ATTACHMENT E

Emissions

ATTACHMENT E EMISSIONS

The effect of emissions from the existing operation is monitored as per the existing licence. Monitoring is reported to the EPA in the site's annual environmental report (AER). The 2007 AER is attached.

ANNUAL ENVIRONMENTAL REPORT

FOR

GREENSTAR LTD.

KNOCKHARLEY LANDFILL

LICENCE NO. W0146-01

JANUARY – DECEMBER 2007

Prepared For: -

Greenstar Ltd.,
Knockharley Landfill,
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Co. Meath.

Prepared By: -

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22nd April 2008

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1. INTRODUCTION

This is the 2007 Annual Environmental Report (AER) for Greenstar's non-hazardous residual landfill at Knockharley, Navan, County Meath. It covers the twelve month period from 1st January 2007 to 31st December 2007. The facility received its Waste Licence (W0146-01) in March 2003 and began accepting residual waste in December 2004.

The content of the AER is based on *Schedule F* of the Waste Licence and the report format follows guidelines set in the "Draft Guidance on Environmental Management Systems and Reporting to the Agency".

2. SITE DESCRIPTION

2.1 Site Location and Layout

The site is located in a rural area, approximately 1.5 km north of Kentstown Village and 7 km south of Slane. The licensed area encompasses 135.2 ha. The landfill footprint, where waste is deposited in engineered landfill cells, is located in the centre of the site and will eventually occupy an area of approximately 25 ha. A buffer of 100 m is maintained between the active landfill footprint and the site boundary. The fill areas are more than 250 m from all occupied dwellings.

The facility will be developed in seven phases. The initial phase, which was completed in December 2004, involved the completion of four engineered landfill cells (Cells 1-4), the construction of an access road from the N2, the provision of the supporting infrastructure (waste reception area, leachate holding lagoons and site offices), groundwater and surface water control measures, and initial landscape works. An additional two cells (Cells 5 & 6) were completed in July 2006 and construction of Cells 7 to 10 began in 2007.

Subsequent phases will involve the construction of additional engineered cells, the expansion of the active gas management and flaring system, progressive landscape works and the capping and restoration of completed landfill cells. None of the completed cells have been restored or capped at this stage.

2.2 Waste Types & Volumes

Only non-hazardous, solid, residual waste is accepted for disposal. Hazardous and liquid wastes are not accepted. All wastes delivered to the facility are subject to Waste Acceptance Procedures that have been approved by the Agency, as specified in Condition 5.3 of the Waste Licence.

The facility is licensed to accept 200,000 tonnes of waste per annum. The following waste types and volumes, as specified in Schedule A of the Waste Licence, can be accepted: -

- Household (100,000 tonnes),
- Commercial (45,000 tonnes),
- Industrial (30,000 tonnes),

- Construction & Demolition (25,000 tonnes).

2.3 Waste Activities

The facility is a full containment landfill, which is designed to accept treated waste for final disposal. The waste activities carried out during the reporting period were: -

- Disposal (landfilling) of wastes,
- Recovery of wastes for removal off-site and recycling, and
- Recovery of certain inert wastes on-site for engineering purposes and use as daily cover.

2.4 Waste Received & Consigned

A breakdown of the different types and quantities of wastes received and consigned from the facility in 2007 and previous years are shown in Tables 2.1, 2.2 and 2.3.

Table 2.1 Waste Received 2007

European Waste Code	Description	Tonnes
Waste for disposal		
EWC 19 12 12	Residual Commercial Waste	92,009.82
EWC 20 01 99	Compacted Marble Dust	27.50
EWC 20 03 01	Mixed Municipal Waste	44,144.59
Total waste for disposal		*136,181.91*
Waste for recovery		
EWC 11 01 10	Industrial Filter Cake	103.96
EWC 17 05 04	Soil and Stone	22,314.04
EWC 17 09 04	Mixed Construction and Demolition Waste	2,743.12
EWC 19 05 03	Off Specification Compost	2,990.30
EWC 19 09 02	Filter Cake from Water Treatment	176.06
EWC 19 12 07	Woodchip	9,534.76
EWC 19 12 09	Minerals - Fines	19,607.33
EWC 19 12 09	Minerals – Stone	5,319.40
Total waste for recovery		*62,788.97*

Table 2.2 Waste Consigned 2007

European Waste Code Categories	Description	Tonnes	Destination
EWC 16 01 21*	Batteries	0.42	Returnbatt Ltd.
EWC 19 07 03	Leachate	13,361.93	Navan Waste Water Treatment
EWC 19 12 12	C& I Dry Mixed	9.22	Greenstar Ltd. Millennium
Total waste consigned		*13,371.57*	

Table 2.3 Waste Received 2004 to 2006

European Waste Code Categories	2004	2005	2006
Waste for disposal			
EWC 02 02 03	-	7.00	-
EWC 19 12 12	-	98,125.18	-
EWC 20 03 01	909.54	37,988.84	133,119.48
EWC 18 02 03	-	0.22	-
Total waste for disposal	*909.54*	*136,121.24*	*133,119.48*
Waste for recovery			
EWC 19 12 09	371.24	25,434.80	22,924.03
EWC 19 12 07	112.94	7,358.34	7,397.28
EWC 19 05 03	-	120.22	2,754.10
EWC 17 05 04	-	-	26,622.46
EWC 17 09 04	-	768.88	-
Total waste for recovery	*484.18*	*33,682.24**	*59,697.87*

2.5 Landfill Capacity

The most recent topographic survey for the landfill cell footprint is included in Appendix 1. The total capacity of the facility is estimated to be 2.886 million tonnes. The capacity of Phase 1, consisting of four engineered landfill cells, is approximately 388,000 m^3 and the capacity of cells 5 and 6, where landfilling commenced in July 2006, is approximately 252,450 m^3, giving a combined capacity of 640,450 m^3. The facility has received 580,000 tonnes since it opened. It is estimated that, at a density of 0.8 tonnes/m^3, approximately 464,000 m^3 of void space has been used. The remaining capacity in cells 1 to 6 is approximately 176,450m^3.

2.6 Method of Deposition of Wastes

2.6.1 Waste Acceptance

The waste accepted for disposal is residual waste from the Northeast region, from household, commercial and industrial sources. At present the majority of waste is delivered to the facility by two waste contractors based in County Meath. Both contractors have systems in place whereby the recyclable fraction is either collected separately, or else separation is carried out manually at their facilities. Both contractors have the infrastructure in place to compost biodegradable wastes, including food waste.

All waste is delivered to the site in Heavy Goods Vehicles (HGV) provided with the appropriate covers to prevent loss of load. Each vehicle first proceeds to the incoming weighbridge where it is weighed. The weighbridge operator and/or the facility manager may, at their own discretion, request the load to be tipped in the Waste Inspection Area. The vehicles then proceed to the active waste disposal area, where waste is deposited under the direction of a banksman. The vehicles weigh out at the outgoing weighbridge and receive an individual weighbridge docket before exiting the site.

Each landfill cell is divided into a number of 'grids', which are used to identify the areas where waste is deposited. Each load is assigned the relevant grid number.

2.6.2 Working Face

Waste is deposited close to and above the advancing tipping face. In accordance with Condition 5.6.1 the active face is confined to a height of 2.5 metres after compaction, a width of 25 metres and a slope no greater than 1 in 3. Deposited waste is spread in shallow layers on the inclined surface and compacted. The steel-wheeled compactors operate on the gradient of the more shallow face, pushing thin layers of waste and applying compaction pressure to them.

The site operatives inspect the deposited waste for items that are not acceptable under the Waste Licence, such as tyres, gas bottles, batteries etc. These are removed and stored in appropriate areas for later removal from the site.

Each day's waste input is deposited to form a 'block', which is compacted and covered. The following day a new 'block' of waste is deposited adjacent to this block. This ordered method of waste deposition enables areas, which have been filled and are to be left for a period, to be progressively restored over the site life, minimising the areas of active waste deposition.

3. ENVIRONMENTAL MONITORING

Greenstar implements a comprehensive environmental monitoring programme to assess the significance of emissions from site activities. The programme includes groundwater, surface water, leachate, landfill gas, noise, dust and particulate monitoring. The monitoring locations are shown on Figure 3.1.

The monitoring results, including the full laboratory reports, were submitted to the Agency at quarterly intervals in the reporting period. This section presents a summary of the monitoring with summary graphs showing trends included in Appendix 2.

3.1 Groundwater Monitoring

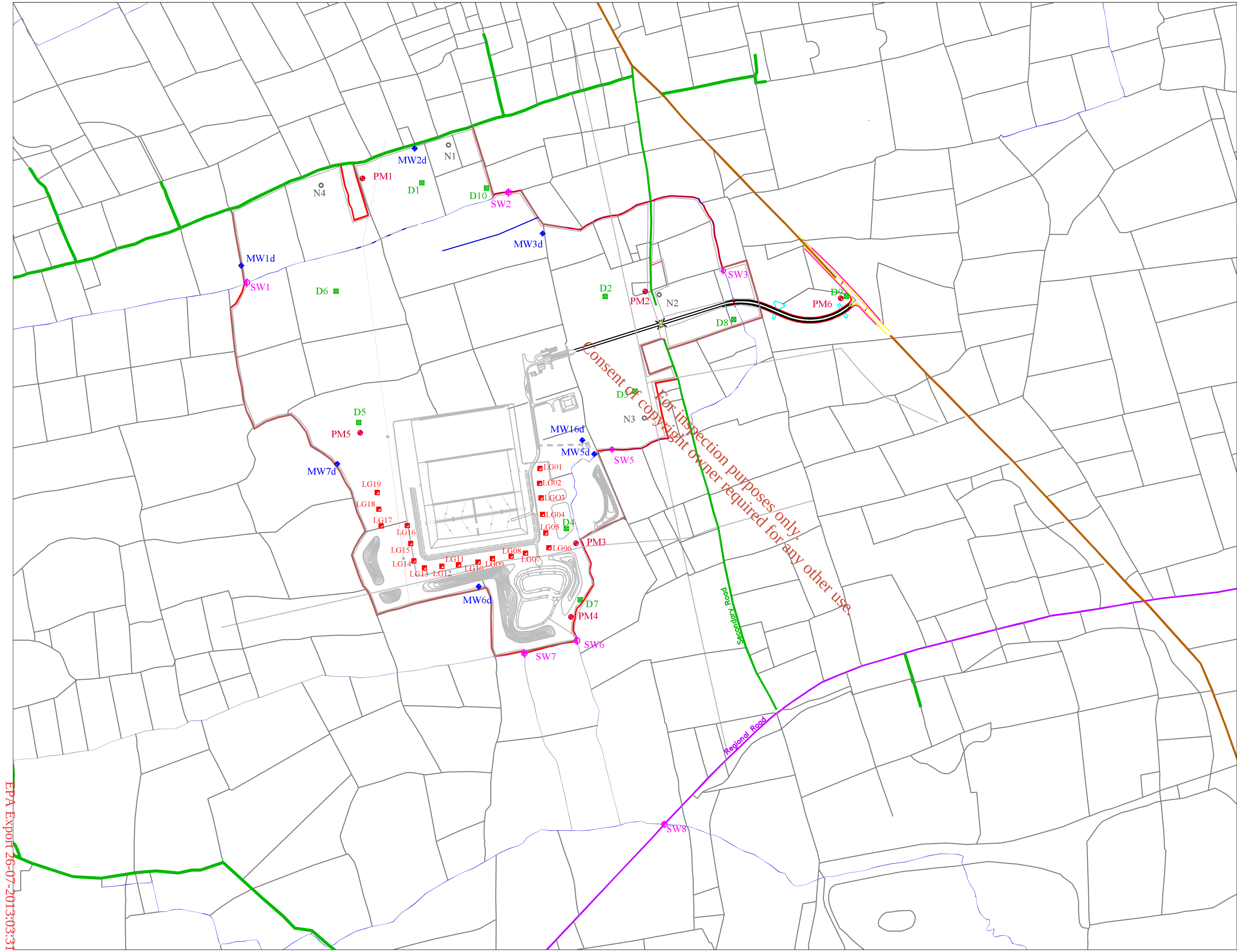
3.1.1 Groundwater Levels

Groundwater levels were measured in each of the seven monitoring wells specified in the Waste Licence (MW1d – MW6d and MW16d) on four occasions during the reporting period. The wells are all screened exclusively in the bedrock. The monitoring confirmed that the direction of groundwater flow in the bedrock aquifer is from the north west to the south east. The monitoring also identified artesian conditions in MW-5d.

3.1.2 Groundwater Quality

Groundwater quality was monitored in the on-site monitoring wells at quarterly intervals. The sampling was carried out in accordance internationally accepted techniques and control procedures and the analyses were completed by a laboratory using standard and internationally accepted procedures.

The 2007 results were generally consistent with those obtained during the monitoring completed before the start of site development works and confirm that the site activities are not impacting on groundwater quality.



NOTES

No	Id	Eastings	Northings
	DUST		
1	D1	297213	267889
2	D2	297744	267560
3	D3	297831	267285
4	D4	297632	266886
5	D5	297030	267194
6	D6	296964	267575
7	D7	297672	266680
8	D8	298117	267493
9	D9	298444	267560
10	D10	297400	267874
	GROUNDWATER		
11	MW1D	296689	267649
12	MW2D	297191	267988
13	MW3D	297562	267742
14	MW5D	297712	267102
15	MW6D	297377	266718
16	MW7D	296967	267074
17	MW16D	297678	267143
	NOISE		
18	N1	297290	267999
19	N2	297901	267565
20	N3	297858	267207
21	N4	296921	267882
	SURFACE WATER		
22	SW1	296706	267600
23	SW2	297464	267862
24	SW3	298087	267634
25	SW5	297764	267116
26	SW6	297663	266562
27	SW7	297510	266525
28	SW8	297916	266029
	PM10		
29	PM1	297030	267909
30	PM2	297833	267591
31	PM3	297656	266894
32	PM4	297656	266630
33	PM5	297035	267170
34	PM6	298454	267576
	LANDFILL GAS		
35	LG01	297555	267061
36	LG02	297554	267018
37	LG03	297559	266975
38	LG04	297563	266928
39	LG05	297572	266874
40	LG06	297581	266831
41	LG07	297513	266815
42	LG08	297472	266806
43	LG09	297418	266799
44	LG010	297376	266789
45	LG011	297319	266781
46	LG012	297271	266777
47	LG013	297220	266772
48	LG014	297190	266793
49	LG015	297181	266843
50	LG016	297170	266895
51	LG017	297095	266894
52	LG018	297088	266942
53	LG019	297084	266991

MONITORING LOCATIONS LEGEND:

- Denotes landfill gas monitoring location
- Denotes groundwater monitoring location
- Denotes surfacewater monitoring location
- Denotes noise monitoring location
- Denotes dust monitoring location
- Denotes PM10 monitoring location

REV	DATE	DESCRIPTION	DRN	CHKD	APP
A	29/11/04	ISSUE	MW	JOC	JOC

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email : ocm@indigo.ie

CLIENT
greenstar Ltd

TITLE
MONITORING LOCATIONS
KNOCKHARLEY
LANDFILL

SCALE: NTS

FIGURE 3.1

REV. A

3.2 Surface Water Monitoring

The site lies within the Nanny River catchment, close to the catchment divide with the River Boyne. The Nanny catchment is characterised by sudden high flows coinciding with high rainfall periods and particularly low flows in the drier summer months.

3.2.1 Visual Assessment

Greenstar carries out weekly inspections of the surface water drainage system. The inspections completed in the reporting period did not identify the presence of any impact on the drainage system associated with site activities.

3.2.2 Chemical Assessment

The surface water monitoring was conducted quarterly at the seven monitoring locations specified in the Waste Licence. The sampling was carried out in accordance with internationally accepted techniques and control procedures, the analyses were completed by a laboratory using standard and internationally accepted procedures.

Monitoring prior to site development established that the water quality is seasonally affected by the surrounding land use, including agriculture and septic tanks. These impacts are reflected in the elevated and variable Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and ammonia levels. Continuous monitoring at the outfall of the surface water lagoon has not shown any impact by the site activities. The 2007 results confirm that this remains the case and that site activities are not impacting on surface water quality.

3.3 Leachate

The monitoring programme involves the collection and testing of leachate samples from the collection sumps and the storage lagoon. The 2007 results indicate an increase in leachate strength throughout the monitoring period, which is expected given the age of the facility. Leachate is removed off site to a Waste Water Treatment Plant (WWPT) as agreed with the Agency.

3.4 Landfill Gas

The gas monitoring programme includes measurements of methane, carbon dioxide, oxygen and atmospheric pressure in wells located both outside and inside the waste body on a monthly basis. The wells are at 50 m intervals around the landfill footprint and there two per

hectare within the cells. The locations of the 19 external wells (LG-01 – LG-19) were agreed in advance with the Agency and are shown on Figure 3.1.

3.4.1 Outside the Waste Body

The 2007 monitoring did not identify any evidence of gas migration from the landfill cells. Since monitoring began in 2004 high concentrations of naturally occurring carbon dioxide have been detected in the in-situ subsoils and these were confirmed in 2007. High concentrations of carbon dioxide can occur naturally at shallow depths of up to 2 metres due to microbiological activity associated with the roots of many types of vegetation, providing concentrations of up to 7% by volume in certain soils such as the silty clays that underlie the site.

Unusually elevated levels of carbon dioxide and elevated levels of methane were detected at LG-03 and LG-04. Methane was detected at LG03 on seven occasions, with levels varying from 0.8 to 31.5% v/v. Methane was also detected at very low levels (the method detection limit) in LG02 and LG04 in February 2007 (0.1%v/v) and again at LG04 in August 2007.

OCM carried out an investigation to determine the source of the elevated methane levels detected and reported the results to the Agency in the Q3 monitoring report, submitted to the Agency in October 2007. The investigation confirmed that the source of the methane and carbon dioxide was localised to the individual wells and was due to the method of well construction.

LG-03 and LG-04 are replacement wells installed in Q2 2006. The original wells had to be removed to allow the construction of an access road and provision of a gas flare. The construction method (excavation of a hole and backfilling with granular material) allowed surface water to enter and accumulate in the backfill due to the low permeability of the surrounding boulder clays. The water became stagnant and anaerobic conditions developed, which is the likely source of the methane. Greenstar will install two replacement wells close to the existing locations. The construction details will be similar to those installed in 2004.

3.4.2 Inside the Waste Body

Methane levels varied from 30.5 to 62.0 %v/v, carbon dioxide levels varied from 5.5 to 13 %v/v, while oxygen levels varied from 0.0 to 9.5 %v/v.

3.5 Noise Survey

Noise surveys were conducted on four occasions at the locations specified in Table D.1.1 of the Waste Licence (Ref. Figure 3.1). The surveys were carried out in accordance with International Standards Organisation 1996: Acoustics-description and Measurement of Environmental Noise (Parts 1, 2 and 3).

The results at the noise sensitive locations indicate that noise from the site complied with the licence limits. Slightly elevated levels were recorded in September and November 2007 at monitoring location N2 (56 dB and 60 dB respectively), however in the context of the local noise environment, emissions from the facility are more accurately represented by the L_{A90} parameter. $L_{A90\ 30\ min}$ levels at this measurement station were 36 dB and 43 dB respectively and therefore within the licence limits on both occasions.

3.6 Dust Monitoring

Dust deposition is monitored monthly at ten monitoring locations (D1 to D8) as specified in Table D.1.1 of the Waste Licence (Ref. Figure 3.1). All of the 2007 monitoring complied with the deposition limits set in the licence (350 $mg/m^2/day$).

3.7 PM_{10}

PM_{10} levels were monitored on four occasions at the locations specified in Table D.1.1 (Figure 3.1) in March, June, September and December. All measurements were below the trigger level of 50 μ/m^3.

3.8 Meteorological Monitoring

Average rainfall, temperature, humidity and wind speed and direction for the monitoring period were obtained from the Meteorological Station at Dublin Airport located approximately 30 km from the facility is presented in Table 3.1.

Table 3.1 Meteorological Data: Dublin Airport – 2007

Rainfall	
Total Annual	761 mm
Maximum month (July)	127.1 mm
Minimum month (Oct)	15.7 mm
Temperature	
Mean Daily	10.1°C
Mean Daily Maximum (Aug)	14.6°C
Mean Daily Minimum (Feb)	5.9°C
Wind (Knots)	
Frequency of calms	3.3%
Prevailing direction	South West
Prevailing sector	South West

The total annual rainfall is 761 mm. The winds are predominantly from the south west sector.

4. SITE DEVELOPMENT WORKS

4.1 Tank, Pipeline and Bund Testing

The fuel storage bund at the facility will be tested in April 2008.

4.2 Summary of Resource & Energy Consumption

Table 4.1 presents an estimate of the resources used on-site in 2007 OCM completed an Energy Efficiency Audit of the facility in compliance with Condition 2.5.1 of the Licence in Q1 2007. The audit was carried out in accordance with the Agency's "Guidance Note on Energy Efficiency Auditing" (2003).

A landfill is a significant source of greenhouse gas emissions, not through the use of fossil fuels, but as a result of the production and flaring of landfill gas. However, to address this it is intended to install a landfill gas utilisation plant at the facility in 2009, which will mean that the facility will have a negative carbon footprint.

The Audit report recommended the development of a documented energy policy statement as this is considered fundamental to the successful implementation of any management system as it provides the framework for the introduction and maintenance of energy efficiency and conservation measures in the day to day operation of the facility. It is intended to develop a documented energy policy statement in 2008.

Table 4.1 Resources Used On-Site

Resources	Quantities
Diesel (green)	153,773 litres
Electricity	137,400 kWh
Hydraulic/Engine Oil	131 litres
Petrol	120 litres
Odour Neutralisers	1,875 litres

4.3 Site Developments

Construction of cells 7 – 10 has been carried out as per the Specified Engineering Works (SEW) proposal, which was submitted to and agreed by the Agency prior to construction. No other development was carried out during 2007.

No development works are planned for 2008. Installation of the first phase of capping around the perimeter of cells 1 – 6 is proposed to commence in April 2008. An SEW has been submitted to the Agency and Greenstar are awaiting approval of same.

It is proposed to install an extraction and filtration unit at the leachate lagoon, which will eliminate any emissions of odorous air during pumping from the lagoon into the tanker. A proposal for this is currently being prepared.

5. EMISSIONS

5.1 Leachate

Water balance calculations were prepared using guidance in the Agency's Landfill Manual-Landfill Site Design and are based on total rainfall data from the onsite met station and the volumes of waste deposited at the site during the reporting period. The calculations are presented in Table 5.1.

It was assumed that all of the incident rainfall on the active cells had the potential to generate leachate. An absorptive capacity of 0.07 m^3/tonne was used based on a waste density of 0.8 tonnes/m^3.

The calculations indicate that approximately 14,500 m^3 of leachate was generated in 2007. 13,362 m^3 of leachate was removed from the facility during the reporting period. The balance is stored in the base of the landfill cells and the storage lagoon.

5.2 Landfill Gas

It is estimated that approximately 1050 m^3 / hour of landfill gas was generated at the facility over the reporting period of which 810 m^3 / hour was burned in the onsite flare. This overall estimate is derived from predictive gas generation model GasSim Version 1.54 the results of which are included in Appendix 3 and the actual volume burned is measured by the flare. Input data for the model are the site specific values, i.e. size of the site, operational period, quantity and type of waste.

5.3 Surface Water

Rainfall on the undeveloped parts of the site discharges directly to the surface water drainage system. Rainfall on active fill areas is collected in the leachate collection system. The surface drainage from all roads is directed to the surface water retention pond via an oil interceptor. Drainage from the waste inspection and quarantine bays is directed to the leachate lagoon. The retention pond design and capacity meets the requirements of the Waste Licence. The inlet to the pond is fitted with a Class 1 Full Oil interceptor.

Table 5.1 Annual Leachate Volume Calculations

Yr.	*Active*	*Active*	*Waste*	*Active*	*Intermediate*	*Intermediate*	*Intermediate*	*Final*	*Restored*	*Restored*	*Liquid*	*Total*	*Cummulative*	*Absorptive*	*Cummulative*	*Cummulative*	*Annual*
	Cell No.	*Area*	*Input*	*Infiltration*	*Restoration*	*Restored* Area	*Infiltration*	*Restoration*	*Area*	*Infiltration*	*Waste*	*Leachate*	*Leachate*	*Capacity*	*Absorptive*	*Leachate*	*Leachate*
		(m^2)	*(t)*	*(m^3)*	*Cell No.*	*(m^2)*	*(m^3)*	*Cell No.*	*(m^2)*	*(m^3)*	*(m^3)*	*(m^3)*	*(m^3)*	*(m^3)*	*Capacity*	*Generation*	*Generation*
2005	1,2	17,813	132,000	8,016		0	0	0	0	0	0	8,016	8,016	9,240	9,240	-1,224	-1,224
2006	1,2,3, 4	35,628	133,119	16,033		0	0	0	0	0	0	16,033	24,048	9,318	18,558	5,490	6,714
2007	1,2,3, 4,5,6	53,441	136,182	24,048		0	0	0	0	0	0	24,048	48,096	9,533	28,091	20,006	14,516
Cell area (m^2)						8,907		Estimated maximum waste input (t/year)						200,000			
Total rainfall (m/year)						0.761		Liquid waste input (t/year)						0			
Effective Rainfall post vegetation (m/year)						0.338		Final Infiltration						0.1	10% of Effective Rainfall per annum		
Density of *in-situ* waste (t/m^3)						0.8		Intermediate Infiltration						0.6	60% of Effective Rainfall per annum		
Absorptive capacity (m^3/t)						0.07		Calculations are based on a 11 year landfill operation.									
Effective Rainfall before vegetation assumed to be (m)						0.45											

6. NUISANCE CONTROL

Greenstar is committed to operating in the best possible manner, using the best available techniques to minimise impacts to the environment and local residential neighbours. The potential sources of nuisance at a landfill facility are odour, vermin, birds, flies, mud, dust, litter and odours.

6.1 Odour

Good operational practices on-site are the main controls to avoid odour nuisances. The handling, depositing and covering of waste at the facility is carried out in accordance with the Agency's Landfill Manual "Landfill Operational Practices". In addition Greenstar have developed a site specific Odour Management Plan (KNKP 033) a copy of which is included in Appendix 4. The plan specifies the operational requirements for the waste placement, the landfill gas management infrastructure and addresses all aspects of odour control.

Any loads with a particular potential for generation of odours are rejected in accordance with the waste acceptance procedures, which are in operation at the facility as submitted to and agreed by the Agency in December 2004.

The waste delivery trucks are unloaded at the working face and the waste is compacted within 3 to 4 minutes. The level areas of the working face are covered on a continuous basis during the day. The slope of the working face is covered completely with artificial cover sheets at the end of each working day, which can easily be removed again the following day prior to commencement of operations.

6.2 Vermin / Flies / Insects

The methods used for vermin control are as detailed in Nuisance Inspection Procedure (KNKP 32) in Appendix 4. A specialist contractor is employed by Greenstar to carry out a vermin control programme. Measures used include internal and external bait boxes, rodenticides and insect control measures. The specialist contractor visits the site at regular intervals throughout the year to inspect the control measures and assess their effectiveness. These control measures have found to be successful.

6.3 Birds

Greenstar employs one of the leading bird control specialists, Falcon Bird Control Services, who operate a seven day dawn to dusk programme. An aviary is provided at the site, which houses the birds of prey used by the contractor. The main aim of the Programme is to create an association of danger, so that birds choose not to fly around the area where bird control is active. This association is achieved using a variety of methods such as visual and audible deterrents in compliance with the licence. To date these measures have proven to be successful.

6.4 Dust

Dust and mud control measures were implemented at the start of the construction phase of the site and continued into the operational phase. These measures include the use of a wheelwash, road sweeper and the use of a water bowser to dampen access roads and stockpiles during periods of dry weather. To date these measures have proven to be successful.

6.5 Litter

Litter is controlled by fencing which was installed around the landfill footprint as specified in the waste licence. Portable litter fencing is also used at the working face, which can be moved to various points around the working face depending on the wind direction. As part of operational controls all litter is collected at the end of the working day and litter has not been an issue at the facility.

7. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

7.1 Incidents

There were no incidents on-site during the reporting period.

7.2 Register of Complaints

Greenstar maintains a register of complaints in compliance with Condition 10.14. Details of all complaints received during the reporting period and the action taken by Greenstar are in Appendix 5.

8. ENVIRONMENTAL MANAGEMENT SYSTEM

8.1 Management Structure

The Management Structure as required by Condition 2.2.1 of the waste licence was submitted to the Agency on 14th December 2004, before the start of waste activities and updated in each AER.

8.1.1 Site Management Structure

The day to day management of the facility and supervision of waste activities are the responsibility of the Facility Manager, nominated Deputy Manager(s) and the site operatives. The positions and names of the persons who provide management and supervision are set out below: -

- Facility Manager, Reinhard Wilkes,*
- Assistant Landfill Manager, Heather Miller,
- Site Foreman, Robert Hughes,*
- Chargehand, Sean Smith,
- Weighbridge Operator, Michael Noone,
- General Operatives, Donal Blaney and Ainars Elbergs,
- Administrator, Tanya Keoghan.

* Nominated Deputies

The following Plant Operators, including suitably experienced and qualified replacement staff will be supplied by the Plant Hire Contractor, Renton Plant: -

- Plant Operators, Patrick Maguire, Martin Maguire.

8.1.2 Responsibilities

Greenstar, as the licensee, is responsible for ensuring that the requisite resources are provided to operate the facility in accordance with the objective of the EMP and the Waste Licence conditions.

The General Manager or nominated Deputy is responsible for ensuring that the day to day operation of the facility is carried out in accordance with the EMP, the Waste Licence conditions and the Operating Procedures.

The General Manager or nominated Deputy is responsible for ensuring that the environmental monitoring programme is carried out and reports submitted to the Agency in accordance with the schedule in the EMP and the Waste Licence conditions.

The General Manager or nominated Deputy is responsible for arranging that the specified engineering works, the leachate and landfill gas management programmes and the restoration programmes are properly implemented.

The General Manager or nominated Deputy is responsible for ensuring that the Corrective Action Procedures, Emergency Response Procedures and Contingency Arrangements specified in the EMP and the Waste Licence are implemented.

The General Manager or nominated Deputy is responsible for arranging appropriate training programmes for all facility personnel and for maintaining training records.

The General Manager, nominated Deputy and designated staff are responsible for implementing the waste acceptance procedures, including the assessment of suitability of the waste for disposal and recording the data specified in the Waste Licence. They are responsible for receiving and recording complaints from members of the public at the facility and informing the Facility Manager or nominated Deputy of the complaints.

The General Manager, nominated Deputy, Site Foreman and designated staff are responsible for ensuring compliance with conditions relating to waste inspection, placement and nuisance control (e.g. daily cover, litter, dust, vermin, birds).

8.1.3 Staff Training

All Training was carried out as scheduled in the training plan for 2007:

Occupational First Aid Training for Site Foreman and one Operative

FAS Waste Management Training for Charge hand and Assistant Manager

Internal Auditor Training for ISO 14001 for Assistant Manager

Regular Toolbox Talks for all staff.

CIWM Landfill Gas Management Course for General Manager

Safety Management Course for General Manager and Site Foreman

Any facility staff who performs duties which involve interpretation of monitoring results or site inspections, will receive the appropriate training by the General Manager or nominated deputy, prior to carrying out such duties.

All facility staff will receive further training in their individual areas of activity. This training will comprise theoretical sessions as well as practical training. All such training will be recorded and documented in individual training files.

8.2 EMP

Condition 2.3 requires Greenstar to submit a proposal for a documented Environmental Management System (EMS) to the Agency for its approval three months prior to the start of waste activities at the site. The EMS proposal completed as part of the Environmental Management Plan was sent to the Agency on the 23rd July 2004 and was approved on the 23rd December 2004.

8.2.1 Schedule of Objectives 2007

Table 8.1 describes the implementation of the objectives and targets in the reporting period.

8.2.2 Schedule of Objectives 2008

Greenstar has set a schedule of targets and objectives for 2008. These are presented in Table 8.2.

8.3 Communications Programme

The Communications Programme required by Condition 2.4.1 of the waste licence, was established three months before the start of waste activities and has been submitted to the Agency.

Table 8.1 Progress Report on Schedule of Objectives and Targets for 2007

Ref.	Objective	Target	Responsibility	Progress
1	Awareness & Training Programme.	Determine training frequency required for each type of training.	RW	On going
		Prepare Training Matrix for 2007.	RW	On going
		Assistant Facility Manager and Site Chargehand to complete FAS Waste Management Training Course. Internal Training programme to continue for 2007.	RH, SB	completed
		Review Progress with completing the training programme for all staff on a quarterly basis.	RW	completed
2	Assess & Review resource & Energy consumption at the site.	Carry out an Energy Audit of the Site	RW	Completed
		Review & Implement recommendations from Energy Audit.	RW	completed
		Review progress made on implementing energy audit recommendations on a quarterly basis.	RW	completed
		Summarise energy/resource usage on a quarterly basis.	RW	completed
3	Review & Assess the Effectiveness of Nuisance control procedures.	Continually review and assess all nuisance control procedures to ensure minimal impact on surrounding area	RW	Ongoing
		Update reports on bird control and odour abatement measures	RW/RH	completed
		Prepare an odour nuisance management plan for the facility.	RW	Completed
		Implement recommendations from the Odour Nuisance Management Plan	RW	31/12/07
4	Develop landfill gas management infrastructure.	Complete Commissioning of the Enclosed landfill gas Flare.	RW	Completed
		Prepare EMS Procedure for the operation of the Enclosed flare.	RW	On going
		Upgrade gas extraction ring main and monitor gas production/quality for energy utilisation viability.	RW	completed
5	Minimise nuisance from vehicle movements and unloading/tipping	Ensure noise, dust, odour from vehicle movements are minimised by correct implementation of relevant operational protocols.	RW	ongoing

6	Operation in Adverse Weather conditions	Ensure that procedures for operation in adverse weather conditions are followed correctly, minimising impact on the surrounding area.	RW, SB, RH	On going
7	Improve relationships with neighbouring communities	Continual to develop & improve on communications with site neighbours.	RW	ongoing
8	Environmental Monitoring	Ensure monitoring results comply with licence limits, & investigate any exceedances of Emission limit values.	RW	completed
9	Monitor Progress of planting programme on a regular basis.	Regularly review planted woodland area, and ensure the replacement of any failed trees.	RW	Ongoing
10	Maintain & Develop the Environmental Management System.	Draw up a EMS compliance schedule to assist site in complying with key deadlines.	RW	Completed
		Change from biannual internal audits of the EMS, to quarterly internal audits.	RW	On going
		FM/Assistant Facility Manager to attend EMS Internal Auditor training	RW/SB	completed
11	Health & Safety/ Emergency Preparedness & Response Procedures.	Determine the frequency of Health &Safety training required (e.g. first aid/manual handling). Include this information on the training matrix.	RW	Ongoing
		Draw up an Accident Prevention Policy as required by site's waste licence.	RW	Completed
		Carry out Fire & Spill Drills on a biannual basis from 2007 onwards.	RW	completed

Table 8.2 Schedule of Objectives and Targets for 2008

Ref.	Objective	Target	Deadline	Responsibility
1	Gas management	Hold Gas Management meetings every 6 months to review existing infrastructure and discuss maintenance and upgrading as required.	On-going	FM
2	Restoration and aftercare	On completion of landfilling within a phase, each phase will be individually assessed as to the capping measures required, e.g. intermediate or final.	On-going	FM
		EPA approval of restoration and after care proposal.	Awaiting EPA response	FM
3	Comply with Licence requirements in relation to leachate management	Continue to monitor and control leachate.	On-going	FM
		Submit proposals for recirculation of leachate to the EPA for their approval.	June 2008	FM
		Implement recirculation of leachate at the landfill and continually assess and upgrade infrastructure as necessary.	Dec 2008	FM
		Assess the potential for alternatives outlets for leachate, e.g. Anaerobic Digestion	Dec 2011	FM
4	Ensure that the site is landscaped in accordance with Licence conditions	Maintain and continue to improve all on site landscaping and the wetland area.	On-going	FM
		Employ a landscape contractor to assess plantations, replace failed trees/plants and improve the overall general appearance of the landfill site.	On-going	FM

Ref.	Objective	Target	Deadline	Responsibility
5	Improve public relations at the landfill	Review relationship with neighbours and interested parties on a continual basis and produce annual public relations report.	Annually and on-going	FM
		Review the number and composition of complaints to determine any trends.	Quarterly and on-going	FM
		Establish a newsletter for distribution to local people at regular intervals.	First issue 2008	FM
		Continue to hold regular meetings with local residents.	Quarterly On-going	FM
		Continue to maintain the Community Development Fund through the Community Liaison Committee	On-going	FM
		Continue to provide sponsorship of interested local parties, clubs, etc.	On-going	FM
6	Reduce energy usage on site	Carry out an annual review of energy usage	Annually On-going	FM
		Employ an energy consultant to carry out a follow up energy audit and report every 3 years	June 2010	FM
		Prepare an Energy Policy Statement for the site.	June 2008	FM
		Implement an Energy Awareness Programme incorporating the recommendations from the 2007 energy audit.	Ongoing	FM

9. OTHER REPORTS

9.1 Financial Provision

Greenstar has accrued over €3,000,000 in funds, to provide for any potential environmental liabilities at this facility. Greenstar also has adequate insurance cover for environmental liabilities to €6,350,000 for any one occurrence, which will apply to "sudden identifiable and unintended incidents".

A financial guarantee, as required by condition 12.2.2 of the Waste Licence was in place during 2007. The guarantee was renewed in December 2007 and is now valid until December 2008.

9.2 Landscape Programme

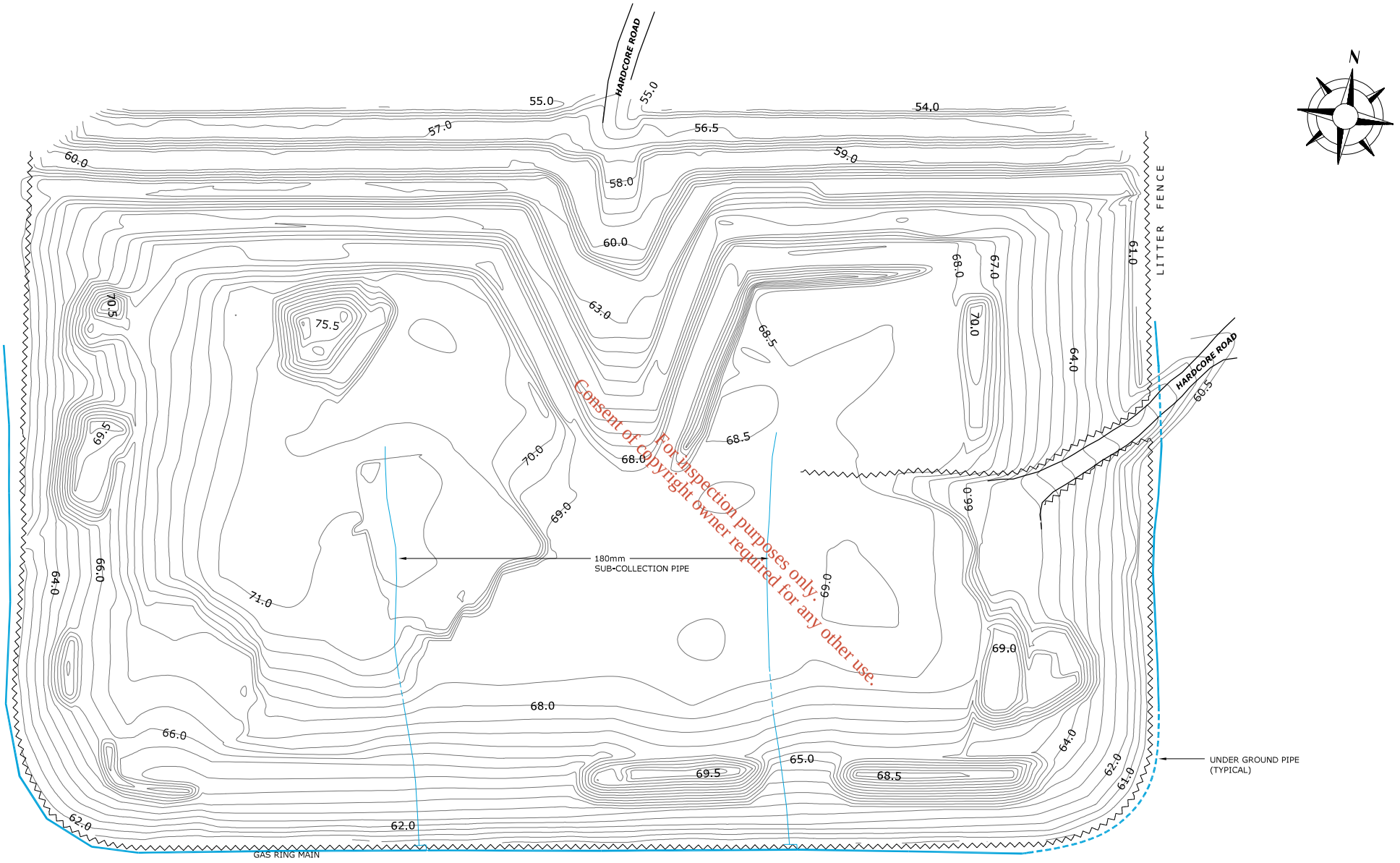
The planting programme was initiated in 2004 and completed in 2005. Approximately 180,000 trees have been planted over 112 acres. Greenstar submitted a landscape proposal to the Planning Authority in December 2002 and to the Agency in March 2005. It is estimated that up to 97% of all trees planted have established. Replacement of failed plants has commenced in January 2006, and will be completed in May 2008. Species planted include oak, ash, beech, pine, alder, sycamore, birch, field maple and hawthorn. As the plantation matures in the coming years further information will be supplied on the die back rate and enhancement of natural biodiversity.

9.3 European Pollutant Release and Transfer Register

Under the European Pollutant Release and Transfer Register Regulation (EC) No. 166/2006 Greenstar are required to submit information annually to the Agency. A copy of the information submitted to the Agency via the web-based data reporting system is included in Appendix 6.

