV.

(b) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

3996 of 4339 or 92% of all 30 minute mean values taken continuously over the quarter for Methane exceeded 1.2 times the 0.14mg/l ELV or 0.168 mg/l.

(c) No 30-minute mean value shall exceed twice the emission limit value.

The dissolved Methane Probe is configured to measure to 0.254 mg/l only and this limit is used as a surrogate figure for 0.28mg/l or twice the emission limit value.

3859 of 4339 or 88.9% of 30 minute mean values taken continuously over this quarter exceeded twice the 0.14mg/l ELV.

Q2 May 2008

This quarter reporting is as per protocols specified in condition 6.3.3.1.

(a) No 24 hour mean value shall exceed the ELV;

81 of 86 or 94% of 24hr means exceeded the 0.14mg/l ELV.

(b) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

3887 of 4131 or 94.1% of all 30 minute mean values taken continuously over the quarter for Methane exceeded 1.2 times the 0.14mg/l ELV or 0.168 mg/l.

© No 30-minute mean value shall exceed twice the emission limit value.

The dissolved Methane Probe is configured to measure to 0.254 mg/l only and this limit is used as a surrogate figure for 0.28mg/l or twice the emission limit value.

3884 of 4131 or 94% of 30 minute mean values taken continuously over this quarter exceeded twice the 0.14mg/l ELV.

Q3 September 2008
This quarter reporting is as per protocols specified in condition 6.3.3.1.

(a) No 24 hour mean value shall exceed the ELV;

92 of 92 or 100% of 24hr means exceeded the 0.14mg/l ELV.

(b) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

4411 of 4416 or 99.88% of all 30 minute mean values taken continuously over the quarter for Methane exceeded 1.2 times the 0.14mg/l ELV or 0.168 mg/l.

© No 30-minute mean value shall exceed twice the emission limit value.

The dissolved Methane Probe is configured to measure to 0.254 mg/l only and this limit is used as a surrogate figure for 0.28mg/l or twice the emission limit value.

4411 of 4416 or 94% of 30 minute mean values taken continuously over this quarter exceeded twice the 0.14mg/l ELV.

Q4 November 2008
This quarter reporting is as per protocols specified in condition 6.3.3.1.
(a) No 24 hour mean value shall exceed the ELV;

92 of 92 or 100% of every 24hr mean since exceeded the 0.14mg/l ELV.

(b) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

All 30 minute mean values taken continuously over the quarter for Methane exceeded 1.2 times the 0.14mg/l ELV or 0.168 mg/l.

© No 30-minute mean value exceeded twice the emission limit value.

The dissolved Methane Probe is configured to measure to .254 mg/l only and this limit is used as a surrogate figure for 0.28mg/l or twice the emission limit value.

4391 of 4391 or 100% of the 30-minute mean values taken continuously over this quarter exceeded twice the 0.14mg/l ELV.

4.3.3. Discussion of Results from Continuous Sampling of Dissolved methane
The results indicate that the ELV is exceeded almost continuously at high levels. As mentioned in section 4.3 Dublin City Council have been informed of this issue and have in consultation with Fingal County Council made recommendations which have been forwarded to *The Agency* (Ref: FCC-W0127-01-2006-029). Under this proposal, weekly monitoring of Methane, Carbon dioxide and Oxygen is being carried out at the headspace of the sump and the point of discharge to public sewer in Finglas

(See Figure 3). The results are being sent to *The Agency* through weekly notifications and are also being compiled for Dublin City Council.

4.4 NOISE.

No noise survey was undertaken at Dunsink Landfill in 2008. This was addressed in Licence Audit Report for 2008 from the Agency W1027-01/08/AR08EM , observation No.5, on Environmental Monitoring.

4.5. DUST

No dust monitoring surveys were carried out at Dunsink Landfill in 2008**.** This was addressed in Licence Audit Report for 2008 from the Agency W1027-01/08/AR08EM , observation No.5, on Environmental Monitoring.

4.6. PM_{10} MONITORING

The Agency in correspondence referenced 127-1/GEN01EM stated that "The Agency, in accordance with Condition 8.2, does not require monitoring of PM_{10} as listed in Table D.3.1 of the waste licence unless otherwise instructed by the Agency."

4.7. BIOLOGICAL ASSESSMENT OF THE SCRIBBLESTOWN STREAM

A biological assessment of the Scribblestown Stream was undertaken at KS1, KS2 & KS3 (Figure 4 / Tables 4.5 & 4.6) on the 3rd December 2008.

Biological Assessment of Scribblestown Stream – Methodology.

Freshwater ecological assessments were conducted at three sites on the Scribblestown stream in the vicinity of Dunsink landfill site, Dunsink, Co Dublin.

These assessments comprised the following investigations:

- Survey of macroinvertebrate fauna using kick sampling, sweep net, stone and vegetation washing methods at two sites on the Scribblestown stream in the vicinity of Dunsink landfill to produce Q-index values in addition to species diversity indices for each site .
- Aquatic macrophytes survey recording vegetation and describing habitats at each site.
- Recording of standard physico chemical parameters at each site. These include pH, oxygen (% saturation and mg/l) and conductivity (µS/cm).

Macroinvertebrates

One macroinvertebrate sample was taken at each location, KS1, KS2 and KS3. Samples were collected by kick sampling at riffle sites or sweep sampling at slow flowing vegetated areas as appropriate. Kick sampling involves disturbing sediment/ vegetation etc for 2 minutes upstream of a standard sweep net (1mm mesh, 250mm width). Sweep sampling involved sweeping through vegetation/ substrate.

Macroinvertebrates were collected and stored in 70% industrial methylated spirits and returned to the laboratory for identification and counting.

Discussion

No rare macroinvertebrates species or species of conservation concern were recorded. The overall macroinvertebrate community shows Scribblestown stream to be exposed to pollution.

Q-values indicate moderate organic pollution (Q2-3, Q3), class C waters on the Scribblestown stream in this area. The principal species recorded downstream from the lagoon were Glossiphonia sp., Gammarus pulex, Tipulidae, Chironomidae, Chironomus sp., Ceratopogonidae, Baetis rhodanii, Hydropsyche sp. and Sericostomatidae. A higher species diversity, with a greater abundance of Group 3 taxa indicates Q3 water quality. This corresponds to Class C, Moderately Polluted.

According to the Council Directive (2006/44/EC) on the quality of freshwater needing protection or improvement in order to support fish life, dissolved oxygen levels should be above 7 mg/l at all times and it is imperative that values remain above 9 mg/l at least 50% of the time (EC, 2006). Both sites had levels below this at the time of surveying.

pH levels in the Scribblestown stream were within the ranges of pH6-9 set out by the water related directives and regulations for salmonids and fresh water fish directives

(EPA, 2001). Conductivity was within the range expected to be found in freshwater, though site KS1 showed slightly elevated conductivity, which may be the result of ions leaching into the stream downstream of site KS1. Dissolved oxygen levels appeared to be similar across all three sites with KS2 showing a marginal drop in % saturation that at the other two locations.

Comparison to Previous Surveys.

No significant difference was recorded between 2005, 2006, 2007 and 2008 in sample procedures. The survey in 2008 was carried out in winter compared to all other surveys which were carried out in the late summer/ early autumn period. The dredging in 2007 of the channel and associated bank works have resulted in the replacement of the natural sediments with chipped gravel. These differences are deemed to be of low significance as they did not affect the overall Q value.

Analysis of sample site KS1 results; in terms of the species composition, relative abundance of faunal groups and recorded oxygen values, indicate a slight improvement in water quality here since 2007. This assessment is based upon:

- Higher oxygen values in 2007 of 4.0mg/l compared with 1.06mg/l in 2006
- An increase in number of taxons from 5 in 2006 to 6 in 2007

A Q-value of 2-3 recorded for this monitoring point denotes the transitional conditions present during the monitoring event.

Analysis of sample site KS2 results indicates a slight improvement in the overall water quality since 2006. This assessment is based on:

- Increased Shannon Weiner species diversity values, 1.3 in 2006 to 1.5 in 2008
- An increase in number of taxons from 7 in 2005 to 11 in 2008
- Increased dissolved oxygen values from 5.5mg/l in 2005 to 11.08mg/l in 2008

Construction works on Scribblestown stream at KS2 does not appear to have significantly negatively impacted water quality at KS3.

Analysis of sample site **KS3** results indicate **no significant change** in the overall water quality since 2007. This assessment is based upon:

- Replacement of relatively clean water cased caddis taxons – Glossosomatidae and Sericostomatidae with limnephilidae since 2007
- A reduction in number of taxons from 9 in 2007 to 8 in 2008.
- Increased dissolved oxygen values from 4.2mg/l in 2007 (less than 7mg/l) as required at all times by the EC Directive (2006/44/EC) to 11.35mg/l in 2008.

This assessment is based on the key components of the results namely Q values, indicator species and oxygen levels.

In summary, KS1 was assigned a Q-value of 2-3 which corresponds with Class C i.e. Moderately Polluted. KS2 and KS3 was assigned a Q-value of Q3 for water quality which corresponds to Class C i.e. Moderately Polluted.

4.8. LANDFILL GAS

4.8.1. Landfill Gas Facility Monitoring.

Since the 4th Quarter (Q4) of 2006 measurements of landfill gas were carried out at twenty four locations at the perimeter of the landfill (See Figure 4 and Table 4.9).

During November 2007 (Q4) in agreement with the *Agency*, weekly gas monitoring decreased to six monitoring locations (G35 to G40) and the leachate sump and sewer, with the monthly monitoring round still consisting of all accessible gas monitoring locations (24 locations)

Gas levels were monitored using an LMSxi landfill gas analyser. The boreholes were monitored for Methane (CH_4), Carbon dioxide (CO_2), Oxygen (O_2), temperature and atmospheric pressure.

Landfill Gas Monitoring – Methodology.

Refer to Schedule D.2. of waste licence 127-1.

Landfill Gas - Proximity of Buildings and Developments to the Site.

There are a number of buildings and developments on site, which are identified in the risk analysis of the site from landfill gas, which have potential to expose receptors to risk from landfill gas (See Figure 4). These include the Irish Power Systems (IPS) compound at the southern boundary to the site along Dunsink lane. The Equipment yard and shed (which will also house the site offices) is close to the southern boundary of the site, immediately east of the IPS compound.

There are a number of buildings and developments close to the site which have potential to expose receptors to risk from landfill gas. Cappagh Hospital is located to the north of the landfill boundary. Dunsoghly estate lies to the east of Cappagh Hospital and north east of the landfill boundary. A halting site is established along the south-east boundary of the landfill (Figure 4).

South of Dunsink Lane, which marks the southern boundary of the site, there are a number of developments. From west to east these include; Elm Green Golf Course, Dunsink Observatory and a series of unauthorised halting sites (Figure 4).

FIGURE 7: LANDFILL GAS MONITORING BOREHOLES AT DUNSINK.

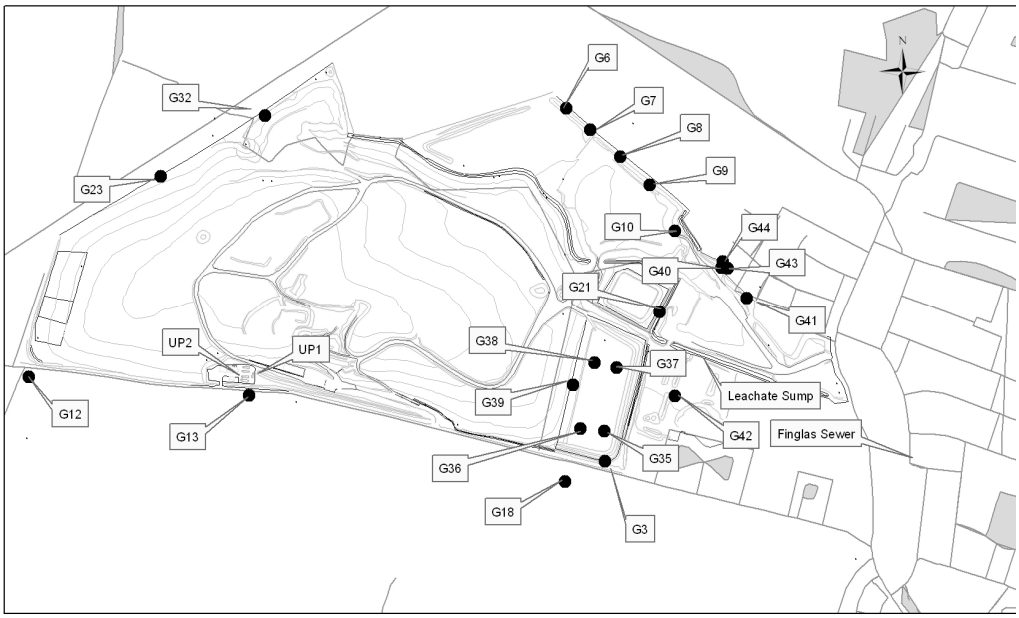

FIGURE 4: LANDFILL GAS BOREHOLE MONITORING LOCATIONS.

Historical Monitoring (1998-2000).

The landfill gas-monitoring programme during the period 1998-2000 involved thirty-four landfill gas-monitoring boreholes.

Monitoring during this period indicated consistent and elevated levels of Methane at landfill gas monitoring boreholes G30 west of the "sports grounds", G25 and G26 immediately north of the IPS compound. The borehole logs for G25 and G26 indicate that these are within the waste body.

Landfill gas monitoring during this period, indicates a more widespread pattern for carbon dioxide trigger level exceedance. Elevated levels were recorded at G1, G2, G30 ("sports grounds"), G4, G6 & G9 (northern boundary of the site); G11 and G32 (M50); G14 & G15 (Dunsink Observatory); G25, G26 & G27 (IPS compound area) and G33 (within waste body).

Landfill Gas Monitoring Locations.	Monitoring Frequency	Eastings	Northings
G3**	Weekly	311270	238670
G6**	Weekly	311180	239425
G7**	Weekly	311230	239375
G8**	Weekly	311300	239320
G9**	Weekly	311360	239260
G10**	Weekly	311410	239170
G12	Monthly	310040	238850
G13	Monthly	310560	238795
G18	Monthly	311150	238630
G21	Monthly	311380	238990
G23	Monthly	310325	239265
G32	Monthly	310540	239420
G35	Weekly	311265	238740
G36	Weekly	311210	238740
G37	Weekly	311290	238875
G38	Weekly	311245	238880
G39	Weekly	311195	238835
G40	Weekly	311520	239090
G41**	Weekly	311580	239020
G42**	Weekly	311410	238805
G43**	Weekly	311524	239088
G44**	Weekly	311516	239100
IPS inlet	Weekly	310515	238849
Leachate Sump	Weekly	311417	238895
Finglas Manhole*	Weekly	311909	238733

** (CHANGED TO MONTHLY MONITORING DURING NOVEMBER 2007)

TABLE 4.9: LANDFILL GAS MONITORING LOCATIONS AND PROGRAMME 2007.

Landfill Gas Monitoring – Findings -2004-2008 (Appendix IV)

During 2004 monitoring indicated consistent and elevated levels of Methane at landfill gas monitoring boreholes G37, G38 & G39 in the "sports field". However, during 2005 following the installation of a passive venting trench and excavations on the sports field levels have dropped significantly at G37 and G38. This downward trend continued through 2006 and 2007with a significant improvement at G39 following the installation of additional extraction wells immediately west of G39. This trend was halted in the 3rd and 4th Quarter findings of 2008 where a marked increase in methane levels, particularly in the G37 area of the "the sports field" was recorded.

Monitoring also indicated elevated levels of methane at landfill gas monitoring borehole G40 near Dunsoghly estate since installation in November 2004. The levels of Methane at G40 dropped off significantly during the second and third quarters of 2006, but rose again during the last quarter. During 2007, slightly elevated levels of methane were recorded at BH40 during Q1, Q2 and Q3, however no methane levels above the recommended 1.0% v/v were recorded at BH40 during the 4th quarter. Additional gas monitoring boreholes (G43&G44) placed adjacent to G40 and closer to Dunsoghly estate during 2006 have recorded no methane since installation. No methane levels above 1.0%v/v were recorded in 2008.

Trace element analysis of gas was undertaken on samples from wells at G40 & G41 (See report FCC-127-1-2005-005). The report intimated that the gas might not be of

landfill origin. Monitoring of three surface water gully traps in Dunsoghly estate during February 2005 recorded (0% CO_2 v/v) and (0% CH_4 v/v) in each instance.

Spike monitoring was conducted through consultants in the green space of Dunsoghly Estate during 22 February 2006. A draft report, which was forwarded to *The Agency* (FCC-127-1-2006-011), indicates that (0% CH_4 v/v) was recorded at each of the seven spike monitoring boreholes.

Landfill gas monitoring during this period, indicates a more widespread pattern of exceedence of trigger levels for carbon dioxide. Consistent and elevated levels were recorded at G35, G36, G37 & G38 in the "sports grounds". Consistent and elevated levels were recorded at G6, G9, G10, G12, G40, G43 & G44 at the boundary with Cappagh Hospital {Appendix III}).*

Locations of Trigger Level Exceedence for Methane.
Locations of trigger level exceedence for methane from historical and current monitoring include the "sports grounds" area and the IPS compound area. The borehole logs for the area around the IPS compound indicate waste in the region of 2.5m to 3m below the surface.

However during 2006, following the placement of additional extraction wells adjacent to G39, 0 % v/v methane readings from G39 have been recorded. The trigger level for Methane has only been exceeded a few times during 2007at BH40. All other borehole gas monitoring locations showed no elevated levels of methane above the recommended trigger level.

The elevation in methane levels observed over Quarters 3 and 4 at the "sports field" of 2008 was a significant change from the previous trends seen through 2006, 2007 and Quarters 1 and 2 of 2008.

Locations of Trigger Level Exceedance for Carbon Dioxide.
Locations of trigger level exceedance for carbon dioxide from historical and current monitoring include the "sports grounds**"** area, the IPS compound area, the M50 area, the Dunsink Observatory and the northern boundary of the site between Cappagh Hospital and Dunsoghly Estate.

The Dunsink Observatory exceedances for the period 1998-2000 have not reoccurred during 2007 monitoring. The M50 area exceedances of early 2004 have not reoccurred during more recent monitoring 2005-2008. A landfill gas spike monitoring report conducted in September 2005 suggested that the Scribblestown Stream may well be acting as an effective natural barrier/vent to landfill gas migration towards Cappagh Hospital and the Northern section of the site

Landfill Gas Monitoring – Discussion.
A review of the landfill gas sampling network and programme was undertaken during Q3 (July-September) 2004 in response to potential landfill gas migration issues. The review included an analysis of potential receptors and results of a spike-monitoring programme. The review culminated in the alteration of the landfill gas monitoring infrastructure and monitoring programme from that stated in Schedule D and G of the

waste licence during 2005. This involved the recruitment of old landfill gas monitoring wells and the addition of three new monitoring wells (G40-G42) into the monitoring infrastructure during 2005 and five new monitoring locations during 2006 (IPS compound, G43, G44, Leachate Sump and Finglas Sewer) (See Figure 4).

The locations for elevated levels of landfill gas emissions of methane at this time included the **"**sports grounds" area, and the northern boundary to the site, the boundary towards Dunsoghly estate and the offices of the IPS compound area.

A venting trench was proposed and agreed by the Agency for the remediation of landfill gas migration on the "sports-ground". These works went to public tender and the venting trench was commissioned during Q2 2005. A landfill gas spike monitoring report conducted in September 2004 suggested that the Scribblestown Stream may well be acting as an effective natural barrier/vent to landfill gas migration towards Cappagh Hospital and the Northern Boundary of the site and implies that these areas are not at risk. During 2006 with the extension of the gas extraction network at Dunsink, considerable reductions in levels of Methane and Carbon Dioxide were noted in the sports fields boreholes throughout 2007. However, elevated Methane and Carbon dioxide levels above the trigger values were recorded once in Quarter 3 of 2008 and then consistently through Quarter 4. Borehole G37 in the "sportsfield" recorded the most elevations while Boreholes G35 and G36 recorded no excceedances in this reporting period. Borehole G38 recorded elevated levels of Carbon Dioxide on a number of occasions in the second half of 2008. A proposal to carry out a series of excavations in the areas of G37 and G38 to detect any local methane sources and follow-up monitoring was accepted by the Agency (FCC-127-1-2009-004).

The offices of the IPS compound area are continuously monitored for elevated levels of methane and carbon dioxide.

Two additional boreholes were placed between G40 and Dunsoghly Estate (G43 and G44). Since installation no methane was recorded at either of these boreholes. Nevertheless, G40 itself continued to register Methane above trigger level throughout 2007, although methane levels have decreased.

Landfill Gas Monitoring – Conclusion.
Landfill gas monitoring has revealed a deterioration in environmental performance in quarters 3 and 4 of 2008 in the previous Methane and Carbon dioxide hotspot at the "sports field" area. An excavation and follow-up monitoring proposal to address the elevated gas situation at the "sportsfield" was submitted and accepted by the Agency. The works are to be carried out at the earliest opportunity. The Dunsoghly area is still being monitored and if Methane levels are recorded above trigger level at G43 or G44 a passive venting trench will be installed immediately.

4.8.2. Landfill Gas Utilisation Plant Monitoring Equipment and Sampling points
Weekly monitoring at the inlet and continuous monitoring at the outlet commenced during Q1 2006. It was agreed by the Agency that reporting of incidents under this system could be done through the quarterly and annual environmental reports.

Inlet to Landfill Gas Utilisation Plant

A gas sampling system to include chilling and filtration for the protection of the portable infrared analyser was installed. This facilitates weekly monitoring of Methane, Carbon dioxide and Oxygen using an LMSXi landfill gas analyser, which is used for borehole monitoring. It also provides a sampling location for annual monitoring of Total Sulphur, Total Chlorine and Total Fluorine. The results from the weekly sampling at the inlet are reported in the weekly landfill gas monitoring round sheets. See Appendix III.

Process Parameters.

Combustion temperature and oxygen is reported by Bioverda Power Systems to be fixed. On 9th December combustion temperature at Engine 1 was recorded as 384^{o}C.

Outlet from Landfill Gas Utilisation Plant.

Carbon monoxide and Nitrogen oxides are monitored continuously. Continuous monitors on the outlets of the two gas engines were installed. The analysers are proven to be effective on other landfill gas utilisation plants. An appropriate data management system has been installed. This provides for data logging and data storage.

Additionally, a gas sampling system to allow for annual monitoring of total VOCs as carbon, total non-methane VOCs and Particulates, Hydrochloric acid and Hydrogen fluoride, and, quarterly monitoring of nitrogen oxides has been installed.

Emission limit values for Landfill Gas Plant

The emission point reference numbers are proposed to be
UP1 Utilisation Plant Input 1
UP2 Utilisation Plant Output Engine 1
UP3 Utilisation Plant Output Engine 2

The analysers are able to measure and report at a sufficient resolution to register the emission limit for Carbon monoxide (CO) (1400mg/m^3).

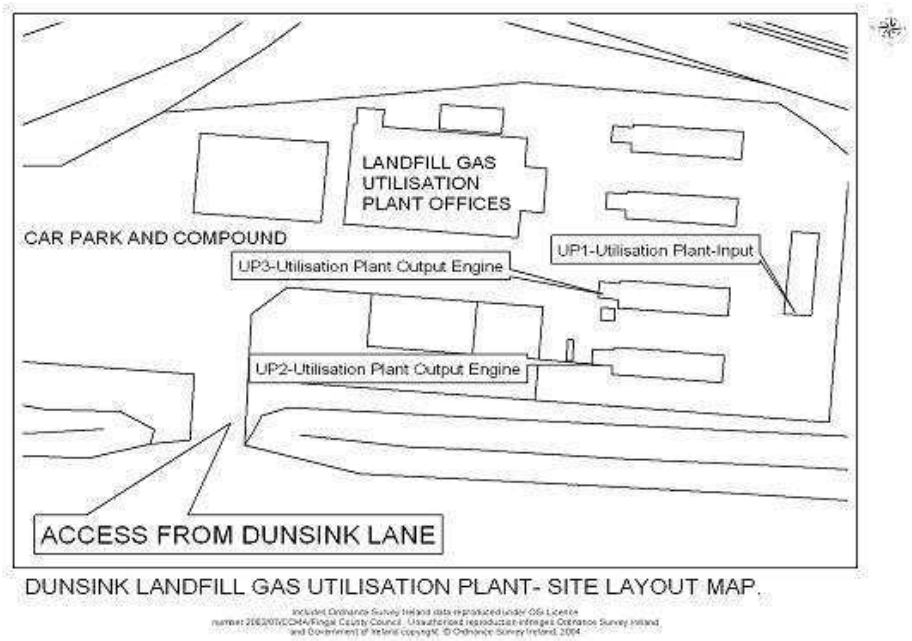

FIGURE 4.1 DUNSINK LANDFILL GAS UTILISATION PLANT.

4.8.3 Results from Continuous sampling of parameters at outlets Landfill Gas Combustion Plant.

1st Quarter 2008

Continuous monitoring of outlet parameters at the Landfill Gas Combustion Plant was undertaken during Q1 except for a period between the 01/01/2008, when the system failed to 06/02/2008 when the system was serviced and calibrated, 5266 records are available for the period 06/02/2008 to 31/03/2008 (Service sheets available upon request).

The source of these emissions is the engines identified as UP2 (Engine #1) and UP3 (Engine #2). UP3, Engine #2 was removed during April 2006 (see Figure 4.1 above).

Limit values as per Schedule C.5 of the governing waste licence 127-1 are outlined in the table below;

Parameter	Utilisation Plant Emission Limit Value
Nitrogen oxides (No_x)	500mg/m^3
CO	1400mg/m^3

TABLE 4.9.1: EMISSION LIMIT VALUES FOR CONTINUOUSLY MONITORED PARAMETERS AT OUTLETS FROM UTILISATION PLANT.

Note 1: Dry gas referenced to 5% oxygen by volume for utilisation plants.

As per condition 1.6 b) of the waste licence 127-1, and Schedule C.5, specifying the Emission Limits Values (ELV) for Landfill Gas Plant (see Table 4.1 above) the following incidents occurred during quarter 2 at the IPS compound in Dunsink.

Condition 6.3.2. has been complied with in full as of 27-09-2006; "The concentration limits …..shall be based on gas volumes under standard conditions of:-

a) In the case of landfill gas combustion plant:

Temperature 273K, pressure 101.3kPa, dry gas; 5% oxygen".

The additional modules were placed on the monitoring system this quarter to ensure that this condition is complied with in full on 27-09-2006. The results from this date comply with Condition 6.3.2.

This quarter reporting is as per protocols specified in condition 6.3.3.1.

(d) No 24 hour mean value shall exceed the ELV;

No 24 hour mean exceeded the 1400 mg/m3 for Carbon monoxide at engines number 1 during the quarter.

No 24 hour means exceeded the 500 mg/m3 for Nitrogen Oxides at engine number 1 during the year respectively.

(e) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

No 30 minute mean value taken continuously over this quarter for Carbon dioxide exceeded 1.2 times the 1400mg/m3 ELV at engine number 1.

No 30 minute mean values taken continuously over this quarter for Nitrogen Oxides exceeded 1.2 times the 500mg/m3 ELV at engine number 1.

