CORK COUNTY COUNCIL
WESTERN DIVISION

ANNUAL ENVIRONMENTAL REPORT 2010
1st Jan 2010 - 31st DEC 2010

BENDUFF LANDFILL SITE
ROSSCARBERY CO. CORK
EPA LICENCE REF No. W0070-01

HUME HSE,
WOLFE TONE ST,
CLONAKILTY,
CO. CORK.

MARCH 2011.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

1.0 Introduction

1.1 Scope and Purpose of the Report

The Environmental Protection Agency (EPA) issued Cork County Council with a Waste Licence (Waste Licence No. 70-1) for Benduff Landfill site on 21st December 2000. In July 2006, in accordance with a revised EPA numbering system, the Waste Licence at Benduff Landfill was renumbered W00070-01. In accordance with the requirement of Condition 2.8.1 of the waste licence,

'The licensee shall submit to the Agency for its agreement, within thirteen months from the date of grant of this licence, and within one month of the end of each year thereafter, an Annual Environmental Report (AER).'

1.2 Reporting Period

This is the ninth AER to be submitted under Condition 2.8 of the licence and covers the reporting period 1st January 2010 to 31st December 2010.

1.3 Site Location

The facility address is:

Benduff Landfill,
Rosscarbery,
Co. Cork.

The National Grid Reference for the site is E126000, N38300.

1.4 Closure of Site

On April 23rd 2004, Benduff Landfill ceased acceptance of waste. Restoration and aftercare has continued from that date.

1.5 Management and Staffing Structure of the Facility

Following closure of the facility (Apr 2004), there has been no full time County Council presence on the site. The Management of the facility is undertaken from the Divisional Offices, Hume House, Wolfe Tone St., Clonakilty.

Management structure is shown in Table 1.5.1 below.

Table 1.5.1: Managerial Staff		
Position.	**Contact Details.**	**Duties.**
Ms Grainne O'Mahony Senior Executive Officer.	Cork County Council, Hume House, Wolfe Tone St., Clonakilty, Co. Cork. Telephone No: 023-8858812 Fax No: 023-8858814	Management of Cork County Council Environment & Waste Operations, Western Division.
Mr. Paudie Hegarty, BE. Senior Executive Engineer.	As above.	Management of Cork County Council Environment & Waste Operations, Western Division.
Ms. Mairead Hales, BE. Executive Engineer.	As above.	Management of Cork County Council Environment & Waste Operations, Western Division.
Mr. Patrick Duggan, BSc. Facility Manager	Clonakilty Recycling Centre, Clogheen Industrial Estate, Clonakilty, Co. Cork Telephone No: 023-8850982 Fax No: 023-885016	Monitoring/inspection/ sampling at Benduff landfill site.

1.6 Environmental monitoring and reporting

Cork County Council personnel carried out environmental monitoring and recording throughout 2010.

2.0 Description of the site

2.1 Waste Management Activities at the Facility

Benduff Landfill was closed in 2004 and capped immediately. Therefore no waste has been accepted on site since that date.

Waste Activities at the Benduff landfill site are restricted to those outlined below:-

Waste Management Act, 1996: Third Schedule
Class 1: Deposit on, in or under land (including landfill)
Class 2: Land treatment, including biodegradation of liquid or sludge discards in soils
Class 4: The storage of leachate and contaminated water pending its disposal at another appropriate facility.
Class 13: Temporary storage of waste, which is unsuitable for deposit at the facility and which has been duly notified to the Agency.

2.2 Remaining capacity

The site has been capped and there remains no capacity in the site. A topographical survey of the facility is included in the Appendices.

3.0 Site Development Works

3.1 Development works during 2010

No major or minor works took place in Benduff Landfill Site in 2010 with all development works complete.

There are no major developments planned for the site in 2011.

4.0 Summary of Monitoring and Emissions

In compliance with Condition 9 and Schedule E of the waste licence the following monitoring is carried out on site:

Landfill gas;
Landfill gas flare;
Groundwater;
Surface water;
Leachate;
Dust.

Four groundwater boreholes (MW1, MW2, MW3 and MW4) were replaced in 2004 and the new wells were placed immediately adjacent to the existing boreholes. Two additional wells (MW5 and MW6) were also installed at that time. An additional well, (MW7) was installed in July 2006.

Two new leachate wells (LW1 and LW2) were installed in 2005 as part of the capping contract. The old wells (L1, L2 &L3) were made redundant and filled in.

All monitoring locations are identified on a Monitoring Locations Drawing attached in the Appendices.

4.1 Landfill Gas

Schedule E.1 of EPA licence W00070-01 specifies that gas monitoring is to be undertaken at groundwater stations, leachate stations, the site office and the landfill gas flare.
The site office was removed following closure of the site in 2004 and thus gas monitoring was discontinued at that location.

Schedule E.1 notes that monitoring is to be undertaken monthly at all stations. However in a report prepared on behalf of Cork County Council by Fehily Timoney and Company in February 2009, a change to the monitoring requirements was requested. According to the correspondence received from the Agency on 21st April 2009 (Ref: W0070-01/ap03ld) Landfill gas emissions are now to be monitored biannually. This states that monitoring is to be undertaken at groundwater stations MW1 – MW7, and at leachate wells LW1 and LW2. . Measurement of the following parameters is specified: methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), atmospheric pressure and temperature. The gas is monitored using a GA94 infra-red gas analyser, which detects levels of carbon dioxide methane and oxygen. Schedule F.2 of the licence specifies methane and carbon dioxide limits of 20% LEL (1% v/v) and 1.5% v/v respectively in any building on or adjacent to the landfill.

Groundwater stations MW1-MW7
No methane was detected at groundwater stations MW1 - MW7. Low levels of carbon dioxide were detected at all groundwater stations. It can be inferred that large-scale lateral migration of landfill gases is not occurring outside of the landfill area.

Gas monitoring – leachate wells LW1 & LW2

Results indicate that methane and carbon dioxide are being produced within the landfill area and that there was considerable variation in values throughout the year. There was a significant reduction in levels of methane and carbon dioxide recorded at monitoring point LW2. The range of values detected at the two leachate wells are detailed in Tables 4.1.1 and 4.1.2.

Table 4.1.1 Range of values for methane

Methane gas (% v/v)	LW1	LW2
Maximum conc.	25.9	1.2
Minimum conc.	19.9	0.8

Table 4.1.2 Range of values for carbon dioxide

Carbon dioxide (% v/v)	LW1	LW2
Maximum conc.	15.3	7.5
Minimum conc.	13.3	1.3

4.2 Surface water

Schedule E.5 of licence W00070-01 specifies that monitoring of surface water quality is to be undertaken at five locations: SW1, SW2, SW3, SW4 and SW5. The local topography is such that stations SW2 and SW4 are down gradient of the landfill, although located to the east and west of the site respectively. Following completion of capping at Benduff, a new surface water monitoring station (SW5) was located upstream of SW2.

In a report prepared on behalf of Cork County Council by Fehily Timoney and Company in February 2009, a change to the monitoring requirements was requested. According to the correspondence received from the Agency on 21st April 2009 (Ref: W0070-01/ap03ld) surface water is now to be monitored biannually and only at monitoring points SW1, SW4 and SW5. The parameters to be measured are ammoniacal nitrogen ($NH_{3/4}$-N), biochemical oxygen demand (BOD), chemical oxygen demand (COD), chloride (Cl^-), dissolved oxygen (DO), electrical conductivity, pH, total suspended solids, and temperature. Table E.5.2 of the licence states additional parameters which are to be monitored annually. Licence W00070-01 does not specify maximum concentrations of these parameters and accordingly, data presented below are discussed with reference to relevant legislation:

(i) Council Directive 75/440/EEC of 16 June 1975 concerning the quality of surface water intended for the abstraction of drinking water, incorporated into Irish law by the European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989 (S.I. No. 294 of 1989). The directive divides waters into three categories - A1, A2 and A3 – depending on the increasing level of treatment required.