APPENDIX 1

Topo Survey



LANDFILL VOID CONSUMED BETWEEN SURVEYS DATED
15th OCTOBER '07 AND 12th DECEMBER '07
= 21,000m3

Golder Associates
TOWN CENTRE HOUSE, DUBLIN ROAD, NAAS, CO. KILDARE
TEL.: 045 874411 - FAX:045 874549 - www.golder.com

Client: greenstar	Title: WASTE CONDITIONS SURVEYED 12th DECEMBER 2007				Project number 05.719.239	Issue to	Date	Revision	Drawing
Location: KNOCKHARLEY LANDFILL CO. MEATH					File Location GREENSTAR/KNOCKHARLEY/GOLDER DWGS /WS/06/01	TO CLIENT	DEC. '07	A	W-S 06/1
Project: KNOCKHARLEY LANDFILL GAS MANAGEMENT	Scale 1:500 A1 1:1,000 A3	Created by CC	Engineer TVM	Reviewed by GP	ORDNANCE SURVEY IRELAND LICENCE NUMBER **AR0056007**				

APPENDIX 2

Monitoring Results

Groundwater Results

Parameter		MW1d	MW1d	MW1d	MW1d
		Q1 2007	Q2 2007	Q3 2007	Q4 2007
pH	pH units	8.09	7.79	7.71	7.58
Conductivity	mS/cm	0.657	0.634	0.641	0.628
Temperature	°C	9.3	13	12.9	9.5
Ammoniacal Nitrogen	mg/l	0.6	1.9	0.2	0.2
Dissolved Oxygen	mg/l	4.3	6.2	4	6.7
Chloride	mg/l	23	24	21	24
Potassium	mg/l	3.9	4	4.6	3.9
Sodium	mg/l	38.5	46.5	41	39
Iron	µg/l	18	<2	13	83
Total Organic Carbon	mg/l	<2	<2	<2	3
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01
Total Coliforms	cfu/100ml	<1	108	5600	14000
Faecal Coliforms	cfu/100ml	1	<1	<1	11
Mercury	µg/l			<0.05	
Total Solids	mg/l			352	
Total Chromium	mg/l			<0.05	
Total Phosphorous	mg/l			<0.05	
Boron	µg/l			35	
Cadmium	µg/l			<0.4	
Calcium	mg/l			63.96	
Copper	µg/l			1	
Lead	µg/l			<1	
Magnesium	mg/l			28.13	
Manganese	µg/l			224	
Zinc	µg/l			14	
Fluoride	mg/l			<0.1	
Sulphate	mg/l			33	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			260	

Parameter		MW2d	MW2d	MW2d	MW2d
		Q1 2007	Q2 2007	Q3 2007	Q4 2007
pH	pH units	7.84	7.69	7.65	7.51
Conductivity	mS/cm	0.722	0.684	0.702	0.665
Temperature	°C	10.1	13.5	12.2	9.4
Ammoniacal Nitrogen	mg/l	<0.2	0.2	<0.2	<0.2
Dissolved Oxygen	mg/l	3.7	6.3	6	6.6
Chloride	mg/l	18	18	16	19
Potassium	mg/l	2.8	3	3.2	2.2

Sodium	mg/l	35	45.5	40.5	31
Iron	µg/l	6	<2	<2	92
Total Organic Carbon	mg/l	2	<2	<2	3
Total Oxidised Nitrogen	mg/l	<0.3	0.3	<0.3	<0.3
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01
Total Coliforms	cfu/100ml	<1	-	86000	1700
Faecal Coliforms	cfu/100ml	12	-	<1	3
Mercury	µg/l			<0.05	
Total Solids	mg/l			560	
Total Chromium	mg/l			<0.05	
Total Phosphorous	mg/l			0.73	
Boron	µg/l			185	
Cadmium	µg/l			<0.4	
Calcium	mg/l			85.38	
Copper	µg/l			<1	
Lead	µg/l			2	
Magnesium	mg/l			23.84	
Manganese	µg/l			5	
Zinc	µg/l			16	
Fluoride	mg/l			<0.1	
Sulphate	mg/l			61	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			260	

Parameter	**Units**	**MW3d**	**MW3d**	**MW3d**	**MW3d**
pH	pH units	7.84	7.56	7.38	7.32
Conductivity	mS/cm	0.852	0.786	0.791	0.777
Temperature	°C	9.7	13.2	11.3	10.1
Ammoniacal Nitrogen	mg/l	0.3	1.6	0.4	0.4
Dissolved Oxygen	mg/l	3.2	5.9	4	5.6
Chloride	mg/l	25	25	22	25
Potassium	mg/l	3.7	3.6	3.8	3.5
Sodium	mg/l	40	51.5	51.5	46
Iron	µg/l	13	<2	4	79
Total Organic Carbon	mg/l	<2	<2	<2	2
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	0.5
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01
Total Coliforms	cfu/100ml	17	1	900	13
Faecal Coliforms	cfu/100ml	29	<1	<1	<1
Mercury	µg/l			<0.05	
Total Solids	mg/l			582	
Total Chromium	mg/l			<0.05	

Total Phosphorous	mg/l			<0.05	
Boron	µg/l			41	
Cadmium	µg/l			<0.4	
Calcium	mg/l			91.51	
Copper	µg/l			<1	
Lead	µg/l			<1	
Magnesium	mg/l			23.28	
Manganese	µg/l			88	
Zinc	µg/l			8	
Fluoride	mg/l			<0.1	
Sulphate	mg/l			189	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			230	

Parameter	**Units**	**MW5d**	**MW5d**	**MW5d**	**MW5d**
pH	pH units	7.26	7.79	7.33	7.37
Conductivity	mS/cm	0.636	0.527	0.626	0.711
Temperature	°C	10.1	13.5	12	8
Ammoniacal Nitrogen	mg/l	0.5	1	0.4	0.5
Dissolved Oxygen	mg/l	4.1	5.4	3.9	6.1
Chloride	mg/l	19	18	16	9
Potassium	mg/l	2.6	2.3	2.8	2.9
Sodium	mg/l	25	21	29	15.5
Iron	µg/l	61	<2	<2	72
Total Organic Carbon	mg/l	<2	<2	<2	3
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	0.4
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01
Total Coliforms	cfu/100ml	<1	2	18	14000
Faecal Coliforms	cfu/100ml	9	<1	<1	18
Mercury	µg/l			<0.05	
Total Solids	mg/l			402	
Total Chromium	mg/l			<0.05	
Total Phosphorous	mg/l			<0.05	
Boron	µg/l			52	
Cadmium	µg/l			<0.4	
Calcium	mg/l			85.66	
Copper	µg/l			<1	
Lead	µg/l			<1	
Magnesium	mg/l			17.88	
Manganese	µg/l			62	
Zinc	µg/l			11	
Fluoride	mg/l			0.2	

Sulphate	mg/l			14	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			280	

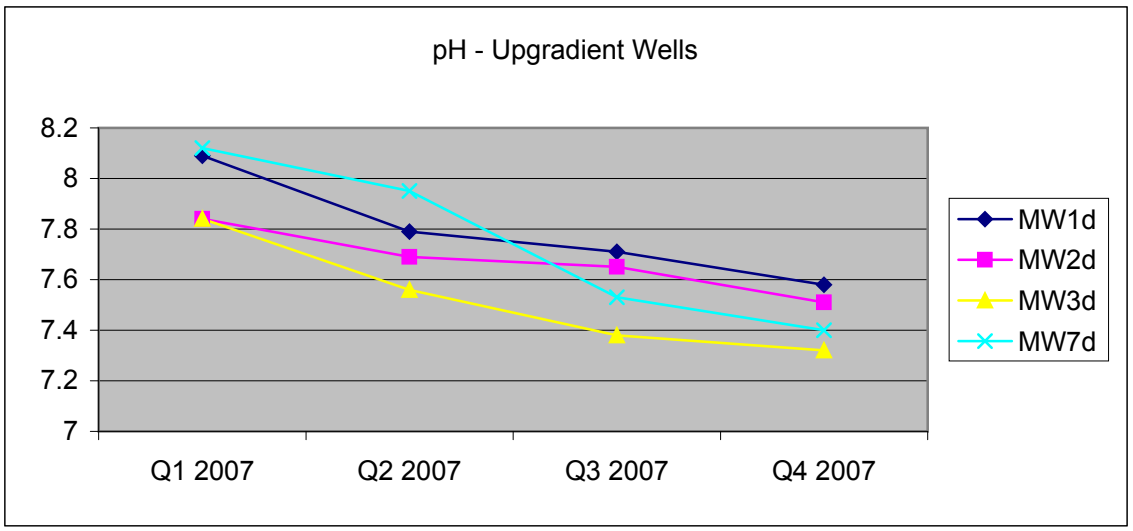
Parameter	Units	MW6d	MW6d	MW6d	MW6d
pH	pH units	7.56	8.07	7.21	7.63
Conductivity	mS/cm	0.628	0.598	0.765	0.61
Temperature	°C	10.1	12.4	12	8.8
Ammoniacal Nitrogen	mg/l	0.2	1	0.4	0.4
Dissolved Oxygen	mg/l	4.2	6	4.3	6.2
Chloride	mg/l	17	20	4	19
Potassium	mg/l	3.1	3	3	2.7
Sodium	mg/l	24.5	28	12	24.5
Iron	µg/l	71	<2	<2	82
Total Organic Carbon	mg/l	<2	<2	4	2
Total Oxidised Nitrogen	mg/l	0.5	<0.3	<0.3	0.4
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01
Total Coliforms	cfu/100ml	<1	<1	5800	1900
Faecal Coliforms	cfu/100ml	268	<1	2	15
Mercury	µg/l			<0.05	
Total Solids	mg/l			492	
Total Chromium	mg/l			<0.05	
Total Phosphorous	mg/l			<0.05	
Boron	µg/l			31	
Cadmium	µg/l			<0.4	
Calcium	mg/l			125.1	
Copper	µg/l			1	
Lead	µg/l			<1	
Magnesium	mg/l			23.34	
Manganese	µg/l			370	
Zinc	µg/l			9	
Fluoride	mg/l			<0.1	
Sulphate	mg/l			28	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			260	

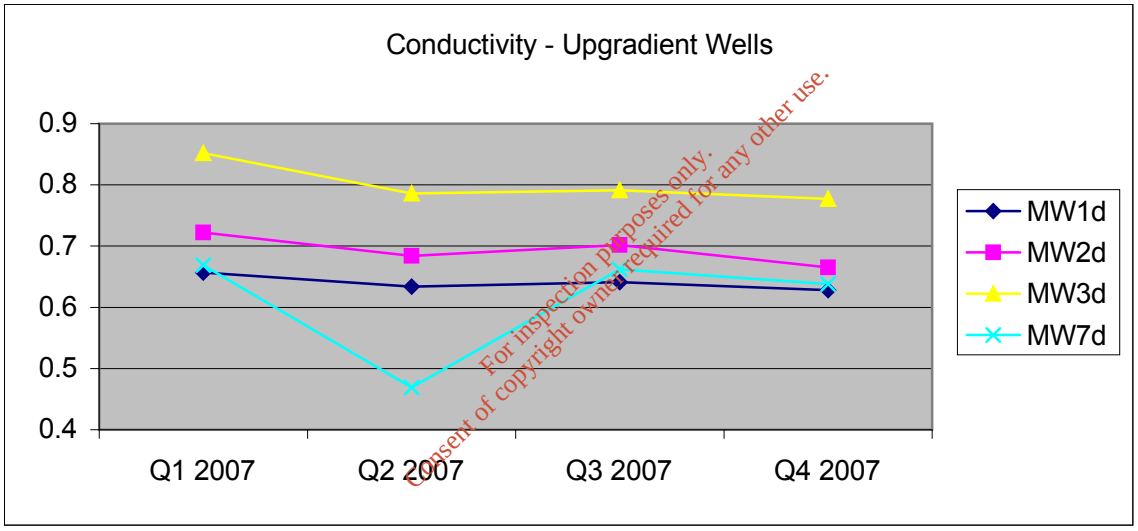
Parameter	Units	MW7d	MW7d	MW7d	MW7d
pH	pH units	8.12	7.95	7.53	7.4
Conductivity	mS/cm	0.669	0.469	0.662	0.638

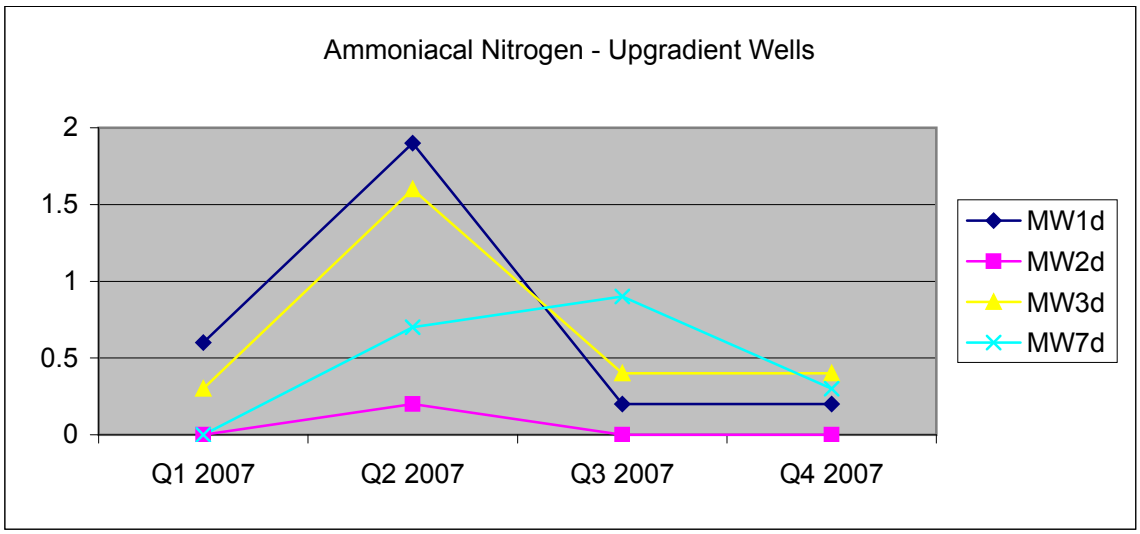
Temperature	°C	9.8	13	10.6	9.4
Ammoniacal Nitrogen	mg/l	<0.2	0.7	0.9	0.3
Dissolved Oxygen	mg/l	3.3	6.1	4.1	5.9
Chloride	mg/l	16	19	11	14
Potassium	mg/l	3.5	2	3.2	2.7
Sodium	mg/l	55	18.5	50	44.5
Iron	µg/l	14	85	2	86
Total Organic Carbon	mg/l	2	<2	3	3
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01
Total Coliforms	cfu/100ml	<1	<1	7400	10000
Faecal Coliforms	cfu/100ml	39	<1	<1	<1
Mercury	µg/l			<0.05	
Total Solids	mg/l			426	
Total Chromium	mg/l			<0.05	
Total Phosphorous	mg/l			<0.05	
Boron	µg/l			44	
Cadmium	µg/l			<0.4	
Calcium	mg/l			78.67	
Copper	µg/l			<1	
Lead	µg/l			<1	
Magnesium	mg/l			17.66	
Manganese	µg/l			628	
Zinc	µg/l			10	
Fluoride	mg/l			<0.1	
Sulphate	mg/l			45	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			320	

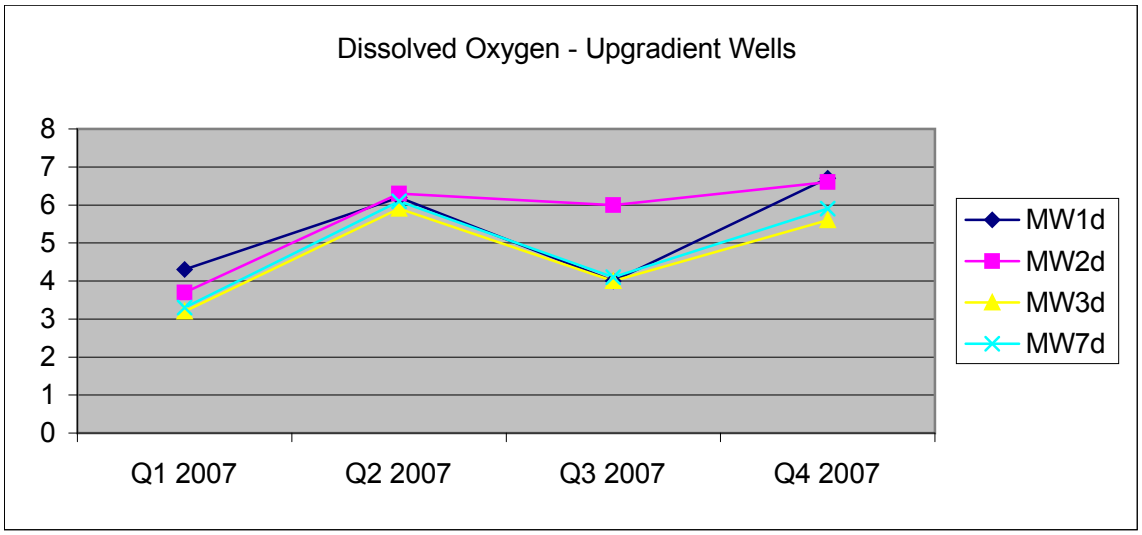
Parameter	**Units**	**MW16d**	**MW16d**	**MW16d**	**MW16d**
pH	pH units	7.52	7.76	7.35	7.26
Conductivity	mS/cm	0.64	0.526	0.636	0.626
Temperature	°C	10.5	13	12.2	8.9
Ammoniacal Nitrogen	mg/l	0.6	0.6	0.5	0.5
Dissolved Oxygen	mg/l	4.5	5.9	4	5.9
Chloride	mg/l	18	21	15	19
Potassium	mg/l	3.1	2.5	3.2	3
Sodium	mg/l	25	21	29	25
Iron	µg/l	68	<2	5	87
Total Organic Carbon	mg/l	<2	<2	2	3
Total Oxidised Nitrogen	mg/l	<0.3	0.8	<0.3	0.7
Total Phenols	mg/l	<0.01	<0.01	<0.01	<0.01

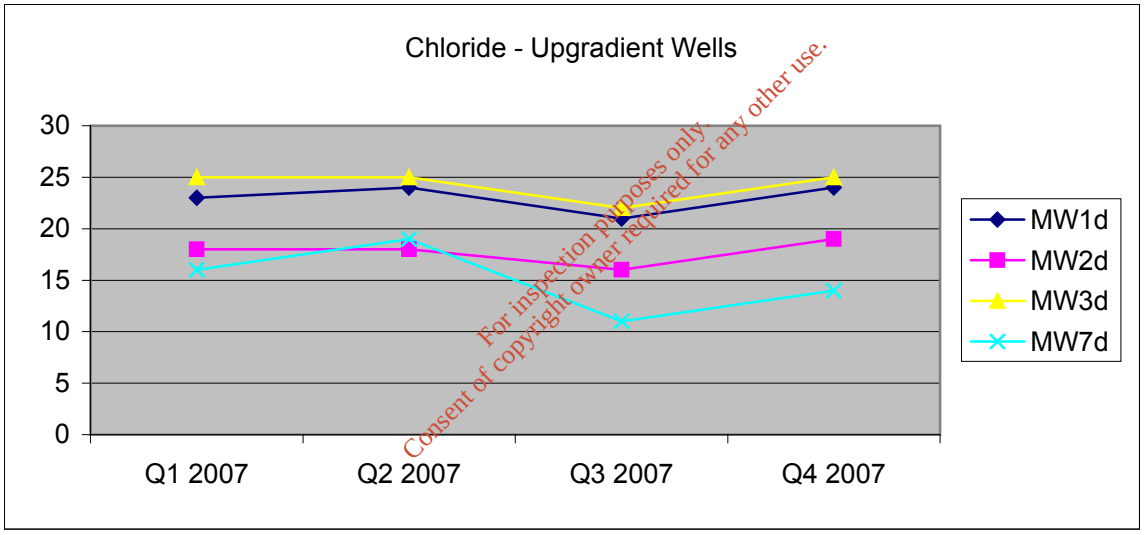
Total Coliforms	cfu/100ml	<1	<1	52	3
Faecal Coliforms	cfu/100ml	36	<1	<1	<1
Mercury	µg/l			<0.05	
Total Solids	mg/l			426	
Total Chromium	mg/l			<0.05	
Total Phosphorous	mg/l			<0.05	
Boron	µg/l			60	
Cadmium	µg/l			<0.4	
Calcium	mg/l			91.7	
Copper	µg/l			<1	
Lead	µg/l			<1	
Magnesium	mg/l			19.32	
Manganese	µg/l			161	
Zinc	µg/l			9	
Fluoride	mg/l			0.2	
Sulphate	mg/l			23	
VOC	µg/l			<1	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Cyanide	mg/l			<0.05	
Total Alkalinity	mg/l			322	