(f) No 30-minute mean value shall exceed twice the emission limit value.

No 30 minute mean values taken continuously over this quarter for Carbon dioxide exceeded twice the 1400mg/m3 ELV at engine number 1.
No 30 minute mean values taken continuously over this quarter for Nitrogen Oxides exceeded twice the 500mg/m3 ELV at engine number 1.

DISCUSSION OF RESULTS FROM CONTINUOUS SAMPLING OF PARAMETERS AT OUTLETS LANDFILL GAS COMBUSTION PLANT FOR Q1

The results from continuous monitoring of the outlets from the landfill gas combustion plant present a picture of continued improved environmental performance. This quarter's results for Carbon monoxide were below the Emission Limit Values as per reporting protocols specified in condition 6.3.3.1.

2nd Quarter 2008

Continuous monitoring of outlet parameters at the Landfill Gas Combustion Plant was undertaken during Q2. However, it became clear on the 26/06/2008 that the memory card was faulty when it was removed from the continuous analyser and plugged into the desk-top computer on site. The card had failed to log any data for this quarter. It was custom and practice to access data from the card at the end of a quarter and not to check it in the interim. The card was replaced on 27/06/2008 and is logging data presently.

The EPA were informed of this on the 27/06/2008. The Agency were also informed that the landfill manager had been in the control room of the utilisation engine several times during the quarter and that Nitrogen Oxides and Carbon Monoxide were below 500 mg/m3 and 1400 mg/m3 respectively.

It was therefore not possible to report incidents occurring during quarter 2 at the IPS compound in Dunsink as per condition 1.6 b) and Condition 6.3.2 of the waste licence W127-01, and Schedule C.5, specifying the Emission Limit Values (ELV) for Landfill Gas Plant.

3rd Quarter 2008

This quarter reporting is as per protocols specified in condition 6.3.3.1.

(d) No 24 hour mean value shall exceed the ELV;

No 24 hour mean exceeded the 1400mg/m^3 for Carbon Monoxide at engine number 1 during the quarter.

Five 24 hour means exceeded the 500mg/m^3 for Nitrogen Oxides at engine number 1 during this quarter. This nevertheless is an incident and is hereby notified to *The Agency*.

(e) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

100% of all 30 minute mean values taken continuously over the year for Carbon dioxide did not exceed 1.2 times the 1400mg/m3 ELV at engines number 1.

Greater than 99% of all 30 minute mean values taken continuously over this quarter for Nitrogen Oxides did not exceed 1.2 times the 500mg/m3 ELV at engines number 1.

(f) No 30-minute mean value shall exceed twice the emission limit value.

No 30 minute mean value taken continuously over this quarter for Carbon Monoxide exceeded twice the 1400mg/m^3 ELV at engine number 1. No 30 minute mean values taken continuously over this quarter for Nitrogen Oxides exceeded twice the 500mg/m^3 ELV at engine number 1.

As agreed with the Agency, a full dataset from continuous monitoring at the outlet is available in digital or hard copy format upon request, but due to the sheer volume of data involved, is not presented in this quarterly report.

DISCUSSION OF RESULTS FROM CONTINUOUS SAMPLING OF PARAMETERS AT OUTLETS LANDFILL GAS COMBUSTION PLANT FOR Q3

The results from continuous monitoring of the outlets from the landfill gas combustion plant present a picture of continued high environmental performance. This quarter's results for Carbon monoxide were below the Emission Limit Values as per reporting protocols specified in condition 6.3.3.1. The 3rd Quarter's results reveal 5 non-compliances for Nitrogen Oxides under the reporting protocols specified in condition 6.3.3.1. These non-compliances occurred on discrete dates and times and returned to normal levels when the engine was serviced.

This quarter's results reveal a continued pattern of improved environmental performance from previous quarters. These non-compliances are considered incidents under the licence and are hereby notified as such.

Bioverda Power Systems were informed of these incidents and they will adjust their service schedule accordingly.

4th Quarter 2008

This quarter reporting is as per protocols specified in condition 6.3.3.1

(d) No 24 hour mean value shall exceed the ELV;

Nineteen 24 hour means exceeded 500 mg/m3 for Nitrogen Oxides and no 24 hour mean exceeded 1400 mg/m3 for Carbon monoxide at engine number 1.

(e) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.

No 30 minute mean values taken continuously over this quarter for Carbon dioxide exceeded 1.2 times the 1400mg/m3 ELV at engine number 1. 83.3% of all 30 minute mean values taken continuously over this quarter for Nitrogen Oxides did not exceed 1.2 times the 500mg/m3 ELV at engine number 1. This constitutes a non-compliance.

(f) No 30-minute mean value shall exceed twice the emission limit value.

No 30 minute mean values taken continuously over this quarter for Carbon dioxide exceeded twice the 1400mg/m3 ELV at engine number 1. 99.9% of 30 minute mean values taken continuously over this quarter for Nitrogen Oxides were less than twice the 500mg/m3 ELV at engine number 1.

As agreed with the Agency, a full dataset from continuous monitoring at the outlet is available in digital or hard copy format upon request, but due to the sheer volume of data involved, is not presented in this quarterly report.

DISCUSSION OF RESULTS FROM CONTINUOUS SAMPLING OF PARAMETERS AT OUTLETS LANDFILL GAS COMBUSTION PLANT FOR Q4

The results from continuous sampling of parameters from outlets at landfill combustion plant for quarter four 2008 present a general picture of compliance with emission limit values apart from 6.3.3.1 (b) for Nitrogen oxides. The exceedances for nitrogen oxides all occurred in the month of October. The Exhaust Gas Emissions

Analyser was serviced and re-calibrated on the 31st October 2008. No further exceedances occurred after this date. Results from continuous monitoring of the enclosed flare will be reported in the next quarterly report.

4.9. METEOROLOGICAL MONITORING.

Condition 8.6 and Schedule D.6 require daily monitoring of precipitation volume, temperature (min/max), wind force and direction, evapotranspiration, humidity and atmospheric pressure. This data is obtained from Met. Eireann's Dublin Airport weather Station and the data are illustrated by month in the following tables / figures. The data is presented in the form of monthly averages which masks much of its complexity. The data is available in full tabular format at the facility offices.

4.9.1. Total Precipitation Volume by Month.

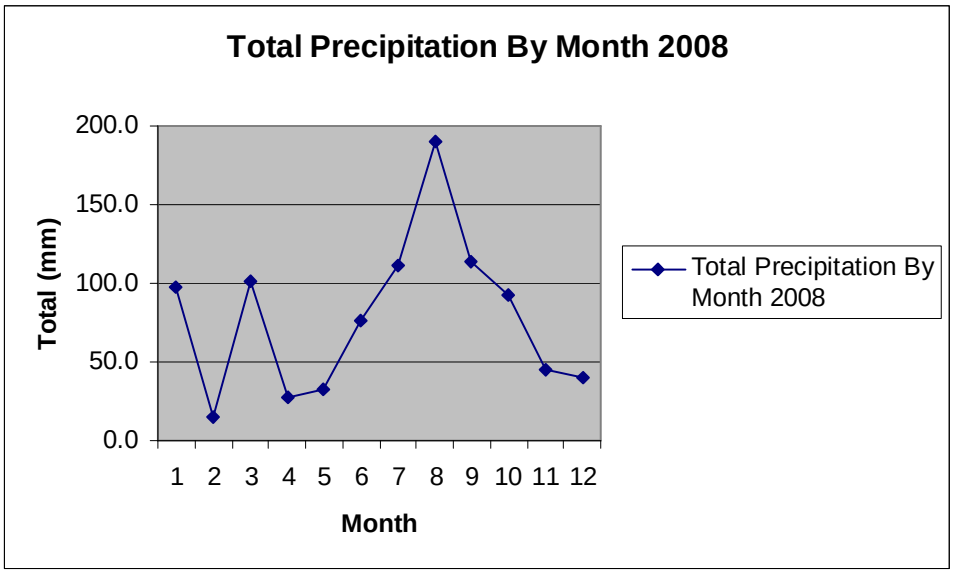

FIGURE 5: TOTAL PRECIPITATION MM BY MONTH 2008.

4.9.2 Average Daily Temperatures (minimum /maximum) By Month 2008.

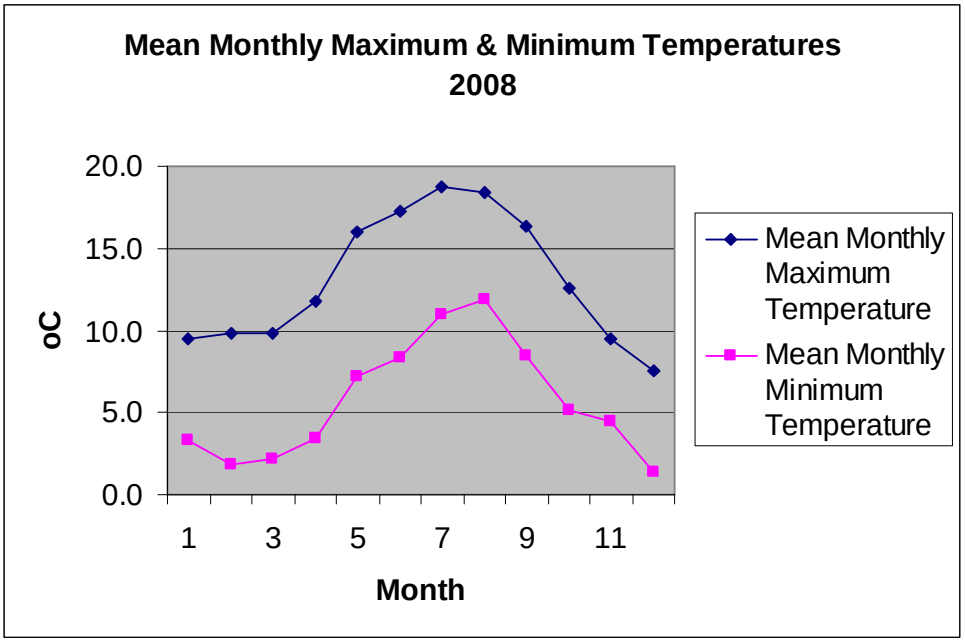

FIGURE 6: AVERAGE DAILY TEMPERATURES (MINIMUM /MAXIMUM) BY MONTH 2008.

4.9.3 Average Daily Wind speed by Month 2008.

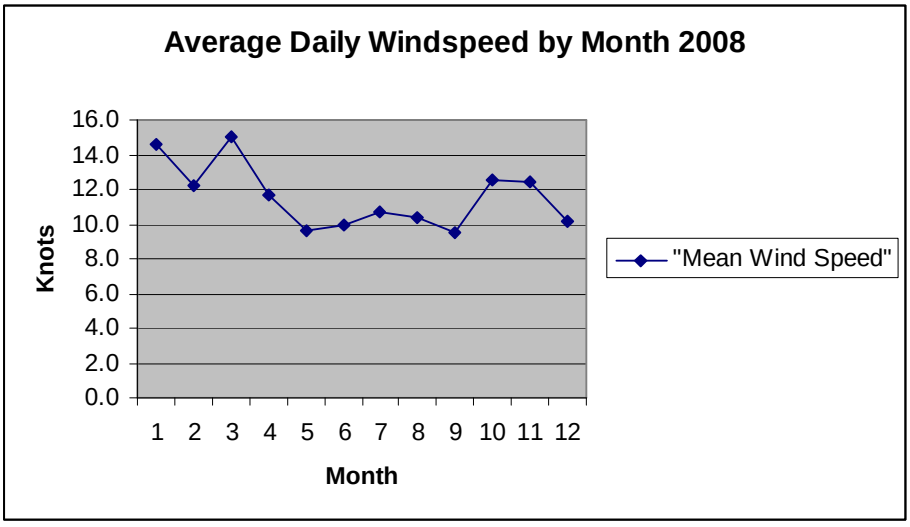

FIGURE 7: AVERAGE DAILY WINDSPEED BY MONTH 2008.

4.9.4. Average Daily Wind Speed and Direction by Month 2008.

Month	Speed (knots)	Direction (degrees)
Jan	14.6	214
Feb	12.2	186
Mar	15.0	233
Apr	11.7	205
May	9.7	115
Jun	10.0	229
Jul	10.8	200
Aug	10.4	225
Sept	9.5	210
Oct	12.6	234
Nov	12.4	241
Dec	10.2	215

TABLE 4.10: AVERAGE DAILY WIND DIRECTION BY MONTH 2008.

The winds are predominantly South Westerly.

4.9.5. Average Daily Evaporation and Potential Evapotranspiration by Month 2008.

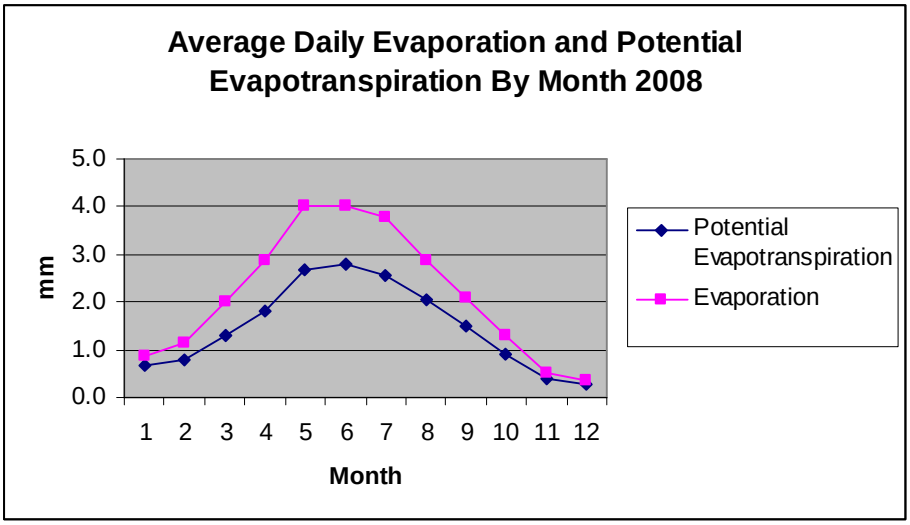

FIGURE 8: AVERAGE DAILY POTENTIAL EVAPOTRANSPIRATION BY MONTH 2008.

4.9.6. Average Daily Relative Humidity By Month 2008.

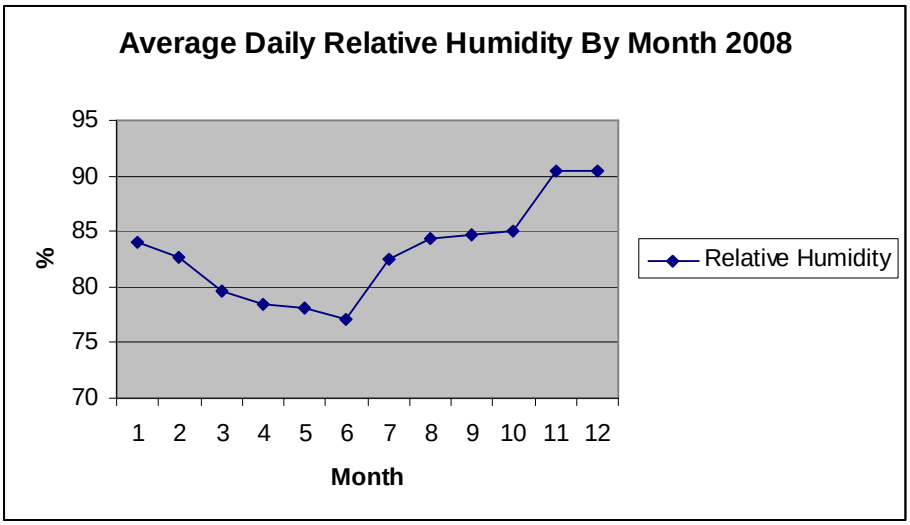

FIGURE 9: AVERAGE DAILY RELATIVE HUMIDITY BY MONTH 2008.

4.9.7. Average Daily Atmospheric Pressure By Month 2008.

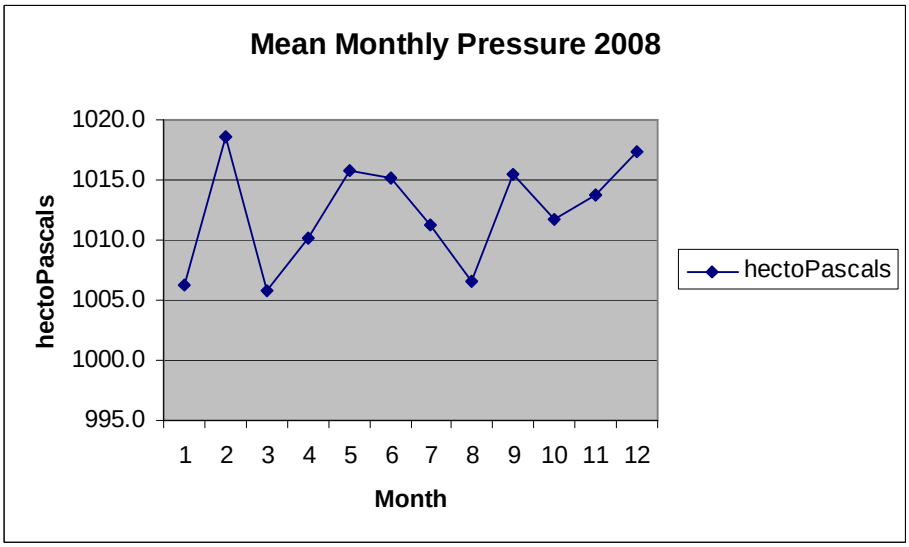

FIGURE 10: AVERAGE DAILY ATMOSPHERIC PRESSURE BY MONTH 2008.

5.0. RESOURCE AND ENERGY CONSUMPTION.

Resources consumed at Dunsink Landfill include diesel fuel, electricity and hydraulic oil. There were three main consumer entities operating on site:
(I) Fingal County Council (FCC)
(II) Contractors
(III) Irish Power Systems

(I) Fingal County Council.

The compound offices were connected to the national electricity grid in March 2005, FCC at Dunsink consumes electricity at the compound and at the pump house. FCC did not consume hydraulic oil. The main component of FCC's resource and energy consumption was electricity, diesel fuel for the leachate pumps and for the site vehicles (Table 5.1). The diesel consumed is similar but slightly less than that consumed during the previous reporting period, as no diesel leachate pumps were required this year. As with 2006, more electricity was consumed in 2007 since the new leachate pumping infrastructure was operational.

(II) Contractors.

Contractors on site consumed diesel fuel in the operation of their plant, which comprises; mainly one JCB (Table 5.1). The number of JCBs and excavators used on site varies from one or two depending upon operational requirements. Consumption of diesel fuel has reduced as the number of heavy plant engaged in the restoration project lessened.

(III) Bioverda Power Systems.

BPS on site consumed less diesel, electricity, lube oil and landfill gas than in previous years (Table 5.1). This reflects the downturn in landfill gas utilisation and their moving headquarters from Dunsink Landfill to Rathcoole.

Resource	**FCC**	**Contractors**	**IPS**	**Total 2008**
Electricity MWh	69	Nil	333	399
Diesel Vehicles	3,000	8,100	Nil	11,100
Diesel Pump	600*	Nil	Nil	600*
Hydraulic Oil	Nil	60*	Nil	60*
Lubricating Oil	Nil	200*	5675	5,875* L

*ESTIMATES

TABLE 5.1: SUMMARY OF RESOURCES USED ON SITE FOR THE REPORTING PERIOD.

6.0. VOLUME OF LEACHATE PRODUCED AND DISCHARGED OFF-SITE.

A flow metre measuring volumes of leachate produced from the facility or volumes of leachate discharged off-site was installed with the new pump house in June 2005. However, during 2004 efforts were made to get estimates for leachate production in Dunsink to determine the appropriate capacity of current and proposed leachate infrastructure. It was considered important in view of the daily discharge limit of 1,400m^3 imposed by the Sanitary Authority (Dublin City Council) to determine responses should this limit be breached.

6.1. METHODS FOR ESTIMATING LEACHATE PRODUCTION.

An annual water balance calculation was performed to estimate leachate production in Dunsink. This figure is compared with figures measured as discharged offsite since June 2005 (See Table 6.1).

6.1.1. WATER BALANCE CALCULATIONS.

In calculating the water balance for Dunsink the formula used was taken from Environmental Protection Agency (EPA) guidelines (EPA 2000)[1]. Rainfall data from Dublin airport Meteorological station are used in this calculation. Data from 2008 are used in the average and scenario calculations.

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

Whereby;

ER	= effective rainfall (m).
A	= Area of cell (m^2).
LW	= Liquid waste (also includes excess water from sludges) M^3.
IRCA	= Infiltration through restored and capped areas (m^3).
l	= Surface area of lagoons (m^2).
a	=absorptive capacity of waste M^3/t.
W	= weight of waste deposited.

ER = Total Rainfall (R) minus Actual Evapotranspiration (AE).
For Dunsink landfill, following the guidance given in the EPA guidelines the ER is taken as R.
Total rainfall for Dunsink in 2008 was 9426 mm or **0.9426m**.

A= The landfill area is 154 acres or 62.3 hectares or **623000m^2**. No area is active, there has been no dumping of municipal waste for over seven years.

ER(A)=0

LW = Liquid waste is not deposited in Dunsink. **0m^3.**

[1] Environmental Protection Agency (2000). Landfill Manuals; Landfill Site Design. EPA, Ireland. ISBN 1 84095 026 9.

IRCA = In areas that have been temporarily capped / restored an infiltration rate of 25-30% of the annual rainfall should be used. In areas which have been restored an infiltration rate of 2-10% should be applied. Given that the landfill is now restored 10% will be used as the infiltration rate through restored and capped areas. 10% of ER = 0.0761. Using the EPA guidelines 15% of the annual rainfall will be used. 623,000m^2 X 0.0761m.

IRCA= 58,724m^3
l = In Dunsink the area of the lagoon is 6000m^2, ER=0.9426.
ER(l) =5656m^3

aW = The total volume of waste has been calculated roughly, as 3.3 million m^3on the basis of volume of three phases of landfill. It has also been roughly estimated that approximately 5,000,000 tonnes of waste have been deposited in Dunsink based on figures available from 1994 for annual inputs to the site. On this basis the roughly estimated waste density is 1.5 t/m3, this is very high and maybe due to compaction by its overburden of subsoil or fill. The absorptive capacity of waste falls to negligible or none per tonne of waste before leachate is generated at densities greater than 1.2 t/m^3, **aW=0 m^3/tonne**

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

Lo = [0 + 0 + 58724 + 5656] – [0]

Lo = 64,380m^3 pa
Lo = 176m^3 /d
Lo = 7.3m^3 /hr

6.3.1. Scenario Building.

This rough estimate should be viewed in the context of varying annual rainfall over a year period. Water balance calculations should be carried out for a number of scenarios such as average monthly leachate volumes to be generated (See Table Below). For example August's 2008 estimate for leachate production was 12,940m3 or an hourly average of 17.39m^3/hr.

2008	Rain	Rainfall % Total	Estimated Monthly Leachate Production M^3
	mm		
January	97.4	10.3	6631
February	14.7	1.6	1030
March	101.8	10.8	6953
April	27.6	2.9	1867
May	32.7	3.5	2253
June	76.4	8.1	5215
July	111.4	11.8	7597
August	189.9	20.1	12940
September	114.1	12.1	7790
October	92.5	9.8	6309
November	44.7	4.7	3026
December	39.4	4.2	2704
Total 2007	942.6	100.0	64380

TABLE 6.1:ESTIMATES OF LEACHATE PRODUCTION: AVERAGE MONTHLY RAINFALL RECORDED AT DUBLIN AIRPORT 2008 (SOURCE: METEOROLOGICAL OFFICE WEBSITE 5/1/2009).

The EPA guidelines (EPA,2000) suggest a peak flow factor of 3 to 5 times the predicted average flow rate should be used when sizing plant / pipe work. Therefore using 2008 rain data and allowing for the advancing restoration of Dunsink, an adequate pump station should be able to handle about ($7.3m^3$ * 3.5) to ($7.3m^3$ * 5) or 25.55 m3/hr to 36.5 m3/hr during wet weather flow. During 2008, the volume of leachate Discharged to public sewer was $241,043M^3$ which equates to 27.44 m3/hr.

6.3.2. Results.
Water balance calculations from EPA guidelines for Dunsink during peak wet conditions suggest that leachate production / discharge could be in the range 613-$876m^3$ /day.

6.3.3.Discussion.
The results presented above are estimates only. The results from this exercise (EPA model), indicate that Dublin City Council's discharge limit of 1400 m^3 / day would not be breached and the leachate lagoon would not ordinarily be needed to deal with any excess leachate generated. The lagoon has a capacity of $26700m^3$. The pump house design facilitates pumping a maximum of 20 litres/s or $72m^3$ / hr or $1728m^3$ / day and the modelled leachate production is well below this.

The new pumping arrangements installed during June 2005 provides data for the volume of leachate generated at the facility (Table 6.2).

2008	Rain mm	%	Estimated Monthly Leachate Production M^3	Volume Discharged as Measured By Flow Metre
January	97.4	10.3	6631	28473
February	14.7	1.6	1030	20681
March	101.8	10.8	6953	17182
April	27.6	2.9	1867	17297
May	32.7	3.5	2253	7854
June	76.4	8.1	5215	14878
July	111.4	11.8	7597	13431
August	189.9	20.1	12940	28237
September	114.1	12.1	7790	25542
October	92.5	9.8	6309	24310
November	44.7	4.7	3026	20127
December	39.4	4.2	2704	23031
Total	942.6	100.0	64380	241043

TABLE 6.2: ESTIMATES OF LEACHATE PRODUCTION AND VOLUMES MEASURED AS DISCHARGED FROM SITE.

The estimated monthly leachate production is significantly and substantially less that the actual volumes measure as discharged from site. There maybe a groundwater influence in leachate generation at the site which accounts for this anomaly. The EPA water balance calculation is based on rainfall contribution to leachate generation.

The rise in leachate pumped off-site during the last two years is partially explained by the emplacement of two major leachate interception drains at the north and south of the facility. These leachate interception drains are obviously harnessing significant amounts of leachate and contributing to the leachate load at Dunsink.

6.3.4. Conclusion.

Given all the results presented above (the varied estimates for leachate production and the actual volumes discharged offsite), it is suggested that the pump house design, in conjunction with the option to use the lagoon periodically provides sufficient capacity for dealing with the estimated leachate generated in the landfill. The continuing restoration of the facility during 2008 has led to a reduced estimate of the amount of leachate generated by the facility through the water balance calculations. However the progress in landfill restoration has resulted in greater leachate collection and consequent increased volumes of leachate being discharged offsite. Nevertheless, the data provided by the leachate flow metre continues to vindicate the capacity designed into the leachate infrastructure.

6.4 ANNUAL WATER BALANCE CALCULATIONS AND INTERPRETATIONS.

6.4.1 INTRODUCTION.

The actual water balance calculations are outlined in detail in Section 6.3.

6.4.2. DISCUSSION AND INTERPRETATION.

It must be stated that the results are estimates only and based on many assumptions, which may or may not be correct. Furthermore; data from key variables such as depth of waste, proximity of groundwater table and effect of springs within waste body; are unavailable.