(ii) Council Directive 78/659/EEC of 18 July 1978 on the quality of fresh waters needing protection in order to support fish life, given Irish effect by the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988). Notwithstanding the absence of any fisheries designation on the streams surrounding the landfill site, the Freshwater Fish Directive carries some weight due to its strict limits and the consequent suitability of a watercourse for other uses should it meet these limits. These limits have been quoted in preference to the Surface Water limits where available.

It is noted that there are no drinking water abstraction points or fisheries designations on the watercourses on which the sampling stations are located, however comparisons with the limits specified by the above legislation is useful for comparative purposes.

Water samples were taken on the following dates:

- 25th March 2010 – SW1, SW4 and SW5
- 23rd September 2010 – SW1
- 15th November 2010 – SW1, SW4 and SW5

All surface water monitoring points were sampled. The results recorded for these monitoring points indicated that the water present was of a very good quality and was not affected by the presence of the landfill. Overall the results have remained consistent during 2010.

4.3 Groundwater

Under schedule E.5 of licence W00070-01, monitoring of groundwater quality is to be undertaken at six locations. Four of these are boreholes (MW1, MW2, MW3 and MW4) while two stations consist of tapped private wells – SPJ1 and SPM2 located 300m southwest and 250m southeast of the site respectively. Borehole MW3 is located up gradient of the landfill site, while stations MW1, MW2 and MW4 are down gradient. MW1 and MW2 lie on the same groundwater corridor. Two new groundwater stations MW5 and MW6 were put in place at the northeast and southeast corners of the landfill respectively. A further groundwater monitoring location, MW7, was installed at a location to the west of the landfill site in July of 2006.

In a report prepared on behalf of Cork County Council by Fehily Timoney and Company in February 2009, a change to the monitoring requirements was requested. According to the correspondence received from the Agency on 21st April 2009 (Ref: W0070-01/ap03ld) groundwater is now to be monitored quarterly at monitoring points MW1-MW7 and SPJ1 and SPM2. The parameters to be measured are groundwater level, ammoniacal nitrogen ($NH_{3/4}$-N), electrical conductivity, pH, and temperature.

Table E.5.2 of the licence states additional parameters that are to be monitored annually.

Groundwater samples were taken on the following dates:

- 25th March 2010
- 29th June 2010
- 23rd September 2010
- 15th November 2010

Licence W00070-01 does not specify maximum concentrations of parameters and accordingly, levels presented below are discussed with reference to relevant legislation/standards:

(i) Council Directive 98/83/EC on the quality of water intended for human consumption repealed the similarly titled Council Directive 80/778/EEC. The directive specifies maximum limits with respect to a large number of parameters and is of particular relevance to groundwater.

(ii) The Netherlands Department of Soil Protection published its *Circular on target values and intervention values for soil remediation* in February 2000. The circular specifies general target and intervention concentrations of parameters (chiefly metals and organics) in soils and groundwater, which it deems necessary to allow the return of contaminated land to any potential use. The target value is the baseline concentration value below which compounds and/or elements are known or assumed not to affect the natural properties of the soil. The intervention value is the maximum tolerable concentration above which remediation is required and is applied where one or more compounds, in concentrations equal to or higher than the intervention value, is found in more than 1000m^3 of groundwater.

A review of the quarterly results for the groundwater wells indicated that levels of ammoniacal nitrogen at MW1 were elevated during some of the sampling occasions in 2010. MW1 is located adjacent to S1 from which leachate is removed on an ongoing basis following an incident in 2004. It is considered probable that the elevated levels of ammoniacal nitrogen at MW1 are related to its proximity to the landfill and this was addressed in a report prepared by O Neill Groundwater Engineering in 2005.

Annual sampling was carried out in November 2010 at Benduff and a greater range of parameters was therefore assessed. Conductivity was slightly elevated at MW1 but was generally consistent with previous results. For all other monitoring points MW2 – MW7 and SPJ1 and SPM2 Ammonia as N, Conductivity and pH all remained relatively consistent with previous monitoring results. A comparison of temporal data indicates that most results remain consistent. The microbiological samples showed that there is in general a low presence of faecal coliforms in the groundwater wells at Benduff landfill. For the total coliforms counts it shows that there is high values of

coliforms at the groundwater wells. These results are generally consistent with the previous years.

4.4 Leachate

Schedule E.5 of licence W00070-01 specifies that monitoring of leachate is to be undertaken at station L1 and any other stations, which may be designated. A second station – L2 – was subsequently agreed. Both L1 and L2 were relocated and renamed LW1 and LW2 in the last quarter of 2005. Schedule E.5 provides a list of parameters, which are to be monitored at weekly, quarterly and annual intervals at all leachate stations. Licence W00070-01 does not specify maximum concentrations of parameters. There are no relevant standards available for leachate quality. Due to low volumes of leachate during 2010 some of the wells were dry at during monitoring. The results were generally consistent with previous years results. All values for the lagoon were significantly lower than LW1 and LW2.

4.5 Additional monitoring at station S1.

Following contamination of a watercourse adjoining the landfill in February 2004 additional monitoring points were specified as follows: *Monthly monitoring at sites S1 (pond) and S4 (corresponding to SW4) for the following parameters COD, BOD, ammoniacal nitrogen, pH, conductivity, chloride, temperature, dissolved oxygen, total suspended solids, total coliforms and faecal coliforms*. Following on from the build up of water at S1 a programme of removal has been put in place. Due to the improvement in water quality at SW4 the Agency no longer require sampling at this location. However, SW4 is monitored as part of the biannual and annual monitoring programmes.

In a report prepared on behalf of Cork County Council by Fehily Timoney and Company in February 2009, a change to the monitoring requirements was requested. According to the correspondence received from the Agency on 21st April 2009 (Ref: W0070-01/ap03ld) the water at monitoring point S1 is now to be monitored biannually. The parameters to be measured are BOD, COD, ammoniacal nitrogen ($NH_{3/4}$-N), electrical conductivity, pH, chloride, DO, TSS, total coliforms, faecal coliforms and temperature.

Monitoring undertaken during the first quarter at S1 showed that there was a deterioration in quality when compared with the results from the final quarter in 2009. The results for Ammonia, BOD, COD and Chloride showed an increase in values. However the results in the final quarter of 2010 showed a marked improvement and were in general consistent with results in 2009. Total coliforms also reduced from 122MPN/100mls in 2009 to 66MPN/100mls in 2010.

4.6 Noise.

As Benduff landfill is no longer active noise monitoring was not required during 2010.

4.7 Dust.

As Benduff landfill is no longer active dust monitoring was not required during 2010.

4.8 Biological survey.

Schedule E.5 of licence W00070-01 notes that an annual biological assessment is to be undertaken at two stations in proximity to the landfill site: WQ1 and WQ2. The schedule specifies that an appropriate biological method is to be used such as the EPA Q-rating system.

Station WQ1 no longer exists as an open watercourse, and therefore it was not possible to take a sample at this location. Accordingly a sample was taken at SW2 and WQ2 was relocated to SW4.

The method employed was the Q-rating system used nationally by the EPA and the survey was carried out in October 2010. The biological survey was undertaken at stations WQ2 (relocated to SW4) and SW2. Volumes at these monitoring points as usual were low when the survey was successfully carried out. This may have had an impact on invertebrate diversity and density at these monitoring locations. On the basis of macro-invertebrate diversity, a provisional Q-value of 2 was awarded to both sites. However as the stream dried up during the summer months at SW4 the low values are probably not related to nutrient enrichment and these results may be misleading. It is also noted that the watercourse on which SW2 is located was cleaned during 2006 which still may influence the results found.