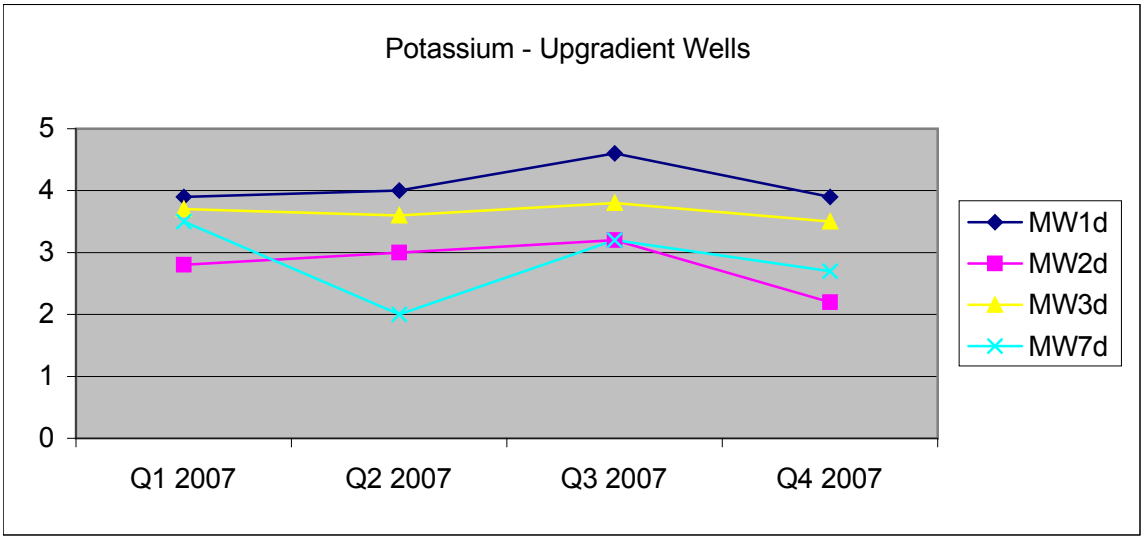


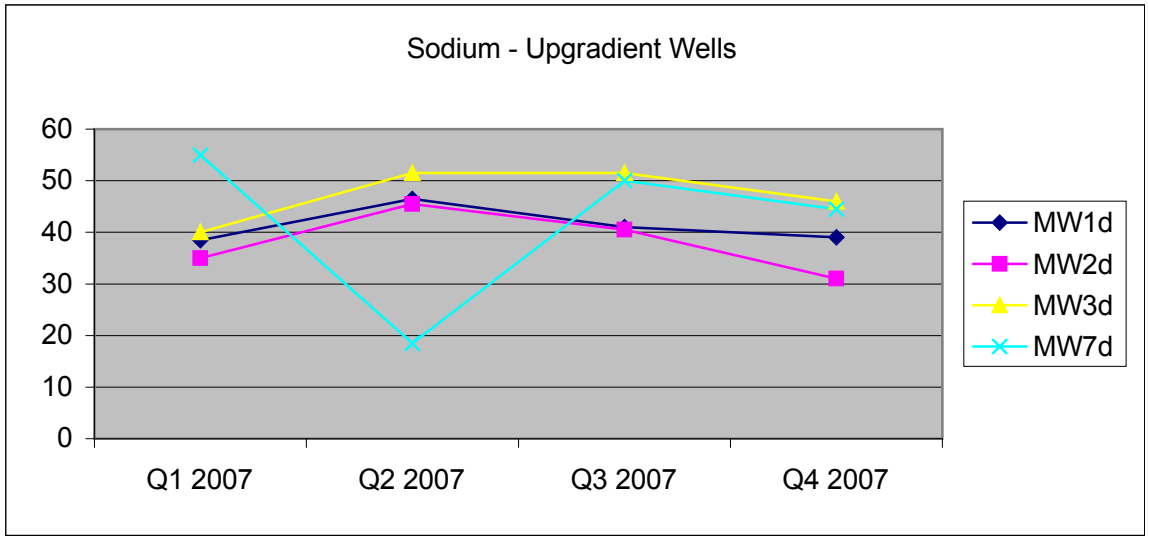


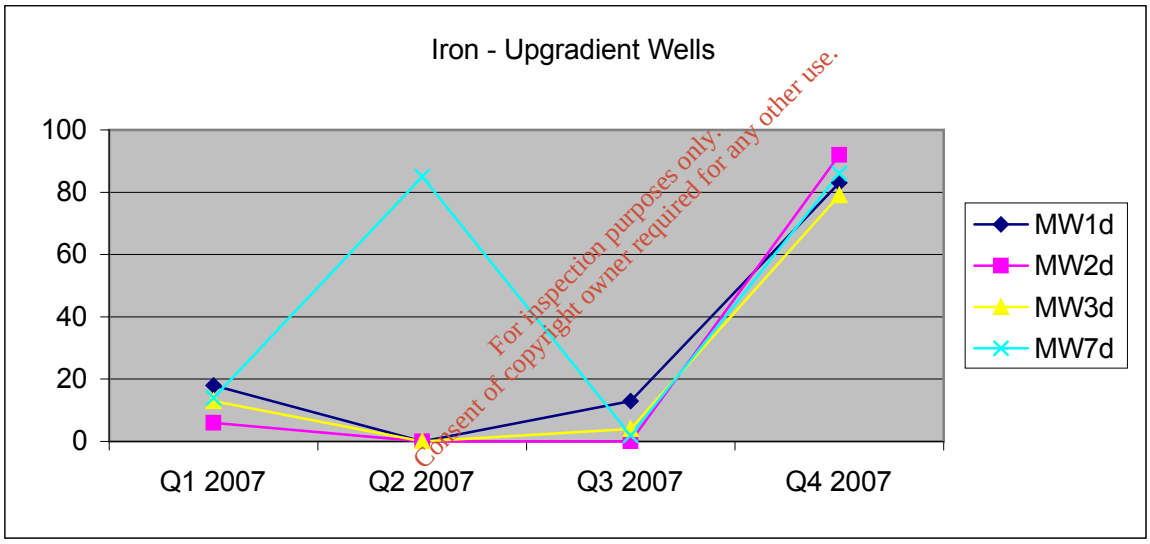


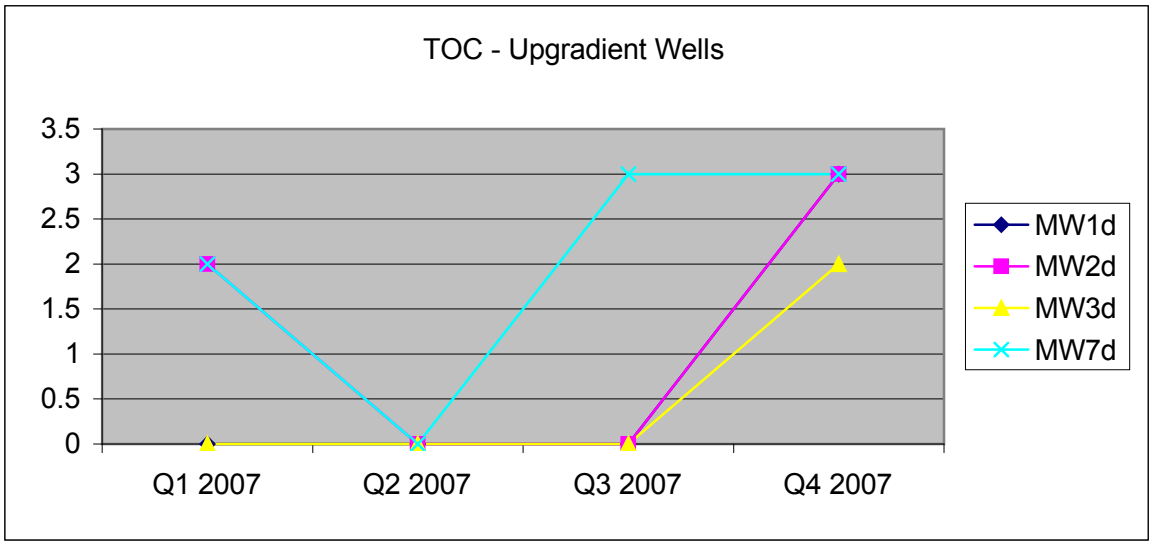


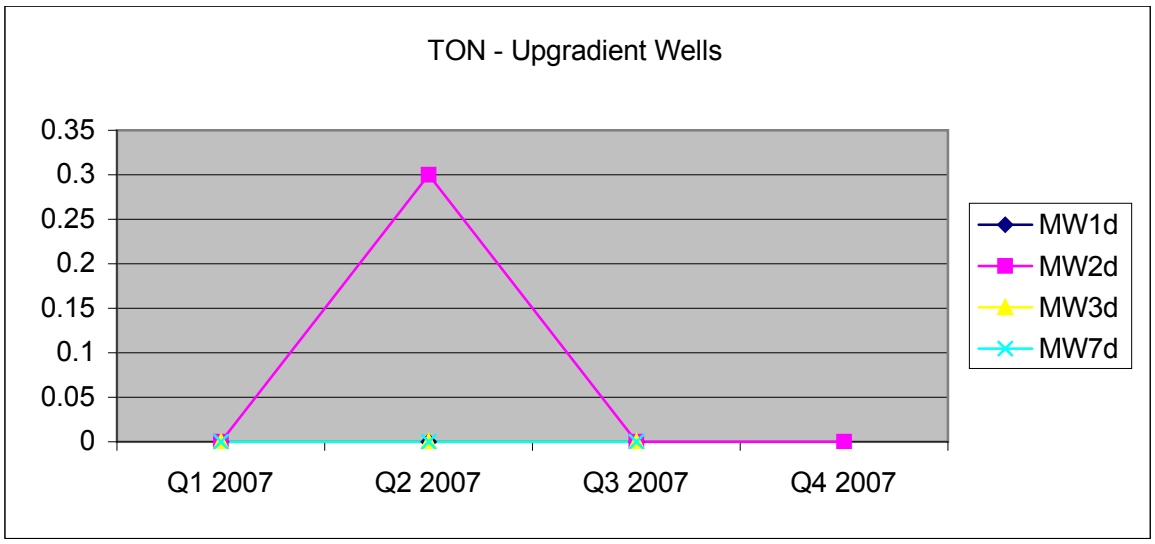


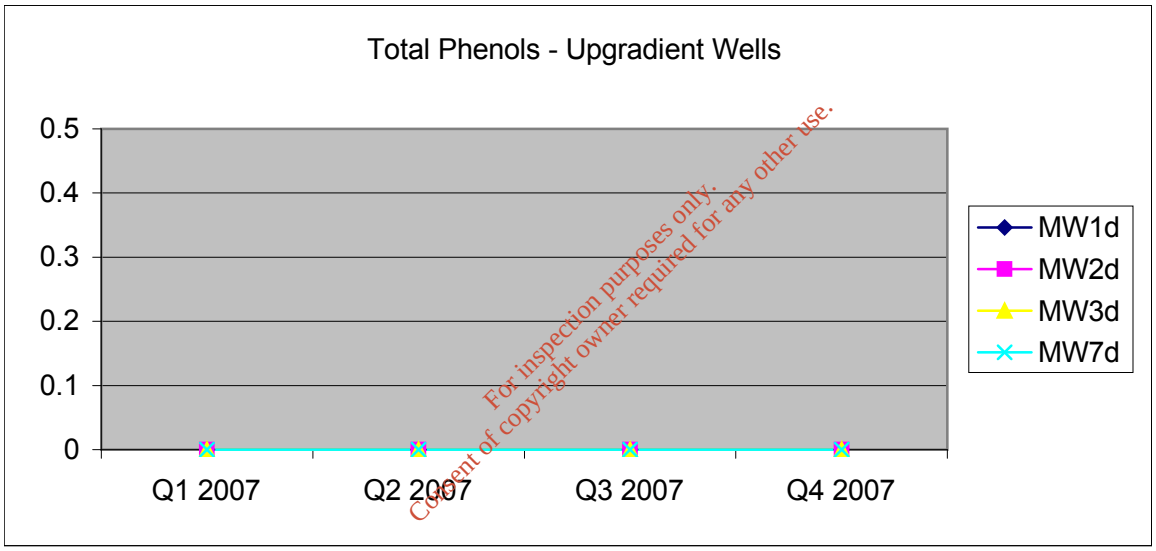


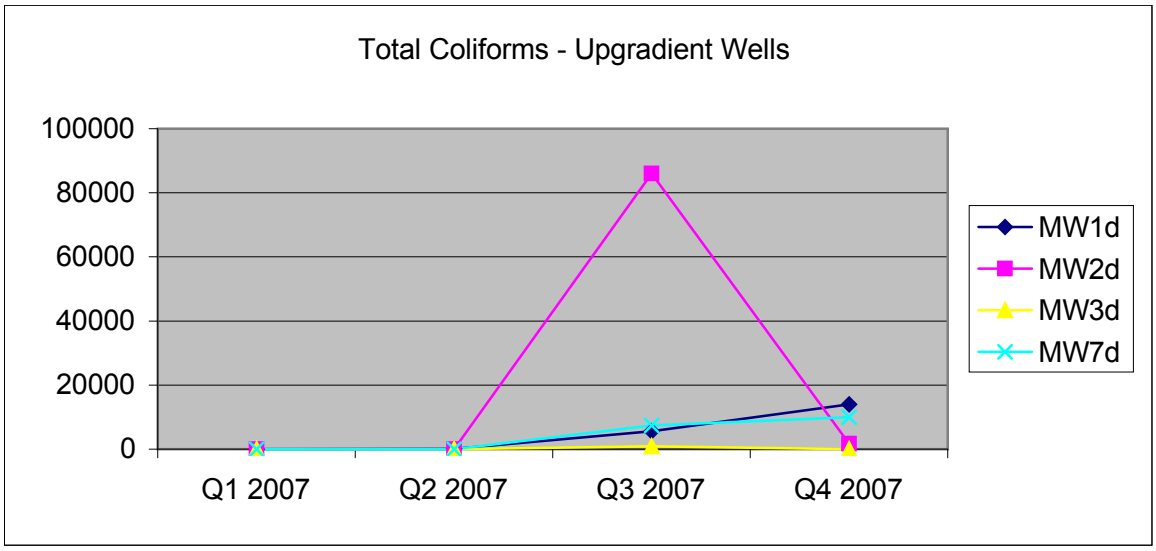


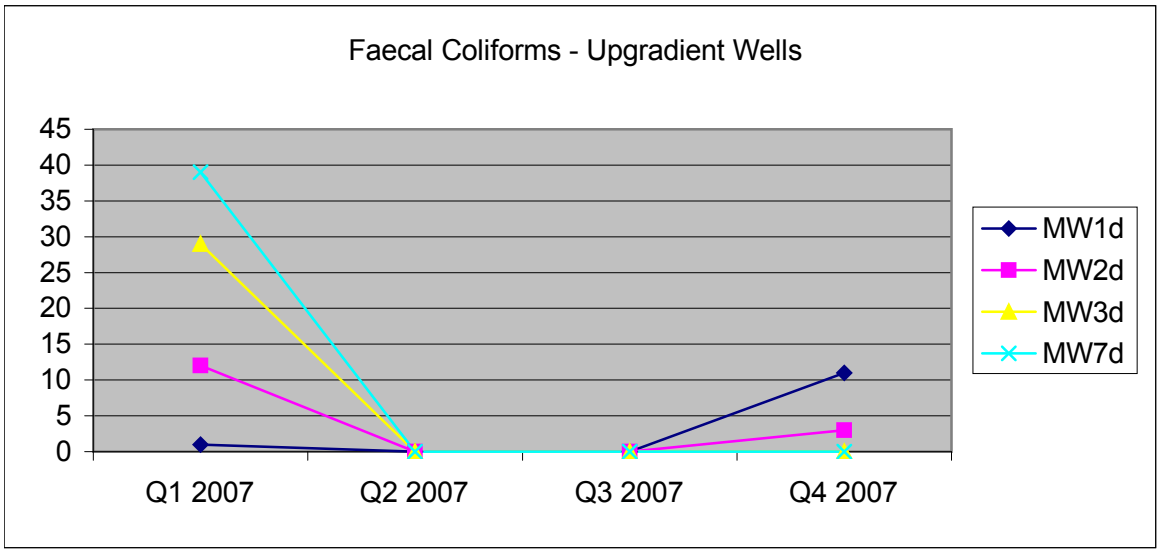


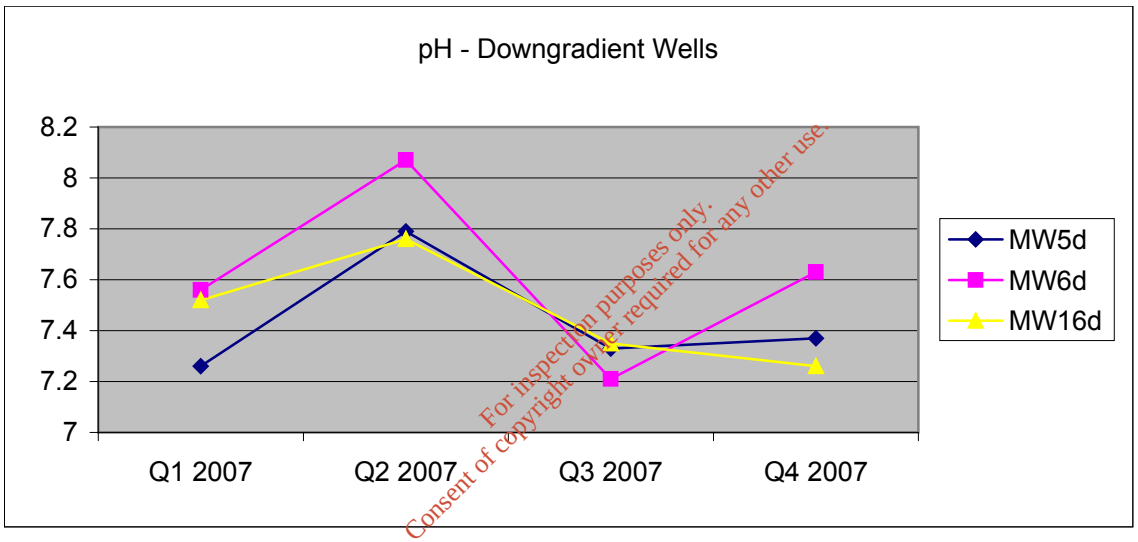


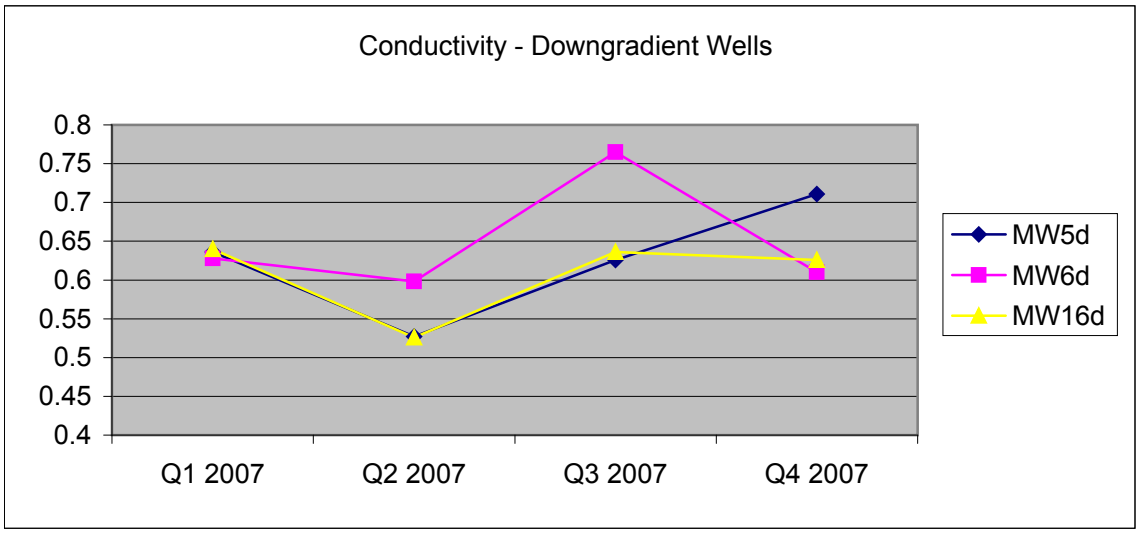


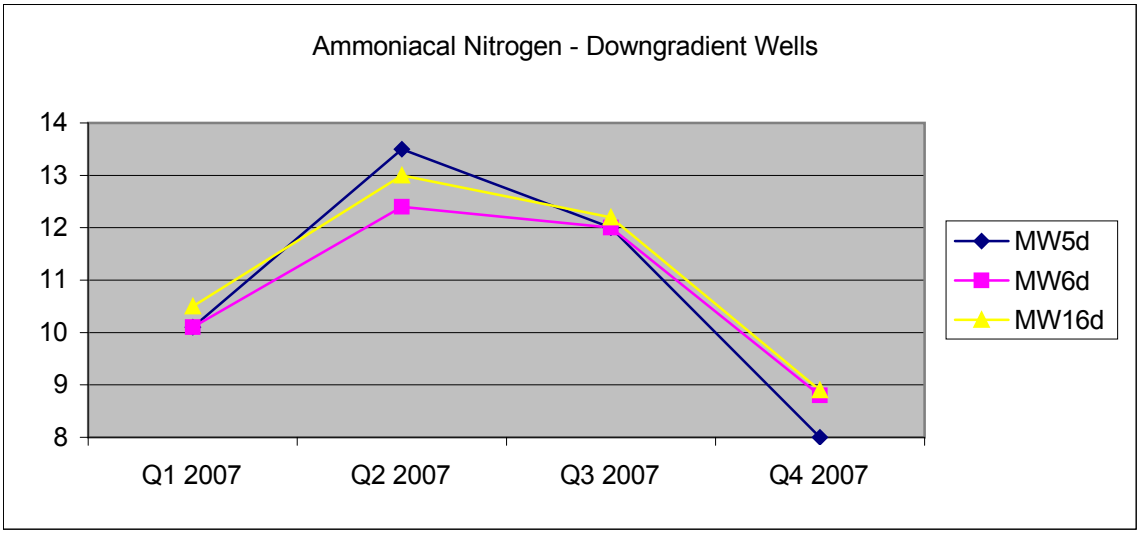


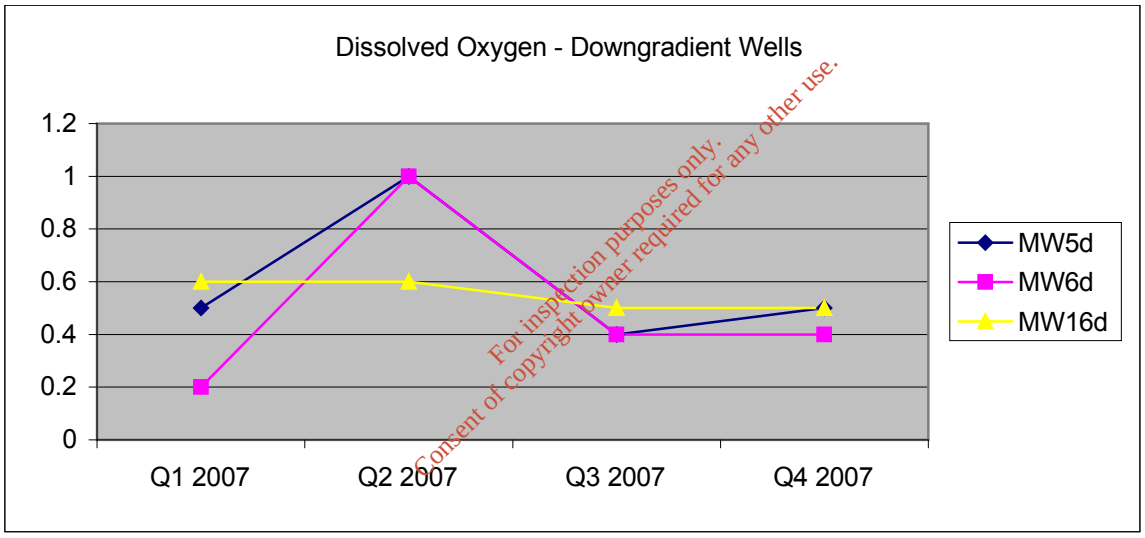


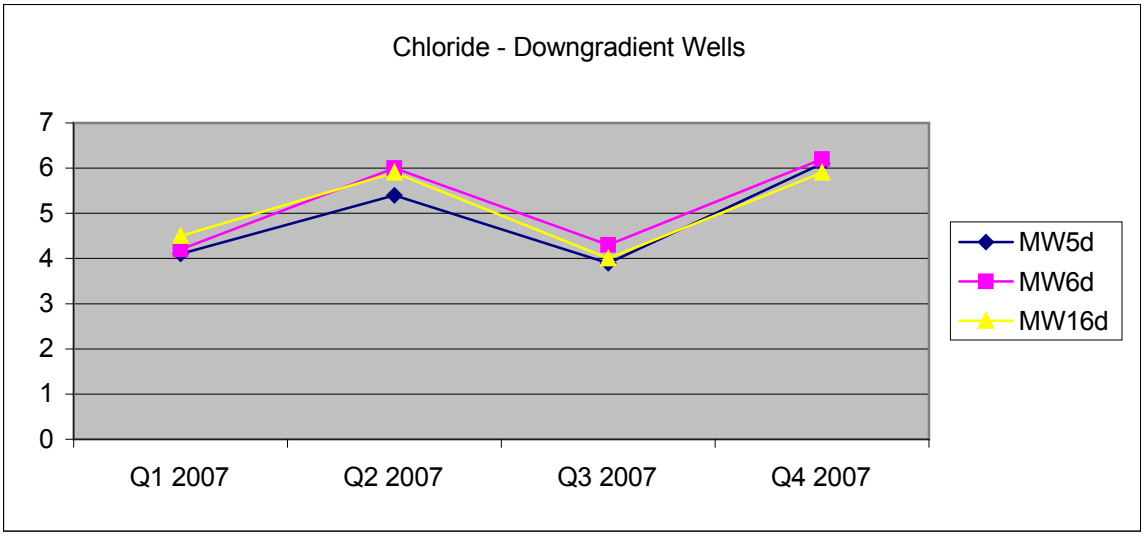


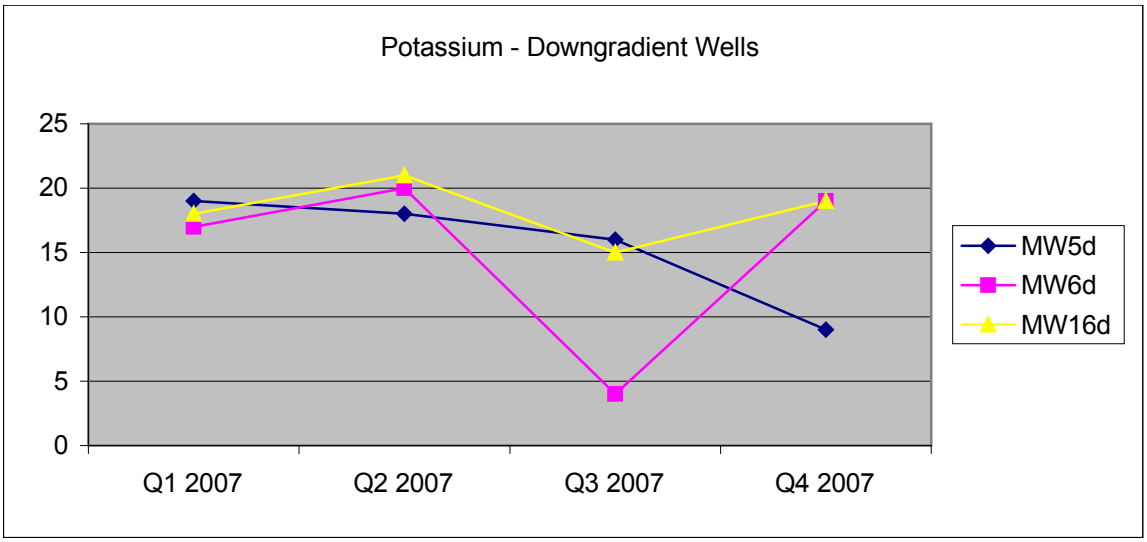


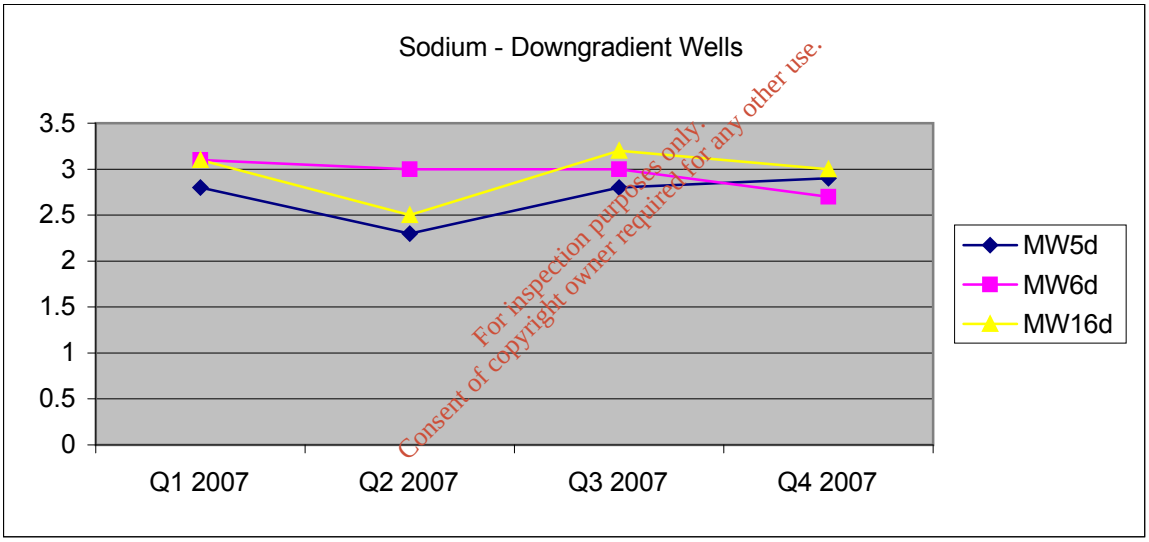


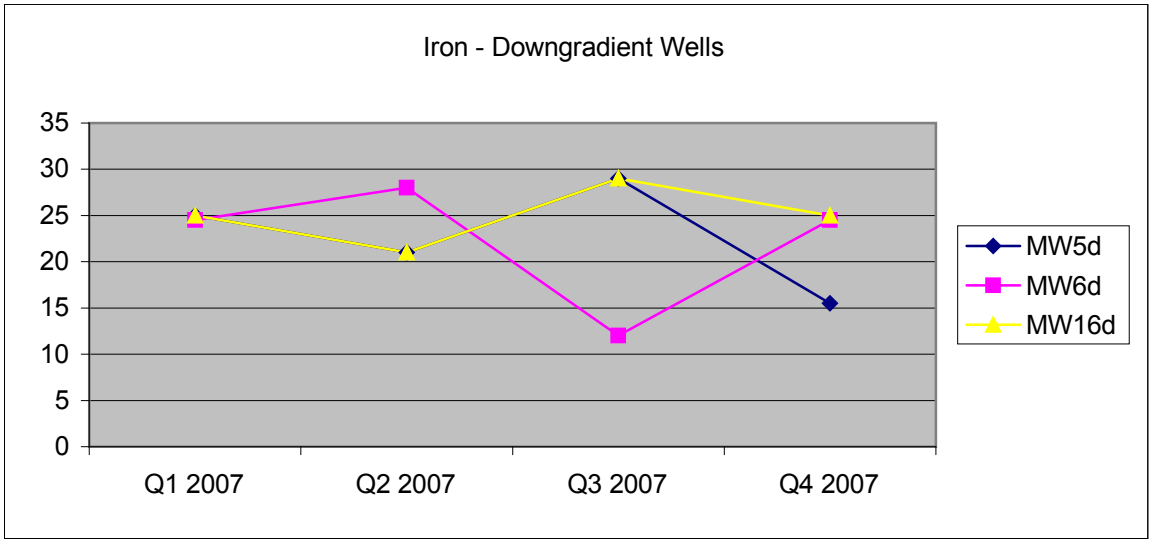


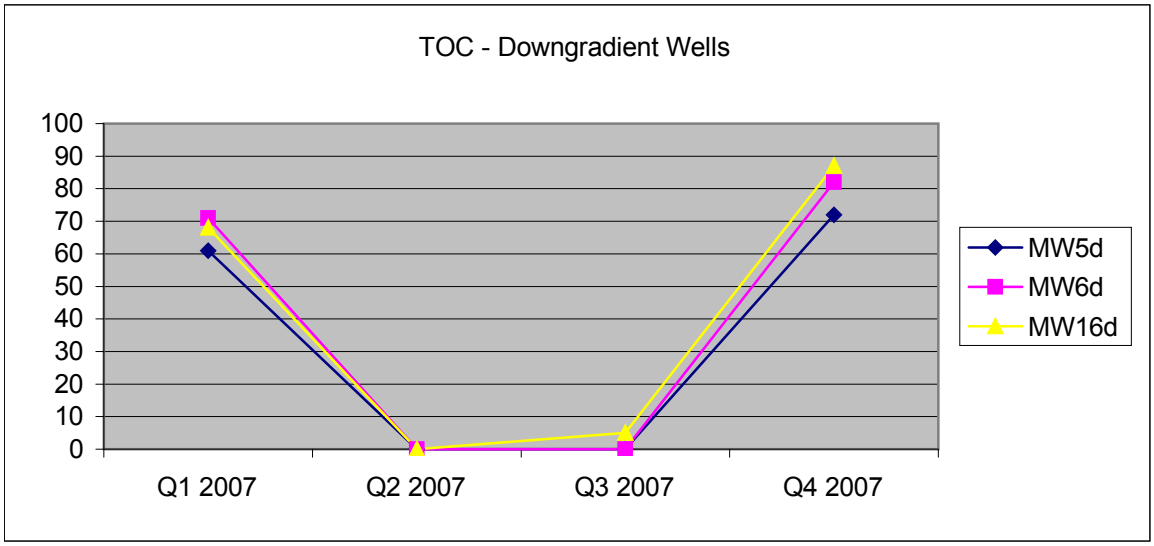


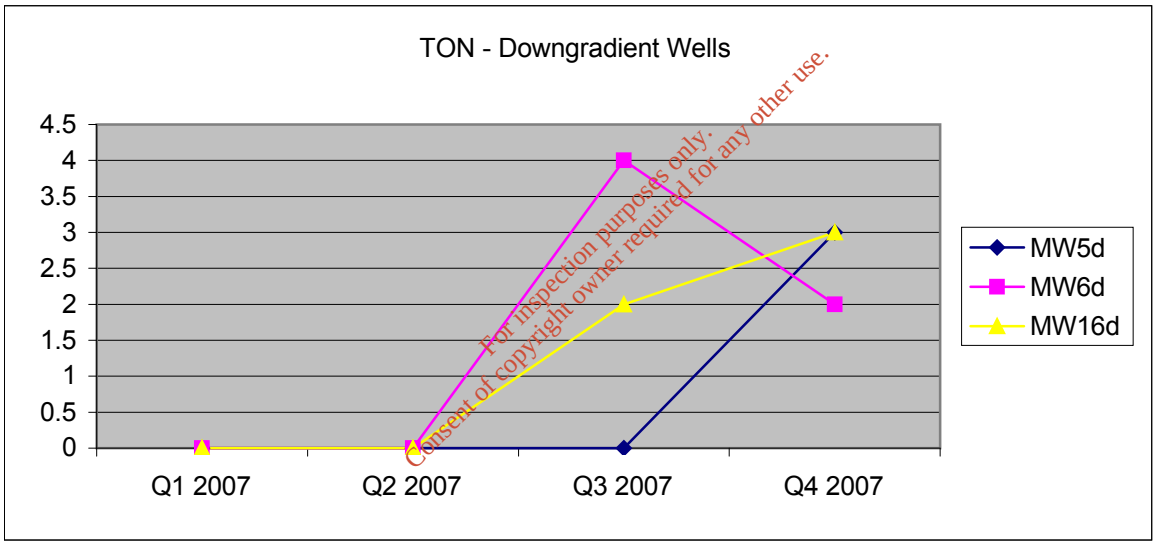


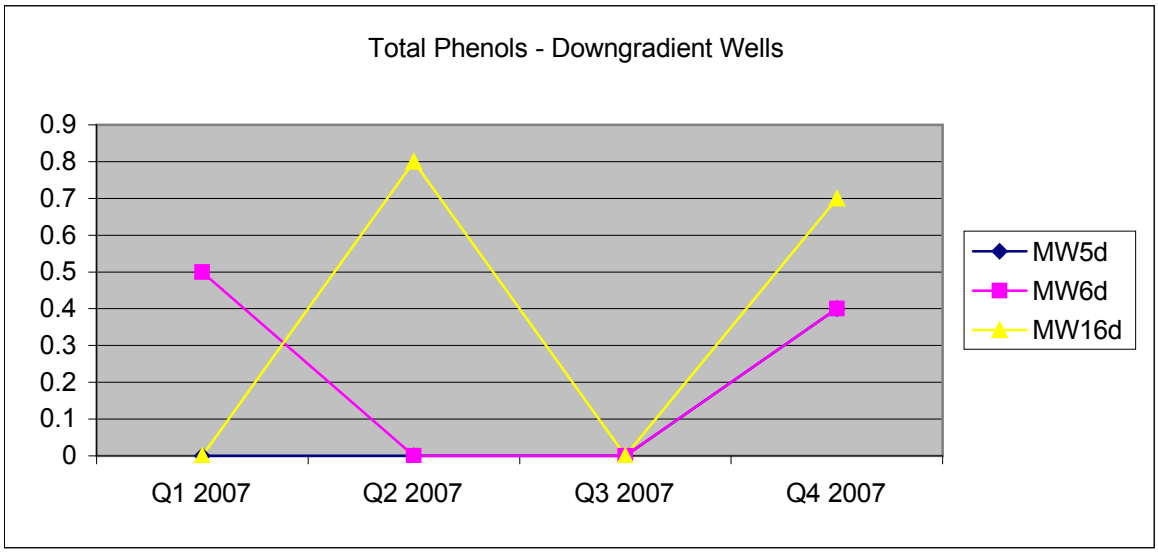


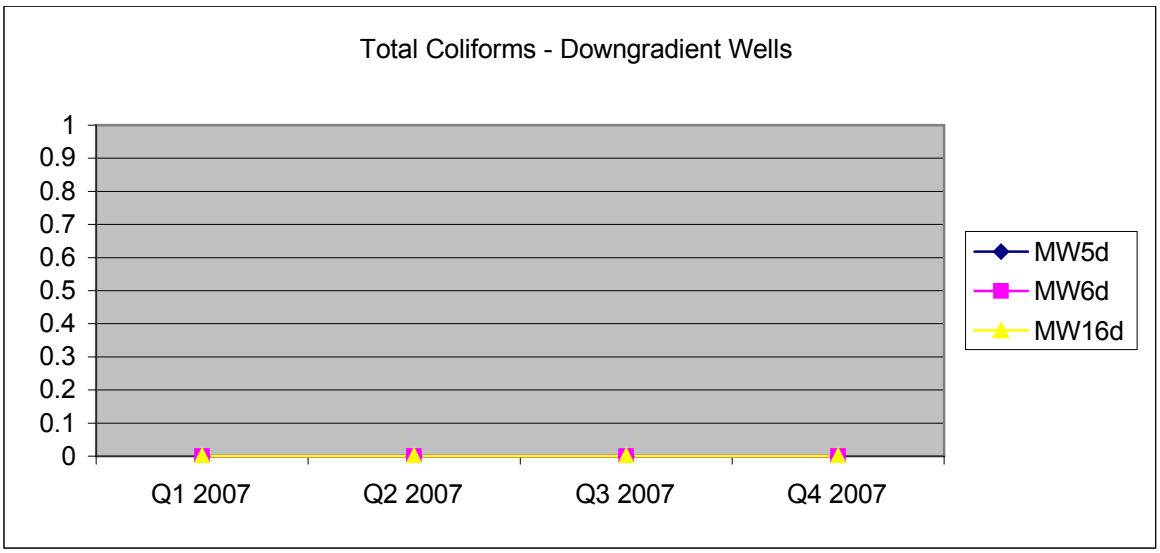


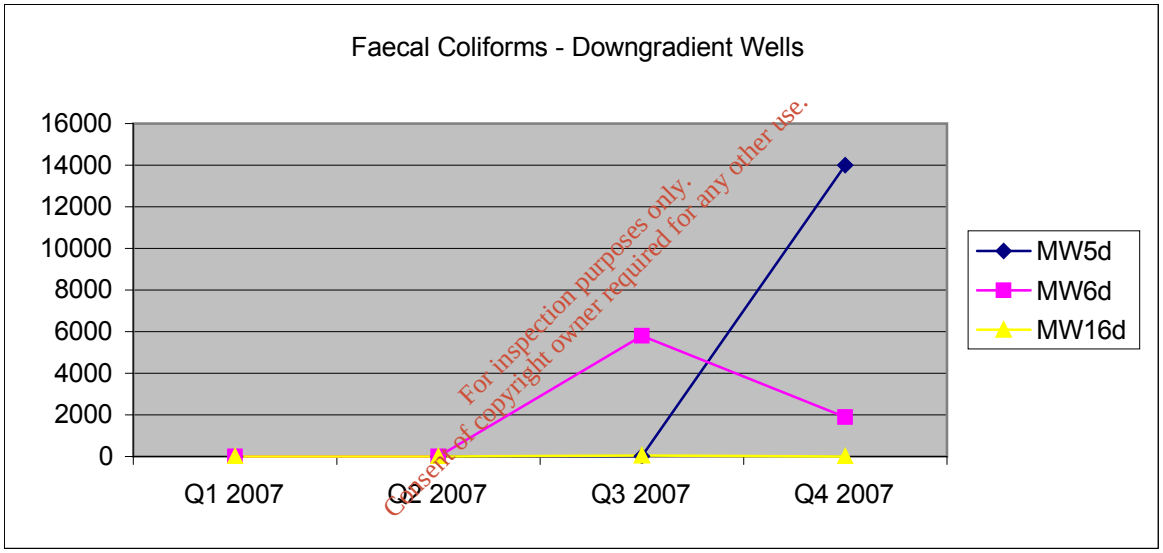












Surface Water Results

Parameter	Units	SW1	SW1 Q2	SW1 Q3	SW1 Q4
		28/02/2007	23/05/2007	15/08/2007	09/11/2007
pH	pH units	8.23	8.14	8.07	8.04
Conductivity	mS/cm	0.544	0.723	0.606	0.82
Temperature	°C		13.5	13.3	6.8
Ammoniacal Nitrogen	mg/l	<0.2	<0.2	<0.2	<0.2
Dissolved Oxygen	mg/l	5.1	5.8	4.5	4.5
Chloride	mg/l	18	36	14	44
Total Suspended Solids	mg/l	<10	<10	<10	<10
BOD	mg/l	<2	<2	*	5
COD	mg/l	21	17	19	36
Potassium	mg/l			4.7	
Sodium	mg/l			10	
TON	mg/l			1.8	
Calcium	mg/l			115.6	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			20	
Lead	µg/l			<1	
Magnesium	mg/l			7.52	
Manganese	µg/l			<1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			15	
Zinc	µg/l			10	
Phosphorous	mg/l			0.11	
Total Alkalinity	mg/l			350	

Parameter	Units	SW2	SW2 Q2	SW2 Q3	SW 2
pH	pH units	7.97	8.07	7.99	7.88
Conductivity	mS/cm	0.514	0.725	0.61	0.815
Temperature	°C		14.4	14.3	7.5
Ammoniacal Nitrogen	mg/l	<0.2	1.3	<0.2	<0.2
Dissolved Oxygen	mg/l	4.4	6	3.9	4.1
Chloride	mg/l	18	40	13	47
Total Suspended Solids	mg/l	<10	13	12	<10
BOD	mg/l	<2	<2	*	7
COD	mg/l	21	37	19	29
Potassium	mg/l			4.1	
Sodium	mg/l			10	
TON	mg/l			1.3	
Calcium	mg/l			117.9	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			14	
Lead	µg/l			<1	
Magnesium	mg/l			7.57	
Manganese	µg/l			<1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			15	
Zinc	µg/l			14	
Phosphorous	mg/l			0.06	
Total Alkalinity	mg/l			390	

Parameter	Units	SW3	SW3 Q2	SW3 Q3	SW 3 Q4
pH	pH units	7.97	7.66	7.72	7.82
Conductivity	mS/cm	0.42	0.718	0.612	0.798
Temperature	°C		13.9	14.2	7.4
Ammoniacal Nitrogen	mg/l	<0.2	<0.2	<0.2	0.9
Dissolved Oxygen	mg/l	7.9	7.2	4.7	4.4
Chloride	mg/l	17	38	13	41
Total Suspended Solids	mg/l	32	<10	<10	<10
BOD	mg/l	3	<2	*	5
COD	mg/l	NDP	28	19	30
Potassium	mg/l			4.3	
Sodium	mg/l			11.5	
TON	mg/l			1	
Calcium	mg/l			115.2	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			26	
Lead	µg/l			<1	
Magnesium	mg/l			8.02	
Manganese	µg/l			<1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			13	
Zinc	µg/l			92	
Phosphorous	mg/l			<0.05	
Total Alkalinity	mg/l			390	

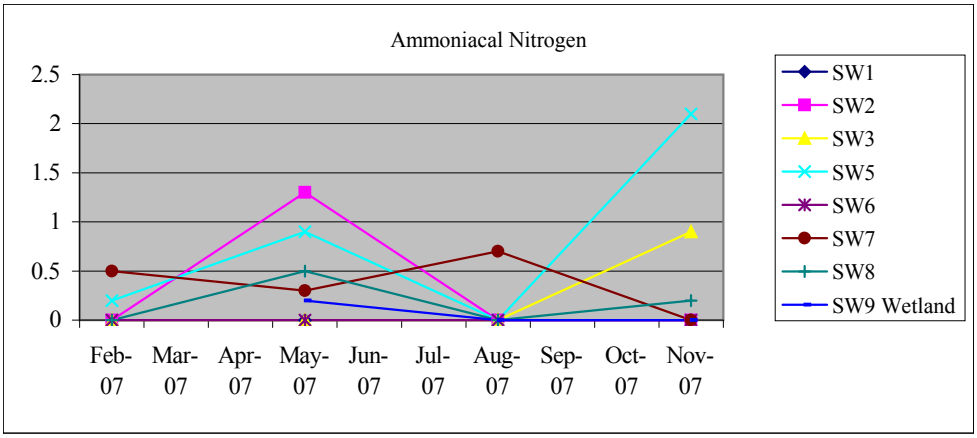
Parameter	Units	SW5 Q1	SW5 Q2	SW5 Q3	SW5
pH	pH units	7.7	7.82	7.78	7.02
Conductivity	mS/cm	0.431	0.756	0.626	0.916
Temperature	°C		13.5	14.5	7.3
Ammoniacal Nitrogen	mg/l	0.2	0.9	<0.2	2.1
Dissolved Oxygen	mg/l	4.7	6.5	4.6	4
Chloride	mg/l	17	32	14	37
Total Suspended Solids	mg/l	22	<10	16	<10
BOD	mg/l	12	3	*	11
COD	mg/l	NDP	30	22	41
Potassium	mg/l			4.9	
Sodium	mg/l			11	
TON	mg/l			1.2	
Calcium	mg/l			117.8	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			<2	
Lead	µg/l			<1	
Magnesium	mg/l			7.9	
Manganese	µg/l			<1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			13	
Zinc	µg/l			12	
Phosphorous	mg/l			<0.05	
Total Alkalinity	mg/l			390	

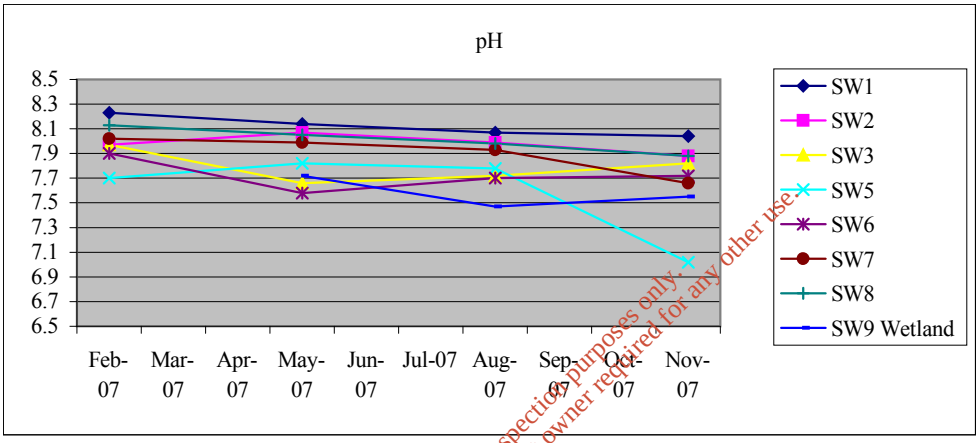
Parameter	Units	SW6 Q1	SW6 Q2	SW6 Q3	SW6
pH	pH units	7.9	7.58	7.7	7.72
Conductivity	mS/cm	0.447	0.666	0.636	0.77
Temperature	°C		16.1	13.8	6.2
Ammoniacal Nitrogen	mg/l	<0.2	<0.2	<0.2	<0.2
Dissolved Oxygen	mg/l	5.2	6.6	4.2	4.2
Chloride	mg/l	16	23	13	25
Total Suspended Solids	mg/l	34	47	<10	<10
BOD	mg/l	4	3	*	2
COD	mg/l	NDP	23	23	22
Potassium	mg/l			4.7	
Sodium	mg/l			11	
TON	mg/l			1	
Calcium	mg/l			119.6	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			9	
Lead	µg/l			<1	
Magnesium	mg/l			8.95	
Manganese	µg/l			<1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			50	
Zinc	µg/l			10	
Phosphorous	mg/l			0.06	
Total Alkalinity	mg/l			360	

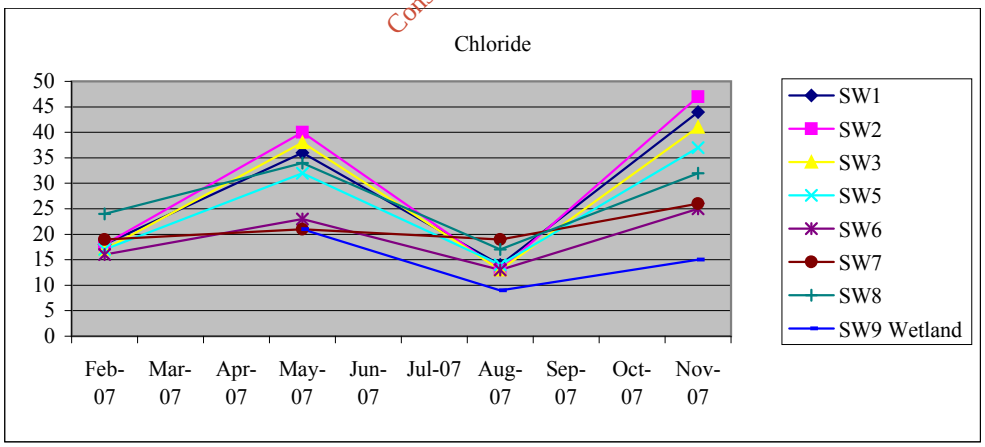
Parameter	Units	SW7 Q1	SW7 Q2	SW7 Q3	SW7
pH	pH units	8.02	7.99	7.93	7.66
Conductivity	mS/cm	0.573	0.669	0.691	0.642
Temperature	°C		14.5	13.8	6.5
Ammoniacal Nitrogen	mg/l	0.5	0.3	0.7	<0.2
Dissolved Oxygen	mg/l	4.6	5.6	4	4.8
Chloride	mg/l	19	21	19	26
Total Suspended Solids	mg/l	25	<10	11	<10
BOD	mg/l	3	3	*	2
COD	mg/l	NDP	24	18	<15
Potassium	mg/l			5.4	
Sodium	mg/l			9.5	
TON	mg/l			3.6	
Calcium	mg/l			130.4	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			3	
Iron	µg/l			24	
Lead	µg/l			<1	
Magnesium	mg/l			10.7	
Manganese	µg/l			1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			22	
Zinc	µg/l			10	
Phosphorous	mg/l			0.18	
Total Alkalinity	mg/l			390	

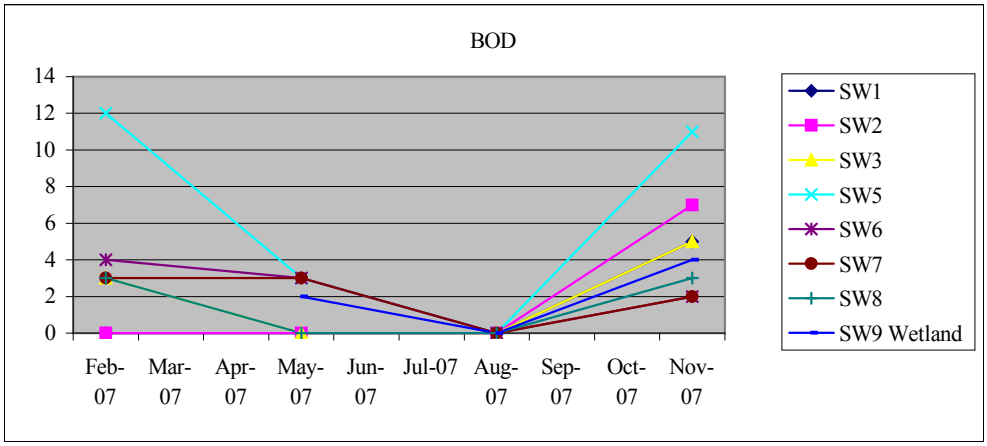
Parameter	Units	SW8 Q1	SW8 Q2	SW8 Q3	SW8
pH	pH units	8.13	8.05	7.98	7.88
Conductivity	mS/cm	0.616	0.722	0.671	0.76
Temperature	°C		13.6	14.4	7.4
Ammoniacal Nitrogen	mg/l	<0.2	0.5	<0.2	0.2
Dissolved Oxygen	mg/l	4.8	5.8	4.5	4.6
Chloride	mg/l	24	34	17	32
Total Suspended Solids	mg/l	60	<10	<10	<10
BOD	mg/l	3	<2	*	3
COD	mg/l	17	22	19	21
Potassium	mg/l			4.8	
Sodium	mg/l			10.5	
TON	mg/l			1.9	
Calcium	mg/l			127.2	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			3	
Iron	µg/l			57	
Lead	µg/l			<1	
Magnesium	mg/l			10.02	
Manganese	µg/l			3	
Mercury	µg/l			<0.05	
Sulphate	mg/l			29	
Zinc	µg/l			12	
Phosphorous	mg/l			<0.05	
Total Alkalinity	mg/l			389	

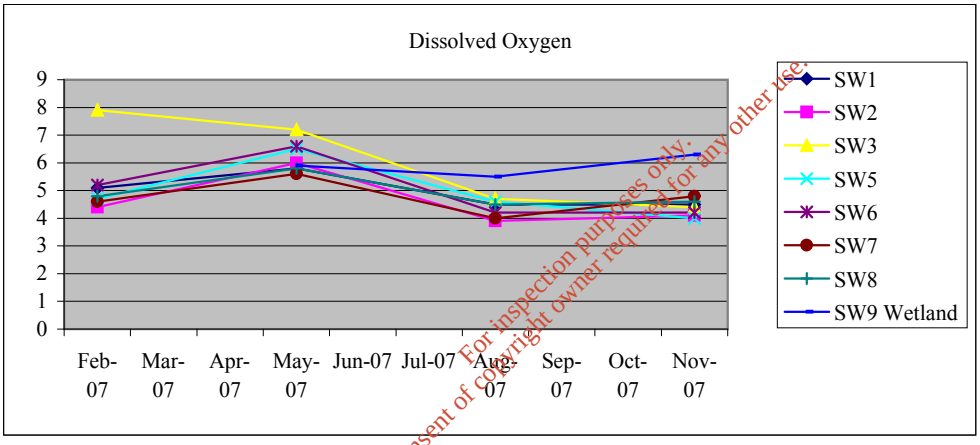
Parameter	Units		SW9 Wetland Q2	SW9 Wetland	SW9 Wetland
pH	pH units		7.72	7.47	7.55
Conductivity	mS/cm		0.711	0.673	0.673
Temperature	°C		15	16.6	6.7
Ammoniacal Nitrogen	mg/l		0.2	<0.2	<0.2
Dissolved Oxygen	mg/l		5.9	5.5	6.3
Chloride	mg/l		21	9	15
Total Suspended Solids	mg/l		17	<10	15
BOD	mg/l		2	*	4
COD	mg/l		17	18	<15
Potassium	mg/l			4.1	
Sodium	mg/l			9.5	
TON	mg/l			<0.3	
Calcium	mg/l			116.9	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			<1	
Iron	µg/l			<2	
Lead	µg/l			<1	
Magnesium	mg/l			15.61	
Manganese	µg/l			<1	
Mercury	µg/l			<0.05	
Sulphate	mg/l			222	
Zinc	µg/l			14	
Phosphorous	mg/l			0.16	
Total Alkalinity	mg/l			180	

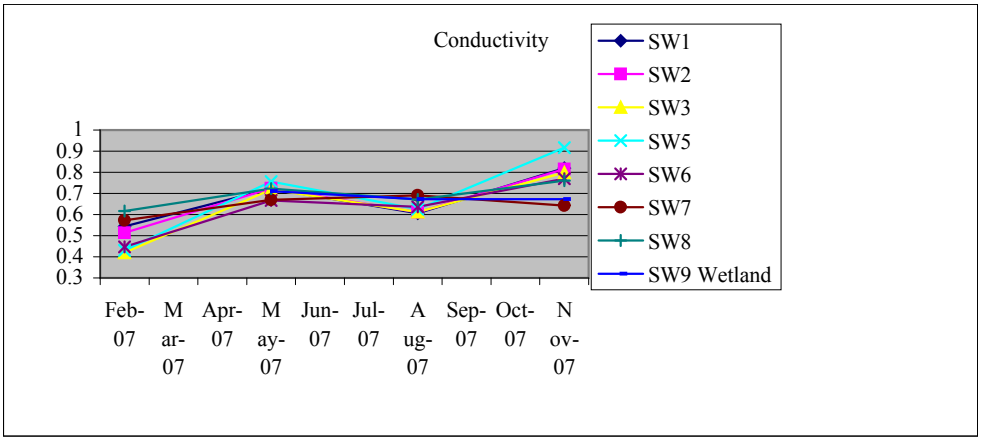


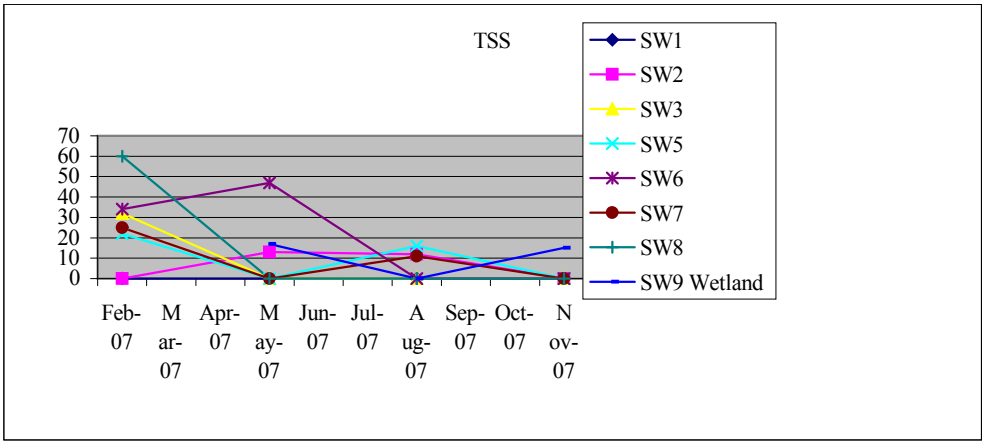


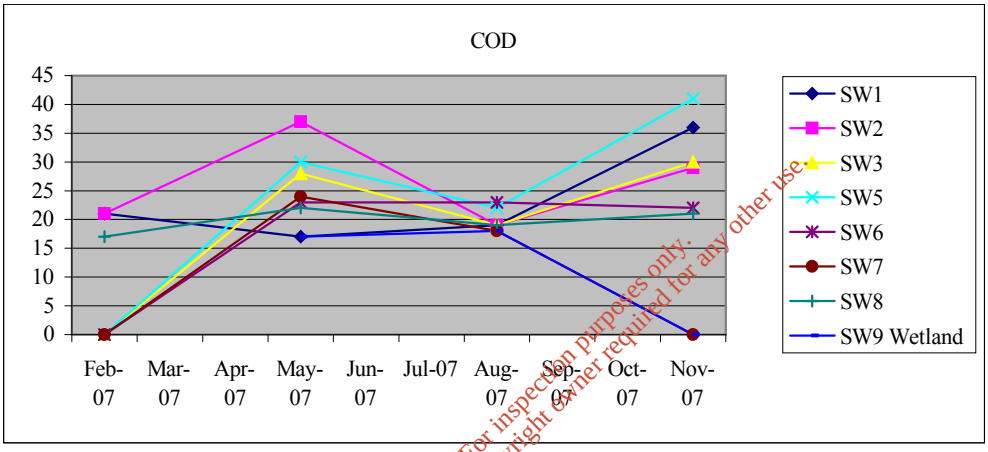












Leachate Results

Parameter	Units	LE1 Q1	LE1 Q2	LE1 Q3	LE1
		Q1 2007	Q2 2007	Q3 2007	Q4 2007
pH	pH units	7.21	7.35	7.18	7.27
Conductivity	mS/cm	7	10	12.25	13
Ammoniacal Nitrogen	mg/l	305.9	597.8	708.1	833
Chloride	mg/l	933	1218	1686	1555
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
BOD	mg/l	37	37	3,614	*
COD	mg/l	554	1039	5,045	6305
Mercury	µg/l			NDP	
Sodium	mg/l			950	
Potassium	mg/l			420	
Total Phosphorous	mg/l			2.34	
Boron	mg/l			3.12	
Cadmium	µg/l			<0.4	
Calcium	mg/l			736.6	
Chromium	µg/l			92	
Copper	µg/l			1	
Iron	mg/l			0.105	
Lead	µg/l			<1	
Magnesium	mg/l			232.5	
Manganese	mg/l			20.41	
Zinc	µg/l			7	
Fluoride	mg/l			1.7	
Sulphate	mg/l			<3	
Total Cyanide	mg/l			<0.05	
OrthoPhosphate	mg/l			1.31	
Total Alkalinity	mg/l			4,286	
Faecal Coliforms	cfu/100ml			50	
Total Coliforms	cfu/100ml			570	

Parameter	Units	LE2 Q1	LE2 Q2	LE2 Q3	LE2
pH	pH units	6.93	7.43	7.47	7.36
Conductivity	mS/cm	8	8	11.65	12.5
Ammoniacal Nitrogen	mg/l	303	410.9	874.1	772.7
Chloride	mg/l	894	1010	325	1596
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
BOD	mg/l	2049	37	373	*
COD	mg/l	4065	467	1,498	4628
Mercury	µg/l			NDP	
Sodium	mg/l			900	
Potassium	mg/l			410	
Total Phosphorous	mg/l			2.4	
Boron	mg/l			3.179	
Cadmium	µg/l			<0.4	
Calcium	mg/l			291	
Chromium	µg/l			91	
Copper	µg/l			1	

Iron	mg/l			2.666	
Lead	µg/l			<1	
Magnesium	mg/l			210.4	
Manganese	mg/l			3.248	
Zinc	µg/l			17	
Fluoride	mg/l			0.2	
Sulphate	mg/l			<3	
Total Cyanide	mg/l			<0.05	
OrthoPhosphate	mg/l			2.42	
Total Alkalinity	mg/l			5,086	
Faecal Coliforms	cfu/100ml			1	
Total Coliforms	cfu/100ml			52	

Parameter	Units	LE3 Q1	LE3 Q2	LE3 Q3	LE3
pH	pH units	7.66	7.63	7.16	7.39
Conductivity	mS/cm	11	13	12.3	13
Ammoniacal Nitrogen	mg/l	479.7	863.3	739.5	801.9
Chloride	mg/l	1155	1576	2672	1602
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
BOD	mg/l	279	304	4928	*
COD	mg/l	1340	1408	5,143	5965
Mercury	µg/l			NDP	
Sodium	mg/l			850	
Potassium	mg/l			370	
Total Phosphorous	mg/l			2.36	
Boron	mg/l			3.15	
Cadmium	µg/l			<0.4	
Calcium	mg/l			639.4	
Chromium	µg/l			81	
Copper	µg/l			<1	
Iron	mg/l			0.157	
Lead	µg/l			<1	
Magnesium	mg/l			227.7	
Manganese	mg/l			17.36	
Zinc	µg/l			6	
Fluoride	mg/l			1.3	
Sulphate	mg/l			56	
Total Cyanide	mg/l			<0.05	
OrthoPhosphate	mg/l			1.42	
Total Alkalinity	mg/l			4,563	
Faecal Coliforms	cfu/100ml			<1	
Total Coliforms	cfu/100ml			<1	

Parameter	Units	LE4 Q1	LE4 Q2	LE4 Q3	LE4
pH	pH units	7.12	7.36	7.48	7.3
Conductivity	mS/cm	10	9.5	16.65	12
Ammoniacal Nitrogen	mg/l	528.9	556.2	868.2	770.3
Chloride	mg/l	1076	1122	299	1529

Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
BOD	mg/l	1402	135	746	*
COD	mg/l	2704	1044	2,043	4911
Mercury	µg/l			NDP	
Sodium	mg/l			1050	
Potassium	mg/l			470	
Total Phosphorous	mg/l			2.85	
Boron	mg/l			3.486	
Cadmium	µg/l			<0.4	
Calcium	mg/l			306.5	
Chromium	µg/l			104	
Copper	µg/l			<1	
Iron	mg/l			0.554	
Lead	µg/l			<1	
Magnesium	mg/l			215.9	
Manganese	mg/l			4.022	
Zinc	µg/l			10	
Fluoride	mg/l			0.2	
Sulphate	mg/l			<3	
Total Cyanide	mg/l			<0.05	
OrthoPhosphate	mg/l			2.25	
Total Alkalinity	mg/l			5,371	
Faecal Coliforms	cfu/100ml			<1	
Total Coliforms	cfu/100ml			600	

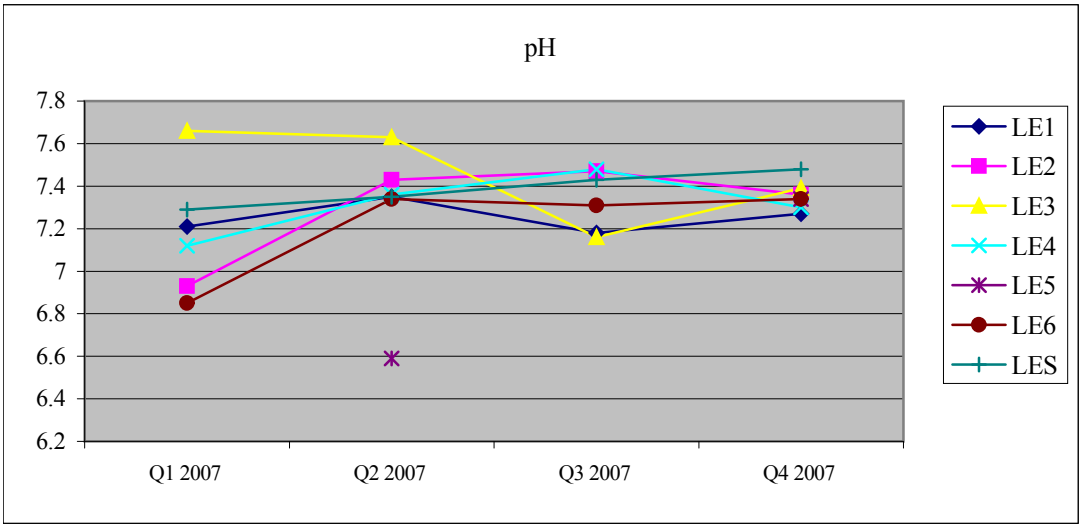
Parameter	**Units**	**LE5 Q1**	**LE5 Q2**	**LE5 Q3**	**LE5**
pH	pH units		6.59		7.34
Conductivity	mS/cm		14		13
Ammoniacal Nitrogen	mg/l		557.2		805.9
Chloride	mg/l		1660		1582
Total Oxidised Nitrogen	mg/l		<0.3		<0.3
BOD	mg/l		383		*
COD	mg/l		587		6309
Mercury	µg/l			N/A	
Sodium	mg/l			N/A	
Potassium	mg/l			N/A	
Total Phosphorous	mg/l			N/A	
Boron	mg/l			N/A	
Cadmium	µg/l			N/A	
Calcium	mg/l			N/A	
Chromium	µg/l			N/A	
Copper	µg/l			N/A	
Iron	mg/l			N/A	
Lead	µg/l			N/A	
Magnesium	mg/l			N/A	
Manganese	mg/l			N/A	
Zinc	µg/l			N/A	
Fluoride	mg/l			N/A	