(ii) Water balance calculations are presented in Section 6.3 from EPA guidelines for Dunsink during peak wet conditions. They suggest that peak leachate production / discharge could be 708m^3 /day during wet weather and 201m^3/day during Dry Weather Flow.

(iii) During 2007, the volume of leachate Discharged to public sewer was 204,858M^3 which equates to 23.38 m^3/hr. (See Table 6.1). They suggest that peak leachate production / discharge could be 2806m^3 /day during wet weather and 561m^3/day during Dry Weather Flow.

These figures must be seen in the context of the bedrock geology and aquifer status of the site. The regional view of the vicinity of the Dunsink Landfill is of a low yielding aquifer.

6.4.3. CONCLUSION.

The results from water balance calculations and from the pump house flow-metre are very different in terms of leachate modelled as generated on site and leachate volumes pumped off-site. However both sets of results validate the choice of leachate pump house design, which was based on empirical measurements of leachate flowing through the existing infrastructure (Section 6.2). The pump house design facilitates pumping a maximum of 20 litres/s or 72m^3 / hr or 1728m^3 / day. Dublin City

Council allows a maximum discharge of 1400 m^3 / day. The worst case scenario for Dunsink from wet weather flows derived from flow metre calculations at 2806m^3/day exceeds this limit. In instances when the pump-house cannot pump away volumes as they are generated from the facility the system is self regulating. During Peak discharges during Wet Weather Flow are rare and short in duration, the automatic valve opens and closes to regulate the level of leachate in the sump and facilitate controlled discharge of leachate to public sewer or the lagoon. The lagoon has additional capacity of 26700m^3 and if empty would allow nine and a half days pumping to lagoon during wet weather flow. This contingency provides for scenarios whereby pumping to the public sewer would not be feasible for any reason.

The results suggest that the pump house design, in conjunction with the option to use the lagoon periodically may provide sufficient capacity for dealing with the estimated leachate generated in the landfill.

6.5. ESTIMATED ANNUAL AND CUMULATIVE QUANTITY OF INDIRECT EMISSIONS TO GROUNDWATER.

6.5.1. EMISSIONS TO GROUNDWATER-INTRODUCTION.

At present there are no estimates for annual and cumulative quantities of indirect emissions of leachate to groundwater.

Inferences are made from estimates in Sections 6.2 (estimates of leachate going through leachate management infrastructure during Wet Weather Flow) and 6.3 (estimates of leachate generated at the facility based on water balance calculations). At the outset, it must be stated that this is an exercise fraught with difficulties in that these estimates are based upon many assumptions, which may or may not be correct. Furthermore; data from key variables such depth of waste, proximity of groundwater table and effect of springs within facility; are unavailable.

Nevertheless the volumes of leachate discharged from the facility consistently and substantially exceed those estimated from water balance calculations.

DRY WEATHER FLOW.

The leachate infrastructure and discharge consents from Dublin City Council are more than adequate to deal with the volumes of leachate generated in Dunsink during dry weather flow. This suggests that there may be no indirect emissions to groundwater during Dry Weather Flow conditions.

WET WEATHER FLOW.

The leachate infrastructure system seems to be “flashy” i.e. the amount of leachate going through the system rapidly increases following rainfall events. For all but the highest peak in wet weather flow the leachate infrastructure and discharge consents from Dublin City Council are more than adequate to deal with the volumes of leachate generated in Dunsink and there is little risk of contamination of groundwater.

In instances when the pump-house cannot pump away volumes as they are generated from the facility the system is self regulating. During Peak discharges during Wet Weather Flow are rare and short in duration, the automatic valve opens and closes to

regulate the level of leachate in the sump and facilitate controlled discharge of leachate to public sewer or the lagoon.

6.5.2 BEDROCK GEOLOGY OF THE SITE AND AQUIFER STATUS.

The western half of the landfill is underlain by Waulsortian Limestones (Figure C.6.1). The GSI classify the County Meath Waulsortian Limestones as L1, bedrock which is moderately productive only in local zones and this can be assumed to be the case for Dunsink.

The central part of the landfill is underlain by the Tober Collen formation. The thinly bedded mudstones of the Tober Colleen formation which underlie the Calp Limestone have been classified by the GSI as Pu, bedrock which is generally unproductive due to the low permeability of the bedrock.

The eastern part of the site is underlain by basinal limestones consisting of limestone turbidites with bioclastic and calcareous mudstones. The GSI classify the County Meath Waulsortian Limestones as L1, bedrock which is moderately productive only in local zones and this can be assumed to be the case for Dunsink.

There is a minor faulting in the vicinity of the site and there is a minor fault running in a north-west south-east direction through the site.

A number of boreholes have been drilled into the bedrock on the site and a visual inspection of the drill chips from the monitoring boreholes indicated the site to be generally underlain by the soft black basinal (Calp) limestones and mudstones. These were recorded at all boreholes that were drilled to bedrock. The hardness and shade of the rock varied between boreholes between different depths within the same borehole. The Calp Limestone of County Dublin has been classified in the GSI Groundwater Protection Scheme as a L1 aquifer, bedrock which is generally moderately productive.

The monitoring well drilling programme confirmed the regional view of the vicinity of the Dunsink Landfill as generally low yielding aquifer.

6.5.3 CONCLUSION.

On the basis that
(1) The underlying geology and overburden have produced a localised classification of the aquifer as generally low yielding.
(2) Measured volumes of leachate discharged from the facility are consistently and substantially higher than those calculated through water balance calculations.
(3) The groundwater monitoring programme indicates that groundwater around the facility is generally good.;

It is considered that indirect discharges to groundwater are not significant in volumes or effect.

7.0. WORKS PROPOSED AND UNDERTAKEN AND TIMESCALE FOR THOSE PROPOSED DURING THE COMING YEAR.

7.1 WORKS UNDERTAKEN DURING 2008.

The following is a summary of objectives, targets, phases and steps achieved during the period January 2008 to December 2008. The licence objectives, targets, phases and steps are listed in Appendix V. The balance will be completed during 2009 (See Section 7.2).

Objective 1: To Measure Environmental Impact.

Target 4 *Install telemetry system to record surface water quality at inlet to and outlet from agreed surface water lagoon (3.15)*

The surface water lagoon was completed during 2007. A case was made to *The Agency* in correspondence FCC-127-1-2007-013 not to install continuous monitoring but set out monitoring frequency, parameters, trigger levels and a standard operating procedure towards an accommodation of Target 4. Agreement with *The Agency* on this issue was sought in 2008 (EPA Audit 2008 observation 6 (WO127-01/08/AR08EM).

Objective 2: To Improve Landfill Gas Management at the Facility.

Target 2 ***Evaluate and Improve Landfill Gas Extraction Infrastructure***

Phase II *Long Term Improvements including pump trial testing in areas of non-extraction and determination of the appropriate size for an enclosed flare.*

The enclosed flare was commissioned.

Objective 3: To Restore The Facility.

Target 1 ***Agree Restoration and Aftercare plans for the facility***

Phase IV *Longer term improvements including final leachate, surface water, gas infrastructure and attenuation ponds, plus interim landscaping.*

The phased handover of the landfill and surrounding areas to the Parks Department which began during 2008 will continue during 2009.

Objective 3: To Restore The Facility.

Target 1 ***Agree Restoration and Aftercare plans for the facility***

Phase IV *Complete capping with subsoil and topsoil. Complete grassing off of freshly capped areas.*

The subsoil and topsoil required for the restoration process has been placed. Some of the quota remains for final landscaping by the Parks Department and slope stability maintanence. Grassing off of freshly capped areas is complete.

Phase V *Longer term improvements including final leachate, surface water, gas infrastructure and attenuation ponds, plus interim landscaping.*

The works required of Phase V are complete, commissioning of the enclosed flare happened 2008. Environmental Infrastructure inspection and maintenance and environmental monitoring were ongoing this year. A phased handover of the landfill and surrounding areas to the Parks Department began during 2007 and was ongoing through 2008.

7.2 WORKS PROPOSED DURING 2009.

The following is a summary of objectives, targets, phases and steps to be achieved during the period January 2008 to December 2008 (Appendix V).

Objective 2: To Improve Landfill Gas Management at the Facility.

Target 2 ***Evaluate and Improve Landfill Gas Extraction Infrastructure***

Phase II *Long Term Improvements including pump trial testing in areas of non-extraction and determination of the appropriate size for an enclosed flare.*

The enclosed flare was commissioned in 2008. A handover of the flare Fingal County Council will take place in 2009.

Objective 3: To Restore The Facility.
Target 1 ***Agree Restoration and Aftercare plans for the facility***

Phase IV *Complete capping with subsoil and topsoil. Complete grassing off of freshly capped areas.*

The subsoil and topsoil required for the restoration process has been placed. Some of the quota remains for final landscaping by the Parks Department and slope stability maintanence. Grassing off of freshly capped areas is complete.

Phase V *Longer term improvements including final leachate, surface water, gas infrastructure and attenuation ponds, plus interim landscaping.*

A phased handover of the landfill and surrounding areas to the Parks Department began during 2007 and was ongoing through 2008. This will continue in 2009.

8.0. SITE SURVEY INDICATING EXISTING LEVELS OF THE FACILITY.

8.1. INTRODUCTION.

A full topographic survey was conducted in 2007. This survey corresponds broadly with the final profile proposals for the site which were forwarded to *The Agency* (FCC-127-1-2005-025) as part of the restoration and aftercare plan. As the site has been fully capped, the 2007 topographical survey was deemed to be still appropriate for 2008 in correspondence with the Agency (W127-01/AK/19EM).

A topographical survey was conducted in August 2004. The resulting map indicates levels existing at the end of 2004. Figures 17a, 17b & 17c represent simplified versions of the maps resulting from the 2004, 2006 and 2007 survey.

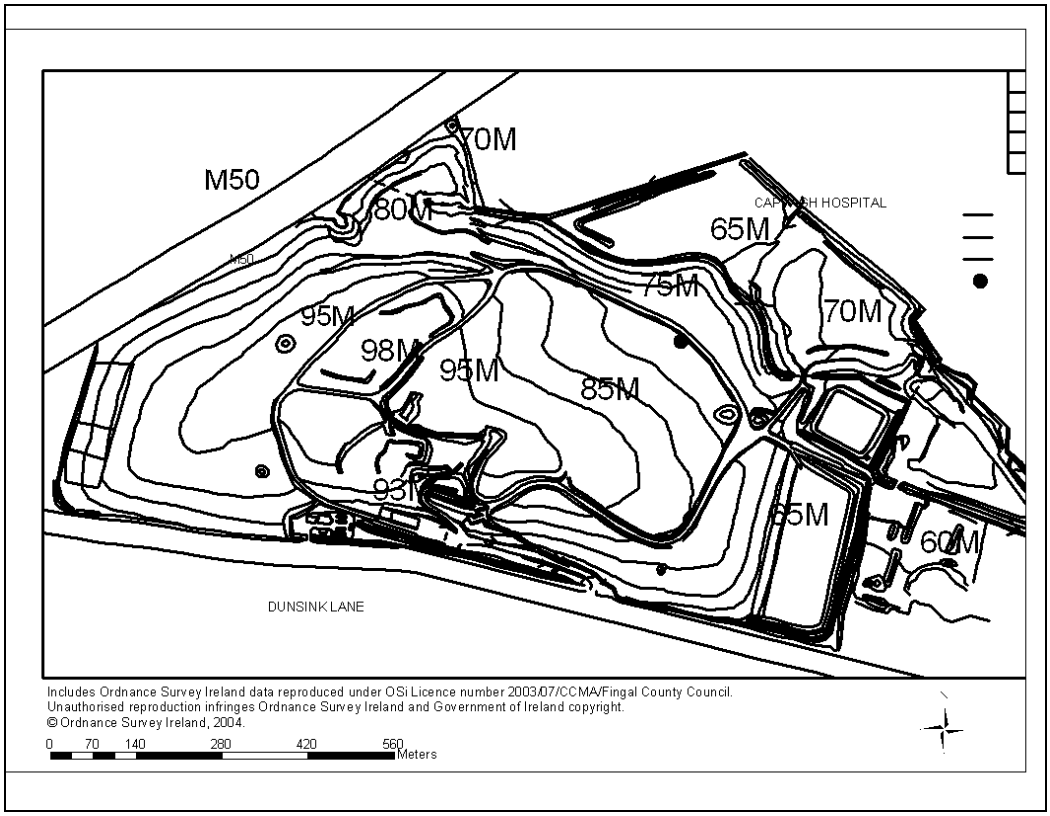

FIGURE 17A: SIMPLIFIED TOPOGRAPHICAL MAP OF DUNSINK 2004**.**

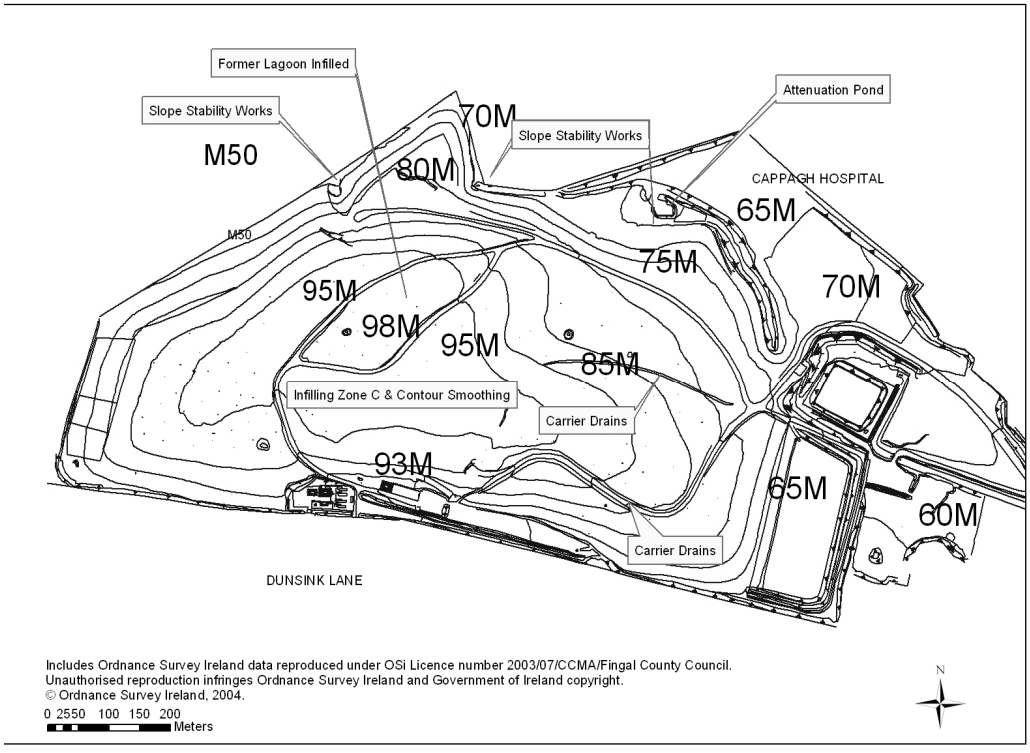

FIGURE 17B: SIMPLIFIED TOPOGRAPHICAL MAP OF DUNSINK 2006.

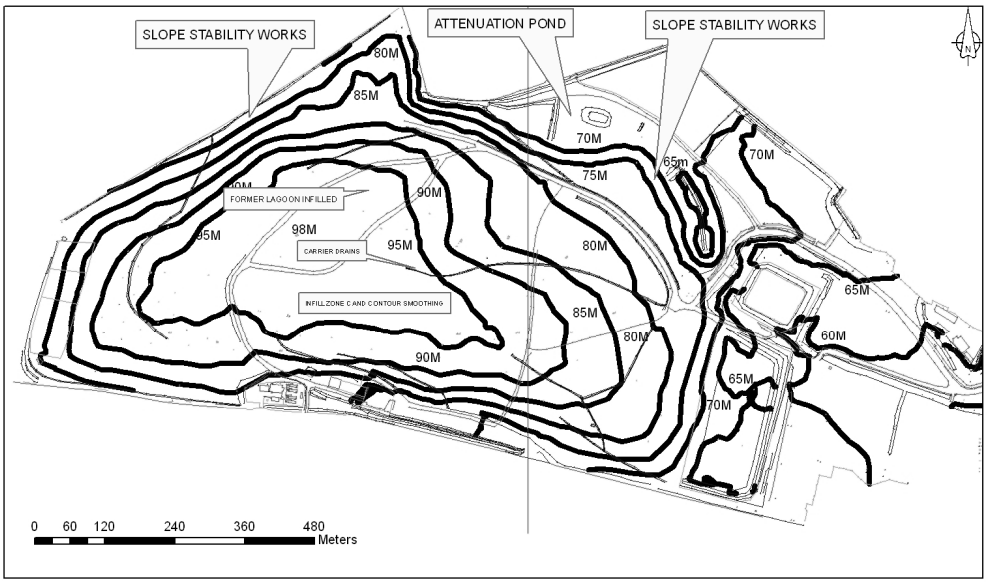

FIGURE 17C: SIMPLIFIED TOPOGRAPHICAL MAP OF DUNSINK 2007.

8.2. DISCUSSION.

The topography broadly follows as a dome shape with the high point approximately 99m WSW of centre. The centre is largely a plateau. Elevation drops away to 65ms towards the fields to the north, 70m at the M50 to the NW, 65m at the sports field to the east and 60m to the south towards Dunsink Lane. The steep slopes off the plateau, have been smoothed in places where slope stability surveys have indicated slopes of marginal risk of failure.

During the period 2004 to 2007 some significant topographic changes have occurred. The result of slope stability work close to the M50 and the northern end of the facility is apparent from a comparison of the two topographic surveys. Other visible alterations to topography include, the infilling of a former lagoon, contour smoothing in Zone C, the infilling of large depressions, the development of contour drains as part of the surface water infrastructure of the site and the surface water attenuation pond. No significant topographical changes occurred in 2008.

Figure 2 (which indicates zones of land receiving up to 1m of clean subsoil in 2005&2006) and Figure 2.1 (which indicates zones of land receiving up to 1m of clean subsoil in 2007) illustrate the areas of minor topographic change not apparent from a comparison of the simplified maps presented in Figures 17a, 17b & 17c.

9.0. ESTIMATED ANNUAL AND CUMULATIVE QUANTITY OF LANDFILL GAS EMITTED.

INTRODUCTION.

In early 1996 a gas collection network was first configured throughout the whole landfilled portion of Dunsink. In 1999 the collection network was replaced by a larger more extensive arrangement as per the attached drawing.

It is comprised of a high-density polyethylene (HDPE) ring main around the site with a number of branch lines, which contains manifolds that connect to individual gas extraction wells.

There are approximately eighty-five gas extraction wells currently connected to manifolds throughout the site. Some of the wellheads are buried so it is not physically possible to confirm their condition or truly assess their performance. An additional thirteen gas wells were installed in Zone A and six additional gas well were installed in Zone C during 2006.

There are ten branch lines off the main collection ring. These branches are 250mm in diameter and have multi-outlet manifolds configured to collect the gas from the wells in their vicinity. Each branch can be isolated where it connects to the main line. The manifold arrangement allows the line from the individual wells to be sampled and controlled. This has the effect of balancing the "good gas" with the bad to maintain the optimum quality to the utilisation plant.

The mainline ring is a 355mm HDPE pipe that completely encircles the landfill and finishes back at the utilisation plant compound. It has two dewatering chambers, one next to the old main landfill entrance and the other adjacent to the IPS compound, where the collected condensate is returned to the waste body via a disused extraction well, it is proposed to divert this condensate directly to the leachate collection system. This ring main can be isolated in a number of locations to permit maintenance operations and still maintain operation of the utilisation plant.

The extraction pump which feeds the remaining generator (one was removed from site during 2006) is capable of collecting three thousand cubic metres of gas per hour at a maximum suction pressure of –150mbar. It is currently delivering approximately five hundred and fifty five cubic metres per hour at a quality of 40%CH_4. In the unlikely event the engine is out of service for an extended duration, the integral flare can be run to maintain negative pressure on the landfill. An enclosed flare shall was delivered to site in December 2007 and will be installed during the first quarter of 2008.

9.1. LANDFILL GAS CONSUMED BY UTILISATION PLANT 2008.

Figures for landfill gas emitted from the facility are derived from data submitted by Irish Power Systems for the utilisation plant in Dunsink. The migration issues of previous years are largely resolved and the utilisation plant controls the vast majority of the landfill gas emitted. The figures for 2008 are presented in Table 9.1.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Landfill Gas NM3	485026	406714	483600	463320	459420	225420	408720	505440	453960	480480	439920	404040	**5216060**
Ch4 % Vol	44	47	44	44	41	43	45	46	46	44	46	44	**44.5**
Total Power Output MWhrs	622	521	620	594	589	289	524	648	582	616	564	518	**6687**

TABLE 9.1: LANDFILL GAS CONSUMED BY IPS UTILISATION PLANT IN DUNSINK DURING 2008.

It takes 580NM^3 and 50% Methane to produce 1000kw (i.e. Deutz fuel consumption figures). Therefore to arrive at an average daily consumption of landfill gas multiply the daily KW output by 0.580 to determine average daily consumption in normal cubic metres or NM^3. Normal cubic metres means that it is measured based on standard temperature and pressure conditions.

9.2. LANDFILL GAS CONSUMED BY UTILISATION PLANT AND GENERATED BY FACILITY 1996-PRESENT.

The amount of landfill gas utilised by the plant was trending downwards but dropping less sharply in recent years than the period 2003-2005. In 2008, there was a significant increase in the gas utilisation from the previous two years. This pattern is observable through figures provided by IPS, See Table 9.2 and Figure 18.

The rate of landfill gas generation at the facility is continuing to drop. This produces a picture of a significantly improved landfill gas utilisation as a percentage of that generated by the facility.

Year	Landfill Gas Generated GasSim ESTIMATES*	NM^3 Utilisation By IPS	% Utilisation
1996 (6 months)		11161752	
1997		22107415	
1998		22080797	
1999		18335789	
2000		16120027	
2001		15015114	
2002		11576321	
2003	10431540	8841878	84
2004	9993240	7051828	70
2005	9554940	5209802	55
2006	9116640	4864378	53
2007	8760000	4065525	46
2008	8564400	5216060	61

* GASSIM FIGURES AVAILABLE FROM 2003 ESTIMATES ONLY.

TABLE 9.2: ANNUAL LANDFILL GAS CONSUMPTION AND GENERATION IN NORMAL CUBIC METRES OR NM^3.

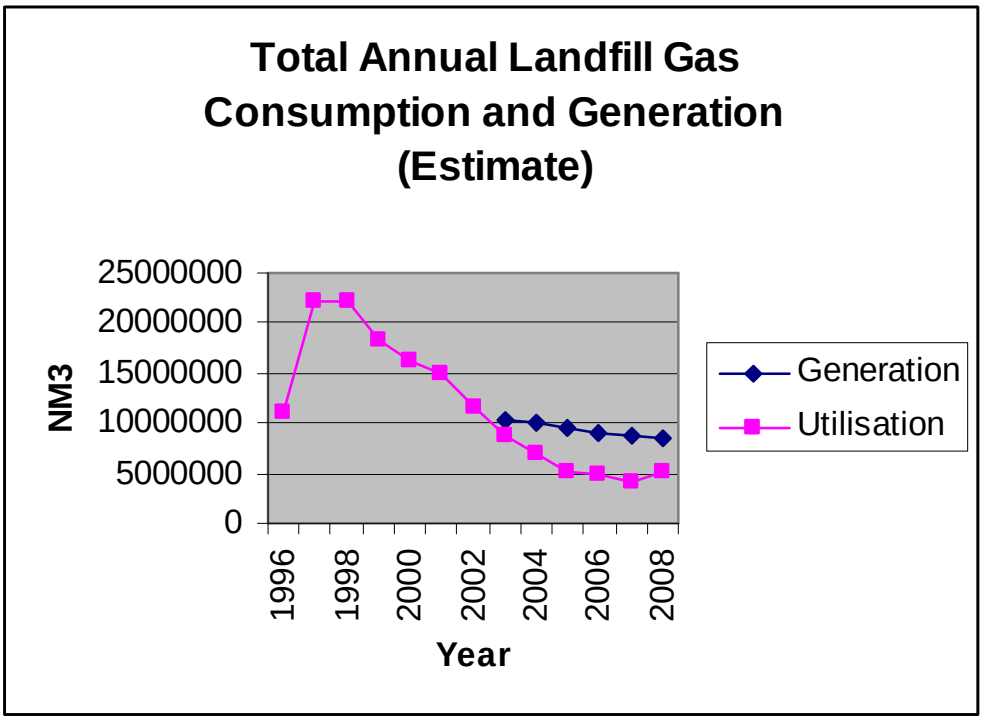

FIGURE 18. ANNUAL LANDFILL GAS GENERATION AND CONSUMPTION IN NORMAL CUBIC METRES OR NM3.

Given that IPS suggest that supply of gas has dropped sharply and that landfill gas migration is not an overwhelming issue at Dunsink, it is suggested that these figures reflect a downward pattern over time of landfill gas emitted from the facility. The landfill gas network was extended during 2006. Given the definite pattern and direction in landfill gas generation and utilisation there appeared to be enough data to provide for the specification of an enclosed flare. The enclosed flare should cater for the needs of landfill Gas Management in Dunsink for the next twenty years. An enclosed flare was delivered to site December 2007 and was installed and commissioned during the first quarter of 2008. The handover to Fingal County Council will be completed in 2009.

10.0 REPORT ON PROGRESS TOWARDS ACHIEVEMENT OF ENVIRONMENTAL OBJECTIVES AND TARGETS CONTAINED IN PREVIOUS YEAR'S REPORT.

This is the fifth AER under this Licence, an account of development works undertaken during 2008, many of which are aimed at the enhancement of environmental issues at Dunsink, is provided in Section 7. Environmental objectives and targets were submitted to the Agency during 2004.

A detailed list of these objectives and targets is given in Appendix V. The appendix gives lists phases of work and steps required to achieve these objectives. It also provides an account of progress towards the achievement of these objectives and targets.

11.0 SCHEDULE OF ENVIRONMENTAL OBJECTIVES AND TARGETS 2008.

An account of development works undertaken during 2008, many of which are aimed at the enhancement of environmental issues at Dunsink, is provided in Section 7. see Appendix V.

A detailed list of objectives and targets for 2009 is given in Appendix V. The appendix lists phases of work and steps required to achieve these objectives. It also provides a schedule for progress towards the achievement of these objectives and targets.

12.0. PROCEDURES DEVELOPED RELATING TO THE FACILITY OPERATION.

12.1. INTRODUCTION.

A new procedure was drawn up during 2008 relating to Diversion of Surface Water. It was sent to *The Agency* for approval (Ref. FCC-127-1-2007-013) but no response has been issued to date. A draft auxiliary safety statement with several standard operating procedures is available for inspection at Dunsink offices, canteen. The draft was revised during 2007. The following are the titles of the procedures developed by FCC for Dunsink during 2004 and 2005. See Table 12.1.