4.9 Landfill Gas Quantities.

A software programme was previously used by Fehily Timoney to predict the total gas generated from the input of waste at Benduff landfill. Modelling was carried out using a Landfill Gas Emissions Model (LandGEM-verison 2.01) and the CAA site of default values were used in the Benduff landfill gas prediction model. The predicted peak rate of gas production for the site occurred in 2002. As estimated by the model the total amount of gas generated to date is shown in Table 4.9.1.

Table 4.9.1. Predicted gas yield.

Year	Gas Yield (m3/year)
1995	1,296,400
1996	1,365,600
1997	1,432,200
1998	1,496,000
1999	1,557,200
2000	1,696,200
2001	1,713,800

2002	1,726,600
2003	1,702,200
2004	1,663,600
2005	1,598,400
2006	1,535,800
2007	1,475,600
2008	1,417,600
2009	1,362,000
2010	1,308,600

4.10 Emissions to Groundwater

The facility is unlined and acts as a dilute and disperse landfill. Although there is no barrier to prevent leachate reaching groundwater it does not appear that the landfill is causing significant contamination of groundwater. Results from 2010 indicate that the quality of groundwater is generally consistent with results from previous years.

4.11 SCADA results.

SCADA results are presented graphically in the Appendices. Results are shown for:

- Methane CH_4,
- Carbon Dioxide CO_2,
- Oxygen O_2,
- Carbon Monoxide CO,
- Flow
- Flare Operating Pressure
- Flare Operating Temperature

4.12 Landfill gas flare – monitoring of emissions.

Monitoring results for the landfill gas flare indicate that the flare is performing efficient combustion of landfill gas. The levels determined for Nitrogen Oxides (NO_X) were within the emission limit values. Organic compounds were within the limits of TA Luft Classes I, II, and III. The sum of the concentration for the three classes were within the limits of the licence and do not exceed the Class III limit. The levels determined for Hydrofluoric acid (HF) and Hydrochloric acid (HCL) and also the results for Particulate Matter were all within the emission limits. The results of the Landfill Gas Flare monitoring are included in the tables below.

Table 4.12.1 Results for Flue Gas monitoring from the Flare System at Benduff Landfill

Parameter	Emission Value[1] (mg/Nm^3)	Emission Limit[2] (mg/Nm^3)
Nitrogen Oxides (NO_X) as NO_2	55	150
Carbon Monoxide (CO)	150	50
Temperature (^oC)	466	N/A

[1]Normalised to 273K, 101.3Pa and 5% O_2 reference
[2]As stated in Schedule F of WL W0070/01

Table 4.12.2 Results of TA Luft Organics monitoring from the Flare System at Benduff Landfill

Parameter	Emission Value (mg/m^3)	Emission Limit (mg/m^3)
TA Luft Class I Dichloromethane Tetrachloroethane	<0.03	20 (at mass flow >0.1kg/hr)
TA Luft Class II Acetonitrile	<0.03	100 (at mass flow >2kg/hr)
TA Luft Class III Vinyl Chloride	<0.03	150 (at mass flow >3kg/hr)
Total TA Luft Organic Compounds (class I-III)	<0.03	150 (at mass flow >3kg/hr)

< denotes that the measured parameter was below the laboratory's level of detection

Table 4.12.3 Results of the HCL and HF monitoring from the Flare System at Benduff Landfill

Parameter	Emission Value (mg/m^3)	Emission Limit (mg/m^3)
HCL	0.648	50
HF	<0.18	5

<denotes that the measured parameter was below the laboratory's level of detection of inorganic acids in the gas stream

Table 4.12.4 Results of the Particulate monitoring from the Flare System at Benduff Landfill

Parameter	Emission Value (mg/m^3)	Emission Limit (mg/m^3)
Particulate	19.7	130

< denotes that the measured parameter was below the laboratory's level of detection

4.13 Leachate disposal off-site

Leachate arising at the facility is transported to, and disposed of, at Bandon Waste Water Treatment Plant. Four tanker loads of leachate were removed from the site during the reporting year.

5.0 Energy consumption.

As there was no plant or machinery on site in 2010, there was no consumption of diesel.
The electricity supply caters for the flare and leachate collection system. Recording of electricity usage is now recorded as part of the weekly flare inspections and is shown in table 5.0.1 below.

Table 5.0.1. Energy Consumption on Site

Month	Electricity Usage (KwHr)
January	169
February	184
March	163
April	335
May	256
June	138
July	472
August	344
September	372
October	370
November	380
December	290
Total:	**3473**

6.0 Environmental incidents, non-compliances and complaints

6.1 Reported Incidents.

No reported incidents were recorded in 2010

6.2 Non-Compliances.

No non-compliances occurred at Benduff landfill during 2010.

6.3 Complaints.

No complaints were received by the facility during the reporting period.

6.4 Review of nuisance controls.

Since cessation of landfilling all nuisance controls for litter, birds, vermin and flies have been removed. Weekly inspections however still monitor nuisance and should nuisance become an issue, adequate resources will be deployed.

6.5 Programme for Public Information.

6.5.1 Information Available to the Public.

Information regarding the facility is held at the County Council Divisional Office, Hume House, Wolfe Tone St., Clonakilty, Co. Cork.

Personnel associated with the facility are also available by appointment to meet with members of the public and answer queries regarding the facility if requested. The following information is held in a public file at these offices available for the public to inspect:-

- copy of the waste licence application.
- copy of the waste licence.
- correspondence from the Agency relating to the facility.
- correspondence from Cork County Council (West) to the Agency relating to the facility.
- copies of quarterly monitoring reports.

7.0 Environmental management programme report.

7.1 Schedule of Objectives and Targets for Year 2010.

Progress in implementation of 2010 Objectives and Targets is shown in Table 7.1.1 below.

Table 7.1.1 Schedule of Objectives and Targets for Year 2010.

2010 Objective	Description.	Progress in implementing objectives.
Objective 1.	Maintain/improve site infrastructure (fencing, monitoring wells and equipment, gas flare, leachate extraction system, etc).	Maintenance ongoing. All site infrastructure functional and adequate at time of report.
Objective 2.	Operate landfill gas system to licence conditions.	Objective achieved.
Objective 3.	Continue aftercare obligations to the waste licence conditions.	On going.
Objective 4.	Review emissions and environmental impacts.	On going monitoring and assessment & close inspection of quarterly reports.

7.2 Proposed Objectives & Targets for 2011.

Proposed Objectives & Targets for 2011 are shown in Table 7.2.1 below.

Table 7.2.1 Schedule of Objectives and Targets for Year 2011.

2011 Objective.	Description.
Objective 1.	Maintain/improve site infrastructure (fencing, monitoring wells and equipment, gas flare, leachate extraction system, etc).
Objective 2.	Operate landfill gas system to licence conditions.
Objective 3.	Continue aftercare obligations to the waste licence conditions.
Objective 4.	Ongoing review of emissions and environmental impacts.

7.3 Financial Provision.

Cork County Council has the ability to meet any financial commitments or liabilities incurred by the maintenance of Benduff Landfill. These commitments include compliance with the waste management licence (No. W00070-01) and aftercare of the site as specified in Condition 8 of the licence.

Cork County Council annually, in the preparation of the 'Book of Estimates' and the passing of these estimates, shall make provision for any capital works required to fulfil conditions of the waste licence for Benduff Landfill.