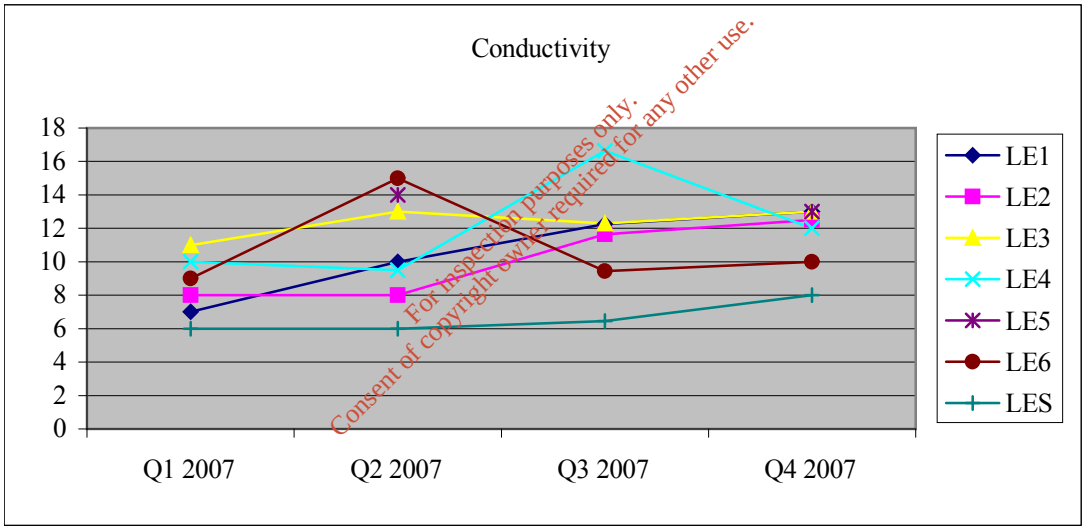
Sulphate	mg/l			N/A	
Total Cyanide	mg/l			N/A	
OrthoPhosphate	mg/l			N/A	
Total Alkalinity	mg/l			N/A	
Faecal Coliforms	cfu/100ml			N/A	
Total Coliforms	cfu/100ml			N/A	

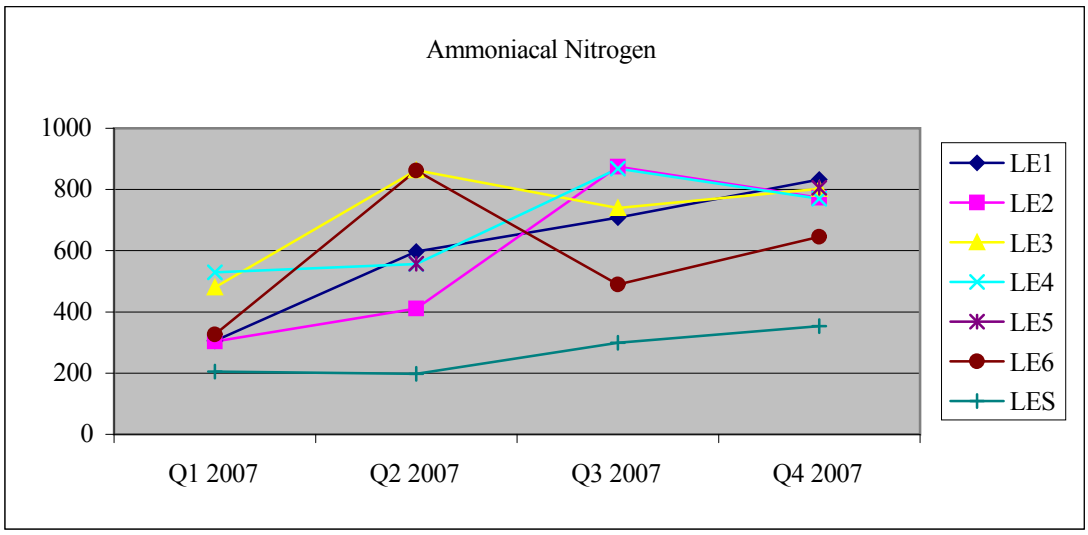
Parameter	Units	LE6 Q1	LE6 Q2	LE6 Q3	LE6
pH	pH units	6.85	7.34	7.31	7.34
Conductivity	mS/cm	9	15	9.45	10
Ammoniacal Nitrogen	mg/l	326.8	862.2	489.2	645.1
Chloride	mg/l	993	2200	1381	1434
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
BOD	mg/l	2169	3175	431	
COD	mg/l	3996	2296	1,184	1102
Mercury	µg/l			NDP	
Sodium	mg/l			850	
Potassium	mg/l			290	
Total Phosphorous	mg/l			1.66	
Boron	mg/l			2.912	
Cadmium	µg/l			<0.4	
Calcium	mg/l			306	
Chromium	µg/l			47	
Copper	µg/l			<1	
Iron	mg/l			0.063	
Lead	µg/l			<1	
Magnesium	mg/l			156.7	
Manganese	mg/l			1.931	
Zinc	µg/l			6	
Fluoride	mg/l			0.5	
Sulphate	mg/l			<3	
Total Cyanide	mg/l			<0.05	
OrthoPhosphate	mg/l			0.38	
Total Alkalinity	mg/l			3,267	
Faecal Coliforms	cfu/100ml			600	
Total Coliforms	cfu/100ml			700	

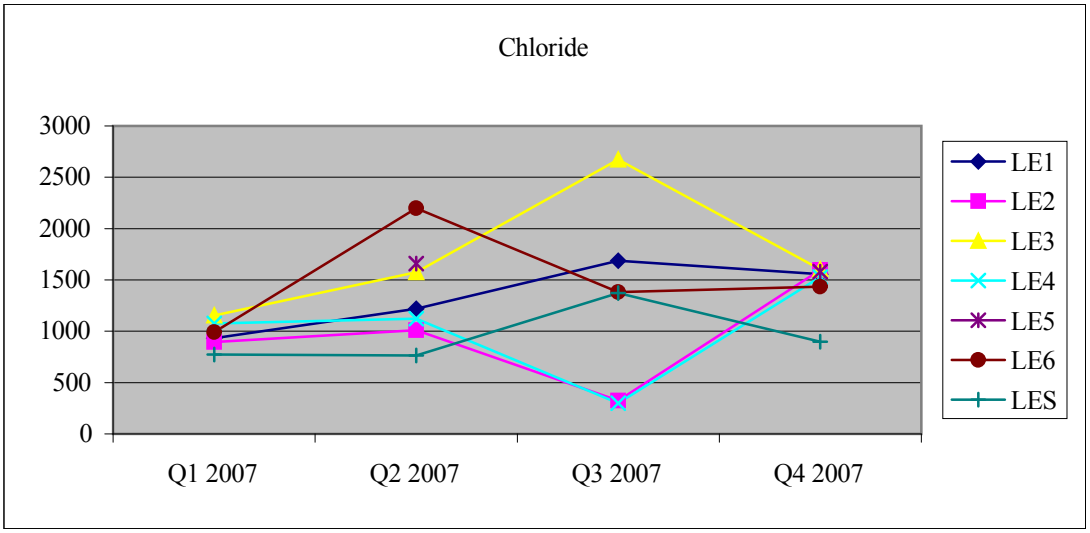
Parameter	Units	LES Q1	LES Q2	LES Q3	LES
pH	pH units	7.29	7.35	7.43	7.48
Conductivity	mS/cm	6	6	6.45	8
Ammoniacal Nitrogen	mg/l	204.5	197.3	298.7	353.2
Chloride	mg/l	774	763	1371	899
Total Oxidised Nitrogen	mg/l	<0.3	<0.3	<0.3	<0.3
BOD	mg/l	2173	3385	124	94
COD	mg/l	NDP	10709	545	899
Mercury	µg/l			NDP	
Sodium	mg/l			415	
Potassium	mg/l			120	

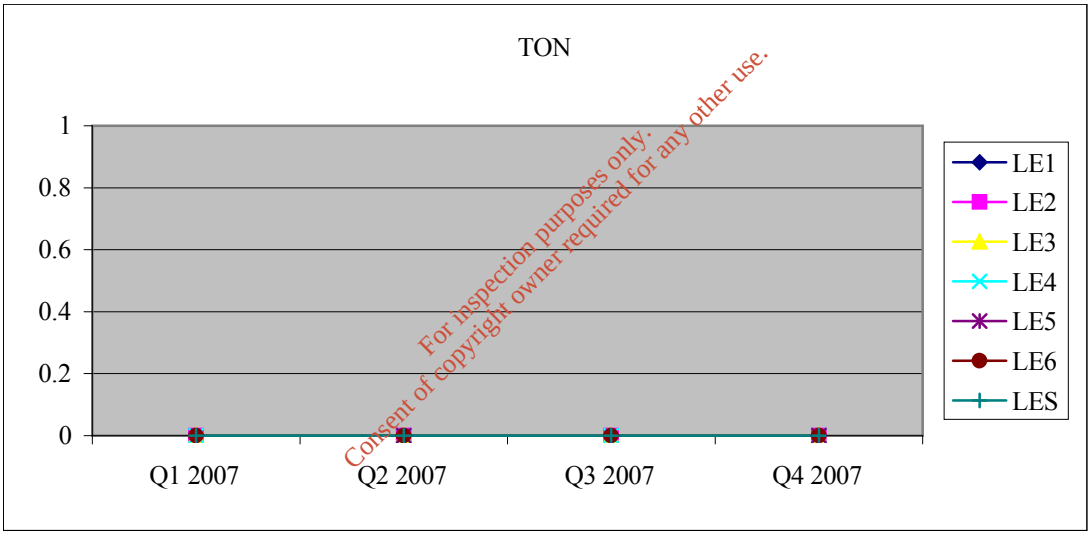
Total Phosphorous	mg/l			1.45	
Boron	mg/l			1.697	
Cadmium	µg/l			<0.4	
Calcium	mg/l			305.3	
Chromium	µg/l			29	
Copper	µg/l			<1	
Iron	mg/l			0.049	
Lead	µg/l			<1	
Magnesium	mg/l			148.8	
Manganese	mg/l			4.127	
Zinc	µg/l			3	
Fluoride	mg/l			0.7	
Sulphate	mg/l			49	
Total Cyanide	mg/l			<0.05	
OrthoPhosphate	mg/l			0.37	
Total Alkalinity	mg/l			2,375	
Faecal Coliforms	cfu/100ml			10	
Total Coliforms	cfu/100ml			1900	

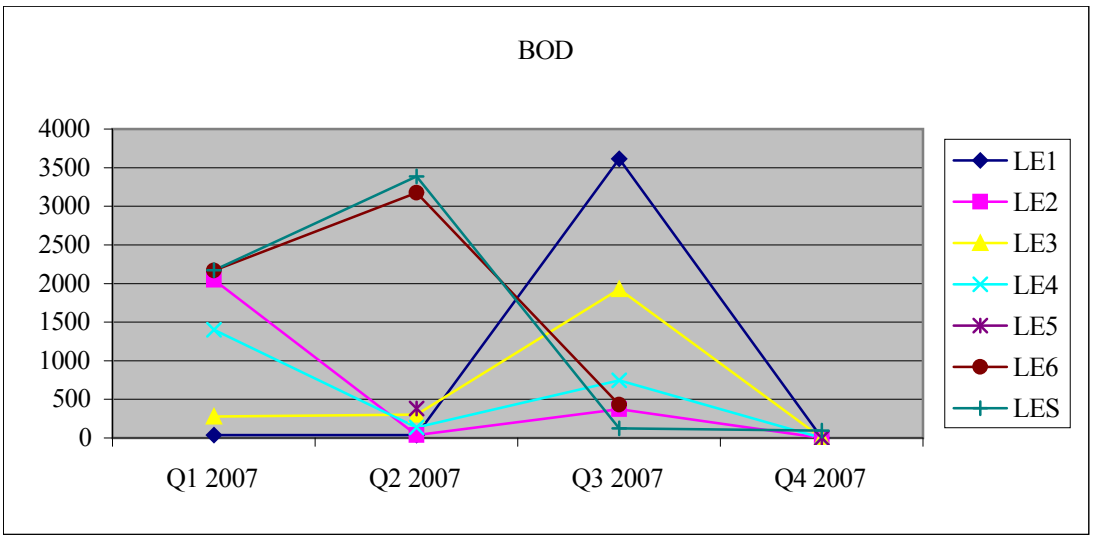


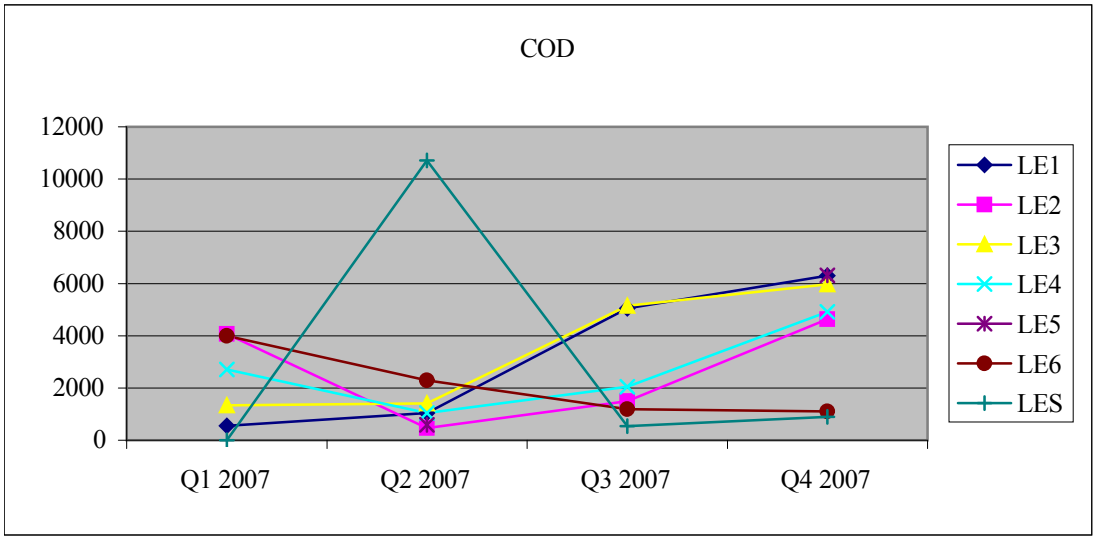












Dust Results

	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Emission Limit ($mg/m^2/day$)
				28 Days	28 Days	28 days	28 Days	28 Days	30 Days	28 Days	29 Days	28 Days	
D1	161	26		95	*	222	319	72	37	67	<10	71	350
D2	124	133		72	145	195	90	148	24	<10	<10	64	350
D3	133	47		33	143	185	85	96	42	<10	41	<10	350
D4	233	48		112	163	305	96	99	43	25	<10	93	350
D5	168	46		151	*	184	315	*	75	*	*	60	350
D6	105	65		94	*	172	114	234	65	*	<10	*	350
D7	*	*		*	*	*	*	*	100	*	*	38	350
D8	130	206		181	202	238	147	212	51	62	14	80	350

* Contaminated with bird excrement

Noise Results

Noise Results for Greenstar Knockharley 2007

Q1 2007

Location	Time	L_{Aeq}	L_{AF10}	L_{AF90}	Comments
N1	11:20	55	52.6	42.2	The dominant noise source at this location was very loud birdsong close to the meter. The distant sound of traffic on the N2 and some sounds of site activities contributed to background levels.
N2	12:35	50.4	52.8	44.4	The noises audible at this location was the sound of site traffic passing on the access road. Noise from the traffic on the N2 contributed to background noise levels.
N3	12:00	50.5	48.8	41.2	Loud birdsong close to the meter was the dominant source at this location and the noise of traffic on the N2 was the principal source of background noise.
N4	10:25	52.8	50.6	41.8	The dominant noise source at this location was the sound of occasional traffic on the minor road. Background noise came from the distant sounds of traffic on the N2 and also some sounds of active site machinery.

Q2 2007

		Measured Noise (dB re. 2x10-5 Pa)			
Location	Time	L_{Aeq}	L_{A10}	L_{A90}	Comments
N1	15.09 – 15.39	48	51	38	Birdsong significant. Intermittent road traffic. Silage cutting faintly audible to south. Ejector trailers at landfill faintly audible on breeze occasionally.
N2	15.52 – 16.22	51	54	39	Continuous emissions faintly audible from SW, possibly grass mowers or silage cutting in distance. Birdsong, sporadic road traffic. Ejector trailers at landfill audible at low level occasionally. Vehicles moving around site and on access road audible at low level sporadically. Rustling vegetation. Children playing at nearby house for short period.
N3	16.31 – 17.01	45	48	38	Emissions audible continuously at low level from within site (access road, weighbridge area, operations area). Not significant. Birdsong. Grass mowers occasionally audible along access road corridor. Rustling vegetation.
N4	14.32 – 15.02	46	48	39	Birdsong significant. JCB on road works 200m SW of SLM on public road. Noise continuously audible at low level. Clangs from bucket. Intermittent road traffic. Noise emissions slightly audible on breeze occasionally from ejector trailers at landfill. Silage cutting faintly audible in distance to S.

Q3 2007

		Measured Noise (dB re. 2x10-5 Pa)			
Location	Time	L_{Aeq}	L_{A10}	L_{A90}	Comments
N1	10.50 – 11.20	44	47	36	Continuous emissions from facility slightly audible, chiefly construction noise and reversing alarms. LA90 representative. Birdsong significant. Sporadic local traffic not associated with Greenstar activities.
N2	10.10 – 10.40	56	47	36	Continuous emissions from within facility audible at low level, chiefly crushers/screens. LA90 representative. Sporadic truck movements on access road slightly audible. Birdsong. Chainsaw in use to W not associated with Greenstar activities occasionally audible. Sporadic local traffic not associated with Greenstar activities.
N3	09.22 – 09.52	54	53	40	Emissions from facility audible at low level continuously, chiefly from crushers/screens and dozer. LA90 representative. No other emissions audible apart from birdsong. Chainsaw operating 100 m offsite 0932-0937 not associated with Greenstar activities.
N4	11.25 – 11.55	45	45	36	Continuous emissions from facility audible at low level, dominant in background. LA90 representative. Birdsong significant. Sporadic local traffic. Breeze picking up to 1-2 m/s, rustling vegetation. Occasional off site chainsaw in distance to W audible at low level.

Q4 2007

		Measured Noise Levels (dB re. 2x10-5 Pa)			
Location	Time	L_{Aeq}	L_{A10}	L_{A90}	Comments
N1	08.44 – 09.14	46	45	39	Noise emissions from site audible continuously at low level. Sporadic ejector trailers audible. Distant traffic faintly audible. Sporadic local traffic.
N2	09.55 – 10.25	60	57	43	Site noise emissions audible continuously at low level. Road sweeper truck audible from 09.56 around weighbridge area. Rustling vegetation. Birdsong. Trucks sporadically audible on access road. Intermittent local traffic (road surprisingly busy).
N3	08.00 – 08.30	50	53	46	Onsite construction plant audible at low level. No waste operations noise audible apart from wheeled compactor and sporadic ejector trailers. Birdsong. Distant traffic faintly audible. Local traffic audible.
N4	09.18 – 09.48	52	47	38	As at N1, except local traffic movements more frequent. Car and van idling outside nearby house for 2 min. Passing helicopter at low altitude.

PM_{10} Results

PM10 Monitoring - Greenstar Knockharley- 2007

Q1 2007

Monitoring Location	Average Concentration Value (µg/m3)
PM1	62.5
PM2	6.9
PM3	
PM4	11.1
PM5	18.1
PM6	48.6

Q2 2007

Location	PM_{10} Concentration ($\mu g/m^3$)
PM1	25
PM2	23.6
PM3	26.4
PM4	19.4
PM5	26.4
PM6	16.7

Q3 2007

Location	PM_{10} Concentration ($\mu g/m^3$)
PM1	18
PM2	12.5
PM3	19.4
PM4	22.2
PM5	11.1
PM6	15.9

Q4 2007

Location	PM_{10} Concentration ($\mu g/m^3$)
PM1	19
PM2	28
PM3	26
PM4	31
PM5	24
PM6	17

Landfill Gas Results

Sample Station	Jan-07			Feb-07			Mar-07			Apr-07		
	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)
LG01	0	0	20.8	0	0.1	20.7	0	0.9	21.1	0	0	20.8
LG02	0	0.1	20.6	0.1	0.1	20.6	0	0.1	21.6	0	0	20.6
LG03	0.8	1.4	18.5	0.9	0.8	19.7	18	5.4	0	0	0	20.5
LG04	0	1.2	16.5	0.1	0.3	19.8	0	2.7	8.9	0	3.7	5.6
LG05	0	0.3	20.4	0	1	20.2	0	0.3	20.9	0	0.1	19.6
LG06	0	0.1	20.6	0	0	20.6	0	0	21.3	0	0	20.3
LG07	0	0.3	20.5	0	0.8	20.2	0	0.5	21	0	0.4	19.8
LG08	0	0.1	20.4	0	0	20.5	0	0.1	21.2	0	0	20.3
LG09	0	0	20.6	0	0	20.5	0	0	21.2	0	0	20.3
LG10	0	0.1	20.4	0	0.4	20.1	0	0.4	20.9	0	0.5	19.7
LG11	0	0	20.4	0	0.1	20.6	0	0	21.1	0	0	20.3
LG12	0	0	20.5	0	0.1	20.5	0	0	21.1	0	0	19.8
LG13	0	0	20.4	0	0	20.5	0	0	21	0	0	20.3
LG14	0	1.4	15.6	0	1.7	14.6	0	0.9	15.4	0	0.4	17.1
LG15	0	0.6	19	0	0.5	20.2	0	0.8	17.2	0	0	20
LG16	0	0	20.3	0	0	20.5	0	0.1	20.3	0	0	20.3
LG17	0	0.2	18.9	0	1	16.2	0	1.2	16.9	0	0	20.3
LG18	0	0	20.3	0	0.1	20.3	0	0	20.6	0	0	20.3
LG19	0	0	20.3	0	0	20.8	0	0	20.9	0	0	20.3

May-07			Jun-07			Jul-07			Aug-07		
CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)
0	0	19.5	0	0	21	0	0	21	0	0	21
0	0	20.7	0	2.7	9.2	0	0	21	0	0	21
0	0	20.5	2.9	3.1	0	15	2.9	0.6	31.5	5.1	0.04
0	3	12.5	0	0.2	19.8	0	1.5	18.9	0.1	2	15.6
0	0	20.5	0	0.3	20	0	0	20	0	0.4	20.3
0	0	20.5	0	0	20.7	0	0	20.4	0	0	20.8
0	0	20.4	0	1.9	19.1	0	0	20.6	0	0.9	19.8
0	0	20.4	0	0	20.7	0	0	20.1	0	0	20.7
0	0	20.5	0	0	20.7	0	0	20.4	0	0	20.7
0	0.1	19.5	0	0	20.4	0	0	20.4	0	0.2	20.4
0	0	20.4	0	0	20.4	0	0	20.4	0	0	20.6
0	0.2	19	0	0	20.3	0	0.2	20.5	0	0	20.6
0	0	20.4	0	0	20.6	0	0	20.4	0	0	20.7
0	0	20.5	0	0	20	0	0	20.5	0	0.4	19.5
0	0.1	20.1	0	0.1	20	0	0	20.4	0	0.7	19.2
0	0	20.3	0	0	20.4	0	0.2	20	0	0	20.5
0	0	19.5	0	0	20.8	0	0	20.4	0	0.1	20.3
0	0	20.4	0	0	20.7	0	0	20.6	0	0	20.5
0	0	20.3	0	0	20.7	0	0	20.5	0	0.2	19.8

Sep-07			Oct-07			Nov-07			Dec-07		
CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	**CH_4 (% v/v)**	**CO_2 (% v/v)**	**O_2 (% v/v)**
0	0.7	19.4	0	0	21.1	0	0	21.1	0	0	21.1
0	0.2	18.3	0	0.4	19.8	0	0	21.3	0	0.1	20.3
16.1	3.1	0.8	-	-	-	-	-	-	-	-	-
0	3.5	15.8	-	-	-	-	-	-	-	-	-
0	1.3	19.3	0	1.8	19.4	0	2.3	16.5	0	0.6	19.7
0	0	21	0	0	20.7	0	0	21.5	0	0	21.5
0	0.9	19.4	0	3.8	14.8	0	4.6	6.6	0	0.9	16.6
0	0	20.6	0	0	20.8	0	0	21.3	0	0	21
0	0	20.7	0	0	21	0	0	21.2	0	0	21.1
0	0	20.5	0	0.7	20.3	0	3.7	18.1	0	1.1	18.1
0	0	20.6	0	0	20.8	0	0	21.3	0	0	21.3
0	0	20.4	0	0	20.5	0	0.2	18.9	0	0.2	19.9
0	0	20.6	0	0	20.6	0	0	21	0	0	21.1
0	0.7	17.9	0	0.6	18.9	0	0.8	19	0	0.8	19
0	0.5	19.9	0	0.4	20	0	0.4	20.6	0	0.4	20.6
0	0	20.4	0	0	20.4	0	0	21.3	0	0	21.3
0	0.7	19.7	0	0.7	19.5	0	1.1	18.9	0	0.5	18.9
0	0	20.7	0	0	20.6	0	0	21	0	0	21
0	0	20.6	0	0	20.7	0	0	21.3	0	0	21.3

APPENDIX 3

Gas Sim Report

APPENDIX 5

Complaints Register

GasSim Version 1.54
Project Name : Knockharley
Client Name :

Gas	CAS	Reporting Threshold	Value to report	Amount Produced 25%	75%
Inorganics					
Ammonia	7664-41-7	1.00 t	n/a		
Asbestos	1332-21-4	1.00 kg	n/a		
Carbon Dioxide - 'chemical'	124-38-9	10,000.00 t	5,490.00 t	5,490.00 t	5,490.00 t
Carbon Dioxide - 'thermal'	124-38-9	10,000.00 t	0.00 g	0.00 g	0.00 g
Carbon disulphide	75-15-0	1.00 t	43.80 kg	14.20 kg	182.00 kg
Carbon monoxide	630-08-0	100.00 t	18.10 kg	5.32 kg	183.00 kg
Hydrogen chloride	7647-01-0	10.00 t	0.00 g	0.00 g	0.00 g
Hydrogen cyanide	74-90-8	100.00 kg	n/a		
Nitrous oxide	10024-97-2	10.00 t	n/a		
Phosgene	75-44-5	10.00 kg	n/a		
Sulphur hexafluoride	2551-62-4	10.00 kg	n/a		
Organics					
Acetaldehyde [Ethanal]	75-07-0	100.00 kg	1.70 kg	644.00 g	5.19 kg
Acrolein	107-02-8	10.00 kg	n/a		
Acrylamide [2-Propenamide]	79-06-1	10.00 kg	n/a		
Acrylonitrile [2-Propenenitrile]	107-13-1	1.00 t	n/a		
Aldrin	309-00-2	1.00 kg	n/a		
Allyl alcohol [2-Propen-1-ol]	107-18-6	10.00 kg	n/a		
Amitrole [3-Amino-1,2,4-triazole]	61-82-5	1.00 kg	n/a		
Aniline [Benzeneamine]	62-53-3	10.00 kg	n/a		
Anthracene	120-12-7	10.00 kg	n/a		
Benzene	71-43-2	1.00 t	68.30 kg	44.00 kg	123.00 kg
Benzo(a)pyrene	50-32-8	1.00 kg	0.00 g	0.00 g	0.00 g
Benzo(b)fluoranthene	205-99-2	1.00 kg	n/a		
Benzo(g,h,i)perylene	191-24-2	1.00 kg	n/a		
Benzo(k)fluoranthene	207-08-9	1.00 kg	n/a		
Benzo butyl phthalate (BBP)	85-68-7	10.00 kg	n/a		
Benzyl chloride	100-44-7	10.00 kg	n/a		
Bromoethene	593-60-2	10.00 kg	n/a		
Butadiene [1,3-Butadiene]	106-99-0	100.00 kg	0.00 g	0.00 g	0.00 g
Butene - all isomers	-	1.00 t	528.00 g	191.00 g	1.10 kg
Carbon tetrachloride [Tetrachloromethane]	56-23-5	10.00 kg	0.00 g	0.00 g	0.00 g
Chlordane	57-74-9	1.00 kg	n/a		
Chlordecone	143-50-0	1.00 kg	n/a		

Gas	CAS	Reporting Threshold	Value to report	Amount Produced 25%	75%
Chlororethane	75-00-3	10.00 kg	n/a		
Chloroform [Trichloromethane]	67-66-3	100.00 kg	1.30 kg	328.00 g	8.28 kg
Chloroprene	126-99-8	10.00 kg	n/a		
Chrysene	218-01-9	10.00 kg	n/a		
Crotonaldehyde	4170-30-3	10.00 kg	n/a		
Cumene hydroperoxide	80-15-9	10.00 kg	n/a		
Dibutyl phthalate	84-74-2	10.00 kg	n/a		
p-Dichlorobenzene [1,4-Dichlorobenzene]	106-46-7	1.00 kg	404.00 g	188.00 g	973.00 g
Dichlorodiphenyltrichloroethane (DDT)	50-29-3	1.00 kg	n/a		
Dichloromethane (DCM) [Methylene chloride]	75-09-2	1.00 t	1.32 kg	160.00 g	21.30 kg
Dieldrin	60-57-1	1.00 kg	n/a		
Diethyl aniline [N,N-Diethyl benzeneamine]	91-66-7	10.00 kg	n/a		
Di(2-ethylhexyl)phthalate (DEHP)	117-81-7	10.00 kg	n/a		
Diethyl ether	60-29-7	10.00 kg	n/a		
Diisopropyl ether	108-20-3	10.00 kg	n/a		
Dimethylaniline [N,N-Dimethyl benzeneamine]	121-69-7	10.00 kg	n/a		
Dimethyl sulphate	77-78-1	1.00 kg	n/a		
Dimethylformamide	68-12-2	1.00 t	n/a		
Dimethyl-o-toluidine	609-72-3	10.00 kg	n/a		
Dimethyl-p-toluidine	99-97-8	10.00 kg	n/a		
Dioxane	123-91-1	10.00 kg	n/a		
Diphenylamine	122-39-4	10.00 kg	n/a		
Endrin	72-20-8	1.00 kg	n/a		
2-Ethoxyethanol [Ethyleneglycol ethylether]	110-80-5	10.00 kg	n/a		
2-Ethoxyethyl acetate [Ethyleneglycol ethylether acetate]	111-15-9	1.00 kg	n/a		
Ethyl acrylate	140-88-5	10.00 kg	n/a		
Ethyl benzene	100-41-4	100.00 kg	n/a		
Ethyl bromide [Bromoethane]	74-96-4	10.00 kg	n/a		
1-Ethyl-3,5-dimethylbenzene	934-74-7	10.00 kg	n/a		
Ethylene [Ethene]	74-85-1	1.00 t	13.90 kg	7.09 kg	20.70 kg
Ethylene dichloride [1,2-Dichloroethane]	107-06-2	1.00 t	1.41 kg	127.00 g	17.20 kg
Ethylene oxide [1,2-Epoxyethane]	75-21-8	1.00 t	n/a		
Ethyl toluene - all isomers	25550-14-5	10.00 kg	187.00 g	47.40 g	919.00 g
Fluoranthene	206-44-0	1.00 kg	n/a		
Formaldehyde [Methanol]	50-00-0	10.00 kg	297.00 g	228.00 g	392.00 g
Heptachlor	76-44-8	1.00 kg	n/a		
Hexabromobiphenyl	36355-1-8	100.00 g	n/a		
Hexabromocyclododecane	25637-99-4	10.00 kg	n/a		
Hexachlorobenzene	118-74-1	1.00 kg	n/a		
Hexachlorocyclohexane - all isomers	608-73-1	1.00 kg	0.00 g	0.00 g	0.00 g
Hexane	110-54-3	10.00 kg	n/a		
1-Hexene	592-41-6	10.00 kg	n/a		

Gas	CAS	Reporting Threshold	Value to report	Amount Produced 25%	75%
Indeno(1,2,3-cd)pyrene	193-39-5	1.00 kg	n/a		
Iodomethane	74-88-4	10.00 kg	n/a		
Isophorone	78-59-1	10.00 kg	n/a		
Isophorone diisocyanate	4098-71-9	1.00 kg	n/a		
Isoprene	78-79-5	10.00 kg	n/a		
Lindane	58-89-9	1.00 kg	n/a		
Maleic anhydride	108-31-6	10.00 kg	n/a		
Methane	74-82-8	10.00 t	2,180.00 t	2,180.00 t	2,180.00 t
Methanol	67-56-1	100.00 kg	n/a		
2-(Methoxyethoxy)ethanol	111-77-3	10.00 kg	n/a		
2-Methoxyethanol	109-86-4	10.00 kg	n/a		
2-Methoxyethyl acetate	110-49-6	10.00 kg	n/a		
Methyl bromide [Bromomethane]	74-83-9	100.00 kg	n/a		
2-Methyl-2-butene	513-35-9	10.00 kg	n/a		
3-Methyl-1-butene	563-45-1	100.00 kg	n/a		
Methyl chloride [Chloromethane]	74-87-3	1.00 t	1.32 kg	379.00 g	3.25 kg
Methyl chloroform [1,1,1-Trichloroethane]	71-55-6	10.00 kg	51.50 kg	1.19 kg	304.00 kg
4,4'-Methylene-bis(2-chloroaniline)	101-14-4	1.00 kg	n/a		
4,4'-Methylene dianiline	101-77-9	10.00 kg	n/a		
4,4'-Methylenediphenyl diisocyanate	101-68-8	1.00 kg	n/a		
Methyl isocyanate	624-83-9	1.00 kg	n/a		
Mirex	2385-85-5	1.00 kg	n/a		
Naphthalene	91-20-3	100.00 kg	n/a		
Nitrobenzene	98-95-3	10.00 kg	n/a		
2-Nitropropane	79-46-9	1.00 kg	n/a		
Pentachlorobenzene	608-93-5	1.00 kg	n/a		
Pentachlorophenol	87-86-5	1.00 kg	n/a		
Pentane	109-66-0	100.00 kg	4.02 kg	1.18 kg	25.90 kg
Pentene - all isomers	25377-72-4	1.00 t	9.43 kg	4.76 kg	18.50 kg
Phenol	108-95-2	10.00 kg	0.00 g	0.00 g	0.00 g
Propylbenzene	103-65-1	10.00 kg	n/a		
Propylene	115-07-1	10.00 t	n/a		
Propylene oxide	75-56-9	100.00 kg	n/a		
Styrene	100-42-5	100.00 kg	n/a		
Tetrachloroethane [1,1,2,2-Tetrachloroethane]	79-34-5	10.00 kg	880.00 g	88.30 g	8.08 kg
Tetrachloroethylene	127-18-4	100.00 kg	1.75 kg	132.00 g	30.20 kg
Tetrafluoroethylene	116-14-3	10.00 kg	n/a		
Toluene	108-88-3	100.00 kg	3.43 kg	722.00 g	27.90 kg
Toluene diisocyanate - all isomers	-	10.00 kg	n/a		
Toxaphene	8001-35-2	1.00 kg	n/a		
Trichlorobenzene - all isomers	12002-48-1	1.00 kg	90.00 g	65.30 g	179.00 g
Trichloroethylene	79-01-6	1.00 t	15.60 kg	6.51 kg	38.50 kg

Gas	CAS	Reporting Threshold	Value to report	Amount Produced 25%	75%
Trichlorotoluene	98-07-7	10.00 kg	n/a		
Trimellitic anhydride	552-30-7	1.00 kg	n/a		
Trimethylbenzene - all isomers	25551-13-7	10.00 kg	368.00 g	59.40 g	2.62 kg
Vinyl acetate	108-05-4	10.00 kg	n/a		
Vinyl chloride	75-01-4	1.00 t	162.00 kg	62.10 kg	317.00 kg
Xylene - all isomers	1330-20-7	1.00 t	676.00 g	27.90 g	19.20 kg
Metals and compounds					
Antimony	7440-36-0	1.00 kg	n/a		
Arsenic	7440-38-2	1.00 kg	n/a		
Beryllium	7440-41-7	1.00 kg	n/a		
Boron	7440-42-8	1.00 t	n/a		
Cadmium	7440-43-9	1.00 kg	n/a		
Chromium	7440-47-3	10.00 kg	n/a		
Copper	7440-50-8	10.00 kg	n/a		
Lead	7439-92-1	100.00 kg	n/a		
Manganese	7439-96-5	10.00 kg	n/a		
Mercury	7439-97-6	1.00 kg	n/a		
Nickel	7440-02-0	10.00 kg	n/a		
Selenium	7782-49-2	100.00 kg	n/a		
Vanadium	7440-62-2	10.00 kg	n/a		
Zinc	7440-66-6	100.00 kg	n/a		
Other substances					
Brominated diphenylethers - penta, octa and deca	-	10.00 kg	n/a		
Chlorine and total inorganic compounds - as HCl	7782-50-5	10.00 t	n/a		
Chlorofluorocarbons (CFCs)	EDF-079	1.00 kg	43.10 kg	10.60 kg	413.00 kg
Dioxins and furans (PCDDs/PCDFs) - I-TEQ	-	0.01 g	0.00 g	0.00 g	0.00 g
Dioxins and furans (PCDDs/PCDFs) - WHO-TEQ	-	0.01 g	n/a		
Fluorine and total inorganic compounds - as HF	7782-41-4	1.00 t	n/a		
Halons	-	1.00 kg	0.00 g	0.00 g	0.00 g
Hydrobromofluorocarbons (HBFCs)	-	10.00 kg	n/a		
Hydrochlorofluorocarbons (HCFCs)	-	1.00 kg	116.00 kg	8.61 kg	384.00 kg
Hydrofluorocarbons (HFCs)	-	100.00 kg	0.00 g	0.00 g	0.00 g
Nitrogen oxides - NO and NO2 as NO2	-	100.00 t	0.00 g	0.00 g	0.00 g
Non-methane volatile organic compounds (NMVOCs)	-	10.00 t	0.00 g	0.00 g	0.00 g
Particulate matter - PM2.5	-	1.00 t	n/a		
Particulate Matter - PM10	-	1.00 t	0.00 g	0.00 g	0.00 g
Particulate Matter - total	-	10.00 t	n/a		
Perfluorocarbons (PFCs)	-	10.00 kg	0.00 g	0.00 g	0.00 g
Polychlorinated biphenyls (PCBs)	1336-36-3	100.00 g	n/a		
Polychlorinated Biphenyls (PCBs) - as WHO TEQ	1336-36-3	0.01 g	n/a		

Gas	CAS	Reporting Threshold	Value to report	Amount Produced 25%	75%
Sulphur oxides - SO2 and SO3 as SO2	-	100.00 t	0.00 g	0.00 g	0.00 g

APPENDIX 4

Odour Management Plan
Nuisance Procedure

Title	Nuisance Inspection Procedure				
Ref	KNKP 32	**Rev**	0	**Date**	13/02/07
Issued.	RW	**App**.	RW	**Pg**	1 /3

1.0 Scope

This procedure documents the approach to be taken when carrying out nuisance inspections at the facility.

2.0 Responsibility

The FM will implement this procedure and site supervisor will ensure the procedure is correctly followed. All site staff will notify the FM or the SS about any observations and will take any other measures necessary to avoid any nuisances from arising outside the facility boundary. The Bird Control and Vermin Control Contractor and their staff will carry out all duties required under the conditions of their contracts and will notify the Facility Management of any other observations which might have the potential to give rise to nuisances outside the facility boundary.

3.0 References

Daily Site Condition Report GS 001

Weekly Inspection Sheet GS 003

Odour Inspection Record GS 005

Weekly Inspection Procedure KNKP 30

Daily Site Condition Report KNKP 23

Licence Condition 7.1: The licensee shall ensure that vermin, birds, flies, mud, dust, litter and odours do not give rise to nuisance at the facility or in the immediate area of the facility. Any method used by the licensee to control any such nuisance shall not cause environmental pollution

Licence Condition 8.14 Nuisance Monitoring: The licensee shall, at a minimum of one week intervals, inspect the facility and its immediate surrounds for nuisances caused by litter, vermin, birds, flies, mud, dust and odours.

4.0 Procedure

4.1 Litter

Litter Inspections shall be carried out and recorded as part of the weekly inspection, which is outlined in the Weekly Inspection Procedure KNKP 30 and the Procedure for completion of the Site Condition Report KNKP 23. It is of importance that the 5 individual areas, sections A to E as outlined in the Weekly Inspection Procedure and the Weekly Inspection Form GS 003, are inspected at a frequency of one per day if practicable. The presence of litter shall be noted on the Inspection Form and removed immediately if practicable. Any litter noted at or outside the boundary fence, which appears to be illegally dumped, shall be inspected for any indications of identity if possible and reported to the Facility Manager.

4.2 Vermin and Birds

Inspections for vermin shall be carried out on a weekly basis for rodents etc. and on a daily basis for birds, in particular crows. The bird control operator, who carries out regular bird control duties on site, shall assist the Site Supervisor by notifying him of any unusual observations. He shall also record any observations in the daily bird control report. Any observations made during inspections shall be recorded on the Daily Site Condition Report GS 001 and the Weekly Inspection Form GS 003.

4.3 Flies

Particularly during the warmer months, attention shall be paid to observations of flies. Any observations shall be recorded on the Daily Site Condition Report GS 001 and the Weekly Inspection Form GS 003. The Facility Manager or the Site Supervisor shall be notified immediately in order to take measures to eliminate any fly populations from establishing. The areas around the Surface Water Lagoon and the Wetland as well as the immediate vicinity of the working face shall be inspected with particular intensity, as these are the most likely locations for fly populations to develop.

4.4 Mud and Dust

The site roads shall be inspected on a daily basis for mud or dust and any observations recorded on the Daily Site Condition Report GS 001 and the Weekly Inspection Form GS 003. Special attention shall be paid to dust during the dry months and mud during the wet months and the Site Supervisor or the Facility Manager notified immediately in order to take measures to minimise or eliminate any potential nuisances arising from mud or dust accumulating on site roads.

4.5 Odour

Odour Inspections shall be carried out in accordance with guidance notes on the Odour Inspection Record GS 005 on a daily basis on and/or off site as required and any findings recorded on the Daily Site Condition Report GS 001 and the Weekly Inspection Form GS 003 as well as the Odour Inspection Record GS 005. Any odour inspections carried out following receipt of a complaint, shall have particular regard to the location to which the complaint relates and shall also have regard to any other observations or other activities in the area that could have contributed to complaints, e.g. spreading of slurry by farmers etc.

Title	Odour Management Plan				
Ref	KNKP 33	**Rev**	1	**Date**	14/04/07
Issued.	RW	**App**.	RW	**Pg**	1/4

1.0 Scope

This procedure addresses all aspects of odour control and landfill gas management.

2.0 Responsibility

The FM will implement this procedure and will, together with the site supervisor, ensure that the procedure is correctly followed. All site staff will notify the FM or the SS about any relevant observations and ensure that all required corrective action is implemented.

3.0 References

Daily Site Condition Report GS 001

Weekly Inspection Sheet GS 003

Odour Inspection Record GS 005

Flare Downtime Log GS 037

Daily Site Condition Report Procedure KNKP 23

Weekly Inspection Procedure KNKP 30

Odour Control and Monitoring Procedure KNKP 31

Nuisance Inspection Procedure KNKP 32

Operation of Landfill Gas Flares KNKP 34

Balancing of Landfill Gas Extraction Wells and Collection System KNKP 35

4.0 Procedure

4.1 Odour Inspections

Odour inspections shall be carried out in accordance with Nuisance Inspection Procedure KNKP 32, as follows:

Odour Inspections shall be carried out in accordance with guidance notes on the Odour Inspection Record GS 005 on a daily basis on and/or off site as required and any findings recorded on the Daily Site Condition Report GS 001 and the Weekly Inspection Form GS 003 as well as the Odour Inspection Record GS 005. Any odour inspections carried out following receipt of a complaint, shall have particular regard to the location to which the complaint relates and shall also have regard to any other observations or other activities in the area that could have contributed to complaints, e.g. spreading of slurry by farmers etc.

4.2 Odour Monitoring

A proposal for an independent odour assessment in accordance with Condition 6.10 has been submitted to the Agency in December 2005, approval for which has yet to be given. As soon as the written agreement by the Agency is obtained, the independent odour assessment shall be carried out by UCD as described in the proposal.

All other odour monitoring will be carried out in accordance with the Odour Control and Monitoring Procedure KNKP 31.

4.3 Operational Requirements

All operational activities shall consider the requirements as descried in the Odour Control and Monitoring Procedure KNKP 31, with particular regard to the acceptance and/or rejection of odorous loads as well as the application of daily cover material and temporary capping. It shall be ensured that the joint between vertical bunds and horizontal layers of daily cover material and temporary capping is not less than the required 150 mm and 300 mm respectively, as it is a potentially weak point which could provide a migration path for landfill gas as well as waste odours.

Appendix 1 describes the planned phasing of waste deposition such as to minimise the potential for odour emissions.

4.4 Landfill Gas Management

4.4.1 Monitoring of fugitive emissions

The monitoring of fugitive emissions of landfill gas shall be carried out on a quarterly basis or as appropriate by means of PID surveys as described in the Odour Control and Monitoring Procedure KNKP 31.

The employment of thermography as a further tool of establishing potential emissions of fugitive landfill gas shall be considered on an annual basis.