Procedure No.	Version	Title	Date
SOP 101	(1)	Waste Acceptance and Handling Procedure	2/9/2004
SOP 101	(2)	Waste Acceptance and Handling Procedure	20/10/2004
SOP 102	(1)	Process Flow Charts for Waste Acceptance	2/9/2004
SOP 103	(1)	Waste Acceptance Policy	2/9/2004
SOP 103	(2)	Waste Acceptance Policy	20/10/2004
SOP 104	(1)	Application Form For Clay Tickets	2/9/2004
SOP 105	(1)	Form C Waste Acceptance	2/9/2004
SOP 106	(1)	Form E Inert Material Application	2/9/2004
SOP 106	(2)	Form E Inert Material Application	20/10/2004
SOP 107	(1)	Emergency Response Procedure	2/9/2004
SOP 107**	(2)	Emergency Response Procedure	04/08/2005
SOP 108	(1)	Weekly Tally For Clay Tickets	20/10/2004
SOP 109	(1)	Leachate Pumping Arrangements	01/11/2004
SOP 109**	(2)	Leachate Pumping Arrangements	02/12/2005
SOP 110	(1)	Corrective Action Procedures	01/12/2004
SOP 110**	(2)	Corrective Action Procedures	05/09/2004
SOP 111**	(1)	Documentation Control Post to/from EPA	06/12/2004
SOP 112***	(1)	Diversion of Surface Water	12/07/2007

** New or Revised Standard Operating Procedures during 2005.

*** Yet to be approved by *The Agency*.

TABLE 12.1: SUMMARY OF WRITTEN PROCEDURES DEVELOPED BY THE LICENSEE DURING 2004 AND 2005, RELATING TO FACILITY OPERATION.

12.2. SUMMARY OF STANDARD OPERATING PROCEDURES.

There follows a summary of the procedures developed for the facility. The full written procedures are available for inspection at the facility office.

12.2.1. Waste Acceptance and Handling Procedure.

This is to document the procedure for waste acceptance and handling at Dunsink Landfill as per condition 5.1 and condition 5.2 of the Waste Licence. It applies to all waste accepted for disposal at the landfill and the quantity of inert waste accepted shall not exceed the amount required to achieve the Restoration and Aftercare Plan.

12.2.2. Process Flow Charts For Waste Acceptance.

This illustrates the procedure for waste acceptance and handling at Dunsink Landfill as per condition 5.1 and condition 5.2 of the Waste Licence.

12.2.3. Waste Acceptance Policy.

This details access to the facility, it's hours of opening, charges for disposal, types of waste handled, characterisation requirements, general on site procedures and emergency procedure.

12.2.4. Application Form for Clay Tickets.

Waste contractors who wish to gain access to the facility must successfully complete all parts of this form which requires full details of waste owner / producer, details of source and waste, and carrier details.

12.2.5. Form C Waste Acceptance Form.

This form, in conjunction with clay tickets, is to accompany all waste accepted at Dunsink. All parts of the form which relate to Carrier information, Source of Waste, Details of Waste and European Waste Code (EWC) must be filled out in full before waste is accepted at the facility.

12.2.6. Form E Inert Material Application.

This form will be required in exceptional circumstances. Wastes from unknown origins are not accepted at the landfill. Only inert material from uncontaminated greenfield sites is accepted at the landfill. If a non-conformity is discovered or suspected, deposit on site will not be possible and the assignment will be rejected offsite. The waste owner / producer or carrier's application may be invalidated. No further loads will be accepted from the waste owner / producer or carrier until "Form E - Application Form 127-1 Inert Material" has been successfully completed. "Form E - Application Form 127-1 Inert Material" requires testing for basic characterisation. Waste that requires basic characterisation must also be subject to Level II Compliance testing in accordance with CD 2003/33/EU, this will involve compliance testing of selected parameters from basic characterisation testing at a sampling interval to be determined by the authority.

12.2.7. Emergency Response Procedure.

This Emergency Response Plan is designed to provide uniform emergency response. This programme is designed to provide guidance on action to be taken in the event of incidents from minor injuries to major emergencies. The Dunsink Landfill is located close to a continuously staffed fire brigade station and an accident and emergency hospital is located approximately 3 miles away in Blanchardstown. The main focus of

this procedure is to initiate the correct action to minimise injury to personnel, damage to the plant or negative environmental impact until the arrival of the emergency services. This procedure provides detailed guidance on the following stages:

1. Responsibilities of emergency team members
2. Raising the Alarm
3. Obtaining first aid
4. Calling out the emergency services
5 Evacuation procedure.
6. Emergency communications.
7. Authority to Silence Alarms.
8. Action in the event of Specific Emergencies

Potential emergencies at the landfill include:

a) Major accident (injury/illness/damage to plant)
b) Chemical spill warranting evacuation.
c) Fire/explosion.
d) Toxic Gas Release

SOP 107(2): Revision documents new management structure.

12.2.8. Weekly Tally for Clay Tickets.
This is designed to record daily and weekly tally for clay tickets, for reconciliation with clay tickets issued and used and the amount of inert material allowed under Schedule A.1 of the licence.

12.2.9 Leachate Pumping Arrangements.
This is designed to document the procedure for leachate management as per Condition 3.12, particularly in relation to the configuration of the valve network under several scenarios.
SOP 109(2): Revision documents new leachate management arrangements following commissioning of new leachate pumping infrastructure.

12.2.10. Corrective Action Procedures.
This documents as per condition 2.3b) of the licence, describes in detail the corrective actions to be taken should any of the following situations in relation to Environmental Management arise;
(i) Excessive Noise.
(ii) Excessive Dirt.
(iii) Excessive Surface Water Build Up.
(iv) Pest/Vermin/Bird Problem.
(v) Odour Problem.
(vi) Litter Problem.
(vii) Groundwater Contamination.
(viii) Gas Leak / Migration.
(ix) Leachate Problem.
(x) Fire Incident.
(xi) Security Issue.
It also contains the weekly nuisance and surface water visual inspection forms.

SOP 110(2): Revision provides a column for recording when and who signs off issues requiring corrective action. An additional sheet is provided (xi) specifically or security issues.

12.2.11. Documentation Control Post to/from EPA Public Display.

This document outlines the procedure for handling, filing and recording all documentation between Fingal County Council and the Environmental Protection Agency.

12.2.12. Diversion of Surface Water.

This document outlines the procedure for diverting the Scribblestown Stream and Southern Tributary in the event of evidence of contamination. This SOP has yet to be agreed with *The Agency*.

13.0 TANK, PIPELINE AND BUND TESTING AND INSPECTION REPORT.

As per condition 3.10.5 the following lagoon and bund tests conducted during 2007 are valid for this reporting period.

Lagoon.

An integrity test was conducted on the Lagoon in Dunsink during August / September 2007. The lagoon is deemed fit for the storage of leachate. A report was submitted to this office based on the findings of the hydrostatic test, construction details and visual assessment of the lagoon. This report is available for inspection at the facility office. A copy of the bund test certificate is provided in Appendix VI.

An integrity test will be conducted on the lagoon during 2010.

Oil Bund IPS Compound- Dunsink.

An integrity test was conducted during December 2007 on the oil bund on the IPS compound. The bund integrity was found to be good, it was watertight and found fit for its intended use. A copy of the bund test certificate for this is provided in Appendix VI.

An integrity test will be conducted on the oil bund during 2010.

14.0. REPORTED INCIDENTS AND COMPLAINTS SUMMARIES.

14.1. REPORTED ENVIRONMENTAL INCIDENTS.

There were fifty two reported incidents last year reported under condition 1.6 c) "Any trigger level specified in this licence which is attained or exceeded"; and d) "Any indication that environmental pollution has, or may have, taken place." Four of these were also notified to the Eastern Regional Fisheries Board and one was reported to Dublin City Council.

	EPA Notified					**ERFB* Notified**	**DCC** Notified**
	Surface Water	**Groundwater**	**Landfill Gas**	**Dissolved Methane**	**Noise**	**Surface Water & Groundwater**	**Surface Water**
Month 2007	**(n)**	**(n)**	**(n)**	**(n)**	**(n)**	**(n)**	**(n)**
January			5				
February			4				
March			4	1			1
April			5				
May			4				
June			4	1			1
July			5				
August			4				
September			4	1			1
October			5				
November			4				
December	1		3	1		1	2
Total Number of Incidents	**1**		**51**	**4**		**1**	**5**

TABLE 16.1: SUMMARY OF REPORTED INCIDENTS DURING 2008.

* Eastern Regional Fisheries Board.
** Dublin City Council.

A summary of the environmental incidents distributed by month and thematic area is provided in Table 16.1.

Table 14.1 reflects a lowering in the number of incidents in 2008. The number of landfill gas incidents is higher than last year. They relate to trigger levels for Methane and Carbon Dioxide in the Sports field. Further investigations will be carried out in this area in early 2009.

The surface water incidents are down on 2007, but this reflects results for suspended solids associated with the completion of the attenuation pond. SW10 will monitored in relation to the elevated Amonniacal nitrogen reading recorded in the 4th quarter. Dissolved Methane incidents were consistent with last year and related to increased data capture than any deterioration in environmental performance.

The EPA was notified of all incidents. The ERFB were notified on all incidents pertaining to surface water and Dublin City Council was notified of incidents relating to Dissolved Methane.

14.2. REPORTED ENVIRONMENTAL COMPLAINTS.

Condition 10.4 of Licence 127-1 requires that the licensee shall maintain a written record of all complaints relating to the operation of the facility. There follows a summary of the complaints for the reporting period, two in total, compared with five for 2004, one for 2005 and two for 2006. Details of the complaints are as follows:-

14.2.1 Licence 127-1 Condition 10.4. Complaint No.1

The licensee shall maintain a written record of all complaints relating to the operation of the facility. Each record shall give details of the following:-

a) Date and time of the complaint;

Complaint reported in Letter dated 1st September 2008 but received by this office 1st September 2008.

b) *Details of the nature of the complaint;*

The EPA reported that they had a received a complaint that there was litter and fly tipped rubbish on Dunsink Land and is not being cleared by Fingal County Council, security of the site was not adequate due to the joyriders causing disturbances to nearby residents and no sportsfield have been provided for use by the local community to date.

c) The response made to each complainant.
Letter sent to the complainant responding to the issues.

14.2.2 Licence 127-1 Condition 10.4. Complaint No.1a

The licensee shall maintain a written record of all complaints relating to the operation of the facility. Each record shall give details of the following:-

a) Date and time of the complaint;
Complaint made by letter to Environment Department FCC on 17/9/2008.

b) *Details of the nature of the complaint;*
Similar to complaint No.1. The EPA reported that they had a received a complaint that there was litter and fly tipped rubbish on Dunsink Land and is not being cleared by Fingal County Council, security of the site was not adequate due to the joyriders causing disturbances to nearby residents and no sportsfield have been provided for use by the local community to date.

c) Actions taken on foot of the complaint and the results of such actions; and
Mr Loftus sent letter to EPA addressing the complainant issues.

15.0. REVIEW OF NUISANCE CONTROLS.

Condition 7 of Waste Licence 127-1 requires that vermin, birds, flies, mud, dust, litter, noise and odours do not give rise to nuisance at the facility or in the immediate area of the facility.

To this end a Nuisance Monitoring Programme was instigated. This involves weekly inspection of the nuisances stated in Condition 7.1, but also includes those associated with security, surface water and leachate. The nuisance inspection is conducted in conjunction with the weekly Surface Water Visual Inspection. The facility and some adjoining areas are separated into seven zones. A checklist was designed and is filled in weekly since inspections were formalised in August 2004. The nuisance-

monitoring programme feeds into the Environmental Management System, in that if nuisances are detected which are not considered incidents under Condition 1.6 of the licence – Corrective Action Procedures are invoked. If nuisances are detected which are considered incidents under Condition 1.6 of the licence, procedures listed under condition 9.1 are adhered to. The records for weekly inspections are available in the facility office.

Inspections have been quite successful in identifying the main nuisances associated with the facility and correcting them;

- Mud and dust on Rathoath Road and site roads.
- Litter on Dunsink Lane and around the perimeter of the site.
- Localised Ponding.
- Occasional Leachate Seepages.
- Fencing and Gate Breaches.
- Abandoned Vehicles.
- Burnt out Vehicles.
- Vandalised Monitoring Infrastructure.
- Vandalised Wheelwash Infrastructure.

During 2007 the main sources of nuisance were associated with traffic bringing in topsoil / subsoil for the capping programme; mud, dust and noise. Additional professional pest monitoring is carried out and logs are kept. These are available for inspection at the facility office.

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16.0 FINANCIAL PROVISION, MANAGEMENT AND STAFFING STRUCTURE AND PROGRAMME FOR PUBLIC INFORMATION.

16.1. FINANCIAL PROVISION.

With regard to the uptake of Environmental Liability Risk Assessment (ELRA), Residuals Management Plans (RMP), Closure Remediation and Aftercare Plans (CRAMP) and Financial Provision (FP), please find the following information in relation to Dunsink Landfill.

- Risk Category as derived using the system set out in the Guidance Document.

This specific exercise has not been carried out to date. However on looking at the guidance document it appears similar to the "Methodology for Determining Enforcement Category of Licences". This exercise gave Dunsink an A2 enforcement category which would probably equate to a Risk Category 3 classification.

- The "Methodology for Determining Enforcement Category of Licences" was last completed for Dunsink in July 2008. This exercise gave Dunsink an A2 enforcement category which would probably equate to a Risk Category 3 classification.
- The facility's RMP/CRAMP was the culmination of a series of proposals beginning in June 2005. It was agreed by "The Agency" during 2005. The series of proposals are referenced and detailed below and "The Agency" would have received copies in triplicate.

FCC-127-1-2005-	LETTER DATED	POST TO EPA 127-1 REGARDING
FCC-127-1-2005-015	09/06/2005	restoration and aftercare plan
FCC-127-1-2005-022	28/07/2005	Restoration and aftercare plan & SEW Leachate Management & Drainage
FCC-127-1-2005-025	13/09/2005	Restoration and Aftercare Plans and achievement of final profile
FCC-127-1-2005-026	19/09/2005	Slope Stability Survey
FCC-127-1-2005-027	23/09/2005	Restoration & Aftercare plans Drilling Wells

- Fingal County Council's position to date with regard to financial provision currently in place for Dunsink and Balleally has been stated as follows; "In accordance with Condition 12.2 of the Waste Licence, Fingal County Council shall establish and maintain a fund or other form of approved security, that is adequate to assure the financial capability of implementing the Restoration and Aftercare Plan as agreed with "The Agency". Financial provision is made on an annual basis at Fingal County Council budgeting meetings.

As the CRAMP/RMP predates the Guidance Document (2006), there are some differences in content and methodology. The contents of the CRAMP/RMP broadly reflect the suggested contents in the guidance document. It is also worth stating that *The Agency* approved of the CRAMP/RMP at the time of submission. The restoration programme is now complete and the facility is now in it's aftercare phase. The financial provision is considered adequate.

Staff from Fingal County Council would be willing to attend a conference in 2009 on implementation of the Environmental Liability Directive.
FCC-W0127-01-2008-007

16.2. MANAGEMENT AND STAFFING STRUCTURE.

16.2.1. Management Structure.

The following comprise the current management structure for Dunsink Landfill.
Licence Compliance

Senior Engineer, Mr. John Daly.
Waste Infrastructure and Enforcement, John Daly. B.E. (Civil Engineering), M.Sc (Environmental Engineering), MIEI
Senior Executive Engineer, Mr. M. Kiely. Responsible for waste infrastructure within the Environment Department. B.E. (Civil Engineering) 1978, Passed all modules of FAS, Waste Management Training Program.
Acting Senior Executive Engineer, Assistant Landfill Manager. Mr. A. Murphy. Landfill Supervision of operations on site, management of waste licence conditions, supervisor of site engineering works.
B.E. (Mechanical Engineering), EurIng, MIEI, Chartered Engineer. Passed all modules of FAS, Waste Management Training Program
Acting Executive Scientist, Mr. Brian Reynolds (Replaced Mortimer Loftus)
Landfill operational management, supervision of scientific monitoring and other licence conditions, Licence compliance and report preparation.

MSc. Project Operations Management, MSc. Applied Science (Env. Science), BSc. Biology and Mathematics, FAS Waste Management Certificate.
Acting Executive Scientist, Mr. M. Loftus.
Landfill operational management, supervision of scientific monitoring and other licence conditions, Licence compliance and report preparation.
Ph.D. Ecology, Diploma Environmental Impact Assessment Management, B.Sc. Environmental Science, Diploma Environmental Management, Diploma in Environmental Impact Assessment Management, Passed all modules of FAS, Waste Management Training Program.

Landfill Management

Senior Parks Superintendant, Mr. Kevin Halpenny. Responsibility for Parks Department,
Senior Executive Parks Superintendant, Ruairi O'Dulaing. Responsibility For Parks Development and transition
District Supervisor, Ted Lynch Coolmine Depot District Supervisor. Responsibility for overseeing Landfill management operations.
Foreman, Colin Gilhooley, Management of Landfill, FAS safe pass, manual handling and CONSAW courses.
Assistant Landfill Manager/Foreman, Mr. R. Donnelly, Assistant to Landfill manager, task management of site operatives and rehabilitation works. 12 years experience working for Fingal County Council.

The management and staffing structure will be reviewed during 2008 when the new phase of aftercare begins with the Parks Department.

16.3. PROGRAMME FOR PUBLIC INFORMATION.

Public information can be viewed at the **Council's Headquarters** between 9.30 a.m. and 12.45 p.m. and 2.00 p.m. and 4.00 p.m. Monday to Friday (excluding public holidays), unless otherwise arranged by prior appointment.

- Facilities for viewing information from a computer or files are provided at Dunsink Facility office by prior arrangement with the Landfill Manager.
- A register of information will be made available on www.fingalcoco.ie. The website was updated February 2005. Additional information relating to the waste licence was posted on the website including; Waste Acceptance Policy, Procedures and Application Forms.
- A Link to the EPA's website that has the licence conditions is as follows www.fingalcoco.ie/services/ENVIRON_MENT/Form.htm. Note that this is a pdf file.
- Requests for copies of environmental information on display should be made using the "Requests for copies of Environmental Information/Reports" form.

Site Visits

- Site visits to **Dunsink Landfill** can be arranged by applying in writing to the Landfill Manager requesting a date and time for the proposed visit and indicating the number of visitors and the purpose of such a visit and whether any

presentation is required. The use of cameras and video equipment during the visit must be agreed in advance with Fingal County Council.

- Such requests will be accommodated where possible. Operational and security matters will take precedence and visits may be cancelled at short notice.

Information Meetings.

A Dunsink Task Force was set up which met up to once monthly in previous years. It's brief includes the discussion of environmental issues in the broader Dunsink area, including issues relating to the waste licence. Local representatives, elected members, local Garda Siochana representatives, Fingal County Council and Dublin City Council members attend these meetings.

Review.

The communication program will be reviewed during 2008 when the facility enters a new phase with the Parks Department.

17.0. STAFF TRAINING.

17.1. STAFF TRAINING REPORT.

Consultation with the Human Resources department was undertaken to determine training requirements of staff on an ongoing basis since 2004. Following an initial assessment of requirements under FCC's corporate safety statement a number of courses were identified as necessary in 2004. Table 17.1 lists those courses taken or to be taken by members of staff involved with activities directly associated with Dunsink and Waste Licence 127-1. (see Appendix VI)

COURSE
Safe Pass
Manual Handling
Waste Management
Slinger / Signaller
Use of Booms and Sorbent Materials
Use of Fire Extinguishers
Occupational First Aid
Health and Safety Management
Working in Confined Spaces
Safe Tractor Operation
Safe Use of Sprayers
Fire Warden
Safety in Excavations
Meeting Effectiveness Course
Geographic Information Systems

TABLE 17.1: LIST OF COURSES REQUIRED BY CORE PERSONNEL INVOLVED IN WASTE LICENCE 127-1.

A survey was undertaken to determine if staff had undertaken any of these courses by November 2004, December 2005 and December 2006. Consultation with staff on site determined, which courses were required by individual members of staff as each staff member is not required to complete all courses. The consultation phase resulted in the nomination of a health and safety representative on site. Reviews of the training

programme were undertaken in June and December 2006 (Appendix VII) and results were submitted to Human Resources.

Training had already occurred on site during 2004 and 2005, in the use of absorbent materials and booms for spillages. The training programme for 2005 addressed elements of the training programme, two members of staff have undertaken the FAS Waste Management Course. Manual handling classes were organised for all staff and two members of staff undertook the working in confined spaces course during 2005. Staff training during 2006 included FAS SAFE PASS for all staff and Managing Safely in Construction Courses for two staff members.
Staff training during 2008 is outlined in Appendix VI but was restricted to two courses for the Health and Safety Representative on site; Fire Warden Course and Location of Underground Services.

GLOSSARY

Aftercare	Any measures that are necessary to be taken in relation to the facility for the purposes of preventing environmental pollution following the cessation of the activity in question at a facility.
Annually	At approximately twelve monthly intervals.
Aquifer	A formation (e.g. body of rock, gravel or sand stratum) that is capable of storing significant quantities of water and through which groundwater moves.
Baseline monitoring	Monitoring in and around the location of a proposed facility so as to establish background environmental conditions prior to any development of the proposed facility.
Borehole	A shaft installed outside a waste area for the monitoring of and/or extraction of landfill gas/groundwater. Established by placing a casing and well screen into the boring. If installed within the waste area, it is called a well.
Bunding / Berm	A dike or mound usually of clay or other inert material used to define limits of cells or phases or roadways; or to screen the operation of a landfill from adjacent properties; reducing noise, visibility, dust and litter impacts.
Capping	The covering of a landfill, usually with low permeability material (landfill cap).
Condensate	The liquid which forms within the gas pipe work due to the condensation of water vapour from landfill gas.
Detection limit.	The concentration of the determinant for which there is a 95% probability of detection when a single analytical result is obtained, detection being defined as obtaining a result which is significantly greater (p=0.05) than zero. Also referred to as Limit of Detection.
Direct discharge	The introduction into groundwater of List I or II substances without percolation through the ground or subsoil.
Downgradient	The direction towards which groundwater or surface water flows.
Emission	Meaning assigned by the EPA Act of 1992.
Flare unit	A device used for the combustion of landfill gas thereby converting its methane content to carbon dioxide.
Gas wells	Wells installed during filling or retrofitted later within the waste area for the monitoring of and/or removal of landfill gas either actively through an extraction system or passively by venting.
Groundwater	Groundwater is that part of the subsurface water which is in the saturated zone.
Hydrogeology	The study of the interrelationships of the geology of soils and rocks with groundwater.

Indirect discharge	The introduction into groundwater of List I or II substances after percolation through the ground or subsoil.
Inert landfill	A landfill that accepts only inert waste that fulfils the criteria set out in the Agency's draft manual "Waste Acceptance".
Lagoon	A land area used to contain liquid, e.g.leachate collected from landfill.
Landfill	Waste disposal facility used for the deposit of waste on to or in to land.
Landfill gas (LFG)	All gases generated from the landfilled waste.
Leachate	Any liquid percolating through the deposited waste and emitted from or contained within a landfill as defined in Section 5(1) of the Waste Management Act.
Leachate Well	Well installed within the waste area for the monitoring and/or extraction of leachate as opposed to borehole, which is the term, used when located outside the waste deposition area.
List I/II substances	Substances referred to in the EU Directives on Dangerous Substances (76/464/EEC) and Groundwater (80/68/EC).
Lower explosive limit (LEL)	The lowest percentage concentration by volume of a mixture of flammable gas with air which will propagate a flame at 25^{o}C and atmospheric pressure.
Macroinvertebrate	Larger invertebrate animals visible to the eye. Usually defined as those that are retained by a net or sieve of mesh size 0.6mm.
Minimum reporting value	This is the lowest concentration of a substance that can be determined with a known degree of confidence. It is a matrix dependent and not necessarily equivalent to the Limit of Detection of the analytical system but is generally a multiple of that value which reflects the robustness and reproducibility of the test method as applied to the specific matrix. Also referred to as the limit of quantitation or practical reporting limit.
Noise Sensitive Location	(NSL) Any dwelling-house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
Quarterly	At approximately three monthly intervals.
Receiving water	A body of water, flowing or otherwise, such as a stream, river, lake, estuary or sea, into which water or wastewater is discharged.
Restoration	Works carried out on a landfill site to allow planned afteruse.
Substrata	River bed or bottom on or in which invertebrates live.
Taxa	Named taxonomic groups. Usually family or species level in biotic indices.

Trigger level	A parameter value specified in the licence, the achievement or exceedance of which requires certain actions to be taken by the licensee.
Upper explosive limit (LEL)	The highest percentage concentration by volume of a mixture of flammable gas with air which will propagate a flame at 25^{o}C and atmospheric pressure.
Void space	Space available to deposit waste.
Water balance	A calculation to estimate a volume of liquid generated. In the case of landfills, water balance normally refers to leachate generation volumes.