APPENDICES

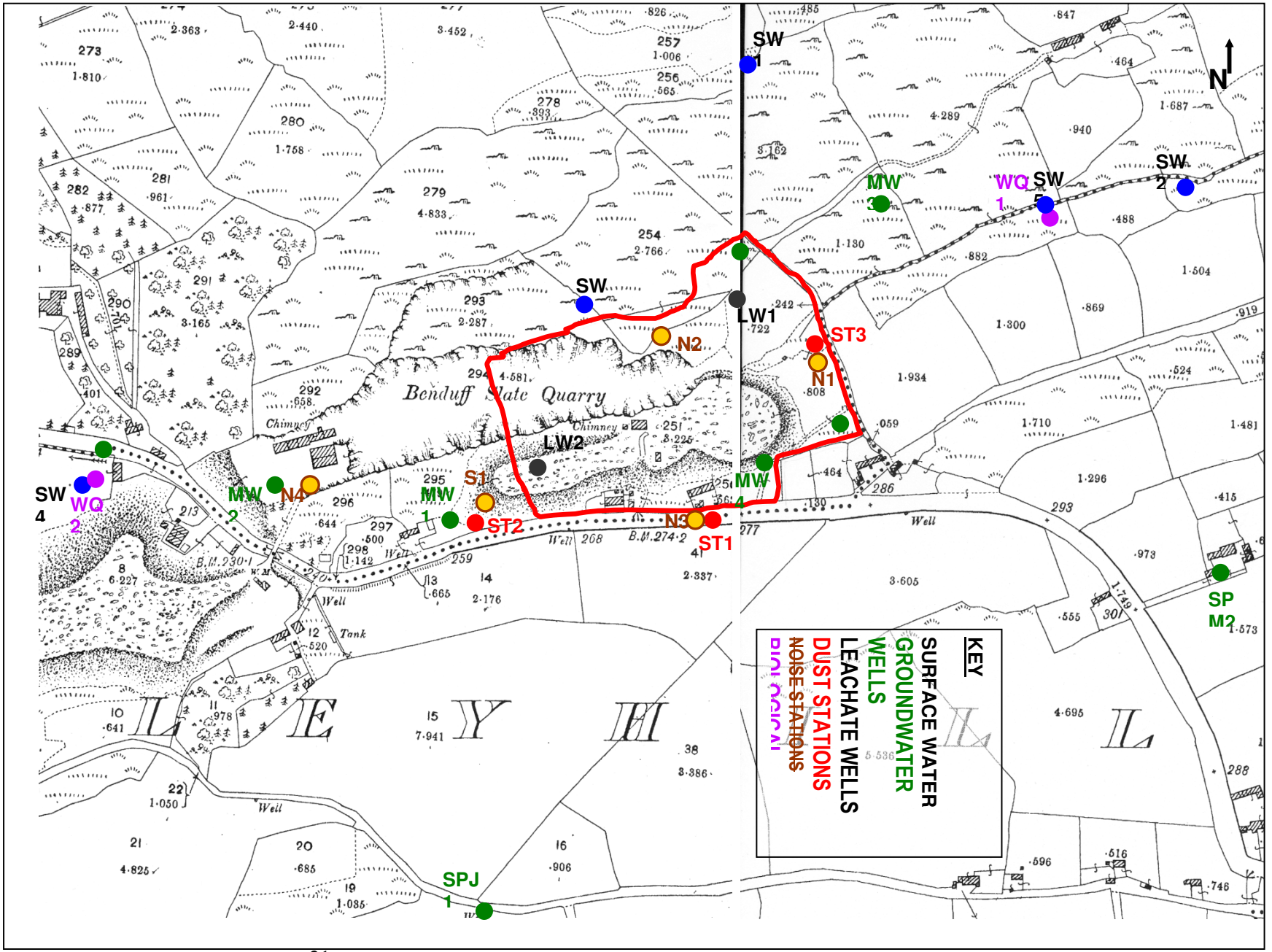
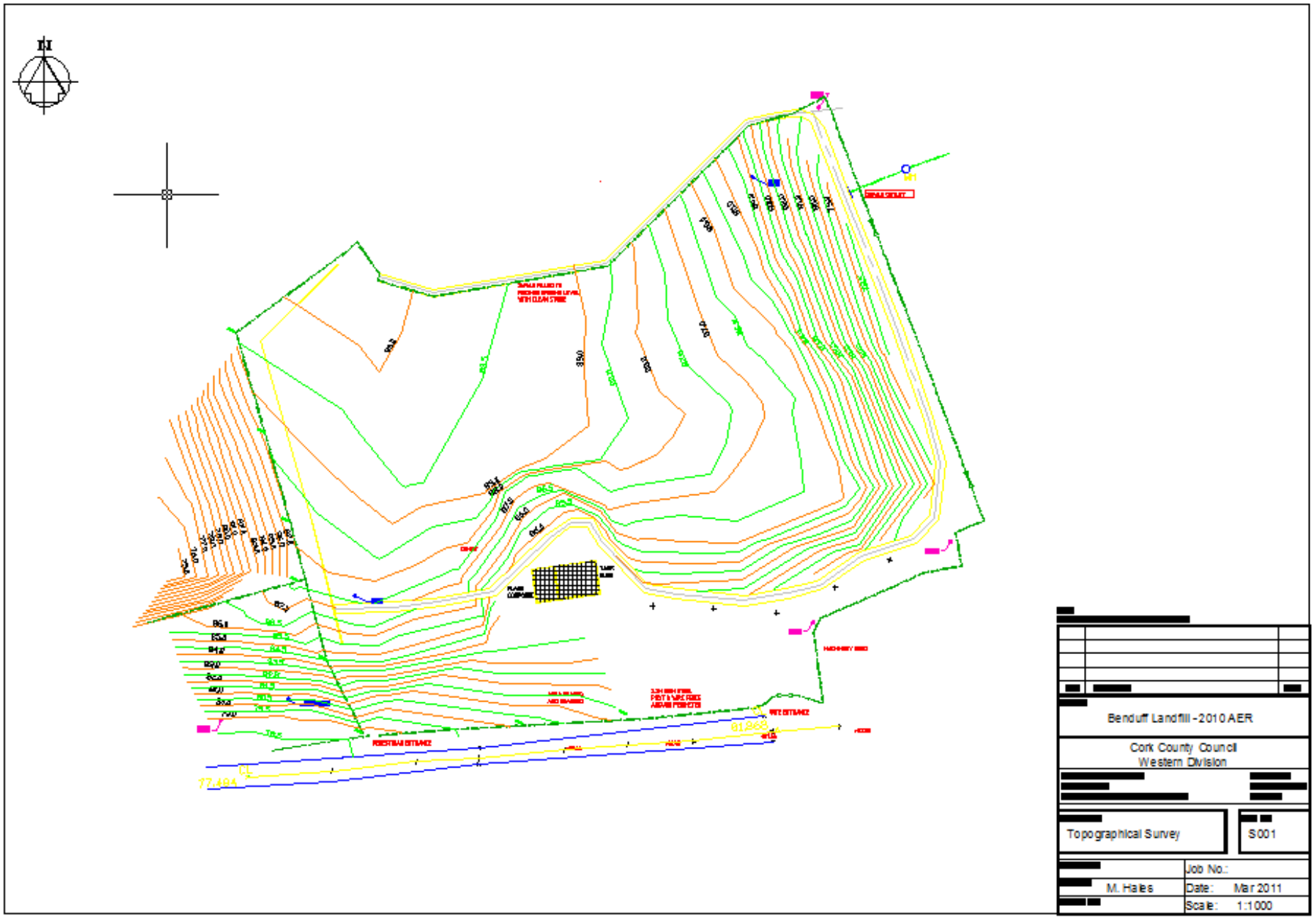