4.4.2 Landfill Gas Extraction

4.4.2.1 General

Extraction of landfill gas shall be carried out through vertical wells, progressively constructed and retrofitted as required, as well as horizontal extraction wells.

4.4.2.2 Vertical wells

Vertical landfill gas extraction wells shall be constructed, progressively with the development of the landfill, at 50 meter lateral and longitudinal centres. Additionally, vertical wells shall be drilled into the waste as required and determined by surveys of fugitive emissions, in order to minimise or eliminate landfill gas migration. The additional drilled wells shall be installed between the constructed main gas extraction wells, so as to reduce the distances between the individual wells and to increase the capture rate of landfill gas. It shall be ensured that the vertical gas wells are sealed at surface with bentonite as required in order to minimise the ingress of oxygen and the potential for migration of landfill gas.

4.4.2.3 Horizontal wells

In order to further enhance gas extraction and commencing in phase 2 of the landfill (i.e. cells 5 and 6 and higher), horizontal gas wells, consisting of slotted gas extraction pipes embedded in stone filled trenches of no less than 1 m^2 sections (i.e. 1 meter depth and 1 meter width), shall be installed in the surface of lifts at least 5 meters above the cell bases and, in areas with a total landfill depth of more than 18 meters, at least 5 meters below the finished waste level as appropriate. It shall be ensured that horizontal trenches are installed as close as possible before filling the next lift of waste above in order to minimise the potential for migration of landfill gas from the trenches. Should this not be possible, a seal of bentonite shall be applied to the top of the trenches.

4.4.2.4 Landfill gas collection network

All vertical and horizontal landfill gas extraction wells shall be connected to the gas collection pipe network which shall consist of a 355 mm ring main around the landfill footprint and 180 mm branches laid across the landfill surface. Each individual well as well as each individual branch shall, prior the point of connection into the next higher collection level (i.e. well-branch connections and branch-ring main connections) be

equipped with shut-off valves, in order to enable flow restriction or isolation of individual wells or branches.

4.4.2.5 Condensate removal

In order to continuously remove condensate from the landfill gas extraction network and therefore avoid uncontrolled flow restriction and pulsating, the ring main shall be connected to the gas flaring and utilisation plant via condensate knockout pots. The condensate accumulating in these pots shall be removed by pneumatic pumps and piped back into the leachate riser pipes, from where it can drain to the cell base and be removed with the leachate.

4.4.3 Landfill gas utilisation and flaring plant

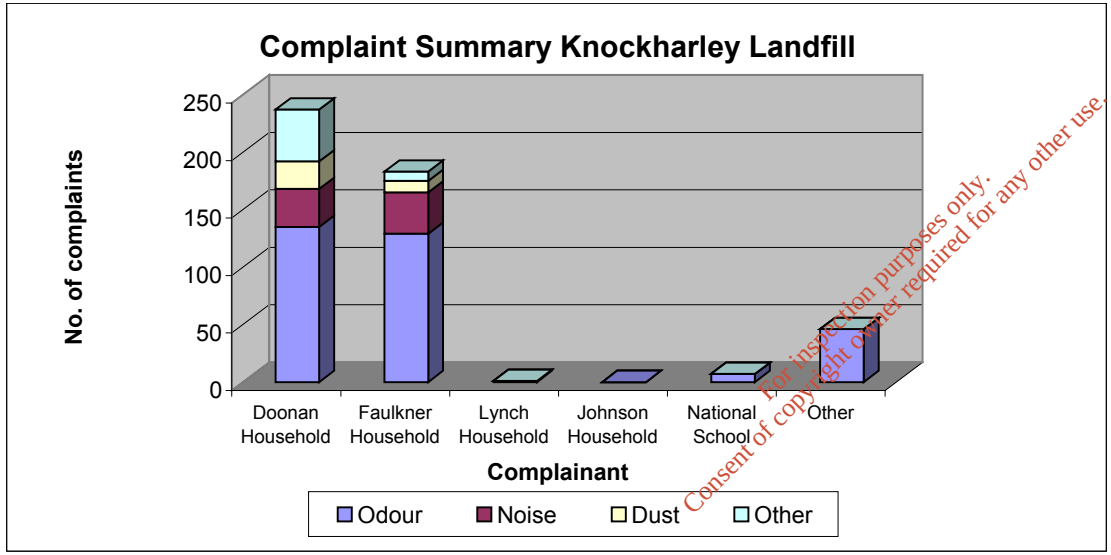
The landfill gas collected in the landfill gas extraction and collection network shall, after passing through the condensate knockout pots, be flared off in an enclosed flare or utilised in gas combustion engines with electricity generation, as appropriate. The sizing of the gas utilisation and flaring equipment shall be planned ahead, in conjunction with expert consultants and subject to the appropriate planning permissions, so that no excess landfill is generated at any stage. Contingency arrangements shall be made to avoid gas venting in the case of plant failures.

The procedure KNKP 34 for the operation of landfill gas flares shall be extended to incorporate the modified enclosed gas flare currently in operation at the facility as soon as the modified operation and maintenance manual for the flare is obtained from the contractor. It shall address the operational requirements to optimise the combustion rates.

Procedure KNKP 35 describes the monitoring and balancing of landfill gas extraction wells and collection network in order to maximise the extraction of landfill gas.

Any significant downtime of landfill gas flares or other utilisation equipment shall be logged on Form GS 037, detailing as a minimum the date(s), time(s) and reason(s) for the downtime of the flare.

2007	Odour	Noise	Dust	Other	Total
Doonan Household	135	33	24	45	237
Faulkner Household	129	36	10	8	183
Lynch Household	1	0	0	0	1
Johnson Household	0	0	0	0	0
National School	7	0	0	0	7
Other	46	0	0	0	46
Total	318	69	34	53	474



APPENDIX 6

E-PRTR Returns

Environmental Protection Agency

AER Returns Worksheet

Version 1.0.4

REFERENCE YEAR	2007

1. FACILITY IDENTIFICATION

Parent Company Name	Greenstar Holdings Limited
Facility Name	Knockharley Landfill
PRTR Identification Number	W0146
Licence Number	W0146-01

Waste or IPPC Classes of Activity

No.	class_name
1	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.
2	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.
3	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.
4	Recycling or reclamation of other inorganic materials.
5	Use of any waste principally as a fuel or other means to generate energy.
6	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
7	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.
8	Deposit on, in or under land (including landfill).
9	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.

Address 1	Knockharley
Address 2	Navan
Address 3	(Includes Townlands of Tuiterath & Flemingstown)
City/Town/Village	Co. Meath
Postal Code	
County	
Country	Ireland
Coordinates of Location	564700.000
River Basin District	
NACE Code	382
Main Economic Activity	Waste treatment and disposal
Production Volume	0
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
5d	Landfills

3. SOLVENTS DIRECTIVE

Is it applicable?	No
Have you been granted an exemption ?	No
Reason for exemption	

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR								
POLLUTANT		METHOD				QUANTITY		
			Method Used		Flare & Footprint			
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
02	Carbon monoxide (CO)	M	EN ISO 12039		106.434	106.434	0	0
08	Nitrogen oxides (NOx/NO2)	M	EN ISO 10849		262.5372	262.5372		0
11	Sulphur oxides (SOx/SO2)	M	EN ISO 7935		4484.419	4484.419	0	0
01	Methane (CH4)	E			0	570495	0	570495
03	Carbon dioxide (CO2)	E			0	727407	0	727407

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR								
POLLUTANT		METHOD				QUANTITY		
			Method Used		Flare			
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
84	Fluorine and inorganic compounds (as HF)	M	US EPA 26		24.8346	24.8346	0	0
80	Chlorine and inorganic compounds (as HCL)	M	US EPA 26		31.22064	31.22064	0	0

SECTION C : LICENSED POLLUTANTS

RELEASES TO AIR								
POLLUTANT		METHOD				QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0	0	0	0

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. Please complete the table below:

Landfill: Knockharley Landfill

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/hour
Methane flared	160.9504	E	Based on estimate of percentage meth		810
Methane utilised in engine/s					

4.2 RELEASES TO WATERS

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used		SW-9 Surface Water Lagoon			
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
12	Total nitrogen	M	EN ISO 17025		19.54404	19.54404	0	0
79	Chlorides	M	EN ISO 17025		1205.43	1205.43	0	0
24	Zinc and compounds	M	EN ISO 17025		1.125068	1.125068	0	0
13	Total phosphorus	M	EN ISO 17025		12.85792	12.85792	0	0

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0	0	0	0

SECTION C : LICENSED POLLUTANTS

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used		SW 9 Surface Water Lagoon			
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
W11	Dissolved oxygen	M	PER	Meter	474.1358	474.1358	0	0
W03	BOD	M	EN ISO 17025		241.086	241.086	0	0
W06	COD	M	EN ISO 17025		1406.335	1406.335	0	0
W38	Potassium	M	EN ISO 17025		329.4842	329.4842	0	0
W41	Sodium	M	EN ISO 17025		763.439	763.439	0	0
W05	Calcium	M	EN ISO 17025		9394.318	9394.318	0	0
W20	Magnesium	M	EN ISO 17025		1254.451	1254.451	0	0
W43	Sulphate	M	EN ISO 17025		17840.36	17840.36	0	0
A40	Suspended Solids	M	EN ISO 17025		1285.792	1285.792	0	0

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
			Method Used		LE S Leachate Lagoon			
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
06	Ammonia (NH3)	M	EN ISO 17025		4280.18	4280.18	0	0
79	Chlorides	M	EN ISO 17025		12717.2835	12717.2835	0	0
13	Total phosphorus	M	EN ISO 17025		19.3749	19.3749	0	0
19	Chromium and compounds	M	EN ISO 17025		0.3875	0.3875	0	0
24	Zinc and compounds	M	EN ISO 17025		0.04009	0.04009	0	0
83	Fluorides (as total F)	M	EN ISO 17025		9.3534	9.3534	0	0

SECTION B : LICENSED POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
			Method Used		LE S Leachate Lagoon			
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
W03	BOD	M	EN ISO 17025		19294.728	19294.728	0	0
W06	COD	M	EN ISO 17025		54129.462	54129.462	0	0
W41	Sodium	M	EN ISO 17025		5545.23	5545.23	0	0
W38	Potassium	M	EN ISO 17025		1603.44	1603.44	0	0
W57	Iron	M	EN ISO 17025		0.65474	0	0	0
W20	Magnesium	M	EN ISO 17025		1988.2656	1988.2656	0	0
W21	Manganese	M	EN ISO 17025		55.14497	55.14497	0	0
W43	Sulphate	M	EN ISO 17025		654.738	654.738	0	0
W32	Ortho-phosphate	M	EN ISO 17025		4.94394	4.94394	0	0
W05	Calcium	M	EN ISO 17025		4079.4186	4079.4186	0	0

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

SECTION B : LICENSED POLLUTANTS

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

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					

ATTACHMENT E.1

Emissions to Atmosphere

ATTACHMENT E.1 ATMOSPHERIC EMISSIONS

- Dust – while there is a potential for increased dust due to traffic and construction, the same rigorous application of suppression by water-spray will prevent any increase in emission. As demonstrated in the monitoring results (see Appendix 8 of the EIS), the existing dust emission has not given rise to any breach of the licensed standard as discussed in Section 14 of the EIS.
- Landfill gas flare – Table E.1.1 is completed for the landfill gas flare. The intensification of waste intake will not increase the overall quantity of landfill gas, it will however increase and advance the peak production. The flare/gas engines will continue to combust the harmful gas and trace compounds, as at present. Further information is available in Section 14 of the EIS.
- General odour emission – while there will be a second working face, the type of waste placed at the northern face will have little potential for odour generation. In any case, appropriate cover material will be used at the northern face for odour abatement. In general, the proposed changing characteristics of the residual waste to be landfilled which will comprise progressively less biodegradable waste and increasing volumes of residual stabilised waste is in itself an odour mitigation measure. Odour control is discussed in the EIS sections 3.6.4, 13.2.1 and Chapter 14.

Table E.1.1 Landfill Gas Flare Emissions to Atmosphere

Emission Point:

Emission Point Ref. Nº:	A1
Location :	Gas Flare
Grid Ref. (12 digit, 6E,6N):	297571 266976
Vent Details Diameter: Height above Ground(m):	 1.06m 10m
Date of commencement of emission:	December 2006

Characteristics of Emission :

CO			15 mg/m^3
Total organic carbon (TOC)			2mg/m^3
NOx			37 mg/Nm^3 0^oC. 3% O_2(Liquid or Gas), 6% O_2(Solid Fuel)
Maximum volume of emission			1,500 m^3/hr
Temperature	1250^{o}C(max)	1000^{o}C(min)	1050^{o}C(avg)

The existing licence lists at Schedule C.5, emission limit values (ELV) for the landfill gas flare.

We request the Agency's agreement to update the ELVs (Schedule C.5) for the proposed Gas Utilisation Plant at the Knockharley Landfill facility as indicated in following Table E.1.2. Moreover in the Table the existing and proposed ELVs of the Waste Licence Register No W0146-01 are in accordance with ELVs specified in recently issued EPA Waste Licences (W0004-03, W0026-02, W0081-03 & W0201-2).

Table E.1.2: Proposed ELV's for Gas Utilisation Plant in mg/m^3.

Parameter	Proposed ELV	Other Relevant ELV's			
		W0004-03	W0026-02	W0081-03	W0201-02
NO2	500	500	500	500	500
CO	**1,400**	1,400	1,400	1,400	-
Particulates	130	130	130	n/a	130
TA Luft Class 1	**1,000 for Total VOC**	1,000	1,000	1,000	-
TA Luft Class 2					
TA Luft Class 3	**75 for non-Methane VOC**	75	75	75	-
Total Organic Carbon	**Not applicable**	n/a	n/a	-	-
Hydrogen Chloride [1)]	50	50	50	-	-
Hydrogen Fluoride [2)]	5	5	5	-	-

1) At mass flows > 0.3kg/h
2) At mass flows > 0.05kg/h

Furthermore the licensee requests the Agency's agreement to amend the ELV's Schedule C.5) for the existing and proposed flare at the Knockharley Landfill facility as indicated in following Table E.1.3. Moreover in the Table E.1.3 the existing and proposed ELV's of the Waste Licence Register No W0146-01 have been compared against ELV's specified in recently issued E PA Waste Licences (W0004-03, W0026-02, W0081-03 & W0201-2)).

Table E.1.3: Proposed ELV's for Landfill Gas Flare in mg/m^3.

Parameter	Proposed ELV	Other Relevant ELV's			
		W0004-03	W0026-02	W0081-03	W0201-02
NO2	No change	150	150	150	150
CO		50	50	-	-
Particulates	Not applicable	n/a	n/a	n/a	n/a
TA Luft Class 1	No change	n/a	n/a	n/a	n/a
TA Luft Class 2					
TA Luft Class 3					
Total Organic Carbon	No change	10	10	-	-
Hydrogen Chloride[1)]	No change	50	50	-	-
Hydrogen Fluoride[2)]		5	5	-	-

1) At mass flows > 0.3kg/h
2) At mass flows > 0.05kg/h

Odour Measurement and Regulation

Condition 7.1 of the existing waste licence needs to be replaced or enhanced to allow for the use of international best practice in the measurement of odour emissions and the determination of nuisance and the application of best available technology in the mitigation of odour nuisance.

ATTACHMENT E.2

Emissions to Surface Waters

ATTACHMENT E.2 EMISSIONS TO SURFACE WATERS

Surface water runoff from the site is routed to the surface water attenuation pond. The intensification will not increase the size of the facility nor will it increase the catchment served by the surface water management system. Refer to Section 8 of the EIS for further detail on surface water.

ATTACHMENT E.3

Emissions to Sewer

ATTACHMENT E.3 EMISSIONS TO SEWER

There are no emissions to sewer. Sewage is treated on site and the treated effluent is discharged to the leachate lagoon.

ATTACHMENT E.4

Emissions to Groundwater

ATTACHMENT E.4 EMISSIONS TO GROUNDWATER

There are no emissions to groundwater due to use of cell lining system which prevents escape of leachate to ground or groundwater. There are no percolation areas as the discharge from the site's WWTP is exported as leachate. Refer to Section 9 of the EIS for further detail on groundwater.

ATTACHMENT E.5

Noise Emissions

ATTACHMENT E.5 NOISE

Noise (existing and predicted) is discussed in section 6 of the EIS. Extra waste deliveries and extra waste-placement machinery will give rise to increased noise as described in Section 6 of the EIS. However, the noise modelling included in the EIS predicts that noise levels form the site will remain in compliance with the licence.

ATTACHMENT E.6

Environmental Nuisance

ATTACHMENT E.6 ENVIRONMENTAL NUISANCE

Bird Control is discussed in the EIS at sections 3.6.1, 3.6.5, 10.2.2 and 10.2.3

Dust Control is discussed in the EIS at section 3.6.2 and Chapter 14.

Fire Control is effected by strict management practices including:

- Smoking only at designated locations
- Immediate and effective compaction of waste
- Rejection of burning or smouldering wastes (use of quarantine area)
- Regular maintenance of all plant and machinery

In the event that a fire arises, the site staff are trained to immediately call the emergency services before tackling minor fires with water (using the on-site bowser). A fire in the waste body would be tackled with the assistance of the site's excavation plant.

The site's accident prevention policy is reproduced in the attachment J.

Litter control is discussed in Section 3.6.3 of the EIS. There has been no non-compliance with respect to litter nuisance since the facility opened. Litter control for the proposed northern cell waste disposal area will be modified as there is no potential for airborne litter from stabilised wastes and wastes suited for disposal separately to biodegradable waste.

The current **traffic control** scheme will continue which has effectively mitigated any associated nuisance or disaffection since the facility opened.

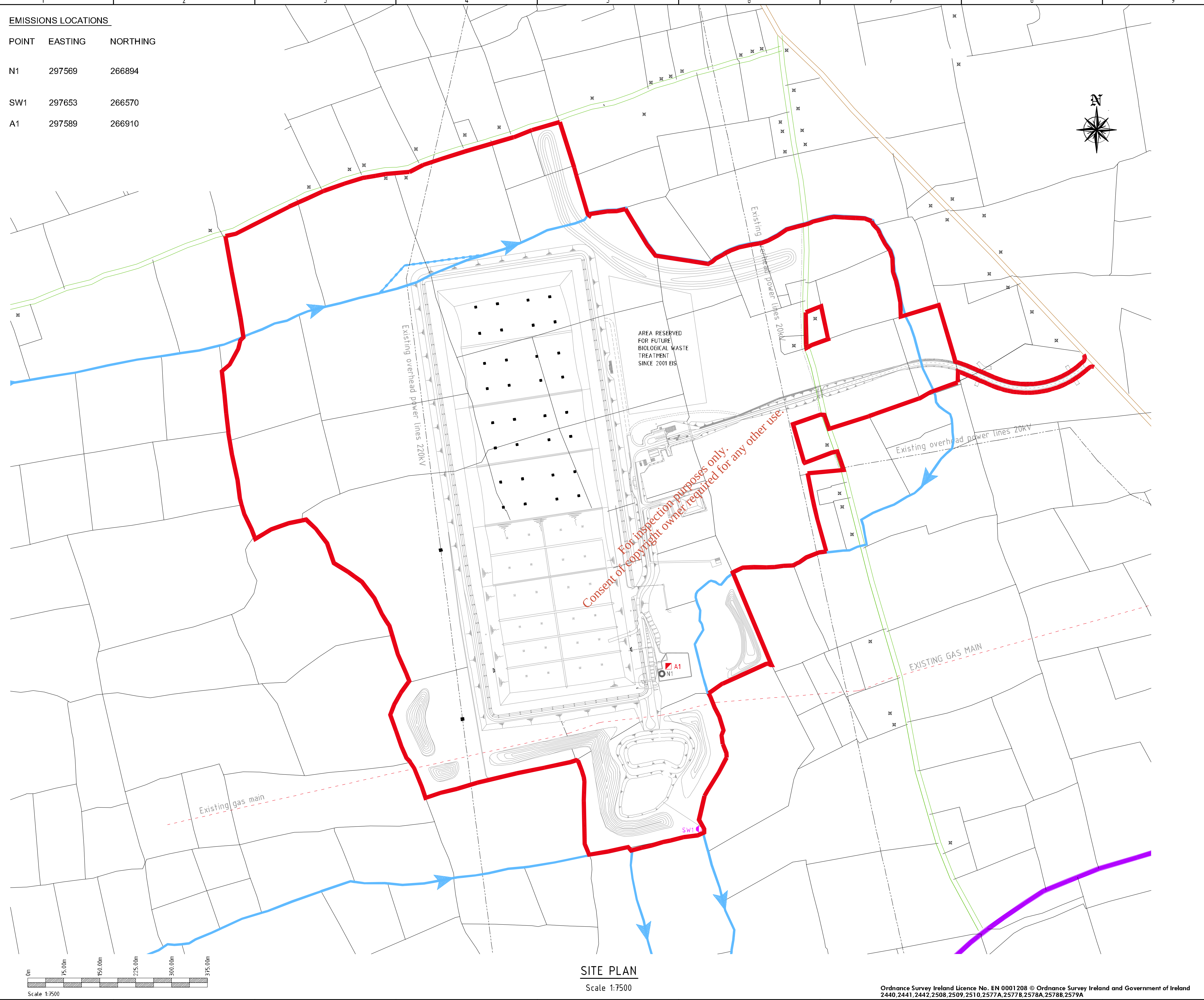
The impact and control of traffic is discussed in section 5 of the EIS.

Vermin control is discussed in Section 3.6.5 of the EIS. To date, existing measures have been successful in controlling vermin.

Road Cleansing The on-site bowser regularly sprays water on the site roads from the N2 through to the end of the paved internal road. There has been no instance of mud or other detritus material being deposited on the public road. The frequency of bowser use is dependent on the need and is assessed continuously. The existing wheel-wash arrangements on the south-bound internal haul road will be replicated for the north-bound internal haul road.

EMISSIONS LOCATIONS

POINT	EASTING	NORTHING
N1	297569	266894
SW1	297653	266570
A1	297589	266910



SITE PLAN

Scale 1:7500

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2440,2441,2442,2508,2509,2510,2577A,2577B,2578A,2578B,2579A

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Legend:

- National Primary Routes
- National Regional Routes
- National County Routes
- Application Site Boundary
- Existing Water Courses
- Denotes Landfill Gas Emission Location (P Denotes Proposed Emission Location)
- Denotes Surfacewater Emission Location (P Denotes Proposed Emission Location)
- Denotes Noise Emission Location
- Existing Passive Gas Vent
- Proposed Passive Gas Vent
- Overhead Powerlines
- Underground Gas Mains

Rev.	Drawn	Chk'd	App'd	Rev Origin / Date	Description
A	JC	SMcA	DOS	Cork 22.12.08	ISSUE FOR REVISION OF WASTE LICENCE

Name of Client: greenstar

Name of Job: KNOCKHARLEY RESIDUAL LANDFILL SITE

Title of Drawing: EMISSIONS POINTS LOCATIONS

Scales Used: Scale 1:7500

Dwg. No.: CE07-172-02-FIG-WLA11 — Rev.: A

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ATTACHMENT F

Control and Monitoring

ATTACHMENT F.1

Emissions and Abatement

ATTACHMENT F.1 EMISSIONS AND ABATEMENT

The impacts and abatement of air emissions are described in Section 14 of the EIS.

Landfill gas emissions are collected in a progressively-developed LFG collection system where gas is pumped to a flare (to gas engine(s) when viable). The flare is an enclosed-type with all associated infrastructure such as condensate pots. The site has standby flares available to cater for emergencies.

A significant proportion of odour potential is associated with LFG. The gas flare destroys odiferous compounds. The use of daily cover is also a primary odour control measure. Daily cover applied at Knockharley comprises a minimum 150 mm layer of soil-like material covered by a 100 mm deep layer of woodchip which is a well documented odour abatement medium. Odour control measures that are in addition to the requirements of the waste licence are described in more detail in Section 14.1 of the EIS.

Dust is controlled by a combination of speed restrictions, the use of water to damp-down road surfaces and daily cover on the working as discussed in Section 14.1 and 14.2 of the EIS

The leachate lagoon is covered to eliminate the risk of aerosol generation. If leachate recirculation takes place in the future, it would occur only under the cap thus eliminating any risk of aerosol generation from that source. Refer to section 3 of the EIS.

A gas flare flow diagram is included overleaf.

The impacts and abatement of **surface water emissions** are described in Section 8 of the EIS.

All surface water generated on site is routed through a surface-water lagoon and constructed wetland. The lagoon allows suspended solids the opportunity to settle out and the wetland has a polishing effect.

The leachate management system is completely isolated from the surface water drainage network. However in the event of a pipe-rupture or a tanker spill, there is a remote possibility that leachate could enter the surface water. For that reason, the surface water lagoon is continuously monitored for a number of parameters (including total organic carbon). In the event that a trigger level is exceeded, an alarm will activate and the outlet from the lagoon will close, giving the site staff time to react appropriately. There has been no incident to warrant valve closure since the facility opened.

Runoff from roads and parking areas drains to the surface water lagoon via an oil-water interceptor which prevents hydrocarbons entering the lagoon. The on-site diesel tank is fully bunded.

A storm pond flow diagram is included overleaf.

There is no **sewer** connection therefore no discharge to sewer.

With respect to **groundwater**, the cells are lined to EU standards. The installation has and will be subject to strict CQA in accordance with contemporary guidance. All leachate pipe-work is fully integral and has been tested for water-tightness. The leachate lagoon is lined to the same standard as is the landfill itself.

Noise from delivery vehicles is mitigated by speed control and also by the presence and continuing development of screening mounds. As the forestry planting grows, it too will mitigate noise.

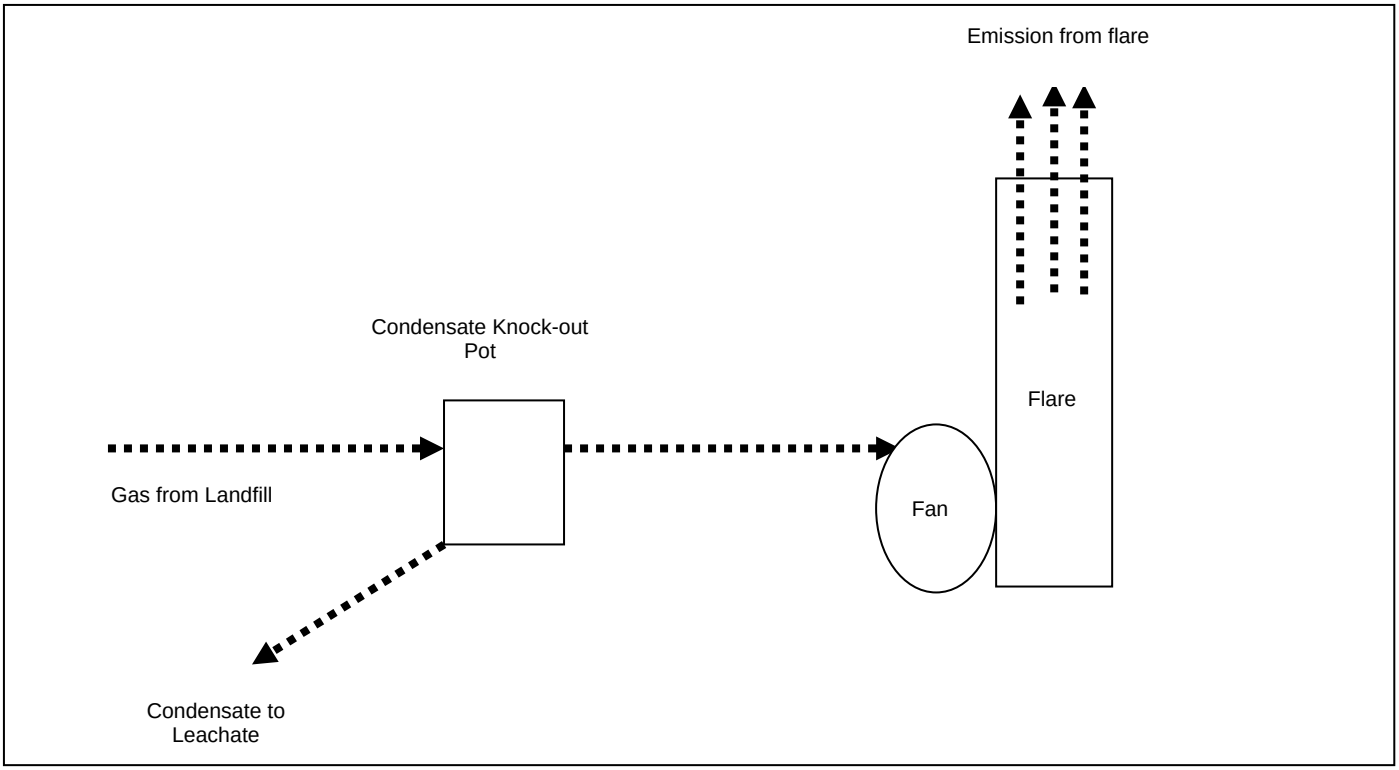
On-site machinery (a mobile noise source) is specified and maintained to the highest standards. This standard extends to hired-in plant, any unduly noisy plant is prohibited from site.

Construction contracts include specifications with respect to plant quality and maintenance. Construction hours are and will be restricted to licensed periods.

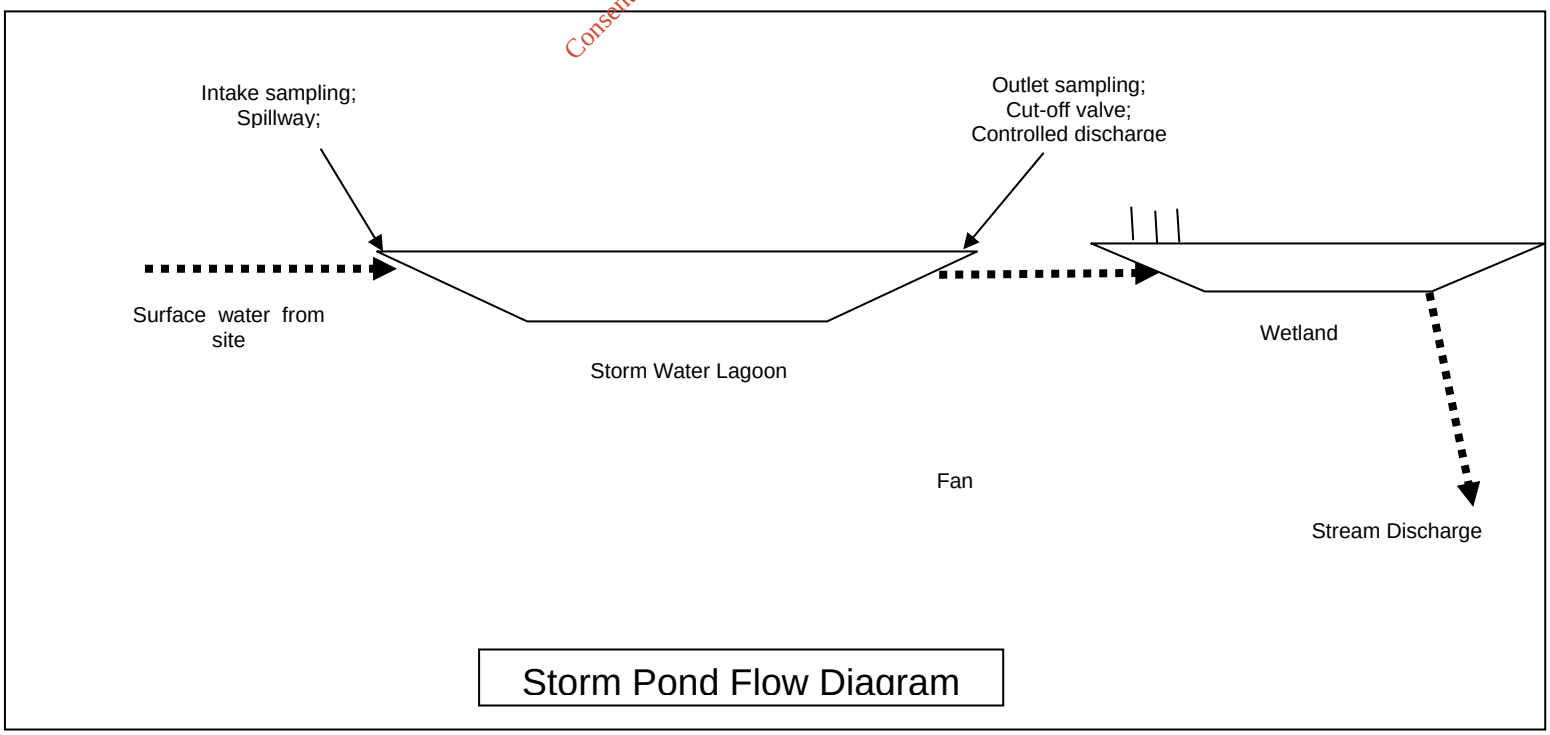
The flare (a fixed noise source) is fully enclosed and it has been used in the site noise model to demonstrate that it will have no significant noise impact at the site boundary.

The site generator has only occasional use. It is housing design minimises its potential noise emission.

Vector (bird) control has the potential for causing noise nuisance through use of gas cannons. However, at Knockharley, the primary bird control measure is the use of birds of prey.



Gas Flare Flow Diagram



Storm Pond Flow Diagram

ATTACHMENT F.2 to F.9

Monitoring and Sampling Points

ATTACHMENT F.2 TO F.9 MONITORING AND SAMPLING POINTS

Monitoring point locations are as prescribed by the existing licence and are presented in Drawing WLA12. Monitoring is undertaken in accordance with the waste licence and the requirements of the EPA Landfill Monitoring Guidance Manual.

F.2 Air Quality

Monitoring of air quality is discussed in sections 3.7 and 14 of the EIS and is prescribed in Condition 8 and Table D.1 and Table D.3 of the licence.

F.3 Surface water

Monitoring of surface water is discussed in sections 3.7.4 and 8 of the EIS and further prescribed in Condition 8 and Table D.1 and Table D.5 of the existing licence.

F.4 Sewer – Not Applicable

F.5 Groundwater

Monitoring of groundwater is discussed in sections 3.75 and 9 of the EIS and is prescribed in Condition 3.20.2, Condition 8 and Tables D.1 and D.5 of the licence.

F.6 Noise

Monitoring of noise is discussed in sections 3.7.8 and 6 of the EIS and is prescribed in Tables D1 and D4 of the licence.

F.7 Meteorological Monitoring

Meteorological data and monitoring are discussed in sections 3.7.9 and 4 of the EIS and prescribed in Condition 3.21 and Table D.6 of the licence.

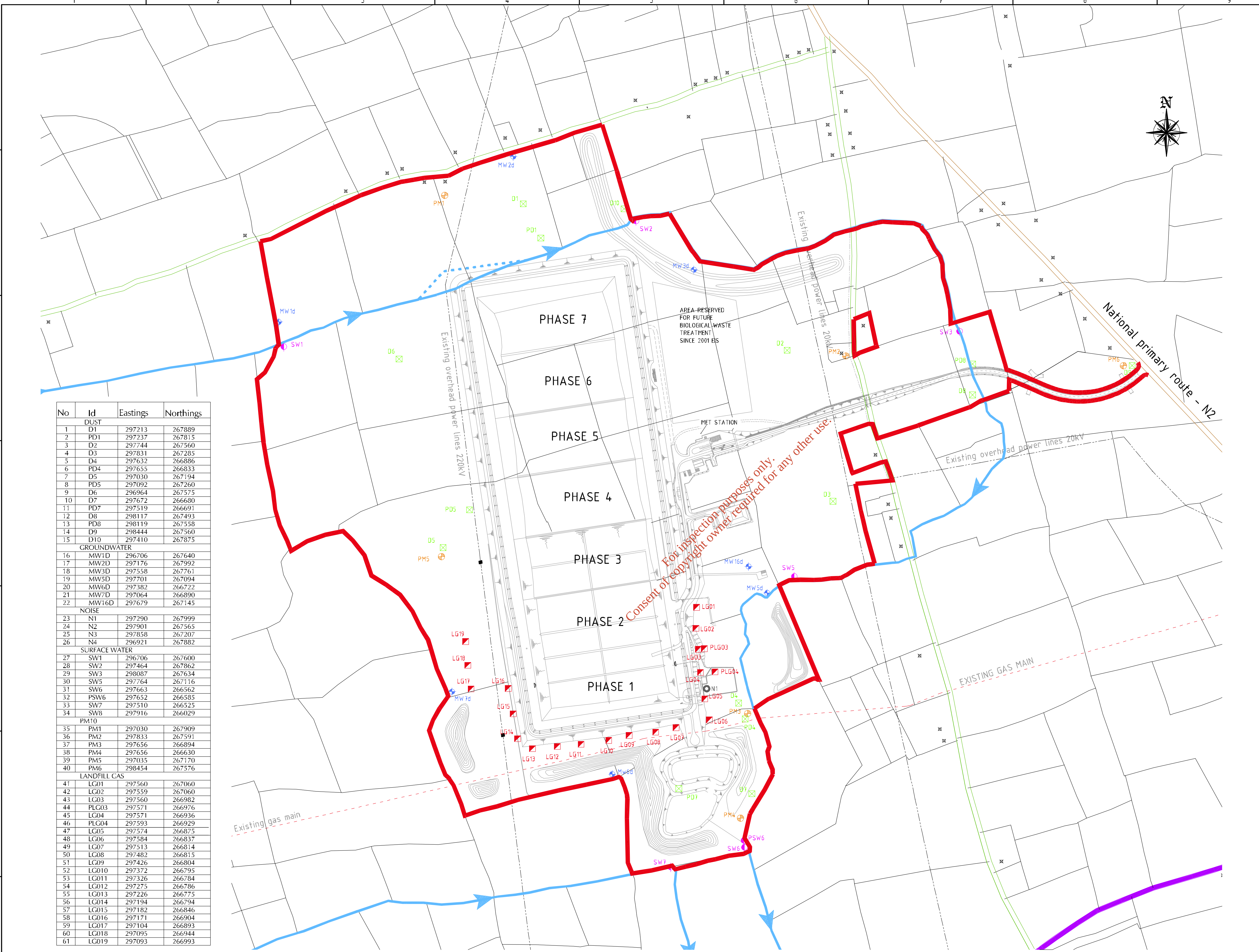
F.8 Leachate

Leachate monitoring includes both measurement of levels and qualitative analyses. Leachate levels within the cells and lagoon are monitored and recorded on the SCADA system.

Leachate monitoring is described in section 3.7.1 of the EIS. Leachate monitoring is prescribed in the licence at Condition 3.20.3 and in Tables D.1 and D.5.

F.9 Landfill Gas

Landfill gas control and monitoring is described in sections 3.7.2 and 14 of the EIS. It is prescribed in the licence at Conditions 3.15, 3.20.1, 8.6 and in Tables D.1, D.2 and D.7.



No	Id	Eastings	Northings
	DUST		
1	D1	297213	267889
2	PD1	297237	267815
3	D2	297744	267560
4	D3	297831	267285
5	D4	297632	266886
6	PD4	297655	266833
7	D5	297030	267194
8	PD5	297092	267260
9	D6	296964	267575
10	D7	297672	266680
11	PD7	297519	266691
12	D8	298117	267493
13	PD8	298119	267558
14	D9	298444	267560
15	D10	297410	267875
	GROUNDWATER		
16	MW1D	296706	267640
17	MW2D	297176	267992
18	MW3D	297558	267761
19	MW5D	297701	267094
20	MW6D	297382	266722
21	MW7D	297064	266890
22	MW16D	297679	267145
	NOISE		
23	N1	297290	267999
24	N2	297901	267565
25	N3	297858	267207
26	N4	296921	267882
	SURFACE WATER		
27	SW1	296706	267600
28	SW2	297464	267862
29	SW3	298087	267634
30	SW5	297764	267116
31	SW6	297663	266562
32	PSW6	297652	266585
33	SW7	297510	266525
34	SW8	297916	266029
	PM10		
35	PM1	297030	267909
36	PM2	297833	267591
37	PM3	297656	266894
38	PM4	297656	266630
39	PM5	297035	267170
40	PM6	298454	267576
	LANDFILL GAS		
41	LG01	297560	267060
42	LG02	297559	267060
43	LG03	297560	266982
44	PLG03	297571	266976
45	LG04	297571	266936
46	PLG04	297593	266929
47	LG05	297574	266875
48	LG06	297584	266837
49	LG07	297513	266814
50	LG08	297482	266815
51	LG09	297426	266804
52	LG010	297372	266795
53	LG011	297326	266784
54	LG012	297275	266786
55	LG013	297226	266775
56	LG014	297194	266794
57	LG015	297182	266846
58	LG016	297171	266904
59	LG017	297104	266893
60	LG018	297095	266944
61	LG019	297093	266993

0m 75.00m 150.00m 225.00m 300.00m 375.00m

Scale 1:7500

SITE PLAN

Scale 1:7500

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Printing/Copying distortion should be checked against scale bar when scaling distances from this drawing.
Use figured dimensions only. If in doubt - Ask!

Legend:

- Denotes Landfill Gas Emmission Location (P Denotes Proposed Emmission Location)
- Denotes Groundwater Monitoring Location
- Denotes Surfacewater Emmission Location (P Denotes Proposed Emmission Location)
- Denotes Noise Monitoring Location
- Denotes Dust Monitoring Location (P Denotes Proposed Monitoring Location Operational from July 2006)
- Denotes PM10 Monitoring Location
- National Primary Routes
- National Regional Routes
- National County Routes
- Application Site Boundary
- Existing Water Courses
- Overhead Powerlines
- Underground Gas Mains

Rev.	Drawn	Chkd	Appd	Rev Origin / Date	Description
A	JC	SMA	DOS	Cork 22.12.08	ISSUE FOR REVISION OF WASTE LICENCE

Revision History A

Name of Client

greenstar

Name of Job

KNOCKHARLEY RESIDUAL LANDFILL SITE

Title of Drawing

MONITORING POINTS LOCATIONS

Scales Used: Scale 1:7500

This Drawing was printed to A3

Dwg. No.: CE07-172-02-FIG-WLA12

Rev.: A

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ORIGINAL DRAWING SIZE A1 - (841 x 594)

NATURAL SCALE

ATTACHMENT G

Resources Use and Energy Efficiency

ATTACHMENT G.1

Raw Materials, Substances, Preparation and Product

ATTACHMENT G.1 RAW MATERIALS, SUBSTANCES, PREPARATIONS AND PRODUCT

The primary materials used in the facility are

- landfill lining materials comprising:
  - Clay – won on site
  - HDPE liner – imported
  - Protective geotextile – imported
  - HDPE pipework – imported
  - Granular drainage material – imported

- daily cover material
  - Soil like material – either won on site or recovered from selected waste deliveries
  - Woodchip – odour abatement layer recovered from waste timber and placed over the daily cover

- capping material
  - Low-permeability soils – won on site
  - LLDPE membrane – imported
  - Topsoil – won on site

- Gas collection pipework – imported

The use of fuels is discussed under G2 below.

Greenstar is conscious of the need to minimise the 'environmental footprint' associated with imported materials. The granular drainage material (1 tonne per m^2) comprises the largest import. Greenstar and its contractors strive to source materials as close as practicable to the facility.

ATTACHMENT G.2

Energy Efficiency

ATTACHMENT G.2 ENERGY EFFICIENCY

An energy efficiency audit was completed in 2007 for the site. The audit report recommended the development of a documented energy policy statement as this is considered fundamental to the successful implementation of any management system as it provides the framework for the introduction and maintenance of energy efficiency and conservation measures in the day to day operation of the facility. At the time of writing the energy policy is in draft format and has yet to be approved.