APPENDIX I

APPENDIX II

APPENDIX III

APPENDIX IV

APPENDIX V

APPENDIX VI

APPENDIX I

Groundwater February 2008

Parameter	Unit	IGV's	BH3	BH3 Control Values	BH3 Trigger Values	BH4	BH4 Control Values	BH4 Trigger Values	BH16	BH16 Control Values	BH16 Trigger Values	BH16R	BH18 Control Values	BH18 Trigger Values	BH27	BH27 Control Values	BH27 Trigger Values	BH31	BH31 Control Values	BH31 Trigger Values	BH32	BH32 Control Values	BH32 Trigger Values	BH33	BH33 Control Values	BH33 Trigger Values	BH34	BH34 Control Values	BH34 Trigger Values
pH	pH Units	6.5-9.5	7.57	8	8.38	7.15	8.2	8.59	7.33	8.24	8.64	7.89	8.72	8.57	7.2	8.18	8.57	7.75	8.39	8.79	7.55	8.15	8.6	7.46	8.58	8.99	7.48	8.61	9.02
Conductivity	mS/cm	2,500	0.833	1.231	1.289	0.813	1.352	1.414	0.662	0.838	0.878	0.277	2.708	2.708	1.012	1.282	1.343	0.671	0.791	0.828	0.671	1.227	1.286	0.628	0.852	0.892	0.627	0.998	1.045
Temperature	°C	-	9.6	-	-	9.7	-	-	10.2	-	-	-	-	-	8	-	-	8.4	-	-	9.5	-	-	8.5	-	-	8.1	-	-
Ammoniacal Nitrogen	mg/l	0.3	<0.2	0.42	0.44	<0.2	0.31	0.33	<0.2	0.21	0.22	<0.2	1.16	1.21	<0.2	1.69	1.96	<0.2	1.575	1.65	<0.2	0.735	0.77	<0.2	0.21	0.22	<0.2	0.21	0.22
Total Organic Carbon	mg/l	-	<2	6.3	6.6	<2	6.3	6.6	<2	6.3	6.3	4	9.45	9.9	<2	5.25	5.5	<2	8.4	8.8	<2	5.25	6	<2	5.25	5.5	<2	6.3	6.6

IGV = Interim Guideline Value

Shading = Value has exceeded IGV's

Shading = Value has exceeded the Control Value

Shading = Value has exceeded Trigger Value

Sampled February 21, 2008

Analysis conducted by Alcontrol Geochem Laboratories

Groundwater May 2008

Parameter	Unit	IGV's	BH3	BH3 Control Values	BH3 Trigger Values	BH4	BH4 Control Values	BH4 Trigger Values	BH16	BH16 Control Values	BH16 Trigger Values	BH16R	BH18 Control Values	BH18 Trigger Values	BH27	BH27 Control Values	BH27 Trigger Values	BH31	BH31 Control Values	BH31 Trigger Values	BH32	BH32 Control Values	BH32 Trigger Values	BH33	BH33 Control Values	BH33 Trigger Values	BH34	BH34 Control Values	BH34 Trigger Values
pH	pH Units	6.5-9.5	7.26	8	8.38	7.4	8.2	8.59	7.32	8.24	8.64	7.86	8.72	8.97	7.19	8.18	8.57	7.21	8.39	8.78	7.21	8.16	8.6	7.31	8.58	8.96	7.07	8.61	9.02
Conductivity	mS/cm	2 500	0.993	1.231	1.285	0.928	1.352	1.414	0.635	0.838	0.878	0.419	2 708	2.708	1.021	1.282	1.343	0.655	0.791	0.828	0.465	1.227	1.288	0.626	0.852	0.892	1.042	0.999	1.045
Temperature	°C	-	13.6	-	-	13.0	-	-	12.8	-	-	13.7	-	-	13.4	-	-	12.8	-	-	12.8	-	-	12.4	-	-	13.2	-	-
Ammoniacal Nitrogen	mg/l	0.9	<0.02	0.42	0.44	<0.02	0.31	0.33	0.19	0.21	0.22	0.03	1.16	1.21	0.05	1.89	1.98	0.3	1.575	1.65	0.11	0.735	0.77	<0.02	0.21	0.22	0.07	0.21	0.22
Total Organic Carbon	mg/l	-	<2	6.3	6.6	<2	6.3	6.6	<2	6.3	6.3	<2	9.45	9.9	<2	5.25	5.5	4	8.4	8.8	<2	5.25	6	<2	5.25	6.5	3	6.3	6.6

IGV = Interim Guideline Value

Shading = Value has exceeded IGV's

Shading = Value has exceeded the Control Value

Sampled May 21, 2008

Analysis conducted by Alcontrol Geochem Laboratories

Dunsink Q3 2006 GW

Groundwater Results

PARAMETER	UNIT	I.G.V.	BH3	BH3 Control Values	BH3 Trigger Values	BH4	BH4 Control Values	BH4 Trigger Values	BH16	BH16 Control Values	BH16 Trigger Values	BH18	Bh16 Control Values	BH18 Trigger Values	BH27	BH27 Control Value	BH27 Trigger Values	BH31	BH31 Control Values	BH31 Trigger Values	BH32	BH32 Control Values	BH32 Trigger Values	BH33	BH33 Control Values	BH33 Trigger Values	BH34	BH34 Control Values	BH34 Trigger Values
pH Value	units	6.5 - 9.5	7.3	8	8.38	7.97	8.2	8.59	7.68	8.24	8.64	7.53	8.72	8.57	7.31	8.18	8.57	7.47	8.39	8.79	7.9	8.18	8.6	7.57	8.58	8.99	7.27	8.61	9.02
Conductivity	mS/cm	1	0.203	1.231	1.289	0.576	1.352	1.414	0.625	0.838	0.878	0.267	2.708	2.708	0.617	1.282	1.343	0.489	0.791	0.828	0.593	1.227	1.286	0.525	0.852	0.892	0.805	0.996	1.045
Ammonical Nitrogen as NH4-N	N mg/l	0.15	0.2	0.42	0.44	<0.01	0.315	0.33	0.1	0.021	0.22	0.5	1.16	1.21	0.09	1.89	1.98	<0.01	1.575	1.65	<0.01	0.735	0.77	0.2	0.21	0.22	0.2	0.21	0.22
Dissolved Oxygen (O2)	O2 mg/l	N-A-C	5	-	-	6	-	-	6	-	-	4	-	-	6	-	-	4	-	-	5	-	-	6	-	-	6	-	-
Chloride (Cl)	Cl mg/l	30	34	76.65	80.3	44	91.35	95.7	23	40.95	42.9	11	386.5	407	46	75.6	79.2	15	32.55	34.1	25	26.25	27.5	14	28.35	29.7	10	32.55	34.1
Potassium (K)	K mg/l	5	4.7	5.25	5.5	5	7.77	8.14	2.3	3.78	3.96	2.7	3.99	4.18	3.2	3.36	3.52	2.9	4.41	4.62	3.5	6.72	7.04	3.5	5.25	5.5	2.3	3.99	4.2
Sodium (Na)	Na mg/l	150	32	51.24	53.68	30	37.8	39.6	20	21	22	8.4	103.31	108.23	37	47.25	49.5	11	25.2	26.4	23	21.97	22.99	14	82.95	86.9	59	64.56	67.7
Fluoride (F)	F mg/l	1	<0.01	0.315	0.33	<0.01	0.315	0.33	0.99	0.74	0.77	0.6	2.21	2.31	0.9	0.74	0.77	0.55	0.945	0.99	0.01	0.315	0.33	0.93	0.945	0.99	0.52	0.92	0.9
Total Organic Carbon	C mg/l	N-A-C	4	6.3	6.6	4	6.3	6.6	<3	6.3	6.6	10	9.45	9.9	<3	5.25	5.5	4	8.4	8.8	4	5.25	6	<3	5.25	5.5	5	6.3	6.6
Total Oxidised Nitrogen (water)	N mg/l	N-A-C	5.9	-	-	5	-	-	<0.3	-	-	0.7	-	-	0.7	-	-	2	-	-	<0.3	-	-	0.6	-	-	0.4	-	-
Calcium (Ca)	Ca mg/l	200	140	-	-	130	-	-	76	-	-	81	-	-	140	-	-	85	-	-	86	-	-	70	-	-	150	-	-
Cadmium (Cd)	Cd mg/l	0.005	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-	<0.00022	-	-
Chromium (Cr)	Cr mg/l	0.03	0.004	-	-	0.004	-	-	0.002	-	-	0.002	-	-	0.002	-	-	0.001	-	-	0.003	-	-	<0.001	-	-	0.002	-	-
Copper (Cu)	Cu mg/l	0.03	<0.0016	-	-	<0.0016	-	-	<0.0016	-	-	0.008	-	-	<0.0016	-	-	<0.0016	-	-	<0.0016	-	-	<0.0016	-	-	<0.0016	-	-
Total Cyanide (Cn)*	Cn mg/l	0.01	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
Iron (Fe)	Fe mg/l	0.2	0.041	0.018	0.019	0.028	0.019	0.02	<0.002	0.03	0.028	0.19	0.0158	0.0166	<0.002	0.03	0.032	<0.002	0.0441	0.0462	<0.002	0.01365	0.0143	<0.002	0.0147	0.0154	<0.002	0.0304	0.0319
Lead (Pb)	Pb mg/l	0.01	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-	<0.0004	-	-
Magnesium (Mg)	Mg mg/l	50	9.5	22.73	23.82	7.7	19.08	19.99	24	29.23	30.62	5.9	93.45	97.9	33	51.07	53.5	6.5	18.76	19.66	18	25.074	26.268	17	21.95	23.001	13	23.247	24.354
Manganese (Mn)	Mn mg/l	0.05	0.002	0.151	0.158	<0.001	0.0294	0.0308	<0.001	0.169	0.177	0.042	0.0515	0.0539	<0.001	0.077	0.08	0.036	0.9135	0.957	0.005	0.0672	0.0704	0.18	0.0483	0.0506	0.16	0.391	0.4103
Nickel (Ni)	Ni mg/l	0.02	0.012	0.0116	0.0121	0.004	0.042	0.044	0.0019	0.0021	0.0022	0.012	0.01	0.02	0.0057	0.063	0.066	0.003	0.0105	0.011	0.0021	0.0105	0.011	0.0027	0.0021	0.022	0.0057	0.00525	0.0055
Mercury (Hg)	Hg mg/l	0.001	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-	<0.00001	-	-
Residue on Evaporation	mg/l	-	588	-	-	730	-	-	395	-	-	368	-	-	590	-	-	765	-	-	484	-	-	285	-	-	621	-	-
Sulphate (soluble) (SO4)	SO4 mg/l	200	79	-	-	110	-	-	46	-	-	83	-	-	92	-	-	44	-	-	41	-	-	25	-	-	120	-	-
Zinc (Zn)	Zn mg/l	0.1	<0.005	-	-	0.009	-	-	<0.005	-	-	<0.005	-	-	<0.005	-	-	<0.005	-	-	0.006	-	-	<0.005	-	-	<0.005	-	-
Boron (B)	B mg/l	1	<0.02	-	-	<0.02	-	-	<0.02	-	-	<0.02	-	-	<0.02	-	-	<0.02	-	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
Alkalinity (as CaCO3)	CaCO3 mg/l	N-A-C	320	-	-	300	-	-	284	-	-	204	-	-	360	-	-	288	-	-	286	-	-	284	-	-	368	-	-
Ortho Phosphate	P04 mg/l	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	0.65	-	-	0.34	-	-

I.G.V.=Interim Guideline Values from Table 3.1 of EPA document "Towards Setting Guideline Values for the protection of Groundwater in Ireland"

Shading = Value has exceeded IGV

Shading = Value has exceeded the trigger control value

* Laboratory level of Detection is above IGV recommended level

Sampling was undertaken on the 2nd September 2006.

N-A-C= No abnormal change

Analysis conducted by Jones Environmental , Deeside, UK

CE5023

OCP/OPP Ground Water
Dunsink

Job No: CE05977
3rd Quarter 2008

Compound	Units	Method Detection Limit	BH3	BH4	BH31	BH32	BH33	BH34
Dichlorvos**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-BHC**	ug/l	<0.01ug/l	<0.021	<0.01	<0.01	<0.01	<0.01	<0.01
beta-BHC**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-BHC (Lindane)**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl parathion**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Malathion**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan 1**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan 2**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDD**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethion**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDT**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulfan sulphate**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-Methoxychlor**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl**	ug/l	<0.01ug/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Volatile Organic Compounds
Dunsink

White Young Green Ireland

Job Number: CE05977
3rd Quarter 2008

Units - µg/kg

Compound	BH3	BH4	BH31	BH32	BH33	BH34
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2
Methyl Tertiary Butyl Ether#	<2	<2	<2	<2	<2	<2
Chloromethane #	<3	<3	<3	<3	<3	<3
Vinyl Chloride	<2	<2	<2	<2	<2	<2
Bromomethane #	<1	<1	<1	<1	<1	<1
Chloroethane #	<3	<3	<3	<3	<3	<3
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3
1,1-Dichloroethene #	<3	<3	<3	<3	<3	<3
Carbon Disulphide #	<3	<3	<3	<3	<3	<3
Dichloromethane #	<3	<3	<3	<3	<3	<3
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1
Bromochloromethane #	<2	<2	<2	<2	<2	<2
Chloroform #	<3	<3	<3	<3	<3	<3
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2
Benzene #	<3	<3	<3	<3	<3	<3
Trichloroethene #	<3	<3	<3	<3	<3	<3
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2
Dibromomethane #	<3	<3	<3	<3	<3	<3
Bromodichloromethane #	<3	<3	<3	<3	<3	<3
cis-1-3-Dichloropropene #	<2	<2	<2	<2	<2	<2
Toluene #	<3	<3	<3	<3	<3	<3
trans-1-3-Dichloropropene #	<2	<2	<2	<2	<2	<2
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2
Tetrachloroethene #	<3	<3	<3	<3	<3	<3
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2
Dibromochloromethane #	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2
Chlorobenzene #	<2	<2	<2	<2	<2	<2
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2
Ethylbenzene #	<3	<3	<3	<3	<3	<3
p/m-Xylene #	<5	<5	<5	<5	<5	<5
o-Xylene #	<3	<3	<3	<3	<3	<3
Styrene #	<2	<2	<2	<2	<2	<2
Bromoform #	<2	<2	<2	<2	<2	<2
Isopropylbenzene	<3	<3	<3	<3	<3	<3
1,1,2,2-Tetrachloroethane #	<4	<4	<4	<4	<4	<4
Bromobenzene #	<2	<2	<2	<2	<2	<2
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3
Propylbenzene #	<3	<3	<3	<3	<3	<3
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3
n-Butylbenzene #	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2
1,2,4-Trichlorobenzene#	<3	<3	<3	<3	<3	<3
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3
Naphthalene	<2	<2	<2	<2	<2	<2
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3

N.B Water Blank Corrected

Q4 - Dunsink Groundwater November 2008

Parameter	Unit	IGV's	BH3	BH3 Control Values	BH3 Trigger Values	BH4	BH4 Control Values	BH4 Trigger Values	BH16	BH16 Control Values	BH16 Trigger Values	BH18R	BH18 Control Values	BH18 Trigger Values	BH27	BH27 Control Values	BH27 Trigger Values
pH	pH Units	6.5-9.5	7.27	8	8.38	7.29	8.2	8.59	7.35	8.24	8.64	7.54	8.72	8.57	7.45	8.18	8.57
Conductivity	mS/cm	3	0.820	1.231	1.289	0.770	1.352	1.414	0.630	0.838	0.878	1.020	2.708	2.708	0.950	1.282	1.343
Temperature	°C	-	10.0	-	-	12.7	-	-	10	-	-	10.6	-	-	10.6	-	-
Ammoniacal Nitrogen	mg/l	0.3	<0.2	0.42	0.44	<0.2	0.31	0.33	<0.2	0.21	0.22	0.5	1.16	1.21	<0.2	1.89	1.98
Total Organic Carbon	mg/l	-	<3	6.3	6.6	<3	6.3	6.6	<3	6.3	6.3	5	9.45	9.9	<3	5.25	5.5

Parameter	Unit	IGV's	BH31	BH31 Control Values	BH31 Trigger Values	BH32	BH32 Control Values	BH32 Trigger Values	BH33	BH33 Control Values	BH33 Trigger Values	BH34	BH34 Control Values	BH34 Trigger Values
pH	pH Units	6.5-9.5	7.26	8.39	8.79	7.47	8.18	8.6	7.69	8.58	8.99	7.32	8.61	9.02
Conductivity	mS/cm	2,500	0.580	0.791	0.828	0.640	1.227	1.286	0.550	0.852	0.892	0.910	0.998	1.045
Temperature	°C	-	10.7	-	-	10.8	-	-	10.5	-	-	10.2	-	-
Ammoniacal Nitrogen	mg/l	0.3	<0.2	1.575	1.65	<0.2	0.735	0.77	<0.2	0.21	0.22	<0.2	0.21	0.22
Total Organic Carbon	mg/l	-	5	8.4	8.8	<3	5.25	6	4	5.25	5.5	5	6.3	6.6

IGV = Interim Guideline Value

Shading = Value has exceeded IGV's

Shading = Value has exceeded the Control Value

Shading = Value has exceeded Trigger Value

Sampled on 12th November 2008

Analysis conducted by Jones Environmental Forensics Ltd.

APPENDIX II

Surface Water February 2008

Parameter	Unit	Salmonid Regs	SW2	SW9	SW10	SW11	SW17	SW18
pH	pH Units	≥6≤9	7.68	7.74	7.73	7.82	7.8	7.58
Conductivity	mS/cm	-	0.915	0.582	1.021	0.992	0.992	1.021
Temperature	°C	<10°C*	8.2	7.9	8.8	8.1	9.7	8.4
Dissolved Oxygen	mg/l	50%>9	6.1	5.0	4.9	5.1	5.7	6.1
Ammoniacal Nitrogen	mg/l	<1	0.11	0.07	0.14	0.05	0.08	0.8
BOD	mg/l	5	<2	2	2	<2	<2	2
Total Suspended Solids	mg/l	25	<10	<10	<10	<10	13	20

Salmonid Regs= European Communities (Quality of Salmonid Waters) Regulation , SI 293 of 1988.

Shading = Value has exceeded Salmonid Regulations

Standard for Ionised Ammonia = <1,Ionised Ammonia= total ammonium x 1.28-Results stated should be converted before being compared to the standard.

*=Second Schedule of Salmonid Regulations states " temperature must not exceed 10 degrees celsius during the period from 1 November to 30 April where species which need cold water for reproduction are present

Sampled February 21, 2008

Analysis conducted by Alcontrol Geochem Laboratories

Surface Water May 2008

Parameter	Unit	Salmonid Regs	SW2	SW9	SW10	SW11	SW17	SW18
pH	pH Units	≥6≤9	7.73	7.54	7.57	7.53	7.54	7.67
Conductivity	mS/cm	-	0.892	0.664	0.888	0.885	0.889	0.752
Temperature	°C	<10°C*	14.1	13.8	14.2	13.7	13.8	12.8
Dissolved Oxygen	mg/l	50%>9	7.3	6.4	6.5	5.4	6.5	7.5
Ammoniacal Nitrogen	mg/l	<1	0.05	0.05	0.1	0.19	0.06	0.05
BOD	mg/l	5	<2	2	<2	2	<2	<2
Total Suspended Solids	mg/l	25	<10	12	11	20	12	<10

Salmonid Regs= European Communities (Quality of Salmonid Waters) Regulation , SI 293 of 1988.

Shading = Value has exceeded Salmonid Regulations
# Standard for Ionised Ammonia = <1,Ionised Ammonia= total ammonium x 1.28-Results stated should be converted before being compared to the standard.
*=Second Schedule of Salmonid Regulations states " temperature must not exceed 10 degrees celsius during the period from 1 November to 30 April where species which need cold water for reproduction are present

Sampled May 21, 2008
Analysis conducted by Alcontrol Geochem Laboratories

Dunsink Q3 2008 SW

Surface Water Results

PARAMETER	UNIT	EQS	Salmonid	SW2	SW9	SW10	SW11	SW17	SW18
pH Value	units	6-9	6-9	8.31	8.15	7.18	8.15	8.17	8.26
Conductivity	mS/cm	1	-	732	541	847	710	608	232
Ammonical Nitrogen as NH4-N	N mg/l	0.02 NH3	1	<0.01	<0.01	<0.01	<0.01	0.2	0.3
Dissolved Oxygen (O2)	O2 mg/l	N-A-C	50% >9	10	10	8	10	10	9
Chloride (Cl)	Cl mg/l	250	-	22	25	23	22	24	25
Potassium (K)	K mg/l	-	-	5.1	3.6	6.9	2	4.2	2.3
Sodium (Na)	Na mg/l	-	-	29	15	35	32	19	8.4
COD	02 mg/l	-	-	17	8	19	19	18	31
BOD	02 mg/l	-	5	1	1	2	<1	<1	2
Total Oxidised Nitrogen (water)	N mg/l	N-A-C	-	1.4	1.5	1.2	<0.3	2.4	0.7
Total Suspended Solids	mg/l	-	25	23	12	20	54	53	34
Calcium (Ca)	Ca mg/l	-	-	140	89	180	140	110	36
Cadmium (Cd)	Cd mg/l	0.005	-	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022
Chromium (Cr)	Cr mg/l	0.03	-	0.002	0.002	0.005	0.004	0.002	0.003
Copper (Cu)	Cu mg/l	0.03	-	0.0021	<0.0016	<0.0016	<0.0016	0.0034	0.0046
Iron (Fe)	Fe mg/l	1	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Lead (Pb)	Pb mg/l	0.01	-	<0.0004	<0.0004	<0.0004	<0.0004	0.0009	<0.0004
Magnesium (Mg)	Mg mg/l	-	-	8.8	6.2	12	9.5	6.6	2.7
Manganese (Mn)	Mn mg/l	0.3	-	0.12	0.024	1	<0.001	<0.001	0.003
Nickel (Ni)	Ni mg/l	0.05	-	0.0048	0.003	0.01	0.0051	0.0029	0.0031
Mercury (Hg)	Hg mg/l	0.001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sulphate (soluble) (SO4)	SO4 mg/l	200	-	130	50	66	88	120	37
Zinc (Zn)	Zn mg/l	0.1	-	<0.05	<0.05	0.006	<0.05	0.006	0.016
Alkalinity (as CaCO3)	CaCO3 mg/l	N-A-C	-	240	272	248	348	220	80
Boron (B)	B mg/l	2	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ortho - phosphate	PO4 mg/l	-	-	<0.01	<0.01	0.09	<0.01	0.01	0.36

EQS = Environmental Quality Standard for Surface Waters

Salmonid Regs= European Communities (Quality of Salmonid Waters) Regulation, 1988

Shading = Value has exceeded Salmonid Water Quality Standard

Sampling was undertaken on September 2nd 2008

N-A-C= No abnormal change

White Young Green Environmental

CE05977

Analysis conducted byJones Environmental Forensis Ltd. Deeside, UK

Q4 - Dunsink Surface Water Additional Monitoring

Parameter	Unit	Salmonid Regs	SW10 UPSTRM	SW10	SW10 DWSTRM
pH	pH Units	≥6≤9	7.96	7.81	7.98
Conductivity	mS/cm	-	0.939	0.872	0.970
Chloride	Cl mg/l	-	42.03	41.43	42.42
Potassium	K mg/l	-	6.18	6.14	6.22
Sodium	Na mg/l	-	33.08	32.93	33.20
BOD	mg/l	5	3	1	1
COD	mg/l	-	31	15	14
TON	mg/l	-	23.99	23.89	24.02
Dissolved Oxygen	mg/l	50%>9	5.0	7.0	6.0
Ammoniacal Nitrogen	N mg/l	<1	1.3	1.8	1.3
Total Suspended Solids	mg/l	25	23	10	<10

Salmonid Regs= European Communities (Quality of Salmonid Waters) Regulation , SI 293 of 1988.

Shading = Value has exceeded Salmonid Regulations

Standard for Ionised Ammonia = <1,Ionised Ammonia= total ammonium x 1.28-Results stated should be converted before being compared to the standard.

*=Second Schedule of Salmonid Regulations states " temperature must not exceed 10 degrees celsius during the period from 1 November to 30 April where species which need cold water for reproduction are present

Sampled on 11th December 2008

Analysis conducted by Jones Environmental Forensics Ltd.

Q4 - Dunsink Surface Water November 2008

Parameter	Unit	Salmonid Regs	SW2	SW9	SW10	SW11	SW17	SW18
pH	pH Units	≥6≤9	7.77	7.45	6.88	7.76	7.51	7.4
Conductivity	mS/cm	-	0.750	0.620	1.020	0.830	0.770	0.830
Temperature	°C	<10°C*	6.9	8	10.3	6.8	7.2	9.8
Dissolved Oxygen	mg/l	50%>9	10.0	8.8	3.4	8.4	9.7	9.2
Ammoniacal Nitrogen#	mg/l	<1	<0.2	0.2	1.2	<0.2	0.7	0.9
BOD	mg/l	5	<1	<1	21	<1	<1	<1
Total Suspended Solids	mg/l	25	53	<10	<10	<10	26	<10

Salmonid Regs= European Communities (Quality of Salmonid Waters) Regulation , SI 293 of 1988.

Shading = Value has exceeded Salmonid Regulations

Standard for Ionised Ammonia = <1,Ionised Ammonia= total ammonium x 1.28-Results stated should be converted before being compared to the standard.

*=Second Schedule of Salmonid Regulations states " temperature must not exceed 10 degrees celsius during the period from 1 November to 30 April where species which need cold water for reproduction are present

Sampled on 12th November 2008

Analysis conducted by Jones Environmental Forensics Ltd.