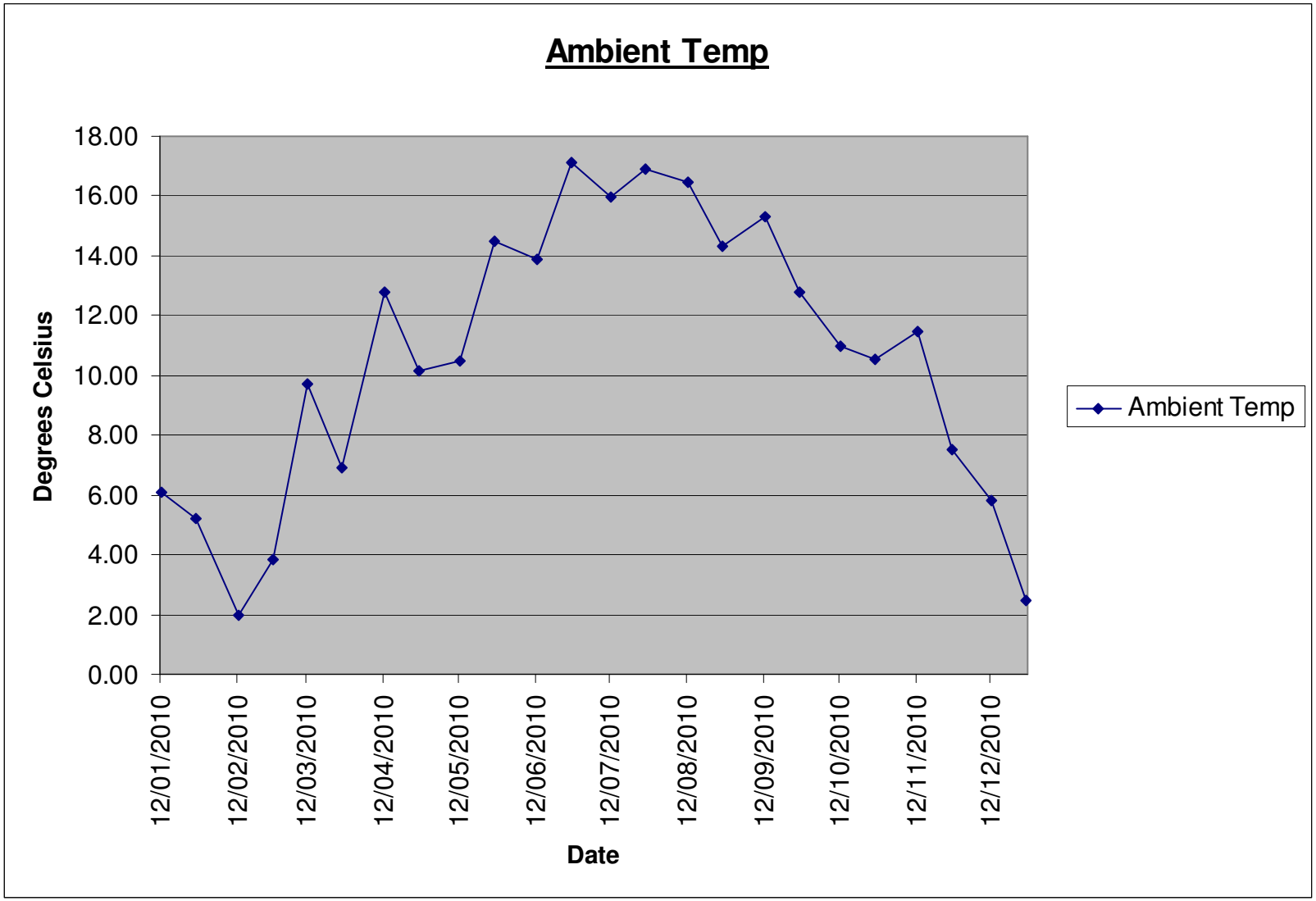
Figure 1. Benduff landfill monitoring stations –2010