Electrical energy is used to power pumps, lighting and the administration building; Most of the plant is diesel powered; and petrol is used for small portable plant. The amount used in 2007 was as follows:

PARAMETER	UNITS	2007
Electricity	(kWh)	137,400
Diesel Oil	(Litres)	153,773
Petrol	(Litres)	120
Hydraulic engine oil	(litres)	131
Odour neutralizers*	Litres	1,875

*Clean Air 400 mixed with water is used as an odour neutralizer

Greenstar is currently moving towards utilisation of LFG for electricity generation. It is envisioned that electricity generation will commence in 2009 pending a grid connection. Greenstar has planning permission for a gas utilisation plant which can deliver up to 4.2MW

ATTACHMENT H

Materials Handling

ATTACHMENT H.1

Waste Types and Quantities

ATTACHMENT H.1 WASTE TYPES AND QUANTITIES

Construction materials containing asbestos (e.g. water pipes, chimney flues and roof sheeting) is acceptable at non-hazardous landfills subject to the requirements of Article 6(c)(iii) of the Landfill Directive (1999/31/EC) and will be accepted and managed in accordance with the procedures laid down in Section 2.3.3 of the Annex to Council Directive 2003/33/EC. The following procedures will be followed when accepting asbestos waste;

- Asbestos based waste will be double wrapped in heavy gauge plastic, which is clearly labelled to indicate the presence of asbestos.
- Disposal of asbestos waste will be into prepared bays or trenches of at least 2 m in depth.
- Deposited asbestos waste will be covered immediately with at least 250 mm of suitable material. At the end of the day, the waste shall be covered with a minimum of 500 mm of suitable material.
- No asbestos waste will be present within 2.5 m of the final surface levels.
- The amount of asbestos containing waste will be limited to a maximum of 2.5% of total annual waste intake for the landfill

ATTACHMENT H.2

Waste Acceptance Procedures

ATTACHMENT H.2 WASTE ACCEPTANCE PROCEDURES

All waste is delivered to the site in heavy goods vehicles (HGV) provided with appropriate covers to prevent loss of load. Each vehicle proceeds to the incoming weighbridge where it is weighed. The weighbridge operator and/or the facility manager may, at their own discretion, request the load to be tipped in the Waste Inspection Area.

On site procedures have been prepared in compliance with Condition 5.3.1 of the Waste Licence (Reg. No. 146-1) and in accordance with Council Decision 2003/33/EC on establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Council Directive 1999/31/EC on the landfill of waste.

The vehicles then proceed to the active waste disposal area, where waste is deposited under the direction of a banksman. Each landfill cell is divided into a number of 'grids', which are used to identify the areas where waste is deposited. Each load is assigned the relevant grid number. When returning from the deposition area, the vehicles pass through a wheelwash before weighing out at the outgoing weighbridge. Each vehicle receives an individual weighbridge docket before exiting the site.

The procedures for waste acceptance and forms for record keeping are appended overleaf. In addition, a specific procedure will be introduced to ensure that specific wastes are directed to the appropriate face.

ATTACHMENT H.3

Waste Handling Procedures

ATTACHMENT H.3 WASTE HANDLING PROCEDURES

Waste is deposited close to and above the advancing tipping face. In accordance with Condition 5.6.1 the active face is confined to a height of 2.5 m after compaction, a width of 25 m and a slope no greater than 1 in 3. Deposited waste is spread in shallow layers on the inclined surface and compacted. The steel-wheeled compactors operate on the gradient of the more shallow face, pushing thin layers of waste and applying compaction pressure to them.

The site operatives inspect the deposited waste for items that are not acceptable under the waste licence, such as tyres, gas bottles, batteries etc. These are removed and stored in appropriate areas for later removal from the site.

Each day's waste input is deposited to form a 'block', which is compacted and covered. The following day a new 'block' of waste is deposited adjacent to the block deposited on the previous day of landfilling. This ordered method of waste deposition enables areas, which have been filled to be progressively restored over the site life, thus minimising the areas of active waste deposition.

The existing waste handling procedures will not change however some activities will be duplicated for the north face. The procedures for waste handling are appended overleaf.

H.3.a Waste handling at the Landfill facility

Waste is not treated on site prior to landfilling however as at present, all waste will continue be treated prior to acceptance at the site.

Treatment typically occurs in one of two ways:

- The residual waste accepted for disposal has been collected as part of a multi-bin source segregation collection scheme
- The residual waste accepted for disposal is the un-recoverable residue from a materials recycling facility (e.g. MRF, CAA or MBT process)

The proposed development will play a supporting role in helping to meet Ireland's obligations set out in the EU Landfill Directive (1999/31/EC) to reduce the amount of biodegradable waste to landfill. The proposed development at the Knockharley Landfill underpins the recycling industry and helps achieve key objectives and targets in the waste management plans and hierarchy by providing a sustainable disposal outlet for the residual wastes generated by the activities higher up the hierarchy. It is anticipated that the waste to be accepted at the development will progressively comprise decreasing volumes of biodegradable waste and increasing volumes of MBT stabilised waste and other stabilised residual waste from recycling activities.

This approach based on the mechanical and biological treatment of waste together with landfill plus energy recovery represents a sustainable form of waste management and a way to achieve the targets of the Landfill Directive. Greenstar has licensed biological treatment capacity for 50,000 tpa at its Millennium Park facility in North County Dublin. This capacity forms an integral part of the company's planned integrated waste infrastructure and given its location on the N2 near the Meath/Dublin county boundary it is expected to work in association with the residual landfill at Knockharley. The site is also appropriately located with respect to Kilshane Cross (on the N2) proposed biological waste facility (Fingal County Council) and Ballyogan (on the M50) biological waste facility. Other biological treatment facilities in the region include the composting facility operated by Thorntons at Kilmainham Wood, County Meath; the MRF/composting facility operated by Panda Waste in the immediate environs of Knockharley landfill; the MRF/composting facility operated by AES in Navan, Co. Meath; and Bord na Mona composting facilities at Kilberry and Drehid, Co. Kildare.

Thus, the proposed increase in the rate of waste acceptance for disposal to 400,000 tpa includes non-biodegradable and non-municipal waste streams as well as MSW and stabilised biodegradable waste. It is proposed that the unstabilised biodegradable portion of MSW accepted will progressively decrease and be replaced with stabilised biowaste.

This is considered to be an effective approach to achieve the Landfill Directive Targets, which is consistent with national waste management policy and the National Biodegradable Waste Strategy. This is discussed in more detail in Sections 1 and 2 of the EIS.

ATTACHMENT H.4

Waste Arisings

ATTACHMENT H.4 WASTE ARISINGS

Leachate and landfill gas (fully described in Attachments D4 and D5) are the principal wastes arising on site. Office use and construction gives rise to a small quantity of 'domestic' waste. All such wastes are source segregated and sent off site for processing with the residual fraction being landfilled.

The proposed intensification of waste intake will not increase leachate arisings. It will not increase the overall volume of gas however the peak generation will occur sooner. There will be a slight increase in 'domestic' waste associated with extra employees.

Knockharley Landfill
Knockharley, Kentstown, Co. Meath
☏ 041 9821650 🖷041 9821750

Certificate of Waste Consignment

Planning Register 01/5006 Second Schedule

Name of Waste Carrier:	
Address of Waste Carrier: Main Office address of the waste carrier	
Registration Number of Waste Collection Permit	
Vehicle Registration Number:	
Composition and Nature of Waste: Process from which the waste has been generated. Describe Waste, e.g. odour, colour, dry	
EWC Code: European Waste Catalogue available to download at www.epa.ie	
Weight of Waste Consignment: To be completed at weighbridge in Knockharley	

Please complete and return to _____ at 041 9821750

Knockharley Landfill
Knockharley, Kentstown, Co. Meath
Telephone 041 9821650 Fax 041 9821750

GS 012 WASTE ACCEPTANCE CONTROL FORM

CUSTOMER	
Name	
Address	
Contact Name	
Telephone Number	**Fax Number**

WASTE PRODUCER		
Name		***As above Yes*** ☐ ***No*** ☐
Address		
Does the site hold an IPC/IPPC or a Waste Licence	***Yes*** ☐ ***No*** ☐	
If yes please submit front page of licence		
Contact Name		
Telephone Number	**Fax Number**	
EPA Approval to use facility	***Yes*** ☐ ***No*** ☐ ***If yes please attach letter***	

WASTE CARRIER		
Name		***As above Yes*** ☐ ***No*** ☐
Address		
Waste Collection Permit Number		
Please submit copy of collection permit		
Contact Name		
Telephone Number	**Fax Number**	

WASTE DETAILS
Description of the Process from which Waste Arises
Physical Description of the Waste(Colour , Physical Form, Odour)

WASTE DETAILS Continued

Chemical Composition of the Waste -

Description of Treatment of Waste

European Waste Catalogue Number (EWC) / / (6 Digit)

Is the waste classified as Hazardous Waste under the EU Hazardous Waste List Yes ☐ No ☐
Available from: http://www.epa.ie/TechnicalGuidanceandAdvice/NationalWasteDatabase/PDFsforNWD/FileUpload,1904,en.pdf

Leachability Test Results should be submitted where the waste is not classified under Chapter 20 of the EWC and/or where no pre-treatment has been carried out on the waste.

Waste Quantity (Tonnage/No of bags etc)

Delivery Method (All vehicles must have automatic nettings if the sets are above 1.5 m high. Articulated tipping trucks are prohibited)

Does the Waste Contain any of the Following?

Hazardous Waste	**Yes ☐ No ☐**	
Liquid Waste	**Yes ☐ No ☐**	For Filtercakes please specify the % solids content and attach analysis.
Filtercakes	**Yes ☐ No ☐**	

Additional Information

Completion of this form is for enquiry purposes only and does not necessarily guarantee acceptance of the waste stream at Knockharley Landfill

CLIENT

Signed on behalf of client

Name: **Date: / /**

Position

1.0 Scope

This procedure applies to record-keeping in relation to the acceptance of waste, into Knockharley landfill, at the weighbridge.

2.0 Responsibility

The FM will implement this procedure. Weighbridge operator and site supervisor will ensure procedure is correctly followed.

3.0 References

GS 009 Certificate of Waste Consignment

GS 012 Waste Acceptance Control Form

Waste Licence 146-1

4.0 PROCEDURE

4.1. Before a waste stream can be accepted on Knockharley Landfill its suitability for acceptance under the site licence must be verified. All wastes accepted on site must comply with the following waste licence conditions:

"1.4 Municipal Waste, Commercial Waste and Industrial Waste may be disposed of at the facility subject to the maximum quantities and other constraints listed in Schedule A: Waste Acceptance, of this licence.

1.5 No hazardous wastes or liquid wastes shall be disposed of at the facility.

1.6 The licensee shall ensure that all waste accepted at the facility is subject to treatment. This provision may not apply to inert wastes for which treatment is not technically feasible nor to any other waste for which such treatment does not contribute to the objectives of the Landfill Directive as set out in Article 1 of the Directive by reducing the quantity of the waste or the hazards to human health or the environment".

4.2. Schedule A of Waste Licence 146-1 allows for the acceptance and recovery of the following wastes:

Disposal	**Recovery**
Household	Construction and Demolition
Commercial	
Industrial	

4.3. If a waste enquiry contains information on a waste which may be suitable for disposal on Knockharley Landfill, but the waste type is not detailed in the tables, then Knockharley Landfill may have to approach the EPA to obtain permission for the waste to be accepted on site.

4.4. Completion of GS 012 Waste Acceptance Control Form

4.4.1. GS 012 Waste Acceptance Control Form must be completed for each type of waste for which disposal is sought. Waste will not be accepted onto site until this completed form has been received. GS 012 only needs to be completed once for each separate waste stream.

4.4.2. GS012 must be completed by the waste producer or broker and signed by a responsible person to declare that the information contained is correct. The form should be completed as fully as possible in order to allow a true picture of the waste type to be ascertained. Any relevant waste analysis information or leachability test information should be attached to the form.

4.4.3. The EWC number for the waste must be included on the form. It may be possible that the waste stream contains more than one waste type in which case additional waste catalogue numbers can be included at the bottom of the sheet.

4.4.4. Completed waste acceptance control forms (GS012) must be returned directly to Knockharley Landfill Site at the address included on the form or faxed on (041) 9821750. If any assistance is required in their completion, please call the Site Manager on 041 9821650. Once the completed form has been received and assessed, Knockharley Landfill will contact the customer to confirm whether the waste is acceptable on site.

4.4.5. **Important Note:** Completion of the GS 012 Waste Acceptance Control Form does not necessarily guarantee acceptance of the waste stream at Knockharley Landfill.

4.5. All waste carriers must hold a waste collection permit in accordance with the Waste Collection Permit Regulations. Meath County Council is the nominated local authority for the North Eastern Region. A copy of the waste collection permit detailing types of waste specified on the permit must be submitted with the waste acceptance control form.

4.6. Completion of GS 009 Certificate of Waste Consignment

4.6.1. All Waste Carriers must complete GS 009 Certificate of Waste Consignment Form for each load of waste received on site.

4.6.2. This details the name and address of the waste carrier - including waste collection permit, & the composition and nature of the waste for disposal. Other information required includes the vehicle registration number and the European Waste Catalogue (EWC) code.

4.6.3. The net weight of the load is inserted on this form by the weighbridge operator.

4.6.4. This form is retained on site by the licensee to comply with the planning decision granted by An Bord Pleanála. There is no requirement for the waste carrier to retain a copy of the Certificate of Waste Consignment.

4.6.5. Further details for the completion of the form are as follows:

- **Customer**: this is defined as the client approaching Greenstar seeking disposal of waste, e.g. waste company. Full contact details of this customer must be recorded
- **Waste producer**: this is defined as the actually producer of the waste, e.g. the industry from which the waste is collected. Full contact details of waste producer must be provided.

- **Waste Collectors:** All Waste collectors must provide Greenstar with copies of up to date collection permits which are maintained on-site.
- The **process** producing the waste must be accurately defined e.g. a chemical, manufacturing, food preparation, packaging process.
- **What does the waste look like**: A full description of the waste should reference whether it is a solid, or powder, its colour, mixed appearance, and if there is an odour.
- **Chemical composition** - this data comes from analysis completed on the waste at a certified laboratory. In house results can only be used for reference purposes. All wastes must be tested for their leaching characteristics as detailed in the Landfill Directive Treatment. This provision may not apply to inert wastes for which treatment is not technically feasible.
- **Treatment** means the physical, thermal chemical or biological processes, including sorting that change the characteristics of the waste in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery.
- **Delivery Method** - type of truck used to transport waste. All truck must have automatic netting.
- **Signing**: In signing this form you confirm that you have completed this form as accurately as possible.

1.0 Scope

This procedure describes the method of accepting waste at the landfill. This document has been prepared in compliance with Condition 5.3.1 of the Waste Licence (Reg.-No. 146-1) and in accordance with Council Decision 2003/33/EC on establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Council Directive 1999/31/EC on the landfill of waste.

2.0 Responsibility

The FM will implement this procedure. Weighbridge Operator and Site Supervisor will ensure procedure is correctly followed.

3.0 References

GS 001 Daily Site Condition Report

Planning Decision (Planning Register Reference Number NA/60336),

Waste Licence 146-1

Council Decision 2003/33/EC on establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Council Directive 1999/31/EC on the landfill of waste

4.0 PROCEDURE

4.1. The types and annual quantities of waste for disposal, as specified in Schedule A of the Waste Licence 146-1 are shown in Table 1 below. However, in accordance with Condition 3 of the Planning Decision (Planning Register Reference Number NA/60336), waste to be accepted at the facility shall be restricted to 132,000 tonnes per annum until December 2010 and 88,000 tonnes thereafter.

Waste Type	Maximum Quantities (in tonnes per annum)
Household	100,000
Commercial	45,000
Industrial	30,000
Sub Total (Waste for Disposal)	**175,000**
Construction & Demolition for recovery at the facility	25,000
Total	**200,000**

4.2. *Waste Collection Permits*

4.2.1. Greenstar will only accept waste from holders of waste collection permits under the Waste Management (Collection Permit) Regulations 2000 as stipulated in Condition 5.2 of the Waste Licence 146-1. All

Waste Collectors must provide Greenstar with copies of up to date collection permits which will be maintained on-site.

4.3. Waste Treatment

4.3.1. As specified in Condition 1.6 of the Waste Licence 146-1, Greenstar will ensure that all waste accepted at the facility has been subject to treatment prior to arrival at the facility. This does not apply to inert wastes.

4.3.2. The facility is only licensed for the deposit and not the treatment of wastes, therefore Greenstar will require all holders of waste to carry out the appropriate treatment at the point of origin or at accordingly licensed/permitted facilities.

4.4. *Waste Characterisation, Testing and Verification*

Waste Acceptance at Knockharley landfill will be carried out in compliance with the requirements of Council Decision 2003/33/EC, and will comprise the three following levels of waste characterisation and testing prior to acceptance.

4.4.1. Basic Characterisation

4.4.1.1. Basic Characterisation is required for each type of waste prior to approval for disposal at Knockharley landfill, i.e. to decide whether or not the waste fulfils the criteria for acceptance.

4.4.1.2. The producer of the waste, or in default the person responsible for its management, is responsible for ensuring that the characterisation information is correct. Independent laboratory testing may be required to determine the leaching behaviour of the waste.

4.4.1.3. In addition to supplying the basic information on the waste, the basic characterisation shall also detect key variables (critical parameters) and specify the scope and frequency for compliance testing. Greenstar will require the submission of the following information for all waste types prior to approval for disposal:

- Details of the source and origin of the waste.
- Information on the process producing the waste (description and characteristics of raw materials and products).
- Description of the waste treatment applied in compliance with Article 6(a) of Council Directive 99/31/EC, or a statement of reasons why such treatment is not considered necessary.
- Code according to the European Waste Catalogue
- Data on the composition of the waste (and the leaching test results, where the waste is not classified in Chapter 20 of the European Waste Catalogue and/or where there has been no pre-treatment carried out on the waste).
- Appearance of the waste (smell, colour and physical form).

- Information to prove that the waste does not fall under the exclusions of Article 5(3) of the Council Directive 1999/31/EC.

4.4.1.4. The procedure for the basic characterisation of waste is shown as a flow diagram in Appendix I.

4.4.1.5. In compliance with Section 2.2.1 of Council Decision 2003/33/EC, municipal waste (as defined in Article 2(b) of Council Directive 99/31/EC that is classified as non-hazardous in Chapter 20 of the European Waste Catalogue), separately collected non-hazardous fractions of household wastes and the same non hazardous materials from other origins can be admitted for disposal without testing.

4.4.1.6. Any other wastes will be subject to testing in accordance with Section 1.1.3 of Council Decision 2003/33/EC, which includes testing of the leaching behaviour and the assessment of the waste against the limit values for non-hazardous waste. Analysis Methods and Limit Values are shown in Appendix II.

4.4.1.7. During basic characterisation, it is established whether wastes are regularly generated in the same process or whether wastes are not regularly generated. This differentiation has an impact on both the frequency and extent of tests for basic characterisation and compliance:

- If wastes are regularly generated from the same process in a single installation, or from the same process in different installations but the measurements sufficiently show the range and variability of the characteristic properties, then those wastes can be considered characterised and shall subsequently be subject to compliance testing only, unless significant changes in the generation process occur.
- If wastes are not regularly generated in the same process and are not part of a well characterised waste stream, then each batch of such waste will need to be subject to basic characterisation, which also means that no compliance testing is needed.

4.4.1.8. Basic Characterisation will be performed and/or paid for by the waste producer or by the person responsible for its management.

4.4.2. Compliance Testing

4.4.2.1. In order to check regularly arising waste streams, any waste that has been deemed acceptable for disposal at Knockharley Landfill on the basis of basic characterisation shall be subject to compliance testing, to determine if it complies with the results of basic characterisation and the relevant acceptance criteria. The testing parameters and frequency will be determined following basic characterisation.

4.4.2.2. The compliance test shall, as a minimum, consist of a batch leaching test, and shall be carried out in the scope and frequency

and for the key variables as determined during basic characterisation. Analysis Methods and Limit Values are shown in Appendix II.

4.4.3. On-Site Verification

4.4.3.1. Each load of waste delivered to the landfill site will be subject to on-site verification to check that the waste presented for disposal is the same as that which has been subjected to basic characterisation and compliance testing and which is described in the accompanying documents. The first step of the on-site verification shall occur at the weighbridge office, where the weighbridge operator will check the documentation accompanying the load, and a first visual check of the waste will be carried out, while the waste is still contained. Should the waste delivered to the facility differ from that described in the accompanying documents, the procedures for rejection apply.

4.4.3.2. If the waste load has passed both initial checks it can be conveyed to the disposal area. After unloading the waste is subject to further visual inspection by site staff at the disposal area. If the load also passes this check it can be spread on the working face for compaction. Should any unacceptable wastes be discovered, the load or any relevant part thereof will be removed to the Waste Inspection Area for further investigation.

4.5. *Waste Acceptance and Handling*

All holders of waste collection permits under the Waste Management (Collection) Permit Regulations 2001, who wish to deliver waste to the facility for disposal are informed of the relevant sections of the Waste Acceptance Procedures prior to the first delivery to the facility. Waste Acceptance consists of five steps described below and also detailed in Appendix III.

4.5.1. Arrival of Waste on Site

When a waste load arrives at the facility the weighbridge operator and any other site staff present check whether all site rules for hauliers are being and have been adhered to. Once a vehicle is approved for access to the site it will enter the entry weighbridge, where the weighbridge operator will perform the documentation check and the first visual inspection.

4.5.2. Documentation Check

The documentation accompanying the waste load is checked by the weighbridge operator. All relevant details relating to the producer and the current and previous carriers must be completed as well as all relevant sections relating to the description of the waste. The weighbridge operator will establish whether the waste has been subject to basic characterisation and has been deemed acceptable. The waste load shall only be accepted if the weighbridge operator is satisfied that all necessary information has been supplied and that the waste has been characterised and deemed acceptable. Should any of the above not be the case, the waste load has to be rejected and the facility manager or nominated deputy informed immediately.

4.5.3. On-Site Verification

The weighbridge operator performs the initial visual inspection of the waste load to verify that the waste delivered is the same as that described in the documentation and has been subject to basic characterisation. The weighbridge operator is aided by the CCTV equipment installed at the weighbridge office if free vision is not possible. If the initial on-site verification at the weighbridge fails, the weighbridge operator will reject the load and immediately inform the facility manager.

4.5.4. Compliance Testing

If the waste delivered to the site is due for compliance testing, as specified in the basic characterisation for the waste, the weighbridge operator will, prior to accepting the waste, inform the facility manager and divert the waste load to the waste inspection area. All key parameters that can be verified on site will be checked for, while all other information like laboratory analysis will have to be supplied separately, based on samples taken from the waste load prior to delivery.

4.5.5. Unloading of Waste

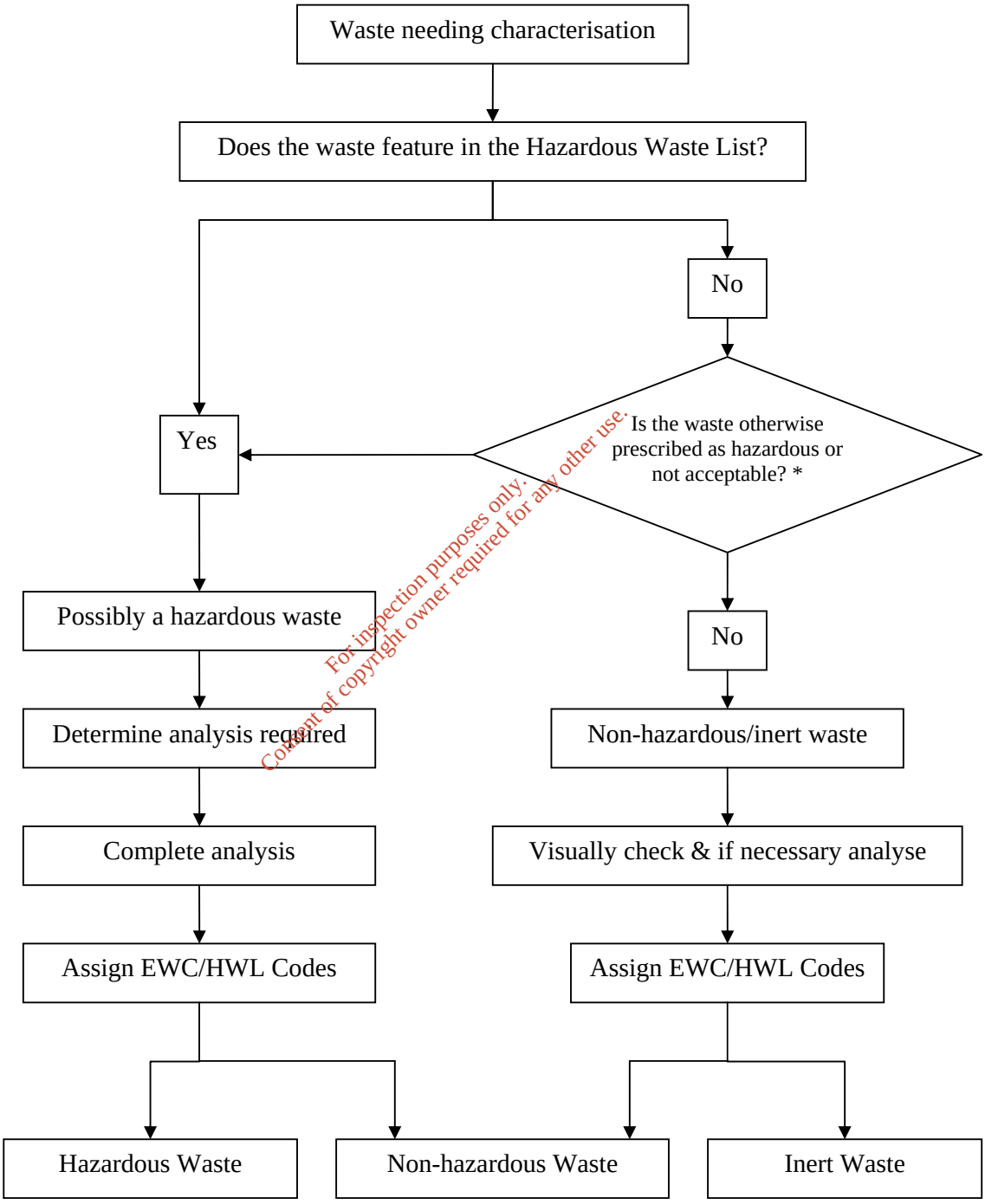
Any waste loads that have passed previous checks, are directed to the tipping area, where waste is unloaded under supervision of site staff. Should any non-conformity be identified during unloading, the site supervisor will immediately stop the unloading and notify the facility manager. If the waste load is fully compliant, the driver will be directed through the wheelwash back to the weighbridge, on completion of unloading.

4.5.6. Procedure for Rejected Waste Loads

During any of the above described steps, a waste load may be rejected, which constitutes an incident in accordance with Licence Condition 1.9 e). Whenever a waste load is rejected, it will be held until a decision has been made on how to proceed.

- If the non-conformity has been identified after unloading the waste, the waste will be loaded back on a site truck and tipped into the Inspection Area.
- If a load has been rejected while still contained, the truck or trailer will be moved into the Waste Inspection Area in agreement with the carrier. In the case that the non-conformity is only related to wrong or incomplete documentation, the necessary amendments will be made in cooperation with the carrier. Should the waste itself be non-conforming, it will be decided whether an alternative outlet for recovery or disposal has to be found or whether further inspection and/or testing is required to establish the exact characteristics of the waste. The carrier will be required to notify Greenstar of the final destination of the waste load.

Appendix I: *Figure 1: Procedure for the Basic Characterisation of Waste*



* Refer to Section 4(2)(a)(ii), Waste Management Act, 1996, and Article 5, Council Directive 1999/31/EC on the Landfill of Waste

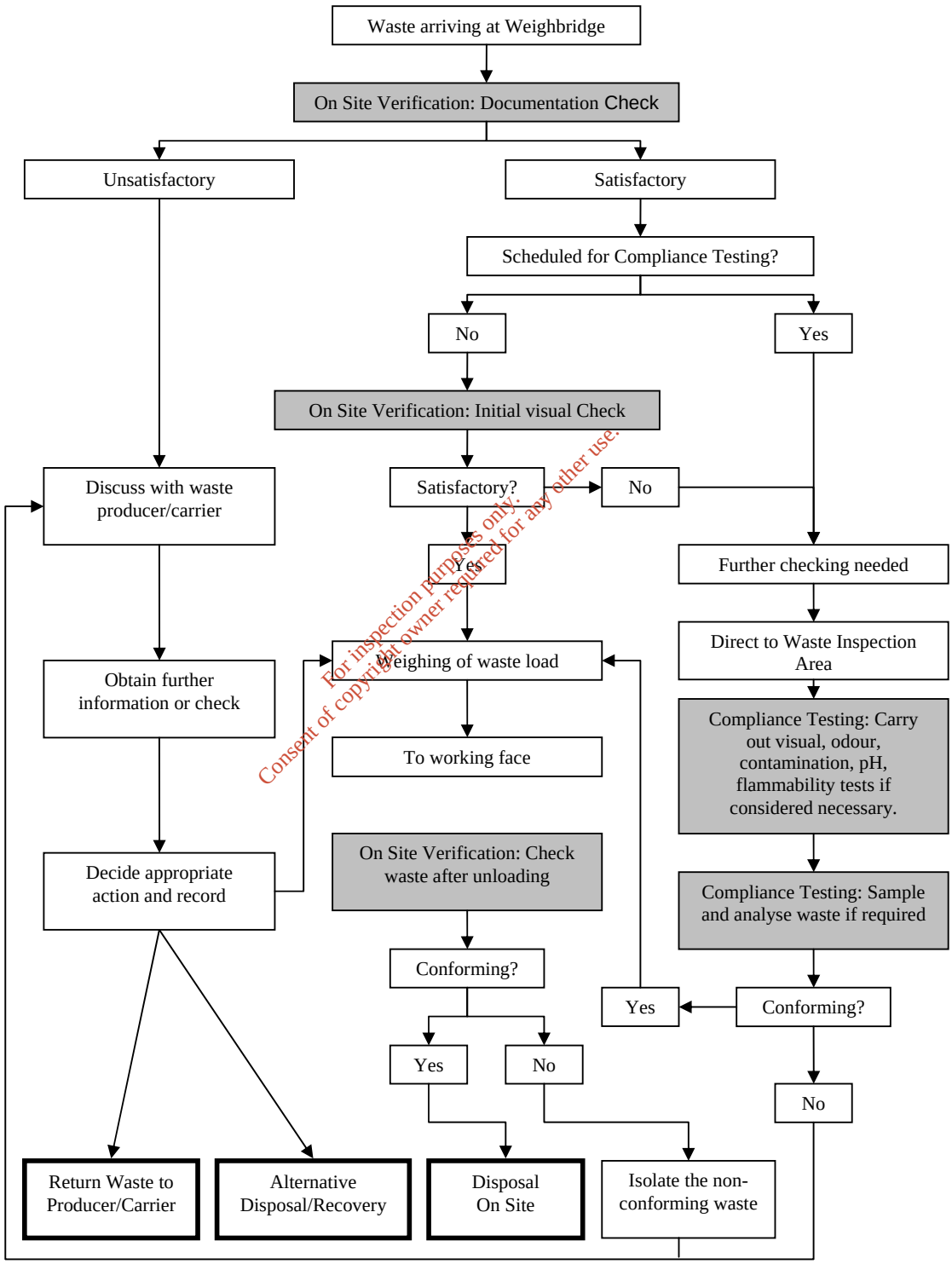
Appendix II

Independent laboratory testing required for basic characterisation and compliance testing will be carried out by an independent and accredited laboratory in accordance with the requirements of section 3 of Council Decision 2003/33/EC, in particular leaching test method EN 12457/1-4 with an L/S ratio of 10. The parameters and limit values for leachability testing as required in section 2.2.2 of Council Decision 2003/33/EC are shown in table 2 below.

Table 2: Limit values for acceptable waste at non-hazardous landfills as prescribed by the EU Commission Decision of "establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Council Directive 1999/31/EC on the landfill of waste"

Component	**(mg/kg dry substance)**
	L/S = 10 l/kg
Arsenic As	2.0
Barium Ba	100
Cadmium Cd	1
Chromium Cr (total)	10
Copper Cu	50
Mercury Hg	0.2
Molybdenum Mo	10
Nickel Ni	10
Lead Pb	10
Antimony Sb	0.7
Selenium Se	0.5
Zinc Zn	50
Chloride	15,000
Fluoride	150
Sulphate	20,000
Dissolved Organic Carbon	800
Total Dissolved Solids	60,000

Appendix III *Figure 1: Procedure for the Acceptance of waste*



1.0 Scope

This document has been established as a guide to determining engineering, restoration or remediation purposes for wastes.

2.0 Responsibility

The General Manager shall implement this procedure.

The Site Supervisor shall ensure that wastes for recovery, in particular those of varying composition, are assigned the appropriate engineering, restoration or remediation purpose as detailed in Section 4.2.2 below.

3.0 References

European Waste Catalogue and Hazardous Waste List

Waste Licence W0146-01

KNHP 24 Waste Acceptance and Handling Procedures

4.0 Procedure

4.1. Waste Acceptance

4.1.1. The acceptance of waste for disposal or recovery shall be decided upon in accordance with the Waste Acceptance and Handling Procedures KNHP 24.

4.1.2. The classification of waste shall be carried out in accordance with the European Waste Catalogue and Hazardous Waste List

4.1.3. All relevant conditions of the Waste Licence W0146-01 relating to waste acceptance shall be considered when deciding whether a waste is suitable for acceptance.

4.2. **Determination of engineering, restoration or remediation purposes**

4.2.1. After completion of all required pre-acceptance procedures and documentation, all wastes for recovery shall be assigned an appropriate engineering, restoration or remediation purpose, utilising the list in Section 4.2.2 below.

4.2.2. The following list shall be utilised as a guidance in determining engineering, restoration or remediation purposes for wastes for recovery:

- Final capping
- Intermediate capping
- Daily cover
- Odour abatement
- Construction of haul roads
- Protection of landfill liner
- Acoustic screening bunds
- Visual screening bunds
- Construction of external bunds
- Construction of internal bunds

4.3. **Assessment of wastes for engineering, restoration or remediation purposes**

4.3.1. All wastes intended for engineering, restoration or remediation purposes shall be assessed regularly regarding their suitability for these purposes. In particular the composition and any beneficial properties, such as odour abatement properties, shall be evaluated.

4.3.2. The frequency of the assessment shall depend on the process from which the material arises, i.e. any material which is of inconsistent quality shall be inspected and assessed more frequently.

4.3.3. The assessment shall focus on the suitability of the individual materials for the purposes listed in Section 4.2.2 above, with particular attention to be paid to the level of contamination, the mechanical stability and the permeability.

ATTACHMENT I

Existing Environment and Impact

ATTACHMENT I.1

Assessment of Atmospheric Emissions

ATTACHMENT I.1 ASSESSMENT OF ATMOSPHERIC EMISSIONS

An assessment of atmospheric emissions is provided in Section 14 of the EIS.

ATTACHMENT I.2

Assessment of Impact on Receiving Surface Water

ATTACHMENT I.2 ASSESSMENT OF IMPACT ON RECEIVING SURFACE WATER

Monitoring to date has demonstrated that the facility has had no adverse impact on surface water. There will be no change in the impact to the surrounding streams as a result of the intensification of waste intake. In fact the existence of the pond and wetland comprise the only engineered control in the local stream catchment. An additional measure installed with the pond is a diversion chamber that enables off-site pollution events to be routed into the Knockharley pond. Refer to Sections 8 and 10 of the EIS which describe surface water.

ATTACHMENT I.3

Assessment of Impact of Sewage Discharge

ATTACHMENT I.3 ASSESSMENT OF IMPACT OF SEWAGE DISCHARGE

There is no emission to sewer.

ATTACHMENT I.4

Assessment of Impact on Ground/Groundwater Emissions

ATTACHMENT I.4 ASSESSMENT OF IMPACT OF GROUND/GROUNDWATER EMISSIONS

Section 9 of the EIS describes the existing groundwater environment. There are no emissions to ground/groundwater either currently or proposed as a result of the intensification of waste intake. The proposed intensification does not require that the formation levels be lowered thus there will continue to be no risk to groundwater.

ATTACHMENT I.5

Ground and/or Groundwater Contamination

ATTACHMENT I.5 GROUND AND/OR GROUNDWATER CONTAMINATION

There is no evidence or history of ground/groundwater contamination at the site. See also EIS Section 9.

ATTACHMENT I.6

Noise Impact

ATTACHMENT I.6 NOISE IMPACT

Noise impact is discussed in Section 3.7.8 and 6 of the EIS. The intensification will lead to a slight increase in noise from waste deliveries and mobile plant and construction activities but this will not result in exceedance of limits specified in the waste licence.

(i) *State the maximum Sound Pressure Levels which will be experienced at typical points on the boundary of the operation. (State sampling interval and duration)*

Section 6 of the EIS demonstrates that the predicted noise impact will not exceed the existing licensed limits.

(ii) *State the maximum Sound Pressure Levels which will be experienced at typical noise sensitive locations, outside the boundary of the operation.*

As demonstrated by the model (See EIS Section 6) there will be no measurable sound pressure level outside the site boundary.

(iii) *Give details of the background noise levels experienced at the site in the absence of noise from this operation.*

Refer to Section 3.7.8 and Section 6 and Appendix 10 of the EIS.

ATTACHMENT I.7

Assessment of Ecological Impact and Mitigation Measures

ATTACHMENT I.7 ASSESSMENT OF ECOLOGICAL IMPACTS & MITIGATION MEASURES

Refer to Section 10 of the EIS.

ATTACHMENT J

Accident Prevention and Emergency Response

ATTACHMENT J ACCIDENT PREVENTION AND EMERGENCY RESPONSE

The procedures for accident prevention (KNKP 100 Accident Prevention Policy) and Emergency Preparedness and Response (KNKP 6 Emergency Preparedness and Response) are appended overleaf.

The policies are reviewed annually and when deemed necessary.

The policies reflect the requirements of the licence and of the EPA guidance documents.

01. Scope

This document outlines the overall aims and principles of action at Knockharley Landfill with respect to the control and prevention of accidents on the site and any environmental impact of accidents. This policy complies with condition 9.6 of site waste licence 146-1.

02. Responsibility

The General Manager will issue and provide training on this policy. All staff will implement this policy and are responsible for complying with the requirements of this policy.

03. References

Greenstar Health and Safety Policy

KNH Landfill Safety Statement and Risk Assessment

Environmental Management System

KNKP 6 Emergency Preparedness and Response Procedure

SOP 071 Accident/Incident Procedure

KNKP 003 Training and Awareness Procedures

04. Greenstar Health and Safety Policy

The Greenstar Health and Safety Policy outlines the company's commitment to controlling accidents and incidents and ensuring all personnel are protected, including contractors, visitors and the general public. The Greenstar health and safety policy is communicated to all employees, contractors and visitors and is displayed in main reception area, site canteen and site weighbridge office. Greenstar CEO is responsible for implementing company Health and Safety Policy.

05. KNH Landfill Safety Statement and Risk Assessment

This document forms an integral part of site Accident Prevention Policy and identifies site policies in relation to the management of site health and safety strategy and the organisation and responsibilities for implementing this strategy. This document also identifies and evaluates the major potential hazards on site and outlines the control measures in place to mitigate against these hazards. The potential hazards identified at Knockharley Landfill are as follows.

- Fire
- Manual Handling
- Electricity
- Chemicals
- Slips, Trips and Falls
- Electric and electronic office equipment
- Other building equipment and facilities
- Visitors and Contractors
- Waste Management Activities
- Bullying

- Lighting
- Vehicle inspection and preventative maintenance
- Mobile plant
- Leachate pumping stations
- Leachate storage lagoon
- Surface water lagoon and wetland
- Aviary
- Confined spaces
- Natural gas main
- Wheelwash
- Maintenance Building
- Waste inspection and quarantine area
- Fuel storage area
- Weighbridge
- Generator and ESB mains
- Landfill gas management

06. Site Environmental Management System

As well as setting and monitoring the implementation of objectives and targets that improve the environmental and health and safety performance of the site the facility, the Environmental Management System, accredited to ISO 14001: 2004 in December 2005, provides working procedures that are followed to minimise the risk of accident or incident for any of the potential hazards identified in the Safety Statement and the Risk Assessment.

These Procedures are as follows.

Procedure Ref.	Title of Procedure
KNKP 1	Environmental Aspects
KNKP 2	Legal and other Requirements
KNKP 3	Training & Awareness
KNKP 4	Communications
KNKP 5	Control of Documents
KNKP 6	Emergency Preparedness & Response
KNKP 7	Monitoring & Measurement
KNKP 8	Objectives, Targets & Programmes
KNKP 9	Non-conformance, corrective, and preventative action
KNKP 10	Control of Records
KNKP 11	Internal Audit
KNKP 12	Management Review
KNKP 13	Complaints
KNKP 14	Operation Start up & Shut Down
KNKP 15	Operation of Facility in Adverse Wind conditions
KNKP 16	Control of Contractors & Visitors
KNKP 17	Compaction of Waste on site
KNKP 18	Litter Prevention & Assembly/Disassembly of Nets
KNKP 19	Suppression of Dust
KNKP 20	Fuel Storage & Distribution
KNKP 21	Vermin Control

KNKP 22	Handling of Batteries and Gas Cylinders
KNKP 23	Completion of Daily Site Condition Reports
KNKP 24	Waste Acceptance & Handling Procedure
KNKP 25	Waste Acceptance (@ Weighbridge)
KNKP 26	Leachate Handling
KNKP 27	Record of Disposal Location
KNKP 28	Maintenance
KNKP 29	Waste Recovery Procedures
KNKP 30	Weekly Inspection Procedure
KNKP 31	Odour Control and Monitoring
KNKP 32	Nuisance Inspection Procedure
KNKP 33	Odour Management Plan
KNKP 34	Operation of Landfill Gas Flare
KNKP 100	Accident Prevention Policy
SOP 071	Accident Incident Procedure

07. Emergency Response Procedure

In addition to control measures implemented for all potential hazards identified in the site safety statement, Emergency Response Procedures (KNKP 006) have been drafted to identify those major hazards that have the potential to cause environmental pollution in addition to been a health and safety risk. Emergency response procedures KNKP 6 form part of site ISO 14001 Environmental Management System. These procedures identify responsibilities and immediate and subsequent actions to be taken in event of specified emergency or accident. Emergencies or accidents that form Emergency Response Procedures are as follows.

1.0 General Emergency
2.0 Site Closure / Suspension of Site Operations
3.0 Gas in Buildings Emergency
4.0 Accidents
5.0 Fires
6.0 Overturned Vehicles
7.0 Spillages
8.0 Handling Hazardous or Chemical Wastes

08. Accident and Incident Reporting

Greenstar Standard Operating Procedure SOP 071 Accident / Incident Reporting Procedure requires the recording and reporting of all accidents, incidents and near misses. Details of incidents are recorded in form GS029 Incident/Accident Report and forwarded to the company Health and Safety Manager. The classification of accident/incident is based on severity and the number of lost man days as a result of the accident and is outlined below.

Reportable Accident: and accident or occupational disease which involves an individual being absent from work for more that three days not including the day of the accident (based on a seven day week, weekends are included).

Lost Time Accident (LTA): one or more days absence not including the day of the accident.

Dangerous Occurrence: an incident that could have resulted in serious injury or death (structural collapse, overturning of any vehicle or mobile plant, fire which resulted in the suspension of normal work for over 24hrs.etc.).

Near Miss: An incident which could result in injury, first aid or damage to property.

First Aid: An injury treated on or off site which did not result in a lost day.

A database of accidents/incidents is maintained on site and this forms part of the Accident Prevention Policy performance monitoring.

09. Training

Site procedure KNKP 003 Training and Awareness procedure forms part of site Environmental Management System and stipulates the following training program. Training records are maintained in the Training File.

Program	Training Frequency	Training By
KNH Landfill Safety Statement and Risk Assessments Document	Initially and when site operations require amendment to document	Independent expert consultant
Site Environmental Management System	Initially and then every three years	Independent expert consultant or site assistant manager
KNKP 006 Emergency Response Procedures	Initially and when site operations require amendment to document	Site manager or site safety officer
Site Operational Procedures	Initially and when site operations require amendment to procedures	Site manager or site assistant manager

010. Policy Performance Monitoring

A database of all occurred accidents/incidents on site is maintained and this forms part of the Accident Prevention Policy performance monitoring. Trends in particular accident or incidents are easily identified with this data management system.

011. Audit and Review

Knockharley Landfills' accident prevention policy, site safety statement and emergency information and procedures are subject to annual expert independent audit, review and amendment where appropriate.

The Environmental Management System, including all procedures, is subject to bi-annual internal audit and biannual accrediting body, SGS, audit where all observations and non-conformances are closed out within agreed time frames.