APPENDIX III

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 09/01/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Raining	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	1.9	18.2	0.0	995	4.0	0.0
G36		0.0	0.0	20.1	0.0	995	4.0	0.0
G37		0.0	3.1	16.1	0.0	995	4.0	0.0
G38		0.0	2.2	16.4	0.0	995	4.0	0.0
G39		0.0	0.0	20.0	0.0	995	4.0	0.0
G40		0.0	7.4	1.2	0.0	995	4.0	0.0
Leachate Sump		0.0	2.4	18.7	0.0	995	4.0	0.0
Sewer		0.0	1.7	19.1	0.0	995	4.0	0.0
IPS INLET		22.7	45.2	1.0	0.0	995	4.0	0.0

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 16/01/2008	Time: AM
Instrument Used :	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration :	
GFM 430 Landfill Gas Analys		Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Overcast/Dry	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.3	16.9	0.0	984	5.0	0.0
G36		0.0	0.0	21.0	0.0	984	5.0	0.0
G37		0.0	2.8	17.3	0.0	984	5.0	0.0
G38		0.0	1.9	18.1	0.0	984	5.0	0.0
G39		0.0	0.0	20.1	0.0	984	5.0	0.0
G40		0.0	5.9	1.0	0.0	984	5.0	0.0
Leachate Sump		0.0	1.7	16.2	0.0	984	5.0	0.0
Sewer		0.0	2.7	14.1	0.0	984	5.0	0.0
IPS INLET		22.7	46.1	0.4	0.0	984	5.0	0.0

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 23/01/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analys	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Dry/overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	19.9	0.0	1008	4.0	-
G6		0.0	1.7	18.1	0.0	1008	4.0	-
G7		0.0	0.0	19.9	0.0	1008	4.0	-
G8		0.0	0.0	19.8	0.0	1008	4.0	-
G9		0.0	2.4	18.1	0.0	1008	4.0	-
G10		0.0	3.6	16.8	0.0	1008	4.0	-
G12		0.0	0.1	19.4	0.0	1008	4.0	-
G13		0.0	1.2	18.3	0.0	1008	4.0	-
G18		0.0	0.3	19.1	0.0	1008	4.0	-
G21		0.0	0.0	20.0	0.0	1008	4.0	-
G23		0.0	1.2	18.7	0.0	1008	4.0	-
G35		0.0	2.1	17.9	0.0	1008	4.0	-
G36		0.0	0.0	19.8	0.0	1008	4.0	-
G37		0.0	2.8	19.0	0.0	1008	4.0	-
G38		0.0	1.6	17.1	0.0	1008	4.0	-
G39		0.0	0.0	20.0	0.0	1008	4.0	-
G40		0.0	4.7	0.6	0.0	1008	4.0	-
G41		0.0	0.0	19.9	0.0	1008	4.0	-
G42		0.0	0.4	17.8	0.0	1008	4.0	-
G43		0.0	1.8	17.8	0.0	1008	4.0	-
G44		0.0	7.8	11.7	0.0	1008	4.0	-
Leachate Sump		0.0	0.8	19.6	0.0	1008	4.0	-
Sewer		0.0	1.9	18.1	0.0	1008	4.0	-
IPS INLET		18.1	41.7	1.0	0.0	1008	4.0	>>>>>

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 29/01/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Raining	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	1.9	19.0	0.0	1014	8.0	0.0
G36		0.0	0.0	19.4	0.0	1014	8.0	0.0
G37		0.0	2.8	17.8	0.0	1014	8.0	0.0
G38		0.0	2.7	18.1	0.0	1014	8.0	0.0
G39		0.0	0.0	19.9	0.0	1014	8.0	0.0
G40		0.0	6.1	1.1	0.0	1014	8.0	0.0
Leachate Sump		0.0	1.7	19.4	0.0	1014	8.0	0.0
Sewer		0.0	2.8	16.2	0.0	1014	8.0	0.0
IPS INLET		21.3	42.2	1.4	0.0	1014	8.0	0.0

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 06/02/2008	Time: AM
Instrument Used :	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration :	Jun-08
Monitoring Personnel :	(WYG) MK	Weather :	Dry
Barometric Pressure :	See Individual Readings		

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.4	17.0	0.0	1018	7.0	0.0
G36		0.0	0.0	20.2	0.0	1018	7.0	0.0
G37		0.0	2.9	18.0	0.0	1017	7.0	0.0
G38		0.0	1.8	18.1	0.0	1018	7.0	0.0
G39		0.0	0.0	20.1	0.0	1018	7.0	0.0
G40		0.0	7.5	1.2	0.0	1017	7.0	0.0
Leachate Sump		0.0	3.8	17.7	0.0	1017	7.0	0.0
Sewer		0.0	1.2	18.8	0.0	1018	7.0	0.0
IPS INLET	Monitoring Point non operational - commissioning of enclosed flare in progress							

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 14/02/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Simon Doyle		Fine Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	4.1	18.7	0.0	1011	8.0	0.0
G36		0.0	8.3	12.5	0.0	1011	8.0	0.0
G37		0.0	0.9	18.4	0.0	1011	8.0	0.0
G38		0.0	1.2	18.4	0.0	1011	8.0	0.0
G39		0.0	0.4	19.0	0.0	1011	8.0	0.0
G40		0.0	7.0	1.2	0.0	1011	8.0	0.0
Leachate Sump		0.0	1.8	18.3	0.0	1011	8.0	0.0
Sewer		0.0	1.4	18.5	0.0	1010	8.0	0.0
IPS INLET*		33.9	22.1	2.3	0.0	1011.0	8.0	0.0

* Note monitoring of inlet gases undertaken at new sampling point off enclosed flare

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 21/02/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Fine Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.7	16.8	0.0	1018	5.0	0.0
G36		0.0	0.0	21.0	0.0	1018	5.0	0.0
G37		0.0	3.3	14.1	0.0	1018	5.0	0.0
G38		0.0	1.2	17.1	0.0	1018	5.0	0.0
G39		0.0	0.0	20.4	0.0	1018	5.0	0.0
G40		0.0	6.1	3.2	0.0	1017	5.0	0.0
Leachate Sump		0.0	4.1	19.0	0.0	1018	5.0	0.0
Sewer		0.0	2.2	17.1	0.0	1018	5.0	0.0
IPS INLET*		34.0	22.0	2.0	0.0	1018	5.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 27/02/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		sunny/dry	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	20.3	0.0	1000.0	8.0	0.0
G6		0.0	2.1	18.7	0.0	1000	8.0	0.0
G7		0.0	0.0	20.1	0.0	999	8.0	0.0
G8		0.0	0.4	20.3	0.0	1000	8.0	0.0
G9		0.0	2.5	17.8	0.0	999	8.0	0.0
G10		0.0	1.7	19.1	0.0	1000	8.0	0.0
G12		0.0	2.3	18.4	0.0	1000	8.0	0.0
G13		0.0	0.3	20.6	0.0	1000	8.0	0.0
G18		0.0	0.1	20.3	0.0	1000	8.0	0.0
G21		0.0	0.0	20.4	0.0	1000	8.0	0.0
G23		0.0	1.2	19.1	0.0	1000	8.0	0.0
G35		0.0	2.4	18.8	0.0	1000	8.0	0.0
G36		0.0	0.0	20.5	0.0	1000	8.0	0.0
G37		0.0	3.1	14.8	0.0	1000	8.0	0.0
G38		0.0	2.2	17.8	0.0	1000	8.0	0.0
G39		0.0	0.0	20.2	0.0	1000	8.0	0.0
G40		0.0	8.2	1.5	0.0	1000	8.0	0.0
G41		0.0	1.6	19.9	0.0	1000	8.0	0.0
G42		0.0	0.0	20.3	0.0	1000	8.0	0.0
G43		0.0	12.1	6.1	0.0	1000	8.0	0.0
G44		0.0	9.3	8.1	0.0	1000	8.0	0.0
Leachate Sump		0.0	4.1	18.8	0.0	1000	8.0	0.0
Sewer		0.0	2.1	19.1	0.0	1000	8.0	0.0
IPS INLET		24.0	45.1	1.3	0.0	1000	8.0	0.0

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 06/03/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Overcast/Dry	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.1	18.2	0.0	1001	6.0	0.0
G36		0.0	0.0	20.2	0.0	1001	6.0	0.0
G37		0.0	4.1	17.1	0.0	1001	6.0	0.0
G38		0.0	2.3	16.2	0.0	1001	6.0	0.0
G39		0.0	0.0	19.8	0.0	1001	6.0	0.0
G40		0.0	7.2	7.3	0.0	1001	6.0	0.0
Leachate Sump		0.0	4.2	19.9	0.0	1001	6.0	0.0
Sewer		0.0	2.0	18.1	0.0	1001	6.0	0.0
IPS INLET		35.0	21.5	1.5	0.0	1001	6.0	0.0

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 12/03/2008	Time: AM
Instrument Used :	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration :	Jun-08
Monitoring Personnel :	(WYG) MK	Weather :	Windy/showers
Barometric Pressure :	See Individual Readings		

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.7	16.2	0.0	991	5.0	0.0
G36		0.0	0.0	20.1	0.0	991	5.0	0.0
G37		0.0	2.9	17.8	0.0	991	5.0	0.0
G38		0.0	1.6	17.3	0.0	991	5.0	0.0
G39		0.0	0.0	20.2	0.0	991	5.0	0.0
G40		0.0	8.5	2.2	0.0	991	5.0	0.0
Leachate Sump		0.0	3.8	17.8	0.0	991	5.0	0.0
Sewer		0.0	2.2	17.4	0.0	991	5.0	0.0
IPS INLET		24.5	44.6	1.4	0.0	991	5.0	0.0

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 19/03/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Dry/overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.6	17.8	0.0	1000	7.0	0.0
G36		0.0	0.0	21.0	0.0	1000	7.0	0.0
G37		0.0	2.3	15.1	0.0	1000	7.0	0.0
G38		0.0	2.1	17.9	0.0	1000	7.0	0.0
G39		0.0	0.0	21.2	0.0	1000	7.0	0.0
G40		0.0	6.1	1.5	0.0	1000	7.0	0.0
Leachate Sump		0.0	4.1	17.3	0.0	1000	7.0	0.0
Sewer		0.0	2.1	18.3	0.0	1000	7.0	0.0
IPS INLET		33.5	23.2	1.8	0.0	1000	7.0	0.0

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name : Dunsink Landfill	Site Address : Dunsink Lane, Dunsink Co Dublin
Operator : Fingal County Council	National Grid Reference :
Site Status : Operative	Date : 26/03/2008 Time: AM
Instrument Used : GFM 430 Landfill Gas Analys	Normal Analytical Range : 0-100% CH_4, CO_2. Date Next Calibration : Jun-08
Monitoring Personnel : (WYG) MK	Weather : sunny/dry Barometric Pressure : See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	20.3	0.0	1001	7.0	0.0
G6		0.0	1.9	18.6	0.0	1001	7.0	0.0
G7		0.0	0.0	20.2	0.0	1001	7.0	0.0
G8		0.0	0.0	20.4	0.0	1001	7.0	0.0
G9		0.0	2.7	18.4	0.0	1001	7.0	0.0
G10		0.0	2.1	18.8	0.0	1001	7.0	0.0
G12		0.0	2.5	19.1	0.0	1001	7.0	0.0
G13		0.0	0.6	20.0	0.0	1001	7.0	0.0
G18		0.0	0.9	19.7	0.0	1001	7.0	0.0
G21		0.0	0.0	20.2	0.0	1001	7.0	0.0
G23		0.0	1.1	19.8	0.0	1001	7.0	0.0
G35		0.0	2.6	17.3	0.0	1001	7.0	0.0
G36		0.0	0.0	20.1	0.0	1001	7.0	0.0
G37		0.0	2.9	14.7	0.0	1001	7.0	0.0
G38		0.0	2.0	17.8	0.0	1001	7.0	0.0
G39		0.0	0.0	20.1	0.0	1001	7.0	0.0
G40		0.0	7.2	1.4	0.0	1001	7.0	0.0
G41		0.0	1.3	19.1	0.0	1001	7.0	0.0
G42		0.0	0.0	20.1	0.0	1001	7.0	0.0
G43		0.0	11.2	8.1	0.0	1001	7.0	0.0
G44		0.0	14.8	5.3	0.0	1001	7.0	0.0
Leachate Sump		0.0	3.1	18.7	0.0	1001	7.0	0.0
Sewer		0.0	2.5	17.4	0.0	1001	7.0	0.0
IPS INLET	Inaccessable							

LANDFILL GAS MONITORING FORM **(Baseline [ ] Ambient [x])**

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin		
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operative	Date :	02/04/2008	Time:	AM
Instrument Used :	Normal Analytical	Date Next Calibration :			
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08			
Monitoring Personnel :		Weather :		Barometric Pressure :	
(WYG) Matthew Keane		Fine Overcast		See Individual Readings	

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.9	17.1	0.0	990	6.0	0.0
G36		0.0	0.0	21.3	0.0	990	6.0	0.0
G37		0.0	2.5	17.8	0.0	990	6.0	0.0
G38		0.0	2.4	17.5	0.0	990	6.0	0.0
G39		0.0	0.0	21.4	0.0	990	6.0	0.0
G40		0.0	7.8	1.5	0.0	990	6.0	0.0
Leachate Sump		0.0	2.8	17.4	0.0	990	6.0	0.0
Sewer		0.0	2.4	17.2	0.0	990	6.0	0.0
IPS INLET*		35.0	21.5	1.5	0.0	990	6.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 09/04/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG)	MK	Dry/overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	20.1	0.0	990	11.0	0.0
G6		0.0	1.9	17.9	0.0	990	11.0	0.0
G7		0.0	0.0	20.2	0.0	990	11.0	0.0
G8		0.0	0.0	20.5	0.0	990	11.0	0.0
G9		0.0	2.5	19.3	0.0	990	11.0	0.0
G10		0.0	2.6	18.8	0.0	990	11.0	0.0
G12		0.0	2.6	18.7	0.0	990	11.0	0.0
G13		0.0	0.8	20.1	0.0	990	11.0	0.0
G18		0.0	0.4	19.9	0.0	990	11.0	0.0
G21		0.0	0.0	20.3	0.0	990	11.0	0.0
G23		0.0	1.2	18.9	0.0	990	11.0	0.0
G35		0.0	2.4	18.4	0.0	990	11.0	0.0
G36		0.0	0.0	20.2	0.0	990	11.0	0.0
G37		0.0	2.0	18.9	0.0	990	11.0	0.0
G38		0.0	1.9	19.8	0.0	990	11.0	0.0
G39		0.0	0.0	20.3	0.0	990	11.0	0.0
G40		0.0	8.8	1.1	0.0	990	11.0	0.0
G41		0.0	1.3	18.4	0.0	990	11.0	0.0
G42		0.0	0.0	20.1	0.0	990	11.0	0.0
G43		0.0	11.8	6.2	0.0	990	11.0	0.0
G44		0.0	16.1	2.3	0.0	990	11.0	0.0
Leachate Sump		0.0	2.9	18.8	0.0	990	11.0	0.0
Sewer		0.0	2.3	17.9	0.0	990	11.0	0.0
IPS INLET		33.5	22.5	2.0	0.0	990	11.0	0.0

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 16/04/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analyse	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Sunny/Dry	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.3	18.1	0.0	1001	8.0	0.0
G36		0.0	0.0	22.1	0.0	1001	8.0	0.0
G37		0.0	2.4	19.7	0.0	1001	8.0	0.0
G38		0.0	2.2	18.7	0.0	1001	8.0	0.0
G39		0.0	0.0	21.7	0.0	1001	8.0	0.0
G40		0.0	8.3	1.2	0.0	1001	8.0	0.0
Leachate Sump		0.0	3.2	18.9	0.0	1001	8.0	0.0
Sewer		0.0	2.2	17.7	0.0	1001	8.0	0.0
IPS INLET*		36.0	21.0	1.8	0.0	1001	8.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 23/04/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Sunny/Dry	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.6	18.3	0.0	1000	13.0	0.0
G36		0.0	0.0	23.1	0.0	1000	13.0	0.0
G37		0.0	2.0	19.2	0.0	1000	13.0	0.0
G38		0.0	2.5	18.4	0.0	1000	13.0	0.0
G39		0.0	0.0	23.0	0.0	1000	13.0	0.0
G40		0.0	7.4	1.1	0.0	1000	13.0	0.0
Leachate Sump		0.0	2.5	18.5	0.0	1000	13.0	0.0
Sewer		0.0	2.4	18.1	0.0	1000	13.0	0.0
IPS INLET*		Not Accessible This Week						

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM **(Baseline [ ] Ambient [x])**

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 30/04/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analys	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Fine Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.0	19.2	0.0	1010	10.0	0.0
G36		0.0	0.0	24.2	0.0	1010	10.0	0.0
G37		0.0	2.4	19.1	0.0	1010	10.0	0.0
G38		0.0	2.7	19.7	0.0	1010	10.0	0.0
G39		0.0	0.0	24.1	0.0	1010	10.0	0.0
G40		0.0	7.5	1.5	0.0	1010	10.0	0.0
Leachate Sump		0.0	2.3	18.9	0.0	1010	10.0	0.0
Sewer		0.0	1.9	19.2	0.0	1010	10.0	0.0
IPS INLET*		34.0	20.0	1.5	0.0	1010	10.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare.**

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 08/052008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analyse	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Fine Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.5	19.8	0.0	1008	20.0	0.0
G36		0.0	0.0	22.3	0.0	1008	20.0	0.0
G37		0.0	2.1	20.0	0.0	1008	20.0	0.0
G38		0.0	2.6	19.8	0.0	1008	20.0	0.0
G39		0.0	0.0	23.1	0.0	1008	20.0	0.0
G40		0.0	8.2	1.2	0.0	1008	20.0	0.0
Leachate Sump		0.0	2.1	19.5	0.0	1008	20.0	0.0
Sewer		0.0	1.6	20.2	0.0	1008	20.0	0.0
IPS INLET*		36.0	22.0	1.9	0.0	1008	20.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 14/05/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG)	MK	Dry/Sunny	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	22.2	0.0	1015	14.0	0.0
G6		0.0	2.1	18.2	0.0	1015	14.0	0.0
G7		0.0	0.0	22.1	0.0	1015	14.0	0.0
G8		0.0	0.0	22.1	0.0	1015	14.0	0.0
G9		0.0	2.3	18.7	0.0	1015	14.0	0.0
G10		0.0	1.9	19.1	0.0	1015	14.0	0.0
G12		0.0	2.4	18.8	0.0	1015	14.0	0.0
G13		0.0	0.3	21.8	0.0	1015	14.0	0.0
G18		0.0	0.5	22.0	0.0	1015	14.0	0.0
G21		0.0	0.0	22.2	0.0	1015	14.0	0.0
G23		0.0	1.4	20.0	0.0	1015	14.0	0.0
G35		0.0	2.4	17.4	0.0	1015	14.0	0.0
G36		0.0	0.0	21.8	0.0	1015	14.0	0.0
G37		0.0	2.3	16.8	0.0	1015	14.0	0.0
G38		0.0	2.2	17.1	0.0	1015	14.0	0.0
G39		0.0	0.0	22.1	0.0	1015	14.0	0.0
G40		0.0	8.8	1.1	0.0	1015	14.0	0.0
G41		0.0	1.0	19.2	0.0	1015	14.0	0.0
G42		0.0	0.0	22.0	0.0	1015	14.0	0.0
G43		0.0	11.8	7.3	0.0	1015	14.0	0.0
G44		0.0	12.3	8.0	0.0	1015	14.0	0.0
Leachate Sump		0.0	2.2	19.2	0.0	1015	14.0	0.0
Sewer		0.0	2.4	18.8	0.0	1015	14.0	0.0
IPS INLET		Not accessible this week						

LANDFILL GAS MONITORING FORM **(Baseline [ ] Ambient [x])**

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin		
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operative	Date :	21/05/2008	Time:	AM
Instrument Used :	Normal Analytical	Date Next Calibration :			
GFM 430 Landfill Gas Analyse	Range : 0-100% CH_4, CO_2.	Jun-08			
Monitoring Personnel :		Weather :		Barometric Pressure :	
(WYG)	Matthew Keane			See Individual Readings	

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.3	18.0	0.0	1018	12.0	0.0
G36		0.0	0.0	21.0	0.0	1018	12.0	0.0
G37		0.0	2.1	18.2	0.0	1018	12.0	0.0
G38		0.0	1.9	19.1	0.0	1018	12.0	0.0
G39		0.0	0.0	22.1	0.0	1018	12.0	0.0
G40		0.0	8.2	2.2	0.0	1018	12.0	0.0
Leachate Sump		0.0	2.2	18.3	0.0	1018	12.0	0.0
Sewer		0.0	2.7	18.1	0.0	1018	12.0	0.0
IPS INLET*		35.0	23.0	1.8	0.0	1018	12.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin		
Operator :	Fingal County Council				
		National Grid Reference :			
Site Status :	Operative	Date :	28/05/2008	Time:	AM
Instrument Used :	Normal Analytical	Date Next Calibration :			
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08			
Monitoring Personnel :		Weather :		Barometric Pressure :	
(WYG) Matthew Keane		0verxast		See Individual Readings	

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.6	17.9	0.0	1001	11.0	0.0
G36		0.0	0.0	22.1	0.0	1001	11.0	0.0
G37		0.0	2.0	18.5	0.0	1001	11.0	0.0
G38		0.0	2.2	19.1	0.0	1001	11.0	0.0
G39		0.0	0.0	22.0	0.0	1001	11.0	0.0
G40		0.0	6.5	3.2	0.0	1001	11.0	0.0
Leachate Sump		0.0	2.4	18.9	0.0	1001	11.0	0.0
Sewer		0.0	2.3	19.3	0.0	1001	11.0	0.0
IPS INLET*		32.0	22.0	0.5	0.0	1001	11.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 04/06/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analys	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Raining	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.2	19.1	0.0	1008	10.0	0.0
G36		0.0	0.0	22.5	0.0	1008	10.0	0.0
G37		0.0	2.1	19.6	0.0	1008	10.0	0.0
G38		0.0	2.4	19.4	0.0	1008	10.0	0.0
G39		0.0	0.0	22.2	0.0	1008	10.0	0.0
G40		0.0	8.4	1.3	0.0	1008	10.0	0.0
Leachate Sump		0.0	2.2	19.0	0.0	1008	10.0	0.0
Sewer		0.0	1.6	20.1	0.0	1008	10.0	0.0
IPS INLET*		35.0	21.0	0.5	0.0	1008	10.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin		
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operative	Date :	11/06/2008	Time:	AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :			
GFM 430 Landfill Gas Analys	0-100% CH_4, CO_2.	Jun-08			
Monitoring Personnel :		Weather :		Barometric Pressure :	
(WYG) Matthew Keane		Dry/Overcast		See Individual Readings	

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.1	18.0	0.0	1018	11.0	0.0
G36		0.0	0.0	22.0	0.0	1018	11.0	0.0
G37		0.0	2.1	18.9	0.0	1018	11.0	0.0
G38		0.0	2.2	18.7	0.0	1018	11.0	0.0
G39		0.0	0.0	22.8	0.0	1018	11.0	0.0
G40		0.0	6.8	2.4	0.0	1018	11.0	0.0
Leachate Sump		0.0	1.9	19.5	0.0	1018	11.0	0.0
Sewer		0.0	2.1	19.9	0.0	1018	11.0	0.0
IPS INLET*		35.0	22.0	0.5	0.0	1018	11.0	0.0

*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 18/06/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analyse	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Dry/Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.8	18.8	0.0	999	10.0	0.0
G36		0.0	0.0	21.0	0.0	999	10.0	0.0
G37		0.0	0.0	21.0	0.0	999	10.0	0.0
G38		0.0	1.8	18.9	0.0	999	10.0	0.0
G39		0.0	0.0	21.2	0.0	999	10.0	0.0
G40		0.0	8.2	2.3	0.0	999	10.0	0.0
Leachate Sump		0.0	1.2	19.4	0.0	999	10.0	0.0
Sewer		0.0	1.1	19.1	0.0	999	10.0	0.0
IPS INLET*		35.5	23.5	0.5	0.0	999	10.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 26/06/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analys(	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Dull	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.3	20.0	0.0	1000	13.0	0.0
G6		0.0	0.4	20.0	0.0	1000	13.0	0.0
G7		0.0	0.0	20.4	0.0	1000	13.0	0.0
G8		0.0	0.0	20.4	0.0	1000	13.0	0.0
G9		0.0	1.6	19.0	0.0	1000	13.0	0.0
G10		0.0	7.6	6.4	0.0	1000	13.0	0.0
G12		0.0	1.4	19.4	0.0	1000	13.0	0.0
G13		0.0	1.2	19.6	0.0	1000	13.0	0.0
G18		0.0	1.0	20.1	0.0	1000	13.0	0.0
G21		0.0	0.0	20.8	0.0	1000	13.0	0.0
G23		0.0	1.5	18.8	0.0	1000	13.0	0.0
G35		0.0	2.2	18.0	0.0	1000	13.0	0.0
G36		0.0	0.0	21.5	0.0	1000	13.0	0.0
G37		0.0	5.9	11.4	0.0	1000	13.0	0.0
G38		0.0	1.6	18.6	0.0	1000	13.0	0.0
G39		0.0	0.0	20.2	0.0	1000	13.0	0.0
G40		0.0	8.4	2.5	0.0	1000	13.0	0.0
G41		0.0	0.0	20.5	0.0	1000	13.0	0.0
G42		0.0	2.1	14.2	0.0	1000	13.0	0.0
G43		0.0	4.4	14.4	0.0	1000	13.0	0.0
G44		0.0	10.9	6.6	0.0	1000	13.0	0.0
Leachate Sump		0.0	1.9	19.2	0.0	1000	13.0	0.0
Sewer		0.0	1.4	19.2	0.0	1000	13.0	0.0
IPS INLET		35.0	26.0	1.5	0.0	1000	13.0	0.0

LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 02/07/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
GFM 430 Landfill Gas Analys	Range : 0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Dry/Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.1	18.5	0.0	1010	14.0	0.0
G36		0.0	0.0	22.4	0.0	1010	14.0	0.0
G37		0.0	2.6	18.3	0.0	1010	14.0	0.0
G38		0.0	1.9	18.9	0.0	1010	14.0	0.0
G39		0.0	0.0	21.2	0.0	1010	14.0	0.0
G40		0.0	7.5	2.0	0.0	1010	14.0	0.0
Leachate Sump		0.0	2.2	18.4	0.0	1010	14.0	0.0
Sewer		0.0	2.1	17.9	0.0	1010	14.0	0.0
IPS INLET*		32.0	21.0	1.0	0.0	1010	14.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 09/07/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analys	0-100% CH_4, CO_2.	Jul-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Dry/Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	2.1	19.3	0.0	1000	10.0	0.0
G36		0.0	0.0	21.0	0.0	1000	10.0	0.0
G37		0.0	3.2	17.6	0.0	1000	10.0	0.0
G38		0.0	1.9	19.8	0.0	1000	10.0	0.0
G39		0.0	0.0	21.0	0.0	1000	10.0	0.0
G40		0.0	7.5	4.2	0.0	1000	10.0	0.0
Leachate Sump		0.0	1.8	19.2	0.0	1000	10.0	0.0
Sewer		0.0	1.6	19.4	0.0	1000	10.0	0.0
IPS INLET*		34.5	22.0	1.5	0.0	1000	10.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 16/07/2008	Time: AM
Instrument Used :	Normal Analytical Range : 0-100% CH_4, CO_2-	Date Next Calibration :	Jul-08
Monitoring Personnel :	(WYG) Matthew Keane	Weather :	showers/Overcast
Barometric Pressure :	See Individual Readings		

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	1.9	19.9	0.0	990	14.0	0.0
G36		0.0	0.0	21.3	0.0	990	14.0	0.0
G37		0.0	2.4	19.4	0.0	990	14.0	0.0
G38		0.0	2.1	21.1	0.0	990	14.0	0.0
G39		0.0	0.0	22.0	0.0	990	14.0	0.0
G40		0.0	8.4	422.0	0.0	990	14.0	0.0
Leachate Sump		0.0	1.6	19.7	0.0	990	14.0	0.0
Sewer		0.0	1.7	19.5	0.0	990	14.0	0.0
IPS INLET*		35.0	22.5	2.0	0.0	990	14.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 23/07/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analys	0-100% CH_4, CO_2.	Jul-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) Matthew Keane		Sunny/dry	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	1.8	20.1	0.0	999	17.0	0.0
G36		0.0	0.0	22.3	0.0	999	17.0	0.0
G37		0.0	2.2	19.5	0.0	999	17.0	0.0
G38		0.0	2.1	21.1	0.0	999	17.0	0.0
G39		0.0	0.0	22.0	0.0	999	17.0	0.0
G40		0.0	7.9	4.2	0.0	999	17.0	0.0
Leachate Sump		0.0	1.9	19.9	0.0	999	17.0	0.0
Sewer		0.0	1.6	21.0	0.0	999	17.0	0.0
IPS INLET*		35.5	22.5	2.0	0.0	999	17.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 31/07/2008	Time: AM
Instrument Used :	Normal Analytical Range :	Date Next Calibration :	
GFM 430 Landfill Gas Analyse	0-100% CH_4, CO_2.	Jun-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG) MK		Showers	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	21.2	0.0	1000	16.0	0.0
G6		0.0	0.2	21.0	0.0	1000	16.0	0.0
G7		0.0	0.0	22.1	0.0	1000	16.0	0.0
G8		0.0	0.0	20.4	0.0	1000	16.0	0.0
G9		0.0	1.7	18.7	0.0	1000	16.0	0.0
G10		0.0	4.5	11.4	0.0	1000	16.0	0.0
G12		0.0	1.2	19.3	0.0	1000	16.0	0.0
G13		0.0	1.0	20.1	0.0	1000	16.0	0.0
G18		0.0	0.6	20.1	0.0	1000	16.0	0.0
G21		0.0	0.0	20.8	0.0	1000	16.0	0.0
G23		0.0	1.5	19.2	0.0	1000	16.0	0.0
G35		0.0	1.9	19.3	0.0	1000	16.0	0.0
G36		0.0	0.0	21.0	0.0	1000	16.0	0.0
G37		0.0	4.6	16.2	0.0	1000	16.0	0.0
G38		0.0	1.6	17.0	0.0	1000	16.0	0.0
G39		0.0	0.0	20.2	0.0	1000	16.0	0.0
G40		0.0	8.4	1.6	0.0	1000	16.0	0.0
G41		0.0	0.0	20.5	0.0	1000	16.0	0.0
G42		0.0	1.7	17.7	0.0	1000	16.0	0.0
G43		0.0	4.0	14.4	0.0	1000	16.0	0.0
G44		0.0	9.9	4.5	0.0	1000	16.0	0.0
Leachate Sump		0.0	1.6	17.9	0.0	1000	16.0	0.0
Sewer		0.0	1.2	18.0	0.0	1000	16.0	0.0
IPS INLET		Not accessible this week						