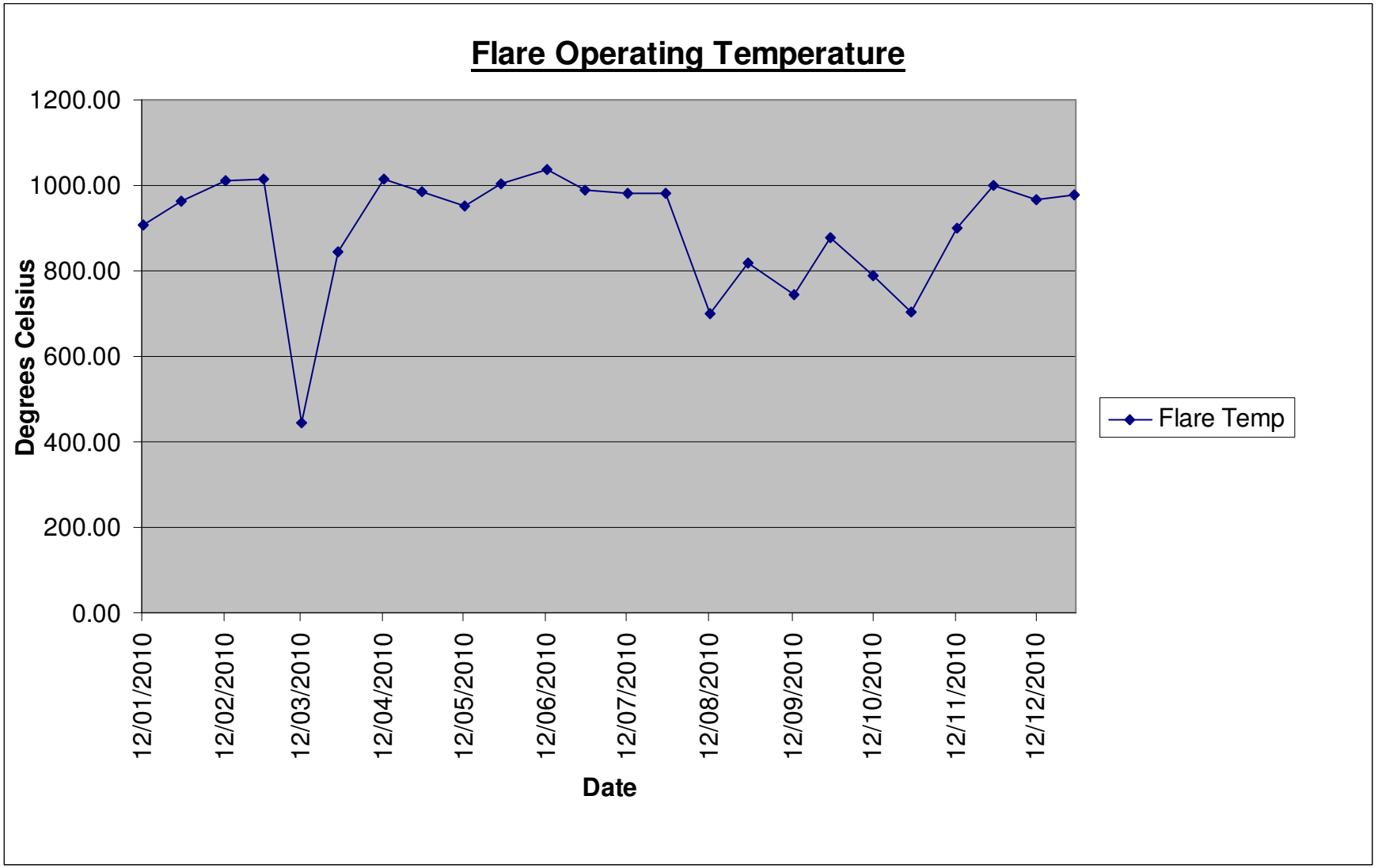
SCALE 1:3600

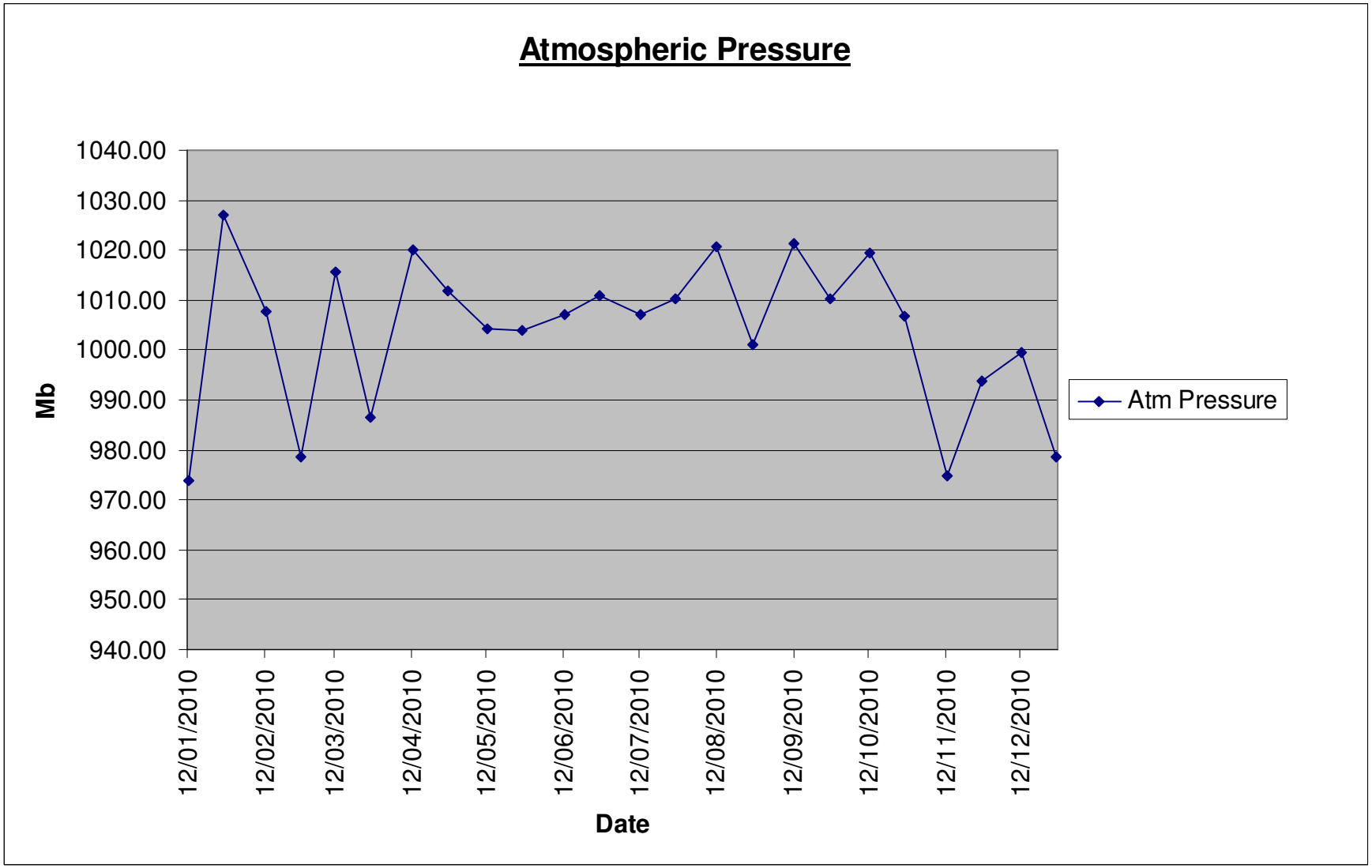

Benduff Landfill -2010 AER
Cork County Council
Western Division
Topographical Survey
S001
M. Hales
Job No.:
Date: Mar 2011
Scale: 1:1000