Metropolitan Building
James Joyce Street
Dublin 1
Tel. +353 1 266 6000
Fax. +353 1 266 6620
www.aon.ie

TO WHOM IT MAY CONCERN

We act as Insurance Brokers on behalf of Greenstar Ltd. and confirm that the following insurance cover has been arranged :

Insured :	**Greenstar Ltd and its subsidiary Companies.**
Type of Insurance:	(a) Employers Liability (b) Public & Products Liability (c) Accidental Pollution Liability
Period of Insurance:	31st December 2007 to the 30th December 2008
Insurers:	Lloyds and others
Limits of Indemnity:	(a) = €13.5M for any one occurrence (b) = €6.5M (c) = €6.5M The above limits are for each and every accident in respect of Employers & Public Liability and limited in the aggregate in any one year in respect of Products Liability and Pollution Liability The Policy contains an Indemnity to Principals Clause.
Business Description:	Waste Disposal/Domestic refuse collection/Industrial refuse collection/Skip and Bin Hirers/Recycling Compactors/Waste transfer Stations/Landfill Owners and Operators including maintenance/Property Owners
Jurisdcition :	European Union
Territorial Limits:	Republic of Ireland, Great Britain, Northern Ireland, the Channel Islands and the Isle of Man and Worldwide in respect of Business Trips undertaken by all Employees of the Insured.

Ann Moran
Corporate Account Manager
Direct Dial : 2666 434
Direct Fax : 2666 621
Email ann_moran@aon.ie

1.0 Scope

To provide for the preparedness for and response to emergencies at Knockharley Landfill.

2.0 Contact Information

2.1. Site Information:

Site Address: **Knockharley Landfill**
Knockharley
Kentstown
County Meath

Telephone: **041 – 98 21 650** Fax: **041 – 98 21 750**

Head Office: **Greenstar Ltd.**
Unit 6
Ballyogan Business Park
Ballyogan Road
Sandyford
Dublin 18

Telephone: **01 – 294 79 00** Fax: **01 – 294 79 90**

2.2. Regulatory Information:

2.2.1. Shown below are the main regulatory bodies relating to Knockharley Landfill. Stipulated in the licence conditions, should an environmental incident occur, then the EPA, the Fisheries Board (in the event of discharges to surface water) and Meath County Council (in the event of an incident which affects their interests), should be informed as applicable no later that 10.00 am the following day. Such contacts should only be made after consultation with the General Manager, Head of Landfill Operations and/or the Environment Director.

2.2.2. Should a serious accident or incident relating to Health and Safety occur then the Health and Safety Authority should be informed by telephone with a confirmation fax sent as soon as possible thereafter. Again, all contact should only be made after consultation with the General Manager, Head of Landfill Operations and/or the Environment Director.

2.3. Regulatory Contacts:

2.3.1. Environmental Protection Agency - To be contacted in the event of any incident. (Inspector – Mr. Niall Horgan)

Environmental Protection Agency
Regional Inspectorate
McCumiskey House
Richview
Clonskeagh Road
Dublin 14

Telephone: 01 – 268 01 00
Fax: 01 – 268 01 99
24-hour Emerg. No: 053 – 60 600

2.3.2. Central Fisheries Board - To be contacted in the event of any pollution of a waterway.

Central Fisheries Board (for the Eastern Regional Fisheries Board)
Mobhi Boreen
Glasnevin
Dublin 9

Telephone: 01 - 837 9206
Fax: 01 - 836 0060

2.3.3. Meath County Council - To be contacted in the event of any incident affecting their interests. In their function as Fire Authority to be contacted in the event of any fire or related incident.

Meath County Council
County Hall
Navan
County Meath

Telephone: 046 – 90 21 581

2.3.4. Health and Safety Authority - To be contacted in the event of any reportable injury or incident.

Health and Safety Authority
10 Hogan Place
Dublin 2

Telephone: 01 - 662 0400
Fax: 01 - 614 7020

2.4. Non-regulatory Contacts:

Kentstown National School
Duleek Road
Kentstown
Co. Meath

Telephone: 041 – 98 25 458

Emergency contacts for Kentstown National School:

Fr. David O'Hanlon (Chairperson, Board of Management):	087 – 280 71 12
Mrs. Maura Beggy (Principal):	087 – 631 97 43
Mrs. Bernie McDonnell (Deputy Principal):	086 – 311 47 28
Ms. Anne Currane (Safety Representative):	086 – 304 23 90
Mrs. Angels Marry (Resident Staff member):	086 – 244 6154

2.5. Emergency Contacts and Employee Contact Information:

2.5.1. Emergency Contact Information - In the event of an emergency always dial 112.

2.5.2. Emergency Callout Priorities - The following call out system should be used in the case of an incident on site out of hours:

Call Out Priority	
1) On Call Phone	*
2) General Manager, Reinhard Wilkes	*
3) Assistant Manager, Heather Miller	*
4) Site Foreman, Robert Hughes	*
5) Chargehand, Sean Smith	*
6) Head of Landfill Operations and Development, Margaret Heavey	*

*Information removed to protect confidentiality

2.6. Employee Contact Information

Private & Confidential
The Information below contains personal contact information for staff and must be kept confidential at all times.

Contact information for company staff is listed below should an out of hours contact be required:

Name	Address	Home Phone	Mobile
Reinhard Wilkes	*	*	*
Heather Miller	*	*	*
Robert Hughes	*	*	*
Michael Noone	*	*	*
Sean Smith	*	*	*
Tanya Keoghan	*	*	*
Ainars Elbergs	*	*	*
Donal Blaney	*	*	*

*Information removed to protect confidentiality

2.7. Contractor Contact Information

Listed below are the main contractor contacts for Knockharley Landfill.

Company Name	Operation	Contact	Phone Number
Renton Plant & Co. Ltd	Plant Hire Contractor	Bart O'Connor	*
Falcon Bird Control Services	Bird Control Contractor	Darren Redington	*
Eastern Pest Control	Vermin Control Contractor	Peter Flanagan	*
MD Protec Ltd	Security Contractor	Martin Dunne	*
CLM Properties	Construction Contractor	Joe Colfer	*
Panda Waste Services	Leachate Tankering Contractor	Eamon Waters	*
O'Callaghan Moran Associates	Env. Monitoring	Michael Watson	*
Fehily Timoney	Civils Consultancy	David Barrett	*
Shaw Automation	SCADA and Automation	Adrian Shaw	*

*information removed to protect confidentiality

3.0 References:

GS 024 Incident Report
GS 025 Incident Register
GS 027 Emergency Procedure Test Record

GS 030 Accident Report Form

4.0 Emergency Procedures:

4.1. General Information

Specific emergency procedures have been developed for Knockharley. These procedures are detailed below. It is not possible to list every possible emergency and those procedures shown below should be applied as appropriate.

Emergency Procedures listed:

4.2 General Emergency Procedures
4.3 Site Closure / Suspension of Site Operations
4.4 Gas in Building Emergency
4.5 Accident Procedures
4.6 Fire Procedures
4.7 Overturned Vehicles
4.8 Spillage Procedures
4.9 Handling Hazardous Waste and Chemical Waste

4.2. General Emergency Procedures

4.2.1. This instruction lists the actions to be taken when an emergency occurs on the landfill site. An emergency may constitute:

- Personnel (staff, customers or visitors) involved in a serious accident.
- Personnel involved in a medical emergency.
- Personnel incapacitated by landfill gas or inert gases in confined spaces such as manholes or pump chambers etc. (***Note: Staff must not enter a confined space to rescue trapped personnel without taking the appropriate precautions***)
- Fire, Explosion, Spillage and unexpected hazardous or clinical waste

4.2.2. This procedure is written in a general manner to cover all emergencies. Certain suggested actions may not be appropriate.

4.2.3. ***Immediate Action:*** If an employee sees any personnel in difficulties he/she should:

- Consider own safety - employee may need to withdraw from the area immediately.

- Contact a more senior member of staff as soon as possible and ideally by radio.
- The Site Foreman will then (not necessarily in the order given):

  - Give instructions to the person making the report regarding assistance and possible evacuation of the person in difficulties.
  - Instruct the Weighbridge Operator to control vehicle entry to the site to prevent traffic problems.
  - Instruct the trained First Aid Staff to attend the incident.
  - Arrange for the evacuation of other personnel if appropriate. This may involve the abandoning of certain vehicles or plant.
  - Arrange for safe transportation of staff to hospital or the attendance of an ambulance.
  - Inform the hospital in advance giving as many details as possible.
  - In the case of a serious incident inform senior management at head office.

4.2.4. *Subsequent Actions (Site Foreman)*

- Contact the General Manager.
- Close off any relevant areas of the site and inform the Weighbridge of any temporary arrangements for traffic movement on the site.
- Record the names and addresses of any personnel witnessing the accident. Also record the vehicle numbers of any vehicles involved together with weighbridge tickets and load details.

4.2.5. *Subsequent Actions (General Manager)*

- Arrange to inspect the area where the incident occurred.
- Inform the Environmental Protection Agency as appropriate. The General Manager should contact the Head of Landfill Operations or Environment Director if possible before contacting the EPA.
- Arrange to take statements from persons witnessing the incident.
- Inform the Health and Safety Authority about the incident if appropriate. The General Manager should contact the Head of Landfill Operations or Environment Director if possible before contacting the HSA.
- In the case of an emergency situation which is likely, or has the potential, to impact on health and safety of staff members or pupils of Kentstown National School, the School or at least one of the contacts listed in Section 2.4 needs to be informed of the nature of the incident and the potential impact.
- Inform the next-of-kin of persons involved in the incident if appropriate.
- Where a person involved in the incident is not a member of staff, their employer should be informed as soon as possible.
- A report should be compiled including all the witness statements.
- A non-conformance report should be written, if applicable.
- The accident book should be completed.

4.2.6. Where no other vehicle is available, a member of the site staff may be authorised to use their own vehicle to transfer affected staff members to hospital.

4.2.7. In the event of the person being retained in hospital or sent home, the General Manager should make arrangements for the affected person's vehicle to be securely stored or returned to their home.

4.2.8. If an affected person is transported to the hospital using site transport, the driver should stay with the affected person until the hospital has made a decision on what further action is necessary.

4.2.9. In the case of subsequent absence from work due to injuries caused by an incident, the company policies, as outlined in the staff handbook, regarding sick leave etc. shall apply.

4.3. Site Closure/Suspension of Site Operations

4.3.1. Under certain conditions it may be necessary to close the site either partially or completely to customers and/or visitors. Possible situations where site closure may be necessary include:

- Emergency situation/accident on site.
- Adverse weather conditions preventing safe disposal of refuse.
- Fire on site.

4.3.2. Should these situations occur the General Manager will consult with the Head of Landfill Operations before any action is taken to discuss possible options.

4.3.3. Where possible, customers will be contacted with as much advance notice as possible to inform them that the site will close. If known, re-opening information will also be given.

4.3.4. If applicable, the EPA and other appropriate bodies will be informed of the closure and the reasons for it.

4.4. Gas in Building Emergency

4.4.1. The facility is an engineered landfill, designed not to permit any uncontrolled emissions of liquid or gaseous contaminants into the environment. In particular the control of landfill gas is facilitated by the artificial lining and the constructed clay layer. Active landfill gas extraction is applied in all sections of the landfill footprint where landfill gas is generated.

4.4.2. Should however either natural or landfill gas be detected in any site building at or above the trigger levels specified within the Site Licence, the following procedures should be followed:

4.4.3. Immediately evacuate the buildings and move people to a safe distance.

4.4.4. Do not re-enter building until it has been declared free from gas and it is safe to do so.

4.4.5. Do not switch on or off any electrical appliances as this may create sparks, which could ignite any build up of gas.

4.4.6. Do not light any naked flames or smoke in the vicinity of the building.

4.4.7. If possible open all doors and windows to allow air to vent the offices.

4.4.8. Inform the Site Manager/Site Foreman to arrange for specialist gas testing to be carried out.

4.4.9. Remember, landfill gas is asphyxiating as well as explosive and is heavier than air so particular attention shall be paid to confined or sheltered areas.

4.4.10. It may be necessary to contact the emergency services depending on the situation.

4.5. Accident Procedures

4.5.1. There are four main aspects to this procedure:

4.5.2. Immediate Actions in the Event of an Accident

4.5.2.1. Ensure your own safety at all times.
4.5.2.2. Make sure you know where the first aid box is kept and inform the Site Manager/Site Foreman if you use anything from it so that it can be replaced.
4.5.2.3. Basic First Aid

- Clean and protect small cuts since these can lead to infection.
- Remember, a trivial injury if not treated properly may later lead to complications.
- In the event of more serious injury, your course of action should be as follows:
- GET HELP - That is not to say that you should leave the casualty whilst you go off in search of a telephone - Call out (or shout) to attract attention.
- TAKE IMMEDIATE ACTION - Do what you can to protect the casualty from further danger, stop the bleeding or give artificial resuscitation.

You are not a doctor or nurse, and might not be a qualified in First Aid, so limit your aid to the obvious, common sense actions until expert help comes.

- COMFORT THE CASUALTY - Keep the casualty warm and dry and talk to him/her to reassure him/her that help is on its way. Anyone who has been involved in an accident will know how good it is to feel that someone is at hand and taking care of you.
- CALL AMBULANCE - Telephone 112
- State: Name, address and the location of the site/accident.
- Telephone number from which you are calling.
- Number of injured persons and, if possible, nature of injuries (e.g. bleeding, electric shock, fracture).

4.5.3. Actions for Specific Injuries

4.5.3.1. Suffocation (Asphyxiation)

- Rescue to fresh air, away from debris
- Ensure the patient's airways are clear. Remove any obstructions if possible.
- Stretch the patient's head back as far as it will go.
- Give artificial respiration by using mouth-to-mouth/nose method.

4.5.3.1.1. Mouth to Mouth Respiration

- Lay the casualty on his/her back on a firm surface.
- Tilt his/her head back and lift the jaw upwards and forwards.
- Open casualty's mouth. Ensure he/she has an open airway.
- Maintain head in well-back position.
- Pinch casualty's nostrils shut.
- Take a deep breath and seal lips around casualty's open mouth.
- Watch the casualty's chest constantly; ft should rise as his/her lungs fill with your air.
- Repeat this action at a steady rate until the casualty begins to breathe naturally.

4.5.3.1.2. Mouth to Nose Method

- If the casualty's mouth will not open or if there is a blockage you cannot clear.
- Use the fingers of one hand to keep the casualty's lips firmly shut.
- Seal your lips around the casualty's nostrils and breathe into him/her.
- Check to see if the casualty's chest is rising and failing.
- Place the casualty in the recovery position. Keep him/her warm and get help quickly.

4.5.3.2. Unconsciousness

- The casualty may die if he/she is left on his/her back.
- Turn to the recovery position.

4.5.3.3. Bleeding

- Try to stop bleeding by pressing over or immediately around the wound. Lay the casualty down.
- If bleeding from a limb, elevate that limb if possible.
- Do not remove any impaled objects.

4.5.3.4. Burns

- Put out flames by smothering; Quench with cold water if available.
- Apply no other material.
- Do not remove any stuck clothing.

4.5.3.5. Major Wounds, Fractures and Internal Injuries

- DO NOT move unless necessary for safety. Any movement increases shock and bleeding.

4.5.4. Accident Reporting Procedure

4.5.4.1. All accidents, injuries and dangerous occurrences (near misses), involving employees, site visitors or members of the public MUST be reported immediately to the General Manager or Site Foreman. The General Manager will ensure that:

- The details of all accidents and injuries are immediately entered into the Accident Report Book, which is kept in the weighbridge office.
- The accident report forms are immediately completed in accordance with the Company's Accident Reporting Procedure and forwarded to the General Manager for processing.

4.5.4.2. This will ensure that the seriousness of the accident, injury or occurrence can be assessed and the appropriate level of investigation can be arranged for. If appropriate, measures can be taken to prevent a recurrence.

4.5.4.3. Where an accident is FATAL, or a MAJOR INJURY ACCIDENT OR DANGEROUS OCCURRENCE, the responsible person i.e. General Manager/Site Foreman should immediately contact the Head of Landfill Operations and/or the Health & Safety Manager who will then pass on the details to the Health and Safety Authority.

4.5.4.4. A record of all telephone notifications shall be kept, including the time, the name of the caller and what details were given of the event being notified.

4.5.5. Accident and Dangerous Occurrence Investigation Procedure

4.5.5.1. If you are involved in or you witness an accident, you will be questioned about it by the General Manager/Site Supervisor. It is important that you supply as much information as possible to help prevent further occurrences.

4.5.5.2. If there is a serious incident, representatives of the Management and the Health and Safety Authority may need to talk to you.

- All accidents and dangerous occurrences are to be investigated fully.
- If the accident is of a serious nature or a dangerous occurrence happens, the Health & Safety Manager is to be consulted on the type of investigation to be carried out.

4.5.5.3. The following points are to be covered in all investigations and, where applicable, details should be accurately recorded on the accident report forms.

- Confirm the accident happened during work time.
- Full name, address and age of the person(s) involved.
- Take photographs of the area and/or vehicles and plant involved for future evidence.
- Record date and time of the accident.
- Take statements from reliable witnesses.
- Obtain medical reports if absence from work is over three-days.
- Had the person involved had any safety training?
- Was the person involved wearing the correct safety clothing?
- Had the person been trained or instructed to carry out his/her particular duties at the time of the accident?
- Had the correct accident reporting procedure been carried out?
- If the accident involved vehicles, plant or machinery, was the equipment in a proper condition at the time of the accident?
- Obtain inspection reports on the condition of any vehicles, plant or machinery involved.
- Was the person in charge aware that this particular part of the injured person's work was being carried out?

- Write down conclusions on cause of accident.
- Report any recommendations to the Heath & Safety Manager.

4.6. Fire Procedures

4.6.1. The immediate actions to take should a fire occur are:

i. Raise the alarm by informing all members of staff using the site radios and internal telephones.
ii. If there is release of odour, fumes, smoke, gas or dust, evacuate to a safe distance. Stay upwind of any smoke or fumes. Keep others away.
iii. Call the Fire Brigade.
iv. If safe to do so, tackle the fire using the water bowser (10,000 l), which is always to be available filled with water, and the fire hose, sand or extinguishers as appropriate. Do not take risks.
v. When fire is out and cold, treat as a spillage (using appropriate precautions as toxic/hazardous substances may be present).

4.6.2. There are several potential causes of explosions or fires. The principal ones are as follows:

Explosion:

- Migrating landfill gas building up in a confined area.
- Partially full gas cylinders coming in with waste.
- Fuel supply systems.

Fires:

- Incoming load on fire.
- Landfill gas fire.
- Fire within the waste itself.
- Fire following an explosion.

4.6.3. Explosion :

4.6.3.1. The most likely cause of an explosion is landfill gas building up in a confined area. Examples of such confined areas are: manholes, pump chambers, leachate storage lagoon, Bio-cycle units, building foundations, poorly vented spaces within the buildings, weighbridge pits, rarely used pipe runs, and duct runs. Trigger values will be used to determine evacuation or other action.

Gas Trigger Levels are:	Methane (CH4)	1.0% v/v
	Carbon Dioxide (CO2)	1.5% v/v

4.6.3.2. All information will be placed on the gas-monitoring plan covering the normal routine gas monitoring on the site. If appropriate, gas alarms will be fitted in certain installations/buildings where regular access is required. The site, as a whole, will be designated a Non Smoking area with a gas free Smoking area designated by management.

4.6.3.3. No Smoking rules must be strictly adhered to at all times.

4.6.3.4. The leachate storage lagoon is particularly vulnerable and will be vented to atmosphere.

4.6.3.5. Incoming gas bottles of whatever description will not be accepted for tipping at the landfill site. Customers will be informed that pressurised bottles are not acceptable, and where discovered these should be placed in the designated storage area and then removed from the site.

4.6.3.6. Fuel supply systems will be labelled up to ensure awareness of the explosion risk and normal precautions be taken to prevent fire or explosion. Flame arresters will be used on vent pipes from any fuel systems.

4.6.4. Fire:

4.6.4.1. The most common causes of fires on the landfill site are incoming loads on fire.

4.6.4.2. If a load is identified as being on fire whilst still in the lorry, the lorry will be parked in an isolated part of the site outside the landfill footprint. Site equipment is adequate to put out small fires, or slow-burning fires, but if the load is fully on fire, emergency services must be called and no personnel put at risk tackling the fire. The area should be kept clear in case of explosion.

4.6.4.3. Often, the fire may only become apparent when the vehicle tips its load and air feeds the fire. Under these circumstances, the fire may be put out using site equipment (Water bowser and fire hose), if possible, but the emergency services must also be called.

4.6.4.4. In the unlikely event of waste itself or landfill gas generated within the waste catching fire, site staff should attempt to smother the fire, utilising the water bowser and fire hose. Landfill fires are problematic and difficult to deal with, but they are usually most effectively dealt with by smothering.

4.6.4.5. Adequate compaction of the waste should prevent wide spread of any fire, and in modern landfill with good compaction fires are usually confined to the top surface. Landfill gas fires will rarely be put out by the addition of water by the Fire Brigade and should be dealt with by site staff, where possible.

4.6.4.6. In the event of a fire on site, the EPA will normally be notified and a judgement made by the General Manager regarding the potential damage to the site containment. In extreme circumstances measures will be taken to expose the site containment closest to the fire to inspect whether any damage has occurred.

4.6.4.7. In the case of a fire with the potential to affect neighbouring properties immediately either with direct impact of fire or with smoke or fumes being blown away from the facility, the neighbouring residents need to be contacted. In particular where the National School might be affected, immediate notification of staff as outlined in Section 2.5 is required.

4.7. Overturned Vehicles

4.7.1. If a tipping (or other) vehicle should overturn:

i. Attend to the driver and call qualified First Aid staff if required.
ii. Contact Emergency Services if necessary
iii. Implement Emergency Action Plan.

4.7.2. Emergency Action Plan

ENSURE YOUR OWN SAFETY AT ALL TIMES

- Remove all other vehicles and personnel from the immediate area.
- Call for assistance and emergency services as necessary
- Inform Site Foreman/Site Manager, preferably via radio.
- Check the location of all personnel and their conditions. Remember to check under and inside the overturned vehicle
- If injured parties complain of back/chest/neck pain do not move them unless absolutely necessary as this could cause further injuries. Only move the casualty in situations where they are in immediate danger, for example, fire etc.
- Switch off the ignition in all vehicles to reduce the risk of fire.
- Check for leaking fuel, fire etc.
- If vehicles are on fire, ensure all personnel are clear and retreat to a safe distance. Remember, burning tyres, fuel tanks, air tanks etc can suddenly explode without warning.
- Once area is made safe, consult with the General Manager to arrange the most suitable method of removing the overturned vehicles.

4.7.3. Once the situation has been stabilised and the overturned vehicle (s) removed the General Manager will arrange for an investigation into the incident to be carried out as soon as possible.

4.8. Spillage Procedure

4.8.1. The most likely situation to arise is a leachate spillage. Other possible spillages may take place during refuelling operations.

4.8.2. Immediate actions to take in the event of a spillage:

- If necessary, raise the alarm. Inform the Site Supervisor and General Manager as soon as possible and preferably by radio.
- If there is release of odour, fumes, smoke, gas or dust, evacuate to a safe distance. Stay upwind in such cases. Keep others away.
- If safe to do so, use appropriate PPE and contain and cover the spillage using sand or granules. Place containment booms around the spillage if appropriate. Immediate priority is to prevent contamination of watercourses, surface water drains, and sensitive areas.
- Clean up the spillage into a suitable container. Store in a safe location until appropriate disposal can be arranged. This may involve the use of specialist contractors.

4.8.3. Report the incident to Site Management and regulatory authorities such as EPA and Meath County Council if appropriate.

4.8.4. A leachate spillage is only likely to occur during the transfer of leachate into the tankers for removal off site. Any spillage is likely therefore to be one of two types:

- Small spillages resulting from failure to shut valves during the coupling or uncoupling process; or
- A major spillage due to a failure of a valve, or the neglect of an operator to shut a valve.

4.8.5. The most extreme, though unlikely, circumstance is that a tanker could be allowed to drain completely. It is highly unlikely that such an event would go unnoticed and even more unlikely that such a spillage would be unnoticed before the vehicle was moved.

4.8.6. The site is designed so that spilt leachate will drain back into the tank via the current drainage system and since, even in the most extreme circumstances the tanker would have just filled from the tank, void space will be adequate within the tank to contain any spillage.

4.8.7. In the unlikely event that the drain point to the tank became blocked leachate spilt will be contained within the hardened area of the site.

An emergency pump will be held on site to pump it back into the landfall site, or back into the pump chamber.

4.8.8. For small spills, (as with diesel spills), absorbent material will be held on site. Such absorbent material will be collected up after use and disposed of as appropriate in accordance with the appropriate regulations. If absorbent material contains liquids other than leachate then it will be assessed as to whether specialist disposal is required.

4.9. Handling Hazardous Waste and Chemical Waste

4.9.1. This instruction gives guidance on the procedure to deal with unexpected hazardous, chemical or clinical waste that arrives at the site. It also describes the controls to ensure that, wherever possible, waste can be identified and dealt with correctly.

4.9.2. The most likely circumstances for waste of this type being found are that it is discovered:

- At the weighbridge.
- During tipping with the identity of the haulier known.
- On site with no means to identify who had hauled the waste in.

4.9.3. Action Plans - Different action will be taken depending on when the waste is discovered and the ease with which it can be identified.

- If waste arrives at the weighbridge and is identified whilst still in the lorry, the lorry will be turned away at the weighbridge and the EPA notified that this has occurred. Where possible, Greenstar will endeavour to determine where the load will be taken. (This latter action is a precaution against the haulier tipping elsewhere but claiming legitimate disposal at the Knockharley site).

- If waste is discovered during tipping, the unacceptable waste should be re-loaded into the lorry that delivered it and the waste removed from site. Again, as a precautionary measure, the EPA should be notified.

- No liquids may be deposited on site; however it is possible that a load may contain drums or containers of liquid within it. If such a load is deposited on site, machinery will be used to remove as much of the contaminated material as is necessary, and the haulier will be required to take it off site.
- If liquid waste in drums arrives on site and is not easily traceable to a haulier, the waste should be put to one side in the quarantine area and either contained, or bunded to prevent access or further contamination. The waste should be moved as little as possible sufficient only to continue operating the site until a final decision is taken as to its disposal route. If the waste is clearly identified as non-conforming within the site licence, arrangements will have to be made

by the site for disposal at a suitable disposal point. Haulage and any legal notifications will be required and the EPA will be notified whilst the waste is still at the Landfill Site for inspection, if required.

- If the waste is not easily identified, specialist scientific advice will be called in to help identify the waste and determine an appropriate disposal route.

For health and safety purposes, non-conforming waste should always be treated with caution and expert advice sought on its identification if this is not clear. Where containers are leaking copious quantities of liquid the EPA should be consulted as to whether or not it is appropriate to return the load to the haulier since leakage into the general environment on route to another site could be a problem.

5.0 Emergency Test Procedure

- Testing of emergency procedures shall be undertaken every 6 months.
- Tests will be undertaken by a trained Fire Marshall.
- Details of the test shall be recorded on form GS 027 and all records retained in the Emergency Procedure Test Records file.

ATTACHMENT K

Remediation, Decommissioning, Restoration and Aftercare

ATTACHMENT K REMEDIATION, DECOMMISSIONING, RESTORATION & AFTERCARE

The restoration and aftercare plan is appended overleaf.

KNOCKHARLEY LANDFILL RESTORATION AND AFTERCARE PLAN

WASTE LICENCE REG.-NO. 146-1

Prepared for:

greenstar
Knockharley Landfill
Knockharley
Kentstown
Co. Meath

Prepared by:

Fehily Timoney & Company
Core House
Pouladuff Road
Cork

March 2005

KNOCKHARLEY LANDFILL RESTORATION AND AFTERCARE PLAN

WASTE LICENCE REG.-NO. 146-1

User is Responsible for Checking the Revision Status of This Document

Rev. Nr.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
A	Initial Document	DOS	RW		22/03/05

Client: *greenstar*

Keywords: aftercare, restoration, nature conservation, woodland restoration

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1. INTRODUCTION

Condition 4.1 of Waste Licence 146-1 states:

> *"Within eighteen months of the date of grant of this licence, the licensee shall submit to the Agency for its agreement, a detailed restoration and aftercare plan for the facility. The restoration and aftercare plan shall have regard to the guidance published in the Agency's landfill manual on "Landfill Restoration and Aftercare". The licensee shall restore the facility on a phased basis, in particular the plan shall include:*
>
> *a. potential restoration options*
> *b. the proposed consultation process in relation to the restoration options for the facility, and*
> *c. proposals for nature conservation and woodland restoration."*

Restoration is not referred to only in the licence condition. The planning permission (An Bord Pleanala Ref. No. PL 17.125891), in Condition 12, has regard to the restoration of the site in that it conditions:

- the establishment of screening berms
- landscaping
- supplementary planting of hedgerows and tree belts
- the height of proposed planting
- the maintenance of landscaping.

Condition 16 of the planning permission requires that the planning authority shall, two years after the final capping of the last phase of the landfill, require the licensee to implement any final landscaping restoration measures that it (the planning authority) may require.

Condition 20 of the planning permission requires the licensee to lodge a cash deposit to secure the final landscaping restoration measures.

This document comprises a submission to the Agency in compliance with Condition 4.1 of the licence, with due regard to the above referenced planning conditions.

2. POTENTIAL RESTORATION OPTIONS

Prior to development, the site comprised 135.2 ha of high quality agricultural land used both for tilling and grazing purposes. Just 25 ha (less than 20%) of the site is being developed as landfill. Hence reversion to grazing and tillage would seem an obvious afteruse and restoration option.

Compliance with other conditions of the licence and planning permission however, influences the restoration options in that a large proportion of the land not being used for the landfill and ancillary infrastructure has been planted with mixed species trees. The extent of existing and proposed planting is shown on Figure 4.10.4 of the EIS that was submitted to the Agency in support of the waste licence application.

Notwithstanding the amount of planting undertaken by the licensee, a significant area of land remains that could revert to pasture or tillage usage, the former would be a more attractive option for all lands to the west of the CR384 with both options being suitable to the east.

Both the final gradient and extent of buried infrastructure (permanent leachate and landfill gas measured infrastructure) would limit the agricultural use of the land over the "landfill footprint" to rough grazing.

A second option for afteruse would be as a nature conservation area and parkland. In this regard, the landscaping and its screening infrastructure proposed in the application and required by the licence and planning permission is appropriate. In addition, both the stormwater lagoon and downstream wetland will prove an appropriate habitat for nature conservation and the establishment of biodiversity in a region that has, through intensive agricultural use, been heretofore limited.

A possible after use for the lands close to the CR384 would be the establishment of playing fields in that the land is relatively flat. In that instance, security fencing of the standard currently employed on the site would be used to isolate the playing fields from the formal landfill area.

3. PROPOSED CONSULTATION PROCESS

Notwithstanding the fact that *greenstar* has, in Section 4.10 of the EIS (given as Appendix 1), declared its intentions with respect to restoration, *greenstar* will, when appropriate, continue to inform the members of the Liaison Committee established under Term 4 of the High Court Settlement Record No. 2003/335J.R., so that the community can be made aware of *greenstar's* intentions with regard to restoration.

Apart from liaison with local residents and other members of the committee, *greenstar* will, when appropriate and required by the planning authority, consult with Meath County Council on the subject of afteruse and restoration.

It is already established that part of the site will form a nature reserve and mixed species woodland. *greenstar* will continue to liaise with the Irish Wildlife Trust with respect to the establishment of a nature trail.

4. PROPOSALS FOR NATURE CONSERVATION AND WOODLAND RESTORATION

As stated in previous sections, a significant area of mixed species woodland has been established where none existed prior to the development. The woodland is subject to a formal management plan. The use of mixed species is intended to widen the biodiversity (flora and fauna) within the woodland.

In conjunction with the Irish Wildlife Trust, a nature trail will be established mainly as a recreational outlet for the local community, but also for educational purposes for local schools.

In addition, with the consent of the Agency, the originally proposed stormwater retention pond has been broken into two zones comprising a stormwater retention pond and an associated wetland. *greenstar* has been advised that, given the existence of poorly drained soil to the west and north-west of the pond, the likelihood is that the wetland will become naturally colonised with species from the poorly drained lands. If this is not evident after two growing seasons, then *greenstar* will artificially colonise the wetland with appropriate species. In this regard, reference will be made to Appendix A 5.5 of the Agency's manual on Landfill Restoration and Aftercare. It is suggested that the established wetland is in accordance with that described in Figure A1 of the manual and it will encourage the establishment of aquatic, marginal/emergent, fringing and carr plant types. It is assumed that both aquatic and terrestrial animals will follow.

5. AFTERCARE

Aftercare will commence when any element of the works is no longer being used for its primary purpose, i.e. landfilling or ancillary to landfilling. In effect, as the phasing of restoration is implemented (as described in Section 4.10 of the EIS) an increasing area of the landfill will enter the aftercare condition. Final capping of the landfill (in accordance with Condition 4.3 of the licence) will trigger the commencement of aftercare on that phase. The achievement of the final profile that will trigger the initiation of the restoration works is discussed in a separate submission entitled *"Achievement of Final Profile".*

Aftercare will include the management of:

- the leachate extraction system
- the landfill gas extraction system
- monitoring
- vegetation maintenance
- regular inspection of drainage ditches
- soil maintenance, and finally
- decommissioning of leachate/gas management installations when redundant.

Landfill Gas

Landfill gas will continue to be produced in the landfill many years after closure. Flaring will commence as soon as there is sufficient methane (the fuel) in the gas stream to support combustion. In time, the quantity of gas may prove adequate for recovery through the generation of electricity, as is the case with greenstar's other landfill KTK in Co. Kildare. It is likely that the gas recovery operation will continue many years after landfilling ceases. Its management and maintenance will be on the basis of a specialist contract with an approved service provider. Gas recovery would continue until the quantity of combustible gas decreases.

Leachate

Leachate extraction and management will continue in the aftercare phase, notwithstanding the fact that the landfill will be capped. The number of penetrations (gas vents, etc.) through the cap will tend to allow a small quantity of water to enter the landfill, ultimately becoming leachate. In addition, modern landfill practice includes for what is known as "concept". It is considered desirable to recirculate leachate back into the waste mass so as to accelerate the biodegradation of waste matter. Two benefits accrue:

- the aftercare phase is shortened because the waste stabilises, (i.e. approaches an inert state) more speedily
- the quantity and quality of landfill gas being produced can be managed and manipulated, thus making recovery options more attractive.

The initiation of leachate recirculation would be by agreement with the Agency and as early as possible to allow stabilisation of the waste mass in a sustainable timeframe.

Monitoring

The current licence prescribes a monitoring regime that will continue during waste placement. When the landfill has achieved its final profile, and when the restoration surface is put on the landfill, then *greenstar* will apply to the Agency for a modified schedule and frequency of monitoring under the headings:

- landfill gas
- leachate
- dust
- odours
- surface water
- groundwater
- landfill settlement
- landfill stability
- flora and fauna

Traditionally, the rate of leachate recirculation and landfill gas abstraction, together with analyses of both, will monitor the ultimate achievement of stability within the landfill mass.

Regular maintenance of all relevant infrastructure will continue in the aftercare phase including the maintenance of drainage ditches, internal roads, fencing, CCTV, gates, etc.

In the aftercare phase, *greenstar* might choose to remove some of the existing site buildings while maintaining any essential buildings or ancillary infrastructure required in the aftercare phase.

Differential settlement assessment will be a significant concern in the aftercare phase. Again, the Agency's attention is drawn to the report on the Achievement of Final Profile that is being submitted in parallel with this report.

A waste licence review application will be made in or around the time that the aftercare is identified and commenced. The review application will have regard to:

- the management structure at the facility
- the removal of redundant facility infrastructure
- changes to the monitoring regime
- modification to the annual charge paid under Condition 12 of the licence.

In the future, when *greenstar* considers that the waste mass has become effectively "stable", a further review application will be made and, ultimately, it is envisioned that, by agreement with the EPA, the landfill will be regarded as having no potential impact on the environment and aftercare activities will cease.

ATTACHMENT L

Statutory Requirements

ATTACHMENT L.1

Section 40(4) of the WMA

ATTACHMENT L.1 SECTION 40(4) WMA

Knockharley Landfill is designed, constructed, operated, monitored and will be restored in accordance with European Council Directive 1999/31/EC, the EPA Landfill Manuals, BAT guidance notes for waste facilities, the waste licence for the site, and with any other relevant environmental standards.

Being a fully lined landfill there is negligible risk that leachate or landfill gas will discharge to any environmental medium. This is borne out by the results of environmental monitoring undertaken in accordance with the conditions of the licence and reported to the Agency on an annual basis. The annual environmental report (AER) for 2007 is attached, in attachment E, by way of example. The AER also deals with other potential emissions such as noise.

The proposed intensification will effect a reduction in leachate generation and a reduced potential for the generation of odiferous gas. The intensification will not change the overall quantity of landfill gas but it will hasten the establishment of a final cap and consequently the efficient capture of LFG. Noise emissions may increase slightly but not to the extent that the standards set in the current licence will be breached. Clearly the duration of noise emissions will reduce.

The existing landfill as operated by Greenstar in accordance with the conditions attached to the Waste Licence has not caused environmental pollution. This is confirmed by the regular monitoring undertaken in compliance with the licensed schedules of the licence. The EPA has audited the Knockharley landfill site on four separate occasions with no non-compliances noted making it the most compliant landfill in the country.

In making this proposal, the existing monitoring regime will continue. The only change is that because cells will develop more quickly, monitoring points will be brought on line sooner. As is demonstrated by leachate balance calculations, the overall quantity and hence the overall risk of leachate pollution, will reduce. As final capping will occur sooner, maximum-efficiency LFG capture (and utilisation/treatment) will commence sooner.

The site selection, its design and operation have and will be compliant with all provisions of the Landfill Directive.

All design and operation has due regard to the EPA manuals and to the (draft) EPA BAT guidance. Greenstar has commissioned specific research into furthering techniques for odour reduction. Part of this proposal (the isolation of stabilised waste and other wastes suited for disposal separately to biodegradable wastes) arises from that research.

Please refer to Chapter 2 of the EIS (Volume 2) for a comprehensive statement on compliance with waste policy.

Greenstar is the incumbent licensee for Knockharley and fifteen other facilities (as well as for a large number of waste permits). Greenstar has in all instances, demonstrated its fitness in compliance with the Act. The proposal does not include any activities or responsibilities that fall outside of Greenstar's normal remit.

The site is about to become a net energy producer. Landfill gas will be used to generate electricity and while the parasitic load will be used to power items such as the gas fans, leachate pumps etc, there will be up to 4 MW available for export.

Modelling has demonstrated that the intensified activity will not breach any noise standard.

The site has a well documented accident prevention plan coupled with an emergency response procedure.

After landfilling ceases, the site will be managed in accordance with its documented aftercare management plan.

Section 53 of the Act addresses financial provisions regarding waste recovery and disposal. This is dealt with in L.2 below.

ATTACHMENT L.2

Fit and Proper Person

ATTACHMENT L.2 FIT AND PROPER PERSON

(i) Offences and Convictions

Greenstar Holdings Limited has not been convicted under the Waste Management Acts 1996 to 2003, the EPA Act 1992 and 2003, the Local Government (Water Pollution) Acts 1977 and 1990 or the Air Pollution Act 1987.

(ii) Technical Competence

Details of the applicants and its relevant employees technical knowledge and the qualifications are presented in Attachment C.1 and in Section C.1 of the application form.

(iii) Financial Provision

An audited financial statement for Greenstar Holdings Ltd. for 2007 is included in this attachment.

As demonstrated in the financial statement, Greenstar is in a position to meet any financial commitments or liabilities that the Agency reasonably considers will be entered into or incurred by it in carrying out the activity to which the application relates or in consequence of ceasing to carry out that activity.

Greenstar will provide the Agency with the appropriate form of guarantee for the amount required to decommission the facility by way of a bond or other financial instrument, as may be agreed with the Agency.

Condition 12 of the current licence requires Greenstar to arrange for the completion, by an independent and appropriately qualified consultant, of an Environmental Liabilities Risk Assessment (ELRA). The ELRA for Knockharley Landfill was submitted to the Agency in accordance with the licence conditions and includes a proposal for financial provision arising from the carrying of activities to which the licence relates. Currently Greenstar has financial and insurance provision in place to the satisfaction of the Agency.

Greenstar Holdings Limited

Directors' report and consolidated financial statements

Greenstar Holdings Limited

Directors' and other information

Directors	M. Wynne (Non-Executive Chairman) (British) J. Barry (Non-Executive Deputy Chairman) A.G. Bailey S. Cowman J. Dempsey G. Dennison J. Dixon (Non-Executive Director) M. King (Non-Executive Director) W. Kitchen M. Walsh (Non-Executive Director)
Registered office	Burton Court Burton Hall Road Sandyford Dublin 18
Secretary	E. Bolger
Bankers	Allied Irish Banks Bank of Ireland Bank of Scotland (Ireland) Irish Intercontinental Bank Ulster Bank Barclays Bank Rabobank
Auditor	KPMG Chartered Accountants 1 Stokes Place St. Stephen's Green Dublin 2
Solicitors	Arthur Cox Earlsfort Centre Earlsfort Terrace Dublin 2 Whitney Moore Wilton Park House Wilton Place Dublin 2

Greenstar Holdings Limited

Directors' report

The Directors have pleasure in submitting their annual report for Greenstar Holdings Limited ("the Company") and its subsidiaries (together "the Group") together with the audited financial statements for the year ended 31 March 2007.

Principal activity and business review

The Group, through the Company's subsidiaries, provides services and infrastructure at each level of the waste management hierarchy. Throughout the year, the Group continued to make significant progress towards its objective of becoming Ireland's leading provider of integrated waste management solutions, and providing national coverage in the Republic of Ireland. The Group remains committed to the delivery of superior returns to its shareholders over the medium term.

Performance for the year and future developments

Revenue for the year ended 31 March 2007 increased by 3% to €135.9 million *(15 month period ended 31 March 2006: €131.6 million)*. Profit for the year grew by 75% to €22.1 million *(2006: €12.6 million)*. The main driver of the increase in revenue related to the half year operation of a new residual landfill facility in Co. Wicklow in addition to the expansion of the collection and transfer business through organic growth and acquisition. The increase in net operating margin from 14.7% to 23.4% reflects the delivery of expected returns on infrastructure development and the successful execution of a restructuring programme under which the Group rationalised and consolidated five sites.

During the year, the Group invested significantly in residual landfill development, recycling, materials separation and bio-waste treatment activities. The total cash investment on capital expenditure (including acquisitions) in the year exceeded €36.0 million. The Group's new state-of-the-art landfill in Wicklow commenced operations in October 2006. Our Kildare, Meath and East Galway residual landfills continued to perform strongly throughout the year. During the year, the Group continued to make substantial investments in its operations of greatest significance was the opening of the Millennium Park facility at a total cost of €21.2 million which has a licensed capacity of 220,000 tonnes making it the largest material recycling facility in Ireland.

The Directors will continue to develop and enhance the current activities of the business. The business has aggressive growth targets and these will be delivered organically and through acquisition where they support the Group's objectives and are value enhancing.

The Group has a number of planning applications currently under consideration for additional infrastructural facilities around the country, which if obtained will require significant investment. The Group will continue to develop technology partnerships in the bio-waste area in readiness for the full implementation of the European landfill and bio-waste directives.

Greenstar Holdings Limited

Directors' report *(continued)*

Principal risks and uncertainties and key performance indicators

Under Irish Company law (Statutory Instrument 116.2005 – European Communities (International Financial Reporting Standards and Miscellaneous Amendments) Regulations 2005), the Group and Company are required to give a description of the principal risks and uncertainties faced, as well as a listing of the key performance indicators used to monitor performance. The Company is the holding company for the Group, and thus the risks below apply to both the Company and the Group.

This section describes the key risks considered by the Directors to be applicable, however, it is not an exhaustive list of all possible risks associated with the Group's operations.

The principal risks and uncertainties that the business faces are as follows:

1 The profitability of the business is highly sensitive to landfill pricing. Landfill prices are subject to normal market fluctuations and in particular a short term softening in pricing may be expected as new landfills come on stream and certain landfill facilities reach the end of their life cycle resulting in pressure to fill remaining unused void space prior to closure.
2 The continued growth of the business is, in part, dependent on securing planning and licencing for new facilities and for facility extensions. The planning and licencing process is by its nature uncertain given that decisions lie with external agencies, namely An Bord Pleanála and the Environmental Protection Agency ("EPA").
3 The odour issues inherent in the materials that the Group handles, mean that odour control is an important issue for the Group in terms of both the cost of compliance and the risk of liability to prosecution over real or alleged infringements.
4 The issue of increased Government control over the flow of waste disposal, whereby Local Authorities are seeking to direct waste to specific facilities, poses a significant threat to the competitive landscape, and could act as a significant deterrent to future private sector investment.