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 06/08/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
LMSXi Landfill Gas analyser	Range : 0-100% CH_4, CO_2.	Aug-08	
Monitoring Personnel :		Weather :	Barometric Pressure :
(WYG)		Raining, Humid	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	8.7	6.0	0.0	998	15.7	0.0
G36		0.0	0.8	18.8	0.0	998	15.7	0.0
G37		0.0	9.9	0.9	0.0	998	18.4	0.0
G38		0.0	16.0	0.0	0.0	997	18.2	0.0
G39		0.0	0.6	19.1	0.0	998	17.7	0.0
G40		0.0	0.0	20.6	0.0	1000	16.0	0.0
Leachate Sump		0.0	0.5	20.3	0.0	999	14.9	0.0
Sewer		0.0	3.0	16.5	0.0	1000	16.2	0.0
IPS INLET*		Inaccessible						

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name : Dunsink Landfill		Site Address : Dunsink Lane, Dunsink Co Dublin	
Operator : Fingal County Council		National Grid Reference :	
Site Status : Operative		Date : 13/08/2008	Time: AM
Instrument Used : LMSXi Landfill Gas analyser	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration : Sep-08	
Monitoring Personnel : (WYG)		Weather : Dull	Barometric Pressure : See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	21.1	0.0	989	16.3	0.0
G36		3.9	3.9	12.9	0.0	989	16.4	78.0
G37		0.0	0.0	20.4	0.0	989	16.3	0.0
G38		0.0	0.0	20.1	0.0	989	16.5	0.0
G39		0.0	6.3	15.6	0.0	989	16.5	0.0
G40		0.0	0.0	20.6	0.0	989	16.0	0.0
Leachate Sump		0.4	3.3	20.1	0.0	989	14.5	0.0
Sewer		0.0	1.4	20.4	0.0	990	16.6	0.0
IPS INLET*		35.0	21.5	1.5	0.0	989.0	16.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 20/08/08	Time: AM
Instrument Used : LMSXi Landfill Gas analyser	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration : Sep-08	
Monitoring Personnel : (WYG)	SD	Weather : Dry/overcast	Barometric Pressure : See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.6	0.0	999	17.7	0.0
G36		0.0	3.2	16.2	0.0	999	17.9	0.0
G37		0.0	0.6	19.9	0.0	999	18.5	0.0
G38		0.0	0.0	20.7	0.0	999	19.3	0.0
G39		0.0	9.8	6.3	0.0	999	20.1	0.0
G40		0.0	0.0	20.9	0.0	999	19.0	0.0
Leachate Sump		0.0	0.2	20.6	0.0	998	18.8	0.0
Sewer		0.0	0.7	20.8	0.0	999	21.0	0.0
IPS INLET*								

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name : Dunsink Landfill		Site Address : Dunsink Lane, Dunsink Co Dublin	
Operator : Fingal County Council		National Grid Reference :	
Site Status : Operative		Date : 26/08/2008	Time: AM
Instrument Used : LMSXi Landfill Gas analyser	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration : Sep-08	
Monitoring Personnel : SD (WYG)		Weather : Dry/overcast	Barometric Pressure : See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.7	20.2	0.0	1007	18.0	0.0
G36		0.0	1.2	19.6	0.0	1007	18.1	0.0
G37		0.0	4.2	13.3	0.0	1008	18.2	0.0
G38		0.0	0.0	20.8	0.0	1007	18.3	0.0
G39		0.0	9.7	6.6	0.0	1007	18.3	0.0
G40		0.0	6.6	0.7	0.0	1008	19.8	0.0
Leachate Sump		0.0	0.1	20.7	0.0	1008	18.5	0.0
Sewer		0.0	0.7	20.7	0.0	1008	19.5	0.0
IPS INLET*		Inaccessible						

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name : Dunsink Landfill		Site Address : Dunsink Lane, Dunsink Co Dublin	
Operator : Fingal County Council		National Grid Reference :	
Site Status : Operative		Date : 03/09/2008	Time: AM
Instrument Used : GFM 430 Landfill Gas Analyse	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration : Sep-08	
Monitoring Personnel : (WYG) SD		Weather : Dull, drizzle	Barometric Pressure : See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	20.8	0.0	989	17.7	0.0
G6		0.0	3.3	18.3	0.0	987	11.3	0.0
G7		0.0	0.0	20.9	0.0	987	11.5	
G8		0.0	0.9	20.0	0.0	987	11.3	0.0
G9		0.0	5.7	15.7	0.0	987	10.6	0.0
G10		0.0	0.0	21.0	0.0	987	11.0	0.0
G12		0.0	0.2	20.6	0.0	987	15.0	0.0
G13		0.0	0.0	20.7	0.0	987	15.9	0.0
G18		0.0	0.3	20.7	0.0	989	15.8	0.0
G21		Temporarily Inaccessible						
G23		0.0	2.1	19.2	0.0	987	13.9	0.0
G32		0.0	0.7	20.4	0.0	987	15.5	0.0
G35		0.0	0.8	19.7	0.0	989	18.3	0.0
G36		0.0	0.6	20.1	0.0	988	17.0	0.0
G37		4.4	6.7	0.0	0.0	988	19.4	88.0
G38		0.0	1.2	18.6	0.0	988	17.1	0.0
G39		0.0	11.0	6.9	0.0	988	15.9	0.0
G40		0.0	6.5	0.6	0.0	985	13.7	0.0
G41		0.0	0.0	21.0	0.0	987	14.3	0.0
G42		0.0	0.3	20.7	0.0	988	11.8	0.0
G43		0.0	7.1	11.9	0.0	987	15.2	0.0
G44		0.0	14.0	1.7	0.0	987	15.3	0.0
Leachate Sump		0.0	0.8	20.4	0.0	987	11.8	0.0
Sewer		0.0	1.3	19.0	0.0	988	11.8	0.0
IPS INLET		36.0	21.5	1.0	0.0	988	11.8	0.0

LANDFILL GAS MONITORING FORM			(Baseline [ ]	Ambient [x])
Site Name : Dunsink Landfill		Site Address : Dunsink Lane, Dunsink Co Dublin		
Operator : Fingal County Council		National Grid Reference :		
Site Status : Operative		Date : 10/09/2008	Time: AM	
Instrument Used : LMSXi Landfill Gas analyser	Normal Analytical Range : (0-100% CH_4, CO_2.	Date Next Calibration : Sep-08		
Monitoring Personnel : SD (WYG)		Weather : Overcast	Barometric Pressure : See Individual Readings	

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.4	20.9	0.0	995	15.2	0.0
G36		0.0	0.3	20.6	0.0	995	14.0	0.0
G37		0.3	3.7	12.3	0.0	995	15.7	6.2
G38		0.0	0.8	19.3	0.0	995	14.8	0.0
G39		0.0	0.0	21.0	0.0	995	14.3	0.0
G40		0.0	5.4	0.0	0.0	995	14.9	0.0
Leachate Sump		0.0	0.5	20.7	0.0	995	14.3	0.0
Sewer		0.0	0.7	20.7	0.0	996	14.5	0.0
IPS INLET*		34.5	22.0	0.5	0.0	995.0	15.0	0.0

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 16/09/2008	Time: AM
Instrument Used :	Normal Analytical	Date Next Calibration :	
LMSXi Landfill Gas analyser	Range : 0-100% CH_4, CO_2.	Sep-09	
Monitoring Personnel :	SD	Weather :	Barometric Pressure :
(WYG)		Overcast	See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.4	0.0	1012	16.0	0.0
G36		0.0	0.0	20.4	0.0	1012	16.0	0.0
G37		0.0	6.2	3.9	0.0	1012	16.0	6.2
G38		0.0	0.0	20.3	0.0	1012	16.0	0.0
G39		0.0	8.2	9.4	0.0	1012	16.0	0.0
G40		0.0	5.5	0.0	0.0	1012	16.0	0.0
Leachate Sump		0.0	0.7	20.0	0.0	1012	16.0	0.0
Sewer		0.0	4.0	19.3	0.0	1014	16.0	0.0
IPS INLET*								

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :	Dunsink Landfill	Site Address :	Dunsink Lane, Dunsink Co Dublin
Operator :	Fingal County Council	National Grid Reference :	
Site Status :	Operative	Date : 24/09/2008	Time: AM
Instrument Used : GFM 430 Landfill Gas Analyse	Normal Analytical Range : 0-100% CH_4, CO_2.	Date Next Calibration : Sep-09	
Monitoring Personnel : (WYG)	SD	Weather : Dull, drizzle	Barometric Pressure : See Individual Readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature* °C	LEL % v/v
G3		0.0	0.0	20.2	0.0	1019	14.0	0.0
G6		0.0	2.4	17.9	0.0	1019	14.0	0.0
G7		0.0	0.0	20.2	0.0	1019	14.0	0.0
G8		0.0	0.6	19.8	0.0	1019	14.0	0.0
G9		0.0	6.4	13.6	0.0	1019	14.0	0.0
G10		0.0	10.3	8.5	0.0	1019	14.0	0.0
G12		0.0	0.1	20.1	0.0	1017	14.0	0.0
G13		0.0	0.9	19.2	0.0	1017	14.0	0.0
G18		0.0	0.5	19.9	0.0	1019	14.0	0.0
G21		Temporarily Inaccessible						
G23		0.0	4.0	11.7	0.0	1018	14.0	0.0
G32		0.0	0.8	19.4	0.0	1018	14.0	0.0
G35		0.0	2.1	18.2	0.0	1019	14.0	0.0
G36		0.0	0.3	19.8	0.0	1019	14.0	0.0
G37		0.7	5.5	0.0	0.0	1019	14.0	17.4
G38		0.0	0.1	20.1	0.0	1018	14.0	0.0
G39		0.0	9.6	6.4	0.0	1019	14.0	0.0
G40		0.0	5.9	0.3	0.0	1019	14.0	0.0
G41		0.0	0.0	20.2	0.0	1019	14.0	0.0
G42		0.0	0.3	19.9	0.0	1019	14.0	0.0
G43		0.0	11.9	3.7	0.0	1019	14.0	0.0
G44		0.0	12.9	1.9	0.0	1019	14.0	0.0
Leachate Sump		0.0	0.4	20.0	0.0	1019	14.0	0.0
Sewer		0.0	0.7	20.0	0.0	1020	14.0	0.0
IPS INLET		38.3	28.8	0.9	0.0	1020	14.0	0.0

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LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :		Site Address :	
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin	
Operator :	Fingal County Council Comhairle Contae Fhine Gall	National Grid Reference :	
Site Status :	Operational	Date : 01/10/08	Time: am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	Simon Doyle	Weather :	Barometric Pressure :
		Sunny/dry	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.4	19.7	0.0	992	16.0	0.0
G36		0.0	0.4	19.6	0.0	992	16.0	0.0
G37		0.1	**4.5**	0.0	0.0	992	16.0	0.0
G38		0.0	0.0	19.9	0.0	992	16.0	0.0
G39		0.0	**9.5**	7.5	0.0	991	16.0	0.0
G40		0.0	**6.0**	0.0	0.0	992	16.0	0.0
Leachate Sump		0.0	0.7	19.5	0.0	993	16.0	0.0
Sewer		0.0	**1.6**	19.5	0.0	992	16.0	0.0
IPS INLET*		**39.2**	**27.7**	0.6	0.0	992	16.0	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	08/10/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	Simon Doyle	Weather :	Barometric Pressure :
		Sunny/dry	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.6	0.0	1009	19.0	0.0
G36		0.0	0.4	19.3	0.0	1008	16.5	0.0
G37		0.0	**4.3**	10.3	0.0	1009	18.0	0.0
G38		0.0	0.0	20.7	0.0	1009	17.5	0.0
G39		0.0	**9.0**	10.3	0.0	1008	20.0	0.0
G40		0.0	**5.4**	0.0	0.0	1008	13.5	0.0
Leachate Sump		0.0	1.3	19.1	0.0	1009	13.5	0.0
Sewer		0.0	**4.6**	18.5	0.0	1010	16.5	0.0
IPS INLET*		**38.8**	**26.2**	0.7	0.0	1010	16.5	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM

(Baseline [ ] Ambient [x])

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	16/10/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	Simon Doyle	Weather :	Barometric Pressure :
		Dry	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.9	0.0	1004	9.4	0.0
G36		0.0	0.2	20.5	0.0	1003	9.4	0.0
G37		**5.2**	**5.0**	0.0	0.0	1003	9.4	35.2
G38		0.0	0.0	20.8	0.0	1003	9.4	0.0
G39		0.0	**7.0**	9.5	0.0	1003	9.4	0.0
G40		0.0	**3.4**	0.3	0.0	1004	11.5	0.0
Leachate Sump		0.1	1.0	20.4	0.0	1004	11.0	0.0
Sewer		0.0	**4.3**	19.7	0.0	1004	9.4	0.9
IPS INLET*		**38.4**	**28.0**	0.5	0.0	1004	9.4	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline / Ambient)

Site Name :		**Site Address :**			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	**National Grid Reference :**			
Site Status :	Operational	**Date :**	22/10/08	***Time:***	am

Instrument Used :	**Normal Analytical Range**	**Next Calibration due:**
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :		**Weather :**	**Barometric Pressure :**
	Simon Doyle	Sunny/dry	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.5	20.5	0.0	1011	12.0	0.0
G36		0.0	0.6	20.4	0.0	1011	12.0	0.0
G37		0.0	**3.8**	10.2	0.0	1012	12.0	0.0
G38		0.0	0.0	20.9	0.0	1012	12.0	0.0
G39		0.0	**9.4**	7.0	0.0	1011	12.0	0.0
G40		0.0	**5.3**	0.4	0.0	1011	12.0	0.0
Leachate Sump		0.2	**3.3**	20.1	0.0	1012	12.0	3.9
Sewer		0.0	**2.7**	20.3	0.0	1012	12.0	>>>>
IPS INLET*		**Inaccessible**						

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline (1) Ambient (2 1)

Site Name :		Site Address :		
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin		
Operator :	Fingal County Council	National Grid Reference :		
Site Status :	Operational	Date :	29/10/08	*Time:* am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	Simon Doyle	Weather :	Barometric Pressure :
		Wintery showers	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	20.9	0	996	6	0
G6		0.0	1.5	17.7	0	997	6	0
G7		0.0	0.0	20.8	0	997	6	0
G8		0.0	0.4	20.2	0	997	6	0
G9		0.0	**3.8**	15.2	0	997	6	0
G10		0.0	**5.9**	13.5	0	998	6	0
G12		0.0	0.0	21.1	0	996	6	0
G13		0.0	0.2	20.8	0	998	6	0
G18		0.0	0.4	21.1	0	999	6	0
G21		0.0	0.0	20.9	0	999	6	0
G23		0.0	0.0	21.3	0	998	6	0
G32		0.0	0.4	19.9	0	997	6	0
G35		0.0	0.0	20.9	0.0	996	6.0	0.0
G36		0.0	0.1	20.7	0.0	996	6.0	0.0
G37		**6.4**	**4.4**	0.0	0.0	997	6.0	0.0
G38		0.0	**8.9**	7.0	0.0	997	6.0	0.0
G39		0.0	**7.8**	9.7	0.0	997	6.0	0.0
G40		0.0	**4.9**	0.0	0.0	997	6.0	0.0
G41		0.0	0.0	21.0	0.0	997	6.0	0.0
G42		0.0	0.2	20.3	0.0	997	6.0	0.0
G43		0.0	**5.8**	10.0	0.0	997	6.0	0.0
G44		0.0	**11.0**	6.1	0.0	996	6.0	0.0
Leachate Sump		0.0	1.5	20.7	0.0	992	6.0	0.0
Sewer		0.3	**3.7**	19.9	0.0	996	6.0	0.0
IPS INLET*		**37.5**	**26.2**	0.2	0.0	996	6.0	>>>>
*** Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare**								

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 viaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	06/11/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	Simon Doyle	Weather :	Barometric Pressure :
		Overcast	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.9	0.0	1013	13.7	0.0
G36		0.0	0.0	20.9	0.0	1012	13.3	0.0
G37		**6.7**	**3.3**	0.0	0.0	1012	13.2	>>>>
G38		0.0	0.0	20.5	0.0	1012	12.4	0.0
G39		0.0	**8.1**	10.1	0.0	1013	13.2	0.0
G40		0.1	**4.8**	0.0	0.0	1012	12.7	0.0
Leachate Sump		0.0	0.5	20.8	0.0	1013	13.2	0.0
Sewer		0.1	**4.6**	19.6	0.0	1013	13.8	0.0
IPS INLET*		**47.6**	**28.4**	0.4	0.0	1013	13.8	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline ( ) Ambient (x))

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	12/11/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	Simon Doyle	Weather :	Barometric Pressure :
		Overcast	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.9	0.0	1012	5.6	0.0
G36		0.0	0.4	20.1	0.0	1012	5.4	0.0
G37		0.0	**1.7**	17.0	0.0	1012	5.7	0.0
G38		0.0	0.3	20.3	0.0	1012	5.8	0.0
G39		0.0	**7.6**	12.9	0.0	1012	5.6	0.0
G40		0.3	**4.8**	0.0	0.0	1011	6.9	0.0
Leachate Sump		0.1	**1.6**	20.7	0.0	1012	9.9	0.0
Sewer		0.0	**3.7**	20.2	0.0	1014	8.2	0.4
IPS INLET*		**35.7**	**25.9**	0.4	0.0	1012	9.0	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline ( ) Ambient ( ))

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	19/11/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	SD/RF	Weather :	Barometric Pressure :
		Wet/overcast	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	21.2	0.0	1016	8.4	0.0
G36		0.0	0.0	21.1	0.0	1016	8.3	0.0
G37		0.0	**3.1**	13.5	0.0	1016	8.8	0.0
G38		0.0	0.3	20.9	0.0	1016	8.6	0.0
G39		0.0	**6.4**	11.3	0.0	1016	8.8	0.0
G40		0.4	**4.6**	0.1	0.0	1016	8.1	0.0
Leachate Sump		0.1	1.0	20.8	0.0	1016	8.9	0.0
Sewer		0.0	**1.8**	20.8	0.0	1016	9.4	0.0
IPS INLET*		**43.1**	**37.4**	0.4	0.0	1016	9.4	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline 1 - 1) Ambient (x 1)

Site Name :		**Site Address :**	
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin	
Operator :	Fingal County Council	**National Grid Reference :**	
Site Status : Operational		**Date :** 27/11/08	***Time:*** am
Instrument Used :	**Normal Analytical Range**	**Next Calibration due:**	
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09	
Monitoring Personnel :	RF	**Weather :** Dry/bright/cool	**Barometric Pressure :** See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	21.3	0.0	997	7.6	0.0
G6		0.0	**2.6**	16.8	0.0	997	6.5	0.0
G7		0.0	0.0	21.2	0.0	997	7.1	0.0
G8		0.0	0.9	19.9	0.0	997	7.3	0.0
G9		0.0	**4.1**	14.4	0.0	998	7.6	0.0
G10		0.0	**6.0**	12.2	0.0	998	7.4	0.0
G12		0.0	0.0	21.3	0.0	995	11.2	0.0
G13		0.0	0.5	20.6	0.0	995	8.1	0.0
G18		0.0	0.4	21.6	0.0	997	7.6	0.0
G21		0.0	1.0	19.8	0.0	999	8.8	0.0
G23		0.0	**3.4**	20.6	0.0	997	3.9	0.0
G32		0.0	0.2	20.8	0.0	997	7.2	0.0
G35		0.0	0.0	21.2	0.0	997	8.1	0.0
G36		0.0	0.2	21.1	0.0	997	10.5	0.0
G37		0.0	**5.2**	2.8	0.0	997	8.2	0.0
G38		0.0	0.0	21.2	0.0	997	8.6	0.0
G39		0.0	**6.6**	11.5	0.0	997	9.2	0.0
G40		0.6	**4.7**	0.3	0.0	997	3.7	4.0
G41		Inaccessible - Flooded						
G42		0.0	0.4	14.6	0.0	997	9.0	0.0
G43		0.0	**2.1**	19.0	0.0	998	7.7	0.0
G44		0.0	**9.5**	10.3	0.0	998	7.9	0.0
Leachate Sump		0.1	1.0	20.7	0.0	999	6.9	0.0
Sewer		0.0	**1.7**	20.8	0.0	999	9.0	0.0
IPS INLET*		**44.5**	**28.1**	0.3	0.0	999	9.0	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 viaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline [ ] Ambient [x])

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	03/12/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	RF	Weather :	Barometric Pressure :
		Dry Cold	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.6	20.2	0.0	997	2.7	0.0
G36		0.0	0.3	20.4	0.0	997	2.7	0.0
G37		**3.9**	**3.9**	1.2	0.0	997	2.7	78.0
G38		0.0	0.3	20.4	0.0	997	4.0	0.0
G39		0.0	**7.0**	11.7	0.0	996	3.2	0.0
G40		0.6	**4.9**	0.0	0.0	997	3.4	12.0
Leachate Sump		0.3	**4.0**	20.0	0.0	997	1.9	6.0
Sewer		0.0	**3.3**	20.3	0.0	997	3.9	0.0
IPS INLET*		**37.2**	**24.1**	2.1	0.0	997	3.9	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline Ref:) (Ambient Ref:)

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council Comhairle Contae Fhine Gall	National Grid Reference :			
Site Status :	Operational	Date :	11/12/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	RF	Weather :	Barometric Pressure :
		Dry/overcast	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.1	0.2	21.2	0.0	1002	4.7	0.0
G36		0.0	0.2	21.1	0.0	1003	5.0	0.0
G37		**4.2**	**4.5**	0.3	0.0	1003	4.0	29.2
G38		0.3	1.0	19.2	0.0	1002	3.8	0.0
G39		0.0	**6.6**	12.6	0.0	1002	4.5	0.0
G40		0.5	**4.6**	0.0	0.0	1003	5.9	3.0
Leachate Sump		1.0	**7.1**	18.8	0.0	1003	5.5	21.1
Sewer		0.0	**4.0**	19.8	0.0	1003	5.7	0.0
IPS INLET*		**39.9**	**24.6**	2.9	0.0	1003	5.7	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM (Baseline / Ambient)

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council	National Grid Reference :			
Site Status :	Operational	Date :	17/12/08	Time:	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
GFM 430 Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	RF	Weather :	Barometric Pressure :
		Overcast/cool	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G3		0.0	0.0	21.3	0.0	1006	5.9	0.0
G6		0.0	**2.1**	17.2	0.0	1006	4.3	0.0
G7		0.0	0.1	21.1	0.0	1006	4.3	0.0
G8		0.0	0.3	20.6	0.0	100	4.9	0.0
G9		0.0	**3.5**	15.8	0.0	1006	4.1	0.0
G10		0.0	**4.0**	13.8	0.0	1006	4.1	0.0
G12		0.0	0.1	21.2	0.0	1003	6.8	0.0
G13		0.0	0.3	20.9	0.0	1001	6.2	0.0
G18		0.0	0.9	20.7	0.0	1004	6.4	0.0
G21		0.0	0.2	21.1	0.0	1006	5.8	0.0
G23		0.0	**2.9**	11.9	0.0	1006	3.1	0.0
G32		0.0	0.2	21.0	0.0	1006	3.2	0.0
G35		0.0	0.0	21.2	0.0	1006	6.4	0.0
G36		0.0	0.0	21.1	0.0	1005	5.3	0.0
G37		0.0	**3.1**	10.9	0.0	1005	6.2	0.0
G38		0.0	**4.9**	10.7	0.0	1005	6.0	0.0
G39		0.0	**6.2**	8.9	0.0	1004	6.1	0.0
G40		0.4	**3.9**	0.0	0.0	1005	4.1	3.0
G41		0.0	0.3	20.7	0.0	1006.0	4.9	0.0
G42		0.2	**2.2**	19.5	0.0	1006	5.3	0.0
G43		0.1	**2.1**	18.7	0.0	1006	4.1	0.0
G44		0.0	**6.4**	11.6	0.0	1006	4.0	0.0
Leachate Sump		0.2	**2.6**	20.3	0.0	1006	5.3	5.2
Sewer		0.0	**2.1**	20.5	0.0	1006	6.9	0.0
IPS INLET*		Inaccessible						

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 values greater than 1.5%v/v

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LANDFILL GAS MONITORING FORM

Baseline [ ] Ambient [x]

Site Name :		Site Address :			
Dunsink Landfill		Dunsink Lane, Dunsink., Co. Dublin			
Operator :	Fingal County Council Comhairle Contae Fhine Gall	National Grid Reference :			
Site Status :	Operational	Date :	23/12/08	*Time:*	am

Instrument Used :	Normal Analytical Range	Next Calibration due:
LMSx Landfill Gas Analyser	0-100% CH_4, CO_2.	Sep-09

Monitoring Personnel :	RD	Weather :	Barometric Pressure :
		Dry/overcast	See individual readings

Results

Borehole Number	Survey Depth	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	H_2S (ppm)	Atmospheric Pressure (mbar)	Temperature °C	LEL % v/v
G35		0.0	0.0	20.7	0.0	1025	7.1	0.0
G36		0.0	0.0	20.7	0.0	1025	7.1	0.0
G37		0.0	0.5	18.7	0.0	1025	7.1	0.0
G38		0.0	0.0	20.6	0.0	1025	7.2	0.0
G39		0.0	**5.8**	9.9	0.0	1025	7.1	0.0
G40		0.5	**3.6**	0.0	0.0	1026	7.0	10.0
Leachate Sump		0.0	0.0	20.6	0.0	1026	7.1	0.0
Sewer		0.0	0.0	20.7	0.0	1026	7.1	0.0
IPS INLET*		**35.9**	**22.2**	3.6	0.0	1026	7.1	>>>>

* Note monitoring of inlet gases undertaken at new continuous sampling point off enclosed flare

Bold underlined text indicates methane values greater than 1%v/v and Co2 vlaues greater than 1.5%v/v

APPENDIX IV

SURFACE WATER VISUAL INSPECTION RECORD

DUNSINK LANDFILL W-L 127-1 – Condition 8.2 (Schedule D.5)

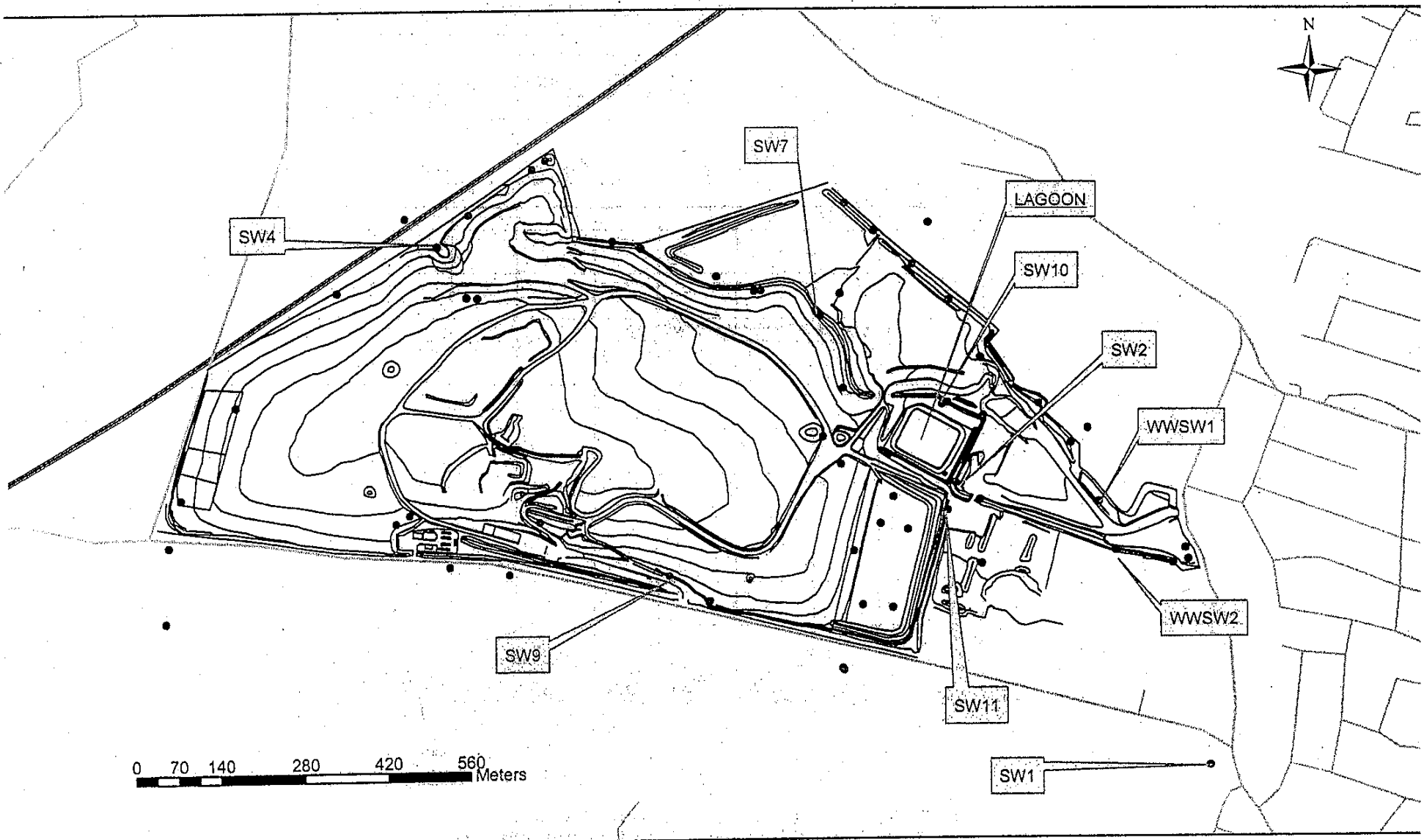
Date: ..... Week no:.....
Inspected By: ..... Time: .....
Weather: .....