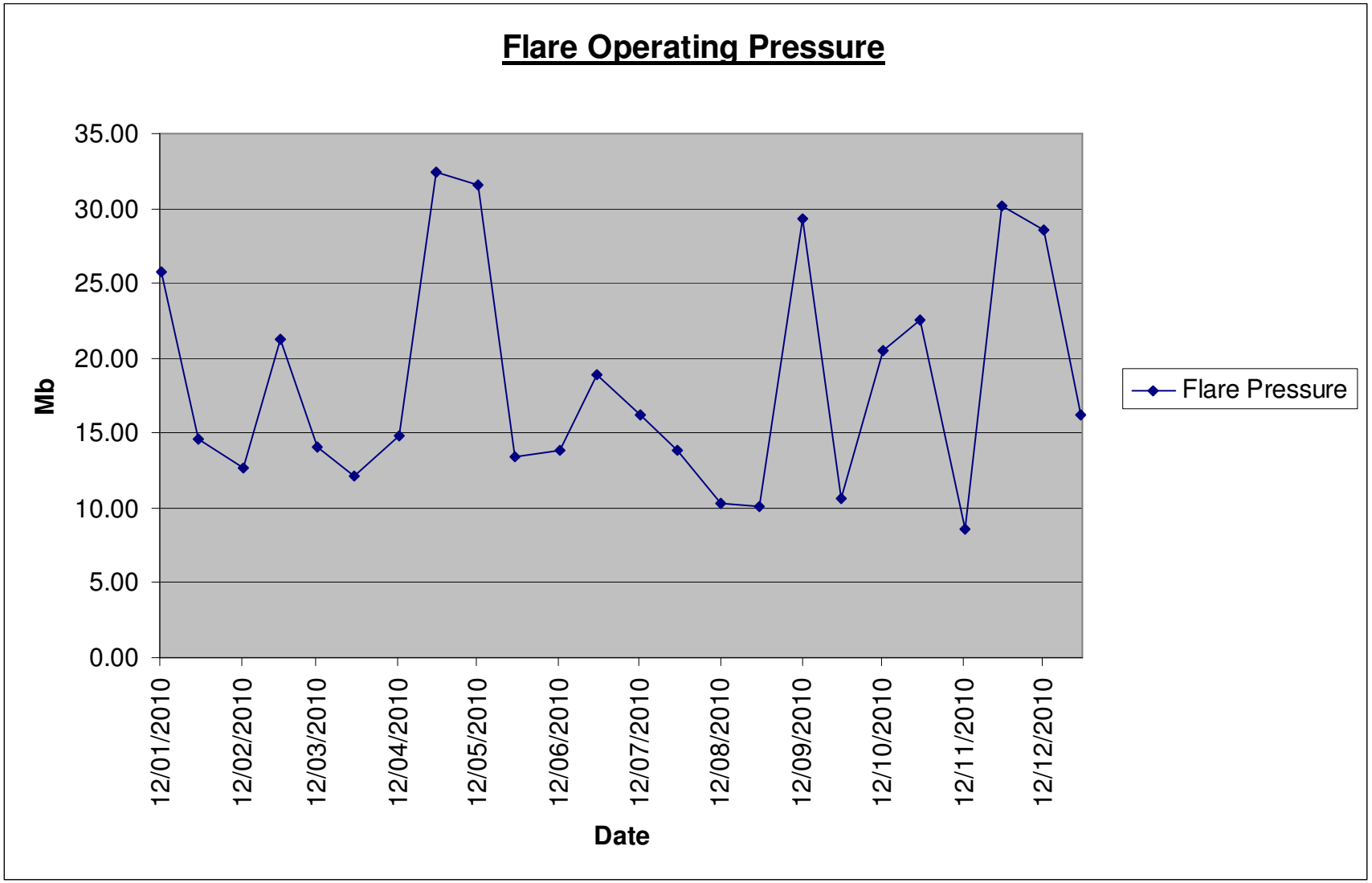
GAS FLARE DATA

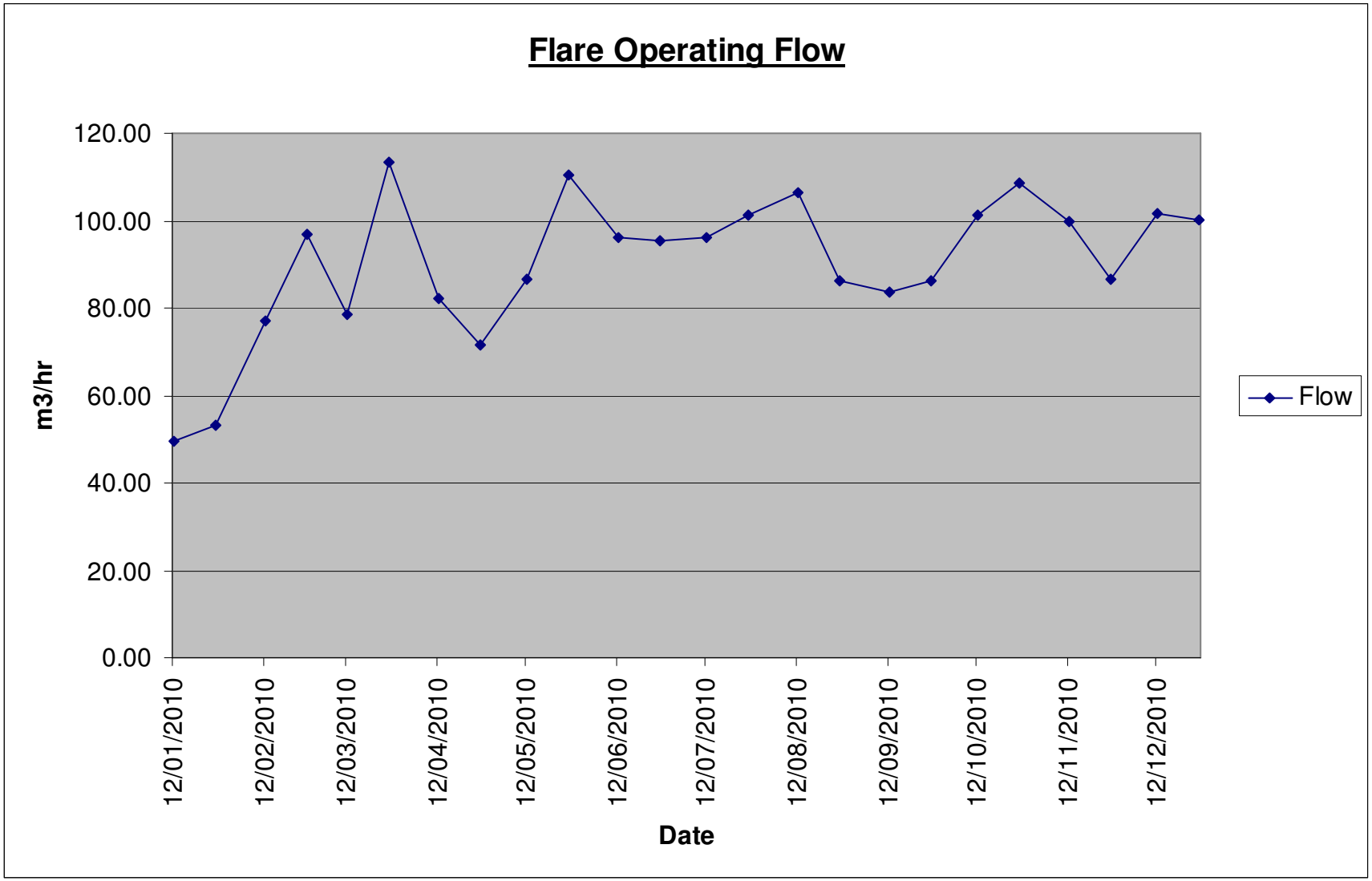
Date	Ambient Temp	Atm Pressure	CO_2	CO	CH_4	O_2	Flow	Flare Pressure	Flare Temp
12/01/2010	6.07	974.00	17.63	0.84	24.34	1.70	49.50	25.80	908.50
26/01/2010	5.22	1027.00	7.26	0.72	17.50	3.40	53.14	14.65	962.80
12/02/2010	2.00	1007.74	17.90	0.48	19.50	2.52	77.01	12.71	1012.24
26/02/2010	3.82	978.50	17.87	0.56	30.53	2.83	96.72	21.28	1014.38
12/03/2010	9.70	1015.58	19.64	0.21	27.25	2.25	78.58	14.05	445.18
26/03/2010	6.93	986.52	8.66	0.18	25.67	4.91	113.35	12.14	844.57
12/04/2010	12.76	1020.13	21.07	0.02	31.62	1.92	82.09	14.79	1016.30
26/04/2010	10.14	1011.75	20.91	0.18	26.20	1.06	71.53	32.43	985.40
12/05/2010	10.48	1004.25	18.95	0.48	31.45	2.30	86.60	31.52	951.78
26/05/2010	14.47	1003.78	18.16	0.95	24.76	4.23	110.37	13.47	1003.86
12/06/2010	13.91	1007.11	9.16	0.22	25.38	3.98	96.24	13.80	1037.15
26/06/2010	17.14	1010.82	15.99	0.36	31.88	3.52	95.24	18.90	988.21
12/07/2010	15.97	1007.17	11.35	0.74	21.85	10.24	96.17	16.20	979.95
26/07/2010	16.90	1010.18	13.85	0.81	11.51	7.42	101.25	13.80	982.56
12/08/2010	16.46	1020.74	19.16	0.83	28.90	6.02	106.26	10.32	701.10
26/08/2010	14.35	1001.03	18.46	0.14	31.61	6.71	86.19	10.12	819.52
12/09/2010	15.33	1021.35	18.52	0.21	26.56	6.30	83.83	29.31	745.05
26/09/2010	12.80	1010.19	21.72	0.45	27.27	6.71	86.42	10.62	876.17
12/10/2010	11.00	1019.59	20.06	0.34	28.84	5.87	101.35	20.47	788.95
26/10/2010	10.56	1006.66	20.66	0.28	35.56	6.47	108.58	22.58	704.56
12/11/2010	11.48	974.66	22.12	0.67	21.05	6.98	99.64	8.54	900.54
26/11/2010	7.51	993.73	16.89	0.88	19.87	5.01	86.58	30.21	1001.79
12/12/2010	5.80	999.46	18.26	0.69	22.01	4.89	101.53	28.58	965.23
26/12/2010	2.46	978.54	22.52	0.24	31.87	6.54	100.01	16.17	976.45

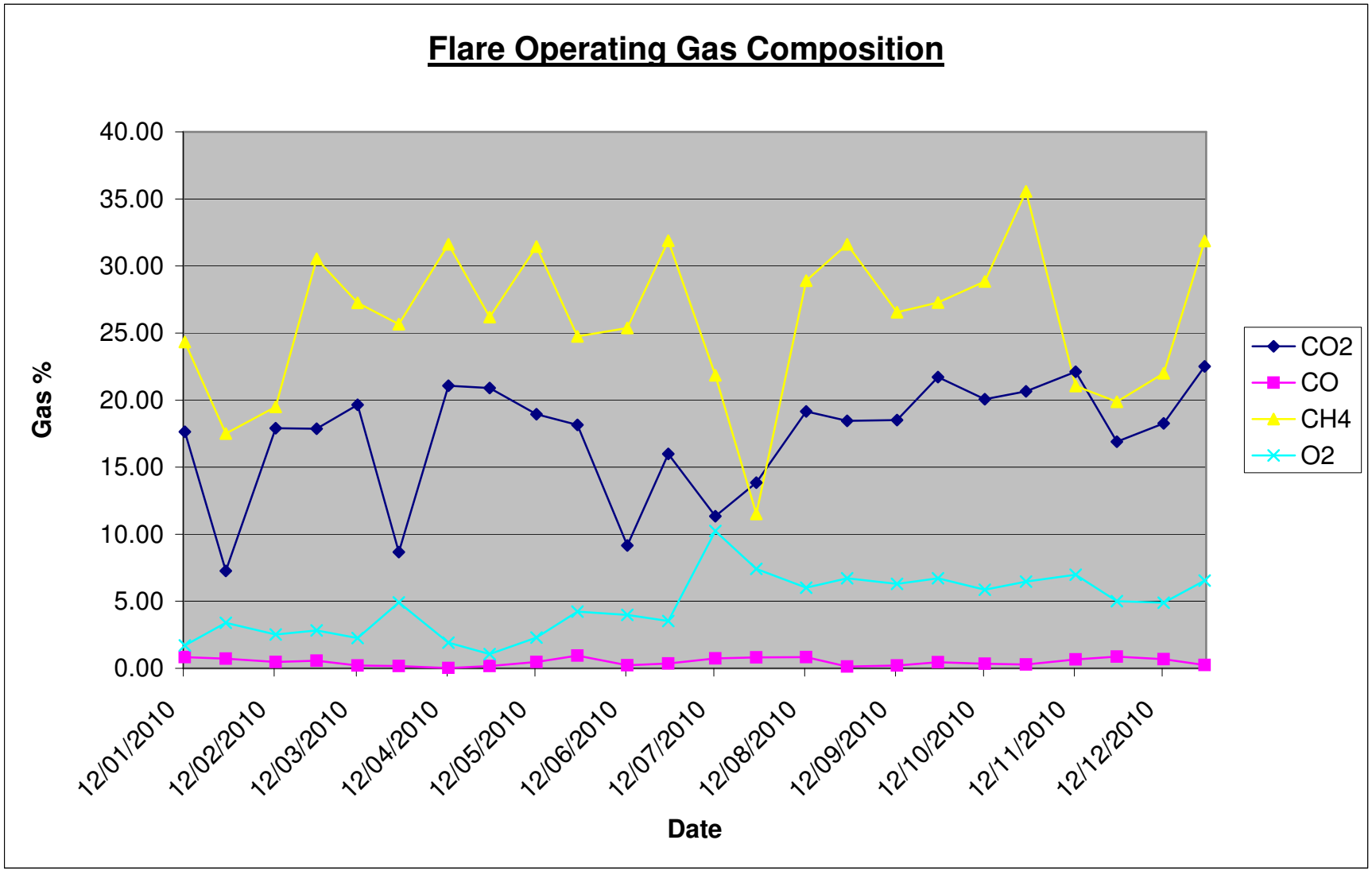

Ambient Temp
Degrees Celsius
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
12/01/2010
12/02/2010
12/03/2010
12/04/2010
12/05/2010
12/06/2010
12/07/2010
12/08/2010
12/09/2010
12/10/2010
12/11/2010
12/12/2010
Date
Ambient Temp


Flare Operating Temperature
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
Degrees Celsius
12/01/2010
12/02/2010
12/03/2010
12/04/2010
12/05/2010
12/06/2010
12/07/2010
12/08/2010
12/09/2010
12/10/2010
12/11/2010
12/12/2010
Date
Flare Temp


Atmospheric Pressure
1040.00
1030.00
1020.00
1010.00
1000.00
990.00
980.00
970.00
960.00
950.00
940.00
Mb
12/01/2010
12/02/2010
12/03/2010
12/04/2010
12/05/2010
12/06/2010
12/07/2010
12/08/2010
12/09/2010
12/10/2010
12/11/2010
12/12/2010
Date
Atm Pressure


Flare Operating Pressure
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Mb
12/01/2010
12/02/2010
12/03/2010
12/04/2010
12/05/2010
12/06/2010
12/07/2010
12/08/2010
12/09/2010
12/10/2010
12/11/2010
12/12/2010
Date
Flare Pressure


Flare Operating Flow
120.00
100.00
80.00
60.00
40.00
20.00
0.00
m3/hr
12/01/2010
12/02/2010
12/03/2010
12/04/2010
12/05/2010
12/06/2010
12/07/2010
12/08/2010
12/09/2010
12/10/2010
12/11/2010
12/12/2010
Date
Flow


Flare Operating Gas Composition
Gas %
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
12/01/2010
12/02/2010
12/03/2010
12/04/2010
12/05/2010
12/06/2010
12/07/2010
12/08/2010
12/09/2010
12/10/2010
12/11/2010
12/12/2010
Date
CO2
CO
CH4
O2

| PRTR# : W0070 | Facility Name : Benduff Landfill Site | Filename : W0070_2010.xls | Return Year : 2010 |

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.11

REFERENCE YEAR	2010

1. FACILITY IDENTIFICATION

Parent Company Name	Cork County Council
Facility Name	Benduff Landfill Site
PRTR Identification Number	W0070
Licence Number	W0070-01

Waste or IPPC Classes of Activity

No.	class_name
3.1	Deposit on, in or under land (including landfill).
3.13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.

3.2	Land treatment, including biodegradation of liquid or sludge discards in soils.
3.4	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.3	Recycling or reclamation of metals and metal compounds.
4.4	Recycling or reclamation of other inorganic materials.
Address 1	Benduff
Address 2	Rosscarbery
Address 3	County Cork
Address 4	
Country	Ireland
Coordinates of Location	-9.06927 51.5933
River Basin District	IESW
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Patrick Duggan (W0070-01)
AER Returns Contact Email Address	patrick.duggan@corkcoco.ie
AER Returns Contact Position	Facility Manager
AER Returns Contact Telephone Number	023-8850982
AER Returns Contact Mobile Phone Number	

AER Returns Contact Fax Number	023 8850016
Production Volume	0.0
Production Volume Units	
Number of Installations	1
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

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

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

Is it applicable?	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 ?	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR				
POLLUTANT		METHOD		
			Method Used	
No. Annex II	Name	M/C/E	Method Code	Designation or
01	**Methane (CH4)**	C	OTH	LandGEM Mod

ADD EMISSION POINT

quantities in this section in KGs

	QUANTITY		
Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
295813.32	295813.32	0.0	0.0

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: Benduff Landfill Site

Please enter summary data on the quantities of methane flared and / or utilised	**T (Total) kg/Year**	**M/C/E**

Total estimated methane generation (as per site model)	302548.32	C
Methane flared	6735.0	C
Methane utilised in engine/s	0.0	
Net methane emission (as reported in Section A above)	295813.32	C

Method Used			
Method Code	**Designation or Description**	**Facility Total Capacity m3 per hour**	
Oth	LandGEM Modelling	N/A	
Oth	Hrs Run	250.0	(Total Flaring Capacity)
		0.0	(Total Utilising Capacity)
Oth	LandGEM Modelling	N/A	

4.2 RELEASES TO WATERS

Link to previous years emissions data

| PRTR# : W0070 | Facility Name : Benduff Landfill Site | Filename : W0070_2010.xls | Return Y

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of

RELEASES TO WATERS					Please enter all qu
POLLUTANT					ADD EMISSION
			Method Used		
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1

ADD NEW ROW | DELETE ROW *

* 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					Please enter all qu
POLLUTANT					ADD EMISSION
			Method Used		
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1

ADD NEW ROW | DELETE ROW *

* 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					Please enter all qu
POLLUTANT					ADD EMISSION
			Method Used		
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1

4.3 RELEASES TO WASTEWATER OR SEWER

Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER				
POLLUTANT		METHOD		
			Method Used	
No. Annex II	Name	M/C/E	Method Code	Designation or Descri

ADD NEW ROW | DELETE ROW *

* 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		
			Method Used	
Pollutant No.	Name	M/C/E	Method Code	Designation or Descri

4.4 RELEASES TO LAND

Link to previous years emissions data

| PRTR# : W0070 | Facility Name : Benduff Landfill Site | Filename : W0070_2010.xls | Return Y

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND					Please enter all quantiti
POLLUTANT		METHOD			ADD EMISSION POINT
			Method Used		
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1

ADD NEW ROW | DELETE ROW *

* 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					Please enter all quantiti
POLLUTANT		METHOD			ADD EMISSION POINT
			Method Used		
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1

| PRTR# : W0070 | Facility Name : Benduff Landfill Site | Filename : W0070_2010.xls | Return Year |

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used	
						M/C/E	Method Used
Within the Country	19 07 02	Yes	104.0	landfill leachate containing dangerous substances	D4	M	Volume Calculation

3

Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
Offsite in Ireland	Bandon Waste Water Treatment Plant,.	Glaslin Road,.,Bandon,Co. Cork,Ireland	Bandon Waste Water Treatment Plant,.,Glaslin Road,.,Bandon ,Co. Cork,Ireland	Glaslin Road,.,Bandon ,Co. Cork,Ireland