NUISANCES	SW8	SW7	SW10	SW2	SW11	SW9	SW12	WWSW1	WWSW2	
COLOUR (clear/tinted/cloudy)										
ODOUR (none/oily/leachate/organic)										
Herbaceous bank cm										
Herbaceous stream cm										
Algae %										
Flow Rate (none/low/moderate/fast)										
Depth (cm)										
Erosion at toe of slope (none/moderate/severe										
Additional Parameters (OPTIONAL)										
Conductivity µS										
Temperature °C										
PH										

Samples Taken: Yes / No Photographs Taken: Yes / No	Inspector's Signature:	Reviewed By:	Site Inspector's Comments:

OTHER OBSERVATIONS/ ANY IMMEDIATE ACTION REQUIRED .....

WEEKLY SURFACE WATER MONITORING LOCATIONS.



APPENDIX V

Appendix V

OBJECTIVES TARGETS PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 1	**To Complete Site Infrastructure.**		
Target 1	*Review of security (3.4).*		Apr-04
Step 1	Initial Security Review and proposal to EPA	Apr-04	
Step 2	Review during weekly inspections.	Ongoing	
Target 2	*Provide facility roads and hardstanding (3.5).*		Immediate
Step 1	Access to licence area from Rathoath Road	Aug-04	
Step 2	Tarmac from wheelwash to Rathoath Road	Jan-05	
Step 3	Submit Proposal to EPA for Waste Inspection Area	Apr-04	
Step 4	Build Waste Inspection Area	Nov-04	
Step 5	Hardstanding provided at old storage yard.	Jan-04	
Target 3	*Provide and maintain office (3.6).*		Immediate
Step 1	Provide Offices	Sep-04	
Step 2	Provide Services (telecommunications / canteen / toilets)	Dec-04	
Step 3	Provide Services (electricity)	Feb-05	
Step 4	Provide appropriate documentation as per Condition 10	Nov-04	

Step 1	**Completed**
Step 1	Completed
Step 1	To be Commenced

OBJECTIVES TARGETS PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 2	**To Measure Environmental Impact**		
Target 1	*Install effective monitoring infrastructure in site offices(3.16).*		Jul-04
Step 1	Call for proposals for continuous landfill gas detection in site offices	Aug-04	
Step 2	EPA guidance sought on this issue	Sep-04	
Step 3	Commission of works to install equipment	Oct-04	
Step 4	Installation of landfill gas detection equipment	Dec-04	
Target 2	*Improve landfill gas monitoring borehole infrastructure*		Nov-04
Step 1	Review current efficacy of existing landfill gas monitoring infrastructure & programme	Sep-04	
Step 2	Submit proposals for addi tional landfill gas monitoring infrastructure	Sep-04	
Step 3	Submit proposals for augmented landfill gas monitoring programme	Sep-04	
Step 4	Implement EPA agreed changes to landfill gas monitoring programme	Oct-04	
Step 5	Works begin to install agreed additional landfill gas monitoring infrastructure	Nov-04	
Target 3	*Install agreed monitors on the outlets of the gas engines (3.13.4.2)*		Jul-04
Step 1	Call for proposals for continuous monitoring of landfill gas at utilisation plant.	Sep-04	
Step 2	Submit proposal for continuous monitoring of landfill gas at utilisation plant to EPA.	Nov-04	
Step 3	Public tender process begins upon recepeipt of EPA agreement	Dec-04	
Step 4	Award Contract	Feb-05	
Step 5	Works to achieve Target 3 begin	Mar-05	
Target 4	*Install telemetry system to record surface water quality at inlet to and outlet from agreed surface water lagoon (3.15)*		Jul-04
Phase I	*Baseline*		
Step 1	Commission capping report	Jun-04	
Step 2	Report received	Nov-04	
Step 3	Submit final capping proposal to EPA	Nov-04	
Phase II	Baseline		
Step 1	Commission final profile report upon receipt of EPA agreement of final capping method	Feb-05	
Step 2	Submit final profile proposals to EPA	Mar-05	
Phase III	*Baseline*		
Step 1	Commission restoration and aftercare plan upon receipt of EPA agreement of final profile proposals	Apr-05	
Step 2	Submit restoration and aftercare proposals to EPA	May-05	
Step 3	Public tender process begins upon receipt of EPA agreement of proposals in FCC-127-1-2005-015 & 022 & 027. (2 pha	upon EPA approval	
Step 4	Contract Awarded	2006 upon EPA approval	
Step 5	Works required of Target 4 begin.	2006 upon EPA approval	
Target 5	*Install telemetry system to record leachate levels in lagoon and any newly installed pump sump. (3.15)*		Jul-04
Step 1	Submit proposals to EPA for new pump sump arrangements	Jul-04	
Step 2	EPA agreement received for new pump sump arrangements	Jul-04	
Step 3	Public tender process begins.	Sep-04	
Step 4	Works to achieve Target 5 begin	Jan-05	
Target 6	Install Monitoring Equipment for Dissolved Methane in Leachate		
Step 1	Submit proposals to EPA for new pump sump arrangements	Jul-04	
Step 2	EPA agreement received for new pump sump arrangements	Jul-04	
Step 3	Public tender process begins.	Sep-04	
Step 4	Works to achieve Target 6 begin	Jan-05	

Step 1	**Completed**
Step 1	Commenced
Step 1	To Be Commenced

OBJECTIVES TARGETS, PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 3	**To Minimise Environmental Impact**		
Target 1	***Provide Waste Inspection Area (3.7)***		Apr-04
Step 1	Submit proposal to EPA	Apr-04	
Step 2	Proposal Agreed	May-04	
Step 3	Submission of alternative Location to EPA	Aug-04	
Step 4	Proposal Agreed	Oct-04	
Step 5	Works begin	Oct-04	
Step 6	Works Completed	Nov-04	
Target 2	***Provide a wheelwash (3.8)***		Immediate
Step 1	Submit proposal to EPA	Jul-04	
Step 2	Proposal Agreed	Jul-04	
Step 3	Works Commissioned	Sep-04	
Step 4	Works Completed	Nov-04	
Target 3	***Provide Waste Water Treatment Plant (3.9)***		Immediate
Step 1	Submit proposal to EPA	Sep-04	
Step 2	Proposal Agreed	Oct-04	
Step 3	Works Commissioned	Nov-04	
Step 4	Works Completed	Nov-04	
Target 4	***Ensure Tank and Drum storage areas comply (3.10)***		Immediate
Step 1	Notification that no fuel store in Licence area	Apr-04	
Step 2	Notification to Irish Power Systems to comply with condition 3.10 of Licence	Sep-04	
Step 3	Waster enforcement personnel inspect IPS compound	Sep-04	
Step 4	Bunded platform purcahsed for storage of two diesel drums in storage yard	Nov-04	
Step 5	Hydrostatic Test Lagoon and Storage Bund	Nov-07	

Step 1	**Completed**
Step 1	Commenced
Step 1	To Be Commenced

OBJECTIVES TARGETS PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 4	**To Improve Surface Water Quality at the Facilty**		
Target 1	***Proivde Effective Surface Water Management Infrastructure (3.11)***		Jul-04
Phase I	*Baseline*		
Step 1	Submit report on existing infrastructure	Sep-04	
Step 2	Submit additional Information on exiting infrastructure	Nov-04	
Phase II	*Immediate Improvements*		
Step 1	Submit proposal to EPA to protect Scribblestown Stream from any Potential leacate leakage from Lagoon	Sep-04	
Step 2	Proposal Agreed	Oct-04	
Step 3	Works Begin	Dec-04	
Step 4	Works Complete	Mar-05	
Phase III	Longer Term Improvements New Drainage Layer and Attenuation Pond		
Step 1	Commission capping report	Jun-04	
Step 2	Submit final capping proposals to EPA	Nov-04	
Step 3	Commission final profile report upon EPA agreement of final capping proposals	Feb-05	
Step 4	Submit final profile proposals to EPA	Mar-05	
Step 5	Commission restoration and aftercare plan upon receipt of EPA agreement of final profile proposals	Apr-05	
Step 6	Submit restoration and aftercare proposals to EPA	May-05	
Step 7	Public tender process begins upon receipt of EPA agreement of proposals in FCC-127-1-2005-015 & 022 & 0	Jan-06	
Step 8	Contract Awarded	Mar-06	
Step 9	Commission works required of Objective 4	Dec-07	
Step 10	Review Works	Jan-08	

Step 1	**Completed**
Step 1	Commenced
Step 1	To Be Commenced

OBJECTIVES TARGETS, PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 5	**To Improve Leachate Management at the Facility**		
Target 1	***Agree Effective Leachate Management Infrastructure (3.12)***		Jul-04
Phase I	*Baseline*		
Step 1	Submit report on existing infrastructure	Sep-04	
Step 2	Submit additional Information on exiting infrastructure	Oct-04	
Phase II	*Immediate Improvements*		
Step 1	Submit proposals for new pump sump arrangements	Jul-04	
Step 2	Agree new pump sump arrangements	Jul-04	
Step 3	Public tender process begins.	Sep-04	
Step 4	Commission works	Dec-04	
Phase III	*Longer term improvements Northern and Southern Interception Drains*		
Step 1	Commission capping report	Jun-04	
Step 2	Submit final capping proposals to EPA	Nov-04	
Step 3	**Commission final profile report upon EPA agreement of final capping proposals**	**Feb-05**	
Step 4	**Submit final profile proposals to EPA**	**Mar-05**	
Step 5	**Commission restoration and aftercare plan upon receipt of EPA agreement of final profile proposals**	**Apr-05**	
Step 6	**Submit restoration and aftercare proposals to EPA**	**May-05**	
Step 7	Public tender process begins upon receipt of EPA agreement of proposals in FCC-127-1-2005-015 & 022 & 027.	Jan-06	
Step 8	Contract Awarded	Jan-06	
Step 9	Commission works required of Objective 5	Jun-06	
Step 10	Review Works	Jan-08	

Step 1	**Completed**
Step 1	Commenced
Step 1	To Be Commenced

OBJECTIVES TARGETS PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 6	**To Improve Landfill Gas Management at the Facility**		
Target 1	***Identify and Remediate Landfill Gas Migration Issues***		
Phase I	*Baseline & Evaluation*		
Step 1	Evaluate monitoring data	Jan-04	
Step 2	Spike Monitoring at landfill boundaries.	Sep-04	
Step 3	Other Investigations Dunsoghly Estate	Oct-04	
Step 4	Evaluate alternative remedial strategies	Sep-04	
Phase II	Immediate Actions		
Step 1	Submit Proposal to EPA for remediation of landfill gas migration at sportsfield	Oct-04	
Step 2	Proposal Agreed	Oct-04	
Step 3	Works begin	Feb-05	
Target 2	***Evaluate And Improve Landfill Gas Exrtaction Infrastructure***		Jul-04
Phase I	*Baseline*		
Step 1	Submit report on existing infrastructure	Jul-04	
Step 2	Submit report on apparent areas of non extraction	Nov-04	
Phase II	*Long Term Improvements! Including enclosed flare and additional extraction*		
Step 1	Commission capping report	Jun-04	
Step 2	Submit final capping proposals to EPA	Nov-04	
Step 3	Commission final profile report upon EPA agreement of final capping proposals	Feb-05	
Step 4	Submit final profile proposals to EPA	Mar-05	
Step 5	Commission restoration and aftercare plan upon receipt of EPA agreement of final profile proposals	Apr-05	
Step 6	Submit restoration and aftercare proposals to EPA	May-05	
Step 7	Public tender process begins upon receipt of EPA agreement of proposals In FCC-127-1-2005-015 & 022 & 027.	Jan-06	
Step 8	Contract Awarded	Apr-06	
Step 9	Commission works required of Objective 6	Aug-06	
Step 10	Review Works	Jun-07	
Step 11	Determine appropritate size for enclosed flares	Mar-07	
Step 12	Public procurement of Enclosed flare	May-07	
Step 13	Enclosed flare delivered to site	Dec-07	
Step 14	Commission Flare	Feb-08	
Step 15	Flare Handover	Mar-09	
Step 1	**Completed**		
Step 1	Commenced		
Step 1	To Be Commenced		

OBJECTIVES TARGETS PHASES & STEPS	ENVIRONMENTAL PROGRAMME OF SURVEY PROPOSALS AND WORKS	OPERATIONAL TIMESCALE	LICENCE TIMESCALE
Objective 7	**To Restore The Facility**		Jan-07
Target 1	***Agree Restoration and Aftercare plans for the facility***	Jul-04	
Phase I	*Baseline*		
Step 1	Commission topographic survey	Jun-04	
Phase II	*Baseline*		
Step 1	Commission slope stability report	May-04	
Phase III	*Baseline*		
Step 1	Commission capping report	Jun-04	
Step 2	Submit final capping proposals to EPA	Dec-04	
Phase IV	*Medium Term Improvements*		
Step 1	Commission final profile report upon EPA agreement of final capping report	Jan-05	
Step 2	Submit Final Profile proposals to EPA	Feb-05	
Phase V	*Longer term improvementsi ncluding aftercare*		
Step 1	Commission restoration and aftercare plan upon receipt of EPA agreement of final profile proposals	Apr-05	
Step 2	Submit restoration and aftercare proposals to EPA	May-05	
Step 3	Public tender process begins upon receipt of EPA agreement of proposals in FCC-127-1-2005-015 & 022 & 027.	Jan-06	
Step 4	Contract Awarded	Jan-06	
Step 5	Commission works required of Objective 7	Jan-06	
Step 6	Review Works	Jan-08	

Step 1	**Completed**
Step 1	Commenced
Step 1	To Be Commenced

APPENDIX VI

	Richard Donnelly	Brian Reynolds	Tony Masterson	John Donnelly
Title	*Ganger*	*Landfill Compliance*	*Operative*	*Operative*
Role	*Management*	*Management*	*Ticket Collection*	*Tractor*
Role			*Inspections*	
Role				
Safe Pass		*		
Manual Handling	*			*
Slinger / Signaller				
Waste Management	*			
Use of Fire Extinguishers	*		*	
Occupational First Aid			*	
Health and Safety Management	*		*	
Safe Tractor Operation				*
Safe Use of Sprayers			*	
Fire Warden	*		*	
Safety in Excavations				
Confined Spaces Training			*	
Computer Skills - Introduction			*	
Banksman				

Environmental Protection Agency

AER Returns Worksheet

Version 1.1.03

REFERENCE YEAR	2008

1. FACILITY IDENTIFICATION

Parent Company Name	Fingal County Council
Facility Name	Dunsink Landfill aka Dunsink Civic Amenity
PRTR Identification Number	W0127
Licence Number	W0127-01

Waste or IPPC Classes of Activity

No.	class_name
4.4	Recycling or reclamation of other inorganic materials.
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.9	Use of any waste principally as a fuel or other means to generate energy.
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.
3.4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
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.

Address 1	Dunsink Lane
Address 2	Finglas
Address 3	County Dublin
Address 4	
Country	Ireland
Coordinates of Location	548100.000
River Basin District	IE-Eastern
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	John Daly (W0127)
AER Returns Contact Email Address	brian.reynolds@fingalcoco.ie
AER Returns Contact Position	Senior Engineer
AER Returns Contact Telephone Number	01-8905000
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
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		Engine	Flare			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
03	Carbon dioxide (CO2)	C	SSC	GASSIM Portable Signal 3030PM FID calibrated with Propane in accordance with EN 1536:2002 non-methane hydrocarbon	2420.0	0.0	13970000.0	0.0	13967580.0
07	Non-methane volatile organic compounds (NMVOC)	c	SSC	Testo 350/454 MXLTCR Tecora isokinetic Oarticulate sampler with QMA (Quartz) high temperature filters in accordance with EN132284-1	186.0	0.0	186.0	0.0	0.0
86	Particulate matter (PM10)	M	SSC	ISO 1996:2002 Total Particulate MAtter	566.0	0.0	566.0	0.0	0.0
05	Nitrous oxide (N2O)	M	Alt	Gas Analyser	7860.0	0.0	7860.0	0.0	0.0
01	Methane (CH4)	C	SSC	GASSIM	14000.0	0.0	555000.0	0.0	541000.0

* 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		Engine				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
11	Sulphur oxides (SOx/SO2)	M	Alt	Testo 350/454 MXL Flue Gas analyser	90.0	0.0	90.0	0.0	0.0
02	Carbon monoxide (CO)	M	Alt	Testo 350/454 MXL Flue Gas analyser Impinger train containing 0.1 molar sodium hydroxide and deionised water solution in accordance with EN1911 &EPA 26A	10700.0	0.0	10700.0	0.0	0.0
80	Chlorine and inorganic compounds (as HCl)	M	SSC	Impinger train containing 0.1 molar sodium hydroxide and deionised water solution in accordance with EN1911 & EPA 26A	79.1	0.0	79.1	0.0	0.0
84	Fluorine and inorganic compounds (as HF)	M	SSC	Impinger train containing 0.1 molar sodium hydroxide and deionised water solution in accordance with EN1911 & EPA 26A	7.56	0.0	7.56	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		Engine	Flare			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
351	Total Organic Carbon (as C)	M	SSC	Portable Signal 3030PM FID calibrated with propane in accordance with EN 1526:2002 non-methane hydrocarbon cutter.	8570.0	0.0	8570.0	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: Dunsink Landfill aka Dunsink Civic Amenity

Please enter summary data on the quantities of methane flared and / or utilised			Method Used			
	T (Total) kg/Year	**M/C/E**	**Method Code**	**Designation or Description**	**Facility Total Capacity m3 per hour**	
Total estimated methane generation (as per site model)	6000000.0	C	SCC	GASSIM	N/A	
Methane flared	0.0				5000.0	(Total Flaring Capacity)
Methane utilised in engine/s	3650000.0	M	OTY	From BPS Power Generation	3000.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	555000.0	C	SCC	GASSIM	N/A	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR									
POLLUTANT		METHOD					QUANTITY		
			Method Used		Engine	Flare			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
03	Carbon dioxide (CO2)	C	SSC	GASSIM Portable Signal 3030PM FID calibrated with Propane in accordance with EN 1536:2002 non-methane hydrocarbon	2420.0	0.0	13970000.0	0.0	13967580.0
07	Non-methane volatile organic compounds (NMVOC)	c	SSC	Testo 350/454 MXLTCR Tecora isokinetic Oarticulate sampler with QMA (Quartz) high temperature filters in accordance with EN132284-1	186.0	0.0	186.0	0.0	0.0
86	Particulate matter (PM10)	M	SSC	ISO 1996:2002 Total Particulate MAtter	566.0	0.0	566.0	0.0	0.0
05	Nitrous oxide (N2O)	M	Alt	Gas Analyser	7860.0	0.0	7860.0	0.0	0.0
01	Methane (CH4)	C	SSC	GASSIM	14000.0	0.0	555000.0	0.0	541000.0

* 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		Engine				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
11	Sulphur oxides (SOx/SO2)	M	Alt	Testo 350/454 MXL Flue Gas analyser	90.0	0.0	90.0	0.0	0.0
02	Carbon monoxide (CO)	M	Alt	Testo 350/454 MXL Flue Gas analyser Impinger train containing 0.1 molar sodium hydroxide and deionised water solution in accordance with EN1911 &EPA 26A	10700.0	0.0	10700.0	0.0	0.0
80	Chlorine and inorganic compounds (as HCl)	M	SSC	Impinger train containing 0.1 molar sodium hydoxide and deionised water solution in accordance with EN1911 & EPA 26A	79.1	0.0	79.1	0.0	0.0
84	Fluorine and inorganic compounds (as HF)	M	SSC	Impinger train containing 0.1 molar sodium hydoxide and deionised water solution in accordance with EN1911 & EPA 26A	7.56	0.0	7.56	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		Engine	Flare			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
351	Total Organic Carbon (as C)	M	SSC	Portable Signal 3030PM FID calibrated with propane in accordance with EN 1526:2002 non-methane hydrocarbon cutter.	8570.0	0.0	8570.0	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: Dunsink Landfill aka Dunsink Civic Amenity

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)	6000000.0	C	SCC	GASSIM	N/A	
Methane flared	0.0				5000.0	(Total Flaring Capacity)
Methane utilised in engine/s	3650000.0	M	OTY	From BPS Power Generation	3000.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	555000.0	C	SCC	GASSIM	N/A	

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 this only concerns Releases from your facility

RELEASES TO WATERS								
POLLUTANT						QUANTITY		
			Method Used		SW17			
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
					0.0	0.0	0.0	0.0
22	Nickel and compounds (as Ni)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	0.929	0.929	0.0	0.0
20	Copper and compounds (as Cu)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	0.288	0.288	0.0	0.0
18	Cadmium and compounds (as Cd)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	0.125	0.125	0.0	0.0
19	Chromium and compounds (as Cr)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	0.641	0.641	0.0	0.0
23	Lead and compounds (as Pb)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	0.288	0.288	0.0	0.0
24	Zinc and compounds (as Zn)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	1.922	1.922	0.0	0.0
21	Mercury and compounds (as Hg)	M	iso/iec 17025:1999	sls tm 127 by Cold Vapour Atomic Absorption	0.016	0.016	0.0	0.0
					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		SW17			
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
					0.0	0.0	0.0	0.0
					0.0	0.0	0.0	0.0
					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		sw17				
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
240	**Suspended Solids**	M	iso/iec 17025:1999	SLS TM 022D by Gravimetric Determination based on BS 2690:Part 120:1981	8331.0	0.0	8331.0	0.0	0.0
320	Magnesium	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	2115.0	0.0	2115.0	0.0	0.0
341	Sodium	M	iso/iec 17025:1999	sls tn 083 using flame emission photometric method	6088.0	0.0	6088.0	0.0	0.0
338	Potassium	M	iso/iec 17025:1999	sls tn 083 using flame emission photometric method	1346.0	0.0	1346.0	0.0	0.0
321	Manganese (as Mn)	M	iso/iec 17025:1999	sls tm 152 D by ICPMS	0.288	0.0	0.288	0.0	0.0
238	Ammonia (as N)	M	iso/iec 17025:1999	sls tm 099 based on BS2690 Part	83.0	0.0	83.0	0.0	0.0
306	COD	M	iso/iec 17025:1999	sls tm 107 using D Dr Lange Kit	4486.0	0.0	4486.0	0.0	0.0
305	Calcium	M	iso/iec 17025:1999	sls tm 152 by icpms	35245.0	0.0	35245.0	0.0	0.0
343	Sulphate	M	iso/iec 17025:1999	sls tm 098	38448.7	0.0	38448.7	0.0	0.0
332	Ortho-phosphate (as PO4)	M	iso/iec 17025:1999	sls tm 100 based on bs 2690:Part 105:1983	9.29	0.0	9.29	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		SUMP			
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
83	Fluorides (as total F)	M	alt	iso/iec 10725:1999 sls tm 104	0.0	0.0	0.0	0.0
					0.0	0.0	0.0	0.0
79	Chlorides (as Cl)	M	alt	Method 525.1/2 iso/iec 17025:1999sls tm 102 D	300.0	300.0	0.0	0.0
12	Total nitrogen	M	alt	iso/iec 10725:1999 sls tm 102 D	184.0	184.0	0.0	0.0
18	Cadmium and compounds (as Cd)	M	alt	iso/iec 10725:1999 sls tm 152 D by ICPMS	0.0	0.0	0.0	0.0
19	Chromium and compounds (as Cr)	M	alt	iso/iec 10725:1999 sls tm 152 D by ICPMS	0.001	0.001	0.0	0.0
20	Copper and compounds (as Cu)	M	alt	iso/iec 10725:1999 sls tm 152 D by ICPMS	0	0.0	0.0	0.0
23	Lead and compounds (as Pb)	M	alt	iso/iec 10725:1999 sls tm 152 D by ICPMS	0	0.0	0.0	0.0
24	Zinc and compounds (as Zn)	M	alt	iso/iec 10725:1999 sls tm 152 D by ICPMS	0	0.0	0.0	0.0
22	Nickel and compounds (as Ni)	M	alt	iso/iec 10725:1999 sls tm 152 D by ICPMS	0.0025	0.0025	0.0	0.0
21	Mercury and compounds (as Hg)	M	alt	Absorption	0	0.0	0.0	0.0
01	Methane (CH4)	M	alt	gls tm 147	0.5125	0.5125	0.0	0.0
					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		SUMP			
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
					0.0	0.0	0.0	0.0
					0.0	0.0	0.0	0.0
238	Ammonia (as N)	M	alt	iso/iec 17025:1999	130.0	130.0	0.0	0.0
338	Potassium	M	alt	iso/iec 17025:1999	110.0	110.0	0.0	0.0
341	Sodium	M	alt	iso/iec 17025:1999	190.0	190.0	0.0	0.0
303	BOD	M	alt	iso/iec 17025:1999	5.0	5.0	0.0	0.0
306	COD	M	alt	iso/iec 17025:1999	110.0	110.0	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

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					

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