The key performance indicators focused on by management include:

	2007 (12 months)	2006 (15 months)
Revenue	**€135.9m**	€131.5m
EBITDA	**€54.9m**	€40.0m
EBITDA margin	**40%**	30%
EBIT	**€31.9m**	€19.5m
EBIT margin	**23%**	15%
Profit for the year	**€22.1m**	€12.6m
EBITDA: interest	**13.1**	11.3
Net debt: EBITDA	**1.6**	2.3
Tonnage handled	**978,000**	822,539
Revenue per tonne	**€139**	€160

Key performance indicators are in line with Group targets.

Greenstar Holdings Limited

Directors' report *(continued)*

Research and development

The Group did not engage in any research and development activities during the year.

Financial risk management policies

The main financial risks affecting the Group are public and employee liability, and credit and interest risk.

Public and employee liability
The Group holds insurance cover for public and employee liabilities of €6.5 million and €13.5 million respectively, for each and every claim.

Credit risk
The Group's objective is to ensure there are no significant risks to the Group from failure by customers to pay. To reduce this exposure, all landfill customers, which represent the largest debtor balances, are insured for credit risk. In addition, all customers must undergo a credit check before commencement of services. For all other customers, the Directors are of the opinion that the Group policy for provision against bad debts provides sufficient cover against any significant loss.

Interest risk
For details on interest risk and the Group hedging policy, please refer to note 22 to the consolidated financial statements.

Directors and Secretary

The Directors and Secretary who served during the year and subsequent to year end were:

M. Wynne (Chairman)
S. Cowman (Chief Executive Officer)
J. Barry
A.G. Bailey
J. Dempsey
G. Dennison
J. Dixon
E. Joyce (resigned July 2006)
M. King
W. Kitchen
M. Walsh
E. Bolger (Secretary)

Greenstar Holdings Limited

Directors' report *(continued)*

Directors' and Secretary's interests

The interests of the Directors and Secretary who held office at 31 March 2007 in the share capital of NTR plc (the ultimate parent company) at 31 March 2007 and 31 March 2006 were as follows:

Shares	**31 March 2007**		31 March 2006	
	Ordinary Shares of €0.00125 each	**Share Options**	Ordinary Shares €0.00125 each	Share Options
J. Barry	**2,913,737**	**-**	2,913,737	-
M. King	**1,515,502**	**-**	1,515,502	-
M. Walsh	**966,019**	**-**	966,019	-

The interests of the Directors and Secretary who held office at 31 March 2007 in the share capital of the Company (including options over shares) at 31 March 2007 and 31 March 2006 (or date of appointment if later) were as follows:

Share options	**At 31 March 2006**	**Exercised during year**	**Forfeited during year**	**At 31 March 2007**	**Exercise price (€)**	**Exercise dates**
A.G. Bailey	40,000	(20,803) *	-	19,197	1	2006-2010
S. Cowman	59,700	-	-	59,700	1	2006-2010
J. Dempsey	29,531	-	-	29,531	1	2006-2010
E. Joyce	29,719	(11,475) **	(18,244)	-	1	2006-2010
W. Kitchen	29,700	-	-	29,700	1	2006-2010

* During the year A. G. Bailey exercised 20,803 share options. The share price on the exercise date was €14.97 and the exercise price was €1.

** During the year E. Joyce exercised 11,475 share options. The share price on the exercise date was €16.89 and the exercise price was €1. The Company bought the shares back from E. Joyce immediately after the exercise.

Shares

A.G. Bailey is the beneifital owner of 20,803 'D' ordinary shares of €1 each *(31 March 2006: nil).*

Shareholdings

NTR plc is the beneficial owner of 3,800,000 "A" Ordinary Shares and 1 "C" Ordinary Share. Celtic Utilities Limited (of which NTR plc owns 76.95%) is the beneficial owner of 3,800,000 "B" Ordinary Shares.

Greenstar Holdings Limited

Directors' report *(continued)*

Subsidiaries

The information required by the Companies Acts, 1963 to 2006, in relation to subsidiary undertakings is set out in Note 25 to the consolidated financial statements.

Post balance sheets events

There have been no significant post balance sheet events which require disclosure in the financial statements.

Political donations

The Group made no political donations during the year *(15 month period ended 31 March 2006: €Nil).*

Accounting records

The Directors believe that they have complied with the requirements of section 202 of the Companies Act, 1990 with regard to books of account by employing accounting personnel with appropriate expertise and by providing adequate resources to the financial function. The books of account of the Company are maintained at Unit 6, Ballyogan Business Park, Ballyogan Road, Sandyford, Dublin 18.

Auditor

In accordance with Section 160 (2) of the Companies Act, 1963, the auditor, KPMG, Chartered Accountants, will continue in office.

On behalf of the board

S. Cowman
Director

A. G. Bailey
Director

2 August 2007

Greenstar Holdings Limited

Statement of directors' responsibilities

for the year ended 31 March 2007

The Directors are responsible for preparing the Annual Report and the Group and Company financial statements, in accordance with applicable law and regulations.

Company law requires the directors to prepare Group and Company financial statements for each financial year. Under that law the Directors have elected to prepare the Group financial statements in accordance with International Financial Reporting Standards ('IFRSs') as adopted by the EU and to prepare the Company financial statements in accordance with Generally Accepted Accounting Practice in Ireland, comprising applicable law and the accounting standards issued by the Accounting Standards Board and promulgated by the Institute of Chartered Accountants in Ireland.

The Group financial statements are required by law and IFRSs as adopted by the EU to present fairly the financial position and performance of the Group; the Companies Acts, 1963 to 2006 provide, in relation to such financial statements, that references in the relevant part of that Act to financial statements giving a true and fair view are references to their achieving a fair presentation.

In preparing each of the Group and Company financial statements, the directors are required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Group and the Company will continue in business.

The directors are responsible for keeping proper books of account that disclose with reasonable accuracy at any time the financial position of the Company and enable them to ensure that its financial statements comply with the Companies Acts, 1963 to 2006. They are also responsible for taking such steps as are reasonably open to them to safeguard the assets of the Group and the company and to prevent and detect fraud and other irregularities.

The directors are responsible for the maintenance and integrity of the corporate and financial information included on the Group's website. Legislation in the Republic of Ireland governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

On behalf of the board

S. Cowman
Director

A. G. Bailey
Director

Independent auditor's report to the members of Greenstar Holdings Limited

We have audited the Group and Company financial statements (the ''financial statements'') of Greenstar Holdings Limited for the financial year ended 31 March 2007, which comprise the Consolidated Income Statement, the Consolidated Balance Sheet, the Consolidated Statement of Cash Flows, the Consolidated Statement of Recognised Income and Expense and the related notes together with the Company Balance Sheet and related notes. These financial statements have been prepared under the accounting policies set out therein.

This report is made solely to the Company's members, as a body, in accordance with section 193 of the Companies Act, 1990, our audit work has been undertaken so that we might state to the Company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Respective responsibilities of Directors and auditor

The Directors' responsibilities for preparing the Annual Report and the Group financial statements in accordance with applicable law and International Financial Reporting Standards (IFRSs) as adopted by the EU, and for preparing the Company financial statements in accordance with applicable law and the accounting standards issued by the Accounting Standards Board and promulgated by the Institute of Chartered Accountants in Ireland (Generally Accepted Accounting Practice in Ireland), are set out in the Statement of Directors' Responsibilities on page 7.

Our responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

We report to you our opinion as to whether the financial statements give a true and fair view and have been properly prepared in accordance with the Companies Acts, 1963 to 2006 and whether, in addition, the Group financial statements have been properly prepared in accordance with Article 4 of the IAS Regulation. We also report to you our opinion as to: whether proper books of account have been kept by the Company; whether at the balance sheet date, there exists a financial situation requiring the convening of an extraordinary general meeting of the Company; and whether the information given in the Directors' Report is consistent with the financial statements. In addition, we state whether we have obtained all the information and explanations necessary for the purposes of our audit, and whether the Company balance sheet is in agreement with the books of account.

We also report to you if, in our opinion, any information specified by law regarding Directors' remuneration and Directors' transactions is not disclosed and, where practicable, include such information in our report.

We read the Directors' Report and consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies within the financial statements. Our responsibilities do not extend to any other information.

Independent auditor's report to the members of Greenstar Holdings Limited
(continued)

Basis of audit opinion

We conducted our audit in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of the significant estimates and judgments made by the directors in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Group's and Company's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In our opinion:

- the Group financial statements give a true and fair view, in accordance with IFRSs as adopted by the EU, of the state of the Group's affairs as at 31 March 2007 and of its profit for the financial year then ended;
- the Group financial statements have been properly prepared in accordance with the requirements of the Companies Acts, 1963 to 2006 and Article 4 of the IAS Regulation.
- the Company financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland, of the state of the Company's affairs at 31 March 2007; and
- the Company financial statements have been properly prepared in accordance with the Companies Acts, 1963 to 2006.

We have obtained all the information and explanations which we consider necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Company. The Company balance sheet is in agreement with the books of account.

In our opinion the information given in the Directors' Report is consistent with the financial statements.

The net assets of the Company, as stated in the Company balance sheet, are more than half of the amount of its called-up share capital and, in our opinion, on that basis there did not exist at 31 March 2007 a financial situation which under Section 40 (1) of the Companies (Amendment) Act, 1983 would require the convening of an extraordinary general meeting of the Company.

2 August 2007

Chartered Accountants
Registered Auditor
Dublin

Greenstar Holdings Limited

Consolidated income statement

for the year ended 31 March 2007

	Notes	**Year ended 31 March 2007 €'000**	15 month period ended 31 March 2006 €'000
Revenue, including share of joint venture		**135,941**	131,586
Less: share of joint venture's revenue		**(361)**	(482)
Group revenue		**135,580**	131,104
Cost of sales		**(87,330)**	(86,556)
Gross profit		**48,250**	44,548
Other operating income	*2*	**4,156**	1,013
Administration expenses		**(20,688)**	(26,235)
Operating profit before joint venture		**31,718**	19,326
Share of profit in joint venture		**162**	219
Profit before financing costs		**31,880**	19,545
Financial income	*4*	**31**	22
Financial expense	*4*	**(4,219)**	(3,531)
Profit before tax	*5*	**27,692**	16,036
Income tax expense	*6*	**(5,602)**	(3,404)
Profit for the financial period		**22,090**	12,632
Attributable to:			
Equity shareholders	*15*	**22,142**	12,631
Minority interest		**(52)**	1
		22,090	12,632

Notes 1 to 29 form part of these consolidated financial statements.

On behalf of the board

S. Cowman
Director

A. G. Bailey
Director

Greenstar Holdings Limited

Consolidated statement of recognised income and expense

for the year ended 31 March 2007

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Cashflow hedges:		
Dealt with in equity, net of deferred tax	**104**	973
Income taken directly to equity in the year	**104**	973
Recycled to income statement, net of deferred tax	**375**	(356)
Profit for the financial period	**22,090**	12,632
Total recognised income and expense for the financial period	**22,569**	13,249
Attributable to:		
Equity holders of the Company	**22,621**	13,248
Minority interests	**(52)**	1
	22,569	13,249
Transition adjustment at 1 January 2005 arising from first-time adoption of IAS 32/39		
Cash flow hedges		(443)
Deferred tax arising thereon		55
		(388)

Notes 1 to 29 form part of these consolidated financial statements.

Greenstar Holdings Limited

Consolidated balance sheet

at 31 March 2007

	Notes	**31 March 2007 €'000**	31 March 2006 €'000
Assets: non-current			
Property, plant and equipment	*7*	**145,407**	144,063
Intangible assets	*8*	**5,976**	3,438
Goodwill	*9*	**36,580**	26,790
Deferred tax assets	*20*	**109**	297
Investment in joint venture	*10*	**219**	267
Derivative financial asset	*22*	**809**	306
Total non-current assets		**189,100**	175,161
Current			
Inventories	*11*	**-**	8
Trade and other receivables	*12*	**32,945**	19,012
Cash and cash equivalents	*13*	**991**	1,254
Assets classified as held for sale	*14*	**3,405**	-
Total current assets		**37,341**	20,274
Total assets		**226,441**	195,435

Greenstar Holdings Limited

Consolidated balance sheet *(continued)*
at 31 March 2007

	Notes	**31 March 2007 €'000**	31 March 2006 €'000
Equity			
Called-up share capital	*15*	**7,621**	7,600
Share premium	*15*	**2,722**	2,432
Other reserves	*15*	**719**	229
Retained earnings	*15*	**68,742**	46,611
Total equity attributable to equity share holders of the parent		**79,804**	56,872
Minority interests	*15*	**(51)**	1
Total equity		**79,753**	56,873
Liabilities: non-current			
Interest-bearing loans and borrowings	*17*	**72,917**	76,934
Employee benefits	*16,18*	**6,914**	5,141
Provisions	*19*	**8,347**	5,493
Deferred tax liabilities	*20*	**1,169**	910
Derivative financial liability	*22*	**-**	45
Total non-current liabilities		**89,347**	88,523
Current			
Bank overdrafts	*13*	**2,731**	4,124
Interest-bearing loans and borrowings	*17*	**16,539**	16,630
Employee benefits	*18*	**128**	110
Trade and other payables	*21*	**31,450**	22,219
Corporation tax payable		**4,154**	3,546
Provisions	*19*	**2,339**	3,410
Total current liabilities		**57,341**	50,039
Total liabilities		**146,688**	138,562
Total equity and liabilities		**226,441**	195,435

Notes 1 to 29 form part of these consolidated financial statements.

On behalf of the board

S. Cowman
Director

A. G. Bailey
Director

Greenstar Holdings Limited

Consolidated statement of cash flows

for the year ended 31 March 2007

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Cash flows from operating activities		
Profit for the financial period	**22,090**	12,632
Adjustments for:		
Depreciation	**21,847**	20,024
Amortisation of intangible assets	**1,165**	593
Impairment of goodwill	**-**	213
Impairment of fixed assets	**384**	406
Aftercare charges	**1,308**	170
Discount interest charge	**458**	512
Gain on sale of property, plant and equipment	**(4,156)**	(656)
Share based payment expense	**1,773**	2,947
Restructuring provision	**(500)**	856
Interest	**3,730**	2,997
Share of profit in joint venture	**(162)**	(219)
Income tax expense	**5,602**	3,404
Operating cash flows before changes in working capital and provisions	**53,539**	43,303
Decrease in inventories	**8**	73
Increase in trade and other receivables	**(9,069)**	(4,122)
Increase in trade and other payables	**2,609**	2,841
Site restoration expenditure	**(792)**	(1,583)
Cash generated from operations	**46,295**	40,512
Income taxes paid	**(4,833)**	(2,228)
Interest paid	**(3,858)**	(2,748)
Interest received	**31**	22
Net cash from operating activities	**37,635**	35,558
Cash flows from investing activities		
Proceeds from sale of property, plant and equipment	**8,826**	1,405
Acquisition of property, plant and equipment and intangibles	**(25,498)**	(47,435)
Deferred consideration payments	**(1,237)**	-
Acquisition of subsidiaries, joint venture net of cash acquired	**(9,895)**	(5,146)
Investment in joint venture	**-**	(48)
Dividends received from joint venture	**210**	-
Net cash used in investing activities	**(27,594)**	(51,224)

Greenstar Holdings Limited

Consolidated statement of cash flows *(continued)*

for the year ended 31 March 2007

	Notes	**Year ended 31 March 2007 €'000**	15 month period ended 31 March 2006 €'000
Cash flows from financing activities			
Payment of finance lease liabilities		**(1,294)**	(1,710)
Repayment of loans from related parties		**-**	(59,420)
(Repayment)/drawdown of bank loans		**(7,917)**	74,497
Issue of share capital		**311**	-
Repurchase of share capital		**(11)**	-
Net cash (used in)/generated from financing activities		**(8,911)**	13,367
Net increase/(decrease) in cash and cash equivalents		**1,130**	(2,299)
Cash and cash equivalents at beginning of year		**(2,870)**	(571)
Cash and cash equivalents at end of year	*13*	**(1,740)**	(2,870)

Notes 1 to 29 form a part of these consolidated financial statements.

Greenstar Holdings Limited

Notes
to the consolidated financial statements

1 Significant accounting policies

Greenstar Holdings Limited (the "Company") is a company incorporated and domiciled in the Republic of Ireland. The consolidated financial statements of the Company for the year ended 31 March 2007 comprise the Company and its subsidiaries (together referred to as the "Group") and the Group's interest in a jointly controlled entity. The Group's year end date was changed during the prior period from 31 December 2005 to 31 March 2006 in order to align it with a change in financial year end made by the parent company, NTR plc. The consolidated financial statements were authorised for issue by the Directors on 2 August 2007.

(a) Statement of compliance

As required by the European Union (EU) law, the Group financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) and their interpretation issued by the International Accounting Standards Board (IASB), as adopted by the EU.

The individual financial statements of the Company ("Company financial statements") have been prepared in accordance with Generally Accepted Accounting Practice in Ireland comprising applicable law and the accounting standards issued by the Accounting Standards Board and promulgated by the Institute of Chartered Accountants in Ireland. The Company has taken advantage of the exemption in Section 148(8) of the Companies Act, 1963 from presenting to its members the Company income statement and related notes which form part of the approved Company financial statements as the Company publishes Company and Group financial statements together.

The date of transition to IFRS for the group was 1 January 2004. The IFRS, adopted by the EU, applied by the Group in the preparation of these Group financial statements are those that were effective at 31 March 2007.

1 Significant accounting policies *(continued)*

(b) Basis of preparation

The consolidated financial statements are prepared on the historical cost basis, presented in euro and rounded to the nearest thousand except that the following assets and liabilities are stated at their fair values: derivative financial instruments and share-based employee benefits.

The accounting policies set out below have been applied consistently by all the Group's subsidiaries and jointly controlled entities to all periods presented in these consolidated financial statements.

(c) Estimates and uncertainties

The preparation of financial statements in conformity with IFRS as adopted by the EU, requires management to make judgements, estimates and assumptions that affect the application of policies and reported amounts of assets and liabilities, income and expenses. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis of making the judgements about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

Judgements made by management in the application of IFRS that have significant effect on the financial statements and estimates with a significant risk of material adjustment in the next year are discussed in note 27.

1 Significant accounting policies *(continued)*

(d) Basis of consolidation

Business combinations
The purchase method of accounting is employed in accounting for the acquisition of subsidiaries by the Group.

The cost of a business combination is measured as the aggregate of the fair values at the date of exchange of assets given, liabilities incurred or assumed and equity instruments issued in exchange for control together with any directly attributable costs. Where a business combination agreement provides for an adjustment to the cost of the combination contingent on future events, the amount of the estimated adjustment is included in the cost at the acquisition date if the adjustment can be reliably measured. Any changes to this estimate in subsequent periods are reflected in goodwill. Deferred consideration is included in the acquisition balance sheet on a discounted basis.

The assets, liabilities and contingent liabilities of a subsidiary are measured at their fair values at the date of acquisition. In the case of a business combination which is completed in stages, the fair values of the identifiable assets, liabilities and contingent liabilities are determined at the date of each exchange transaction. When the initial accounting for a business combination is determined provisionally, any adjustments to the provisional values allocated to the identifiable assets, liabilities and contingent liabilities are made within twelve months of the acquisition date.

The interest of minority shareholders is stated at the minority's proportion of the fair values of the assets and liabilities recognised. Subsequently, any losses applicable to the minority interest in excess of the minority interest are allocated against the interests of the parent.

(i) Subsidiaries

Subsidiaries are entities controlled by the Company. Control exists when the Company has the power, directly or indirectly, to govern the financial and operating policies of any entity so as to obtain benefits from its activities. In assessing control, potential voting rights that presently are exercisable or convertible are taken into account. The financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases. A list of subsidiaries consolidated within these financial statements is included at note 25.

The interest in a subsidiary undertaking included in the consolidation that is attributable to the shares held by or on behalf of persons other than the Company and its subsidiary undertakings are included within the minority interest in the balance sheet.

(ii) Joint ventures

Joint ventures are those entities over whose activities the Group has joint control, established by contractual agreement. The consolidated financial statements include the Group's share of the assets, liabilities, revenue and expenses of its joint venture entity on an equity accounted basis from the date that joint control commences until the date that joint control ceases.

1 Significant accounting policies *(continued)*

(iii) Transactions eliminated on consolidation and equity accounting

Intra-group balances and unrealised gains and losses or income and expenses arising from intra-group transactions are eliminated on consolidation. Unrealised gains arising from transactions with joint ventures are eliminated to the extent of the Group's interest in the entity. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment.

(e) Foreign currency

Foreign currency transactions

Transactions in foreign currencies are translated at the foreign exchange rate ruling at the date of the transaction. Non-monetary assets that are carried at historical cost are not subsequently re-translated. Monetary assets and liabilities denominated in foreign currencies at the balance sheet date are translated to the Group's functional currency at the foreign exchange rate ruling at that date. Foreign exchange differences arising on translations are recognised in the income statement. Non-monetary assets and liabilities denominated in foreign currencies that are stated at fair value are translated to the Group's functional currency at foreign exchange rates ruling at the dates the fair values were determined.

1 Significant accounting policies *(continued)*

(f) Derivative financial instruments

Derivate financial instruments are recognised initially at fair value, being their cost. Subsequent to initial recognition, derivative financial instruments are stated at fair value. The gain or loss on remeasurement to fair value is recognised immediately in the income statement. However, where derivatives qualify for hedge accounting, recognition of any resultant gain or loss depends on the nature of the item being hedged and the hedge accounting model adopted (see accounting policy g).

The fair value of interest rate swaps is the estimated amount that the Group would receive or pay to terminate the swap at the balance sheet date, taking into account current interest rates and the current creditworthiness of the swap counterparties.

Up to 31 December 2004, gains and losses on derivative financial instruments used to hedge foreign exchange and interest rate exposures arising on future planned transactions were recognised in the income statement when the hedged transactions occurred.

Land options

The Group holds certain options to acquire land for use as landfill sites. The option fee paid is non-refundable to the Group, non-transferable and cannot be settled net in cash. Accordingly, these options are exempt from being accounted for as derivatives.

(g) Hedging

Cash flow hedges

Where a derivative financial instrument is designated as a hedge of the variability in cash flows of a recognised asset or liability, or a highly probable forecasted transaction, the effective part of any gain or loss on the derivative financial instrument is recognised directly in equity. When the forecasted transaction subsequently results in the recognition of a non-financial asset or non-financial liability, the associated cumulative gain or loss is removed from equity and included in the initial cost or other carrying amount of the non-financial asset or liability. If a hedge of a forecasted transaction subsequently results in the recognition of a financial asset or a financial liability, the associated gains and losses that were recognised directly in equity are reclassified into the income statement in the same period or periods during which the asset acquired or liability assumed affects the income statement (i.e. when interest income or expense is recognised). For cash flow hedges, other than those covered by the preceding two policy statements, the associated cumulative gain or loss is removed from equity and recognised in the income statement in the same period or periods during which the hedged forecast transaction affects the income statement. The ineffective part of any gain or loss is recognised immediately in the income statement.

1 Significant accounting policies *(continued)*

(g) Hedging *(continued)*

Cash flow hedges *(continued)*

When a hedging instrument expires or is sold, terminated or exercised, or the Group revokes designation of the hedge relationship but the hedged forecast transaction is still expected to occur, the cumulative gain or loss at that point remains in equity and is recognised in accordance with the above policy when the transaction occurs. If the hedged forecast transaction is no longer expected to take place, the cumulative unrealised gain or loss recognised in equity is recognised immediately in the income statement.

(h) Share awards

Share-based payment transactions

The Group operates a cash settled share based programme which allows employees to acquire shares in the Group. The fair value of awards granted is recognised as an employee expense with a corresponding increase in liabilities.

The fair values of cash settled awards are initially measured at grant date and spread over the period during which the employee becomes unconditionally entitled to payment. The liability is re-measured to fair value at each balance sheet date until the awards vest and thereafter at settlement amount until settlement date. Any changes in the value of the liability are reflected in the income statement as an employee benefit expense.

(i) Property, plant and equipment

(i) Owned assets

Items of property, plant and equipment are stated at cost, net of accumulated depreciation and any impairment losses (see accounting policy n). Cost includes those costs, including employee and other costs, that are directly attributable to bringing assets into working condition for their intended use. The cost of self-constructed assets and acquired assets includes, where relevant, (i) the initial estimate at the time of installation of the assets of dismantling and removing the items and of restoring the site on which they are located and (ii) changes in the measurement of existing liabilities recognised for those costs during the period of use resulting from changes in the timing or outflow of resources required to settle the obligation or from changes in the discount rate.

Costs in relation to assets in development and construction are capitalised, where, in the opinion of the Directors, the related project will be successfully developed and the economic benefits arising from future operations will at least equal the amount of capitalised expenditure incurred to date. Costs capitalised to assets in development relate to costs incurred in bringing a project to the consent stage. Costs associated with reaching the consent stage include planning application costs and environmental impact studies. Depreciation commences when the asset is substantially complete and ready for its intended use. Full provision is made for any impairment in the value of the asset.

1 Significant accounting policies *(continued)*

(i) Property, plant and equipment *(continued)*

Financing costs which are directly attributable to the construction of property, plant and equipment are capitalised as part of the cost of those assets. The commencement of capitalisation begins when both finance costs and expenditures for the asset are being incurred and activities that are necessary to get the asset ready for use are in progress. Capitalisation ceases when substantially all the activities that are necessary to get the asset ready for use are complete.

When parts of an item of property, plant and equipment have different useful lives, those components are accounted for as separate items of property, plant and equipment.

(ii) Leased assets

Leases under the terms of which the Group assumes substantially all the risks and rewards of ownership, are classified as finance leases. Assets acquired by way of finance lease are stated at an amount equal to the lower of its fair value and the present value of the minimum lease payments at inception of the lease, less accumulated depreciation and impairment losses (see accounting policy n). The capital element of finance lease obligation payments is recorded as a liability, while the interest element is charged to the income statement over the period of the lease to produce a constant rate of charge on the balance of capital repayments outstanding. Operating lease payments are accounted for as described in accounting policy t (i).

(iii) Subsequent expenditure

The Group recognises in the carrying amount of an item of property, plant and equipment the cost of replacing part of such an item when that cost is incurred if it is probable that the future economic benefits embodied within the item will flow to the Group and the cost of the replaced item can be measured reliably for its derecognition. All other costs are recognised in the income statement as an expense as incurred.

(iv) Depreciation

Freehold land, assets in development and assets in construction are not depreciated. Depreciation is calculated to write off the cost, less estimated residual value of all other assets as follows:

- Landfill site acquisition, commissioning costs, engineering works and the discounted cost of final site restoration are depreciated over the life of the landfill project based on the rate of fill of void space, commencing from the start of landfill operations. Available void space is measured annually, and any resulting impact on the depreciation charge is recognised prospectively.

- All other assets are depreciated on a straight line basis over their expected useful lives at the following annual rates:

Material Recycling Facility assets	2% - 4%
Plant	15% - 33%
Office equipment	10% - 33%
Motor vehicles	20% - 33%
Leasehold improvements	Over the shorter of the life of the lease or the asset

The residual value, if significant and remaining useful lives are reassessed annually.

1 Significant accounting policies *(continued)*

(j) Intangible assets

(i) Goodwill

All business combinations are accounted for by applying the purchase method. Goodwill represents amounts arising on the acquisition of subsidiary undertakings and jointly controlled entities. In respect of acquisitions that have occurred since 1 January 2004, goodwill represents the difference between the cost of the acquisition and the fair value of the net identifiable assets, liabilities and contingent liabilities acquired.

In respect of acquisitions prior to this date, goodwill is included on the basis of its deemed cost, which represents the amount recorded under Irish GAAP. The classification and accounting treatment of business combinations that occurred prior to 1 January 2004 has not been reconsidered in preparing the Group's opening IFRS balance sheet at 1 January 2004.

Goodwill is stated at cost or deemed cost less impairment losses. Negative goodwill arising on an acquisition is recognised directly in the income statement.

(ii) Other intangible assets

Other intangible assets that are acquired by the Group are stated at cost less accumulated amortisation and impairment losses (see accounting policy n).

(iii) Subsequent expenditure

Subsequent expenditure on capitalised intangible assets is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure is expensed as incurred.

(iv) Amortisation

Amortisation is charged to the income statement on a straight-line basis over the estimated useful lives of intangible assets. Intangible assets are amortised from the date they are available for use. The estimated useful lives are as follows:

- Customer lists 7 - 10 years
- Software development costs 5 years

(k) Trade and other receivables

Trade and other receivables are stated at their cost less impairment losses (see accounting policy n).

1 Significant accounting policies *(continued)*

(l) Inventories

Inventories are stated at the lower of cost and net realisable value. Cost is based on the first-in first-out method and includes expenditure incurred in acquiring the inventories and bringing them to their existing location and condition. Net realisable value is based on estimated selling price in the ordinary course of business, less further costs expected to be incurred to completion and disposal. Provision is made for obsolete, slow-moving or defective items where appropriate.

(m) Cash and cash equivalents

Cash and cash equivalents comprise cash balances and call deposits. Bank overdrafts that are repayable on demand and form an integral part of the Group's cash management are included as a component of cash and cash equivalents for the purpose of the Statement of Cash Flows.

(n) Impairment

The carrying amounts of the Group's assets, other than inventories (see accounting policy l) and deferred tax assets (see accounting policy u), are reviewed at each balance sheet date to determine whether there is any indication of impairment. Non-depreciable assets and goods are assessed annually for impairment. In assessing an asset for impairment, the recoverable amount of the asset or its cash generating unit is estimated. An impairment loss is recognised when the carrying amount of an asset or its cash-generating unit exceeds its recoverable amount. Impairment losses are recognised in the income statement.

Impairment losses recognised in respect of cash-generating units are allocated first to reduce the carrying amount of goodwill allocated to cash-generating units (groups of units) and then, to reduce the carrying amount of the other assets in the unit (group of units) on a pro-rata basis. Goodwill was tested for impairment at 31 March 2006 and 2007 and no indication of impairment existed.

(i) Calculation of recoverable amount

The recoverable amount of such assets is the greater of their net selling price and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

1 Significant accounting policies *(continued)*

(n) Impairment *(continued)*

(ii) Reversals of impairment

An impairment loss in respect of goodwill is not reversed. In respect of other assets, an impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount.

An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

(o) Dividends

Dividends are recognised as a liability in the period in which they are declared and approved by those with authority to do so or, in the case of the interim dividend, when it has been approved by the Board of Directors and paid.

(p) Interest bearing borrowings

Interest bearing borrowings are recognised initially at fair value, less attributable transaction costs. Subsequent to initial recognition, interest-bearing borrowings are stated at amortised cost with any difference between cost and redemption value being recognised in the income statement over the period of the borrowings on an effective interest basis. Capitalised interest is described in accounting policy (t).

(q) Employee benefits - Defined contribution plans

Obligations for contributions to defined contribution pension plans are recognised as an expense in the income statement in the period in which the relevant employee service is received.

(r) Provisions

A provision is recognised in the balance sheet when the Group has a legal or constructive obligation as a result of a past event, and it is probable that an outflow of economic benefits will be required to settle the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to that liability.

1 Significant accounting policies *(continued)*

(r) Provisions *(continued)*

Site restoration and aftercare
Full provision is made for the net present value of the Group's costs in relation to restoration liabilities at its landfill sites. The net present value of the estimated costs is capitalised as property, plant and equipment. The unwinding of the discount element on the restoration provision is reflected as a finance cost in the income statement. Current cost estimates are revised each year and any resulting change is reflected in the carrying amount of the relevant assets. Provision is made for the net present value of post closure costs based on the quantity of waste input into the landfill during the year. Similar costs incurred during the operating life of the landfill site are expensed as incurred.

(s) Revenue

Revenue represents the fair value of goods and services delivered to customers in the normal course of business, net of trade discounts and VAT. Services are deemed to have been delivered when, and to the extent that, the Group has met its obligations under its service contracts. Payments received in advance of performance are deferred and recognised as revenue when the related service is delivered.

(t) Expenses

(i) Operating lease payments

Payments made under operating leases are recognised in the income statement on a straight-line basis over the terms of the lease. Lease incentives received are recognised in profit or loss as an integral part of the total lease expense.

(ii) Finance costs and finance income

Net financing costs comprise interest payable on borrowings calculated using the effective interest rate method, interest receivable on funds invested, dividend income, foreign exchange gains and losses, and gains and losses on hedging instruments that are recognised in the income statement (see accounting policy g) and the unwinding of discounts on provisions. Interest payable on borrowings is shown as an operating activity in the consolidated statement of cash flows.

Interest income is recognised in the income statement as it accrues, taking into account the effective yield on the asset. Interest income is shown as an operating activity in the consolidated statement of cash flows. Dividend income is recognised in the income statement on the date that the Company becomes unconditionally entitled to the dividend.

The interest expense component of finance lease payments is recognised in the income statement using the effective interest rate method.

1 Significant accounting policies *(continued)*

(t) Expenses *(continued)*

(ii) Finance costs and finance income *(continued)*

Financing costs which are directly attributable to the construction of property, plant and equipment are capitalised as part of the cost of those assets. The commencement of capitalisation begins when both finance costs and expenditures for the asset are being incurred and activities that are necessary to get the asset ready for use are in progress. Capitalisation ceases when substantially all the activities that are necessary to get the asset ready for use are complete.

(u) Income tax

Income tax on the profit for the year comprises current and deferred tax. Income tax is recognised in the income statement except to the extent that it relates to items recognised directly in equity, in which case it is recognised in equity.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantially enacted at the balance sheet date, and any adjustment to tax payable in respect of previous years.

Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. The following temporary differences are not provided for: goodwill not deductible for tax purposes, those arising on the initial recognition of assets or liabilities that affect neither accounting or taxable profit and differences relating to retained earnings in subsidiaries to the extent that they will probably not reverse in the foreseeable future. The amount of deferred tax provided is based on the expected manner of realisation or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantially enacted at the balance sheet date.

A deferred tax asset is recognised only to the extent that it is probable that future taxable profits will be available against which the asset can be utilised. Deferred tax assets are reduced to the extent that it is no longer probable that the related tax benefit will be realised.

(v) Deferred purchase consideration and earn out obligations

When a business combination agreement provides for an adjustment to the cost of a business acquired contingent on future events, the Group accrues the probable amount of any additional consideration payable in the cost of the combination as a liability at the acquisition date where this can be measured reliably. This amount is reassessed at each balance sheet date.

To the extent that deferred purchase consideration and earn out obligations are payable after one year from the date of acquisition, they are discounted at an appropriate loan interest rate and, accordingly, are carried at net present value in the consolidated balance sheet. An appropriate interest charge, at a constant rate on the carrying amount adjusted to reflect material conditions, is reflected in the income statement over the earnout period, increasing the value of the provision so that the obligation will reflect its settlement value at the time of maturity. Adjustments to the amount of the obligation relating to changes in the amount expected to be paid, the effective interest rate or the timing of the expected payments are accounted for as adjustments to the cost of the acquisition and reflected in goodwill.

1 Significant accounting policies *(continued)*

(w) Cost of sales

Cost of sales include those costs directly attributable to the Group's revenue streams including those direct costs associated with the Group's collection, transfer, recycling and landfill operations.

(x) Recent accounting pronouncements

The IFRSs and IFRIC Interpretations set out below have been adopted by the EU prior to date of sign off, are not yet effective and have not been early adopted in these financial statements. The Directors have formed the opinion that the adoption of these pronouncements will not have a significant effect on the Group's consolidated financial statements, except for IFRS 7 *Financial Instruments: Disclosures* and Amendment to IAS 1 *Capital disclosures.* Their likely impact is briefly outlined below:

- Amendment to IAS 1 – *Capital disclosures* (effective for annual periods beginning on or after 1 January 2007). This amendment will require additional disclosures regarding the capital structure of the Company
- IFRS 7 – *Financial Instruments: Disclosures* (effective for annual periods beginning on or after 1 January 2007). This standard updates and extends disclosure requirements of IAS 32 and will require significant additional disclosures relating to risk management policies and processes
- IFRIC 8 – Scope of IFRS 2 (effective for annual period beginning on or after 1 January 2007)
- IFRIC 9 – Reassessment of Embedded Derivatives (effective for annual period beginning on or after 1 January 2007)
- IFRIC 10 – Interim Financial Reporting and Impairment (effective for annual period beginning on or after 1 January 2007)
- IFRIC 11 – *IFRS 2 Group and Treasury Share Transactions* (effective for periods beginning on or after 1 March 2007)

Notes
to the consolidated financial statements (continued)

2 Other operating income

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Release of unused provisions	-	357
Gain on disposal of property, plant and equipment	**4,156**	656
	4,156	1,013

3 Employee benefits and transactions with executive directors and other key management personnel

The average number of persons employed by the Group during the financial year was 456 *(15 month period ended 31 March 2006: 491)* and is analysed as follows:

	Year ended 31 March 2007	15 month period ended 31 March 2006
Operations	**314**	328
Administration and marketing	**170**	163
	484	491

Notes
to the consolidated financial statements (continued)

3 Employee benefits and transactions with executive directors and other key management personnel *(continued)*

Staff costs comprise:

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Wages and salaries	**19,694**	22,658
Social welfare costs	**2,169**	2,513
Pension costs	**673**	814
Share based payments	**2,064**	2,948
Other staff costs	**695**	801
Death and disability plan premiums	**141**	204
	25,436	29,938
Capitalised in property, plant and equipment	**(375)**	(921)
Charged to income statement	**25,061**	29,017

Transactions with key management personnel (excluding non-executive directors)

In the opinion of the Directors, executive directors comprise the key management of the Group.

Key management personnel compensation is as follows:

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Wages and salaries	**974**	1,668
Social security costs	**103**	179
Pension costs	**131**	191
Share based payments	**1,266**	1,451
Compensation for loss of office	**-**	167
Other staff costs	**95**	111
Death and disability plan premium	**12**	22
	2,581	3,789

The interests of the Directors and Secretary and their immediate relatives in the share capital of the Company at 31 March 2007 and 31 March 2006 are set out in the Directors' Report on page 5. There were no loans to Directors during the year ended 31 March 2007 *(15 month period ended 31 March 2006: €Nil)*.

4 Net financing costs

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Financial expense		
Interest expense		
On site restoration	**458**	515
Finance lease interest	**175**	251
On bank loans repayable by instalments, the last of which falls due within 5 years	**3,357**	224
On loans due to related parties	**91**	3,121
Amortisation of arrangement fees and commitment fees	**654**	628
	4,735	4,739
Interest capitalised within property, plant and equipment	**(516)**	(1,208)
	4,219	3,531

The Group used an average capitalisation rate of 4.17% *(15 month period ended 31 March 2006: 3.75%)* in determining the amount of interest capitalised.

Financial income

Interest received in respect of loan to a related party	**31**	22

5 Statutory and other information

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Directors' remuneration	**2,581**	3,789
Auditor's remuneration		
- audit	**223**	173
- other, principally tax fees	**145**	161
Depreciation of property, plant and equipment	**21,847**	19,618
Impairment of property, plant and equipment	**384**	406
Amortisation of intangible assets	**1,165**	593
Impairment of goodwill	**-**	213
Operating lease rentals	**2,475**	1,730

As permitted by Section 148(8) of the Companies Act, 1963 no separate profit and loss account is presented in respect of the Company. The Company recorded a loss for the year of €955,000 *(15 month period ended 31 March 2006: loss of €1,653,000).*

6 Income tax expense

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Recognised in the income statement		
Current tax	**5,558**	3,307
Over provision in respect of previous periods	**(115)**	(52)
Total current tax charge	**5,443**	3,255
Deferred tax	**159**	149
Total income tax charge	**5,602**	3,404
Deferred tax recognised in equity		
Relating to cash flow hedges	**(69)**	(32)

No significant changes are expected to statutory tax rates in the future.

6 Income tax expense *(continued)*

The difference between the total income tax expense shown above and the amount calculated by applying the standard rate of Irish corporation tax is as follows:

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Profit before taxation	**27,692**	16,036
Tax on Group profit on ordinary activities at standard Irish corporation tax rate of 12.5% *(2006: 12.5%)*	**3,461**	2,005
Effects of:		
Expenses not deductible for tax purposes	**2,256**	1,559
Income not taxable	**-**	(135)
Adjustment to tax charge in respect of previous period	**(115)**	(52)
Income taxable at higher rate	**-**	27
Total income tax charge for period	**5,602**	3,404

Notes
to the consolidated financial statements (continued)

7(a) Property, plant and equipment

	Assets in development €'000	Assets in construction €'000	Landfill assets €'000	Material recycling facility assets €'000	Land €'000	Leasehold improvements €'000	Plant €'000	Motor vehicles €'000	Office equipment €'000	Office buildings €'000	Total €'000
Cost											
At 31 March 2006	15,560	13,996	91,912	31,697	9,539	2,897	31,339	7,452	3,589	-	207,981
Additions	8,044	2,469	7,572	1,456	-	48	5,850	645	716	198	26,998
Site restoration	-	-	1,524	-		-	-	-	-	-	1,524
Disposals	(1,561)	-	-	-	(3,055)	(1,199)	(98)	(1,147)	(90)	-	(7,150)
Transfers	(14,266)	(14,696)	13,525	16,104	(6,484)	(2)	3,294	208	667	1,650	-
Transfers to intangible assets	-	-	-	-	-	-	-	-	(329)	-	(329)
Additions through business combinations	-	-	-	1,788	-	-	2,203	702	155	-	4,848
Transfer to current assets held for sale	-	-	-	(3,181)	-	(407)	-	-	-	-	(3,588)
Transfer to receivables	(1,387)	-	-	-	-	-	-	-	-	-	(1,387)
At 31 March 2007	**6,390**	**1,769**	**114,533**	**47,864**	**-**	**1,337**	**42,588**	**7,860**	**4,708**	**1,848**	**228,897**

7(a) Property, plant and equipment *(continued)*

	Assets in development €'000	Assets in construction €'000	Landfill assets €'000	Material recycling facility assets €'000	Land €'000	Leasehold improvements €'000	Plant €'000	Motor vehicles €'000	Office equipment €'000	Office buildings €'000	Total €'000
Depreciation and impairment											
At 31 March 2006	2,764	-	35,567	1,928	-	1,477	14,568	5,678	1,936	-	63,918
Charge for year	76	-	12,622	576	-	85	5,955	1,636	896	1	21,847
Impairment	384	-	-	-	-	-	-	-	-	-	384
Disposals	-	-	-	-	-	(1,199)	(134)	(1,049)	(98)	-	(2,480)
Transfers (note 8)	28	-	6	(24)	-	-	(20)	10	-	-	-
Transfers to intangible assets	-	-	-	-	-	-	-	-	4	-	4
Transfers to current assets held for sale	-	-	-	(113)	-	(70)	-	-	-	-	(183)
At 31 March 2007	**3,252**	**-**	**48,195**	**2,367**	**-**	**293**	**20,369**	**6,275**	**2,738**	**1**	**83,490**
Net book value											
At 31 March 2006	12,796	13,996	56,345	29,769	9,539	1,420	16,771	1,774	1,653	-	144,063
At 31 March 2007	**3,138**	**1,769**	**66,338**	**45,497**	**-**	**1,044**	**22,219**	**1,585**	**1,970**	**1,847**	**145,407**

7(b) Property, plant and equipment

	Assets in development €'000	Assets in construction €'000	Landfill assets €'000	Material recycling facility assets €'000	Land €'000	Leasehold improvements €'000	Plant €'000	Motor vehicles €'000	Office equipment €'000	Total €'000
Cost										
At 1 January 2005	14,106	38,852	33,000	29,795	9,539	2,384	20,489	8,792	2,511	159,468
Additions	19,215	-	17,726	2,447		79	7,642	760	745	48,614
Site restoration	-	-	1,839	-	-	-	-	-	-	1,839
Disposals	-	-	(9)	(569)	-	-	(749)	(2,089)	(20)	(3,436)
Transfers	(17,761)	(24,856)	39,356	24	-	434	2,461	(11)	353	-
Additions through business combinations	-	-	-		-	-	1,496	-	-	1,496
At 31 March 2006	**15,560**	**13,996**	**91,912**	**31,697**	**9,539**	**2,897**	**31,339**	**7,452**	**3,589**	**207,981**

Notes
to the consolidated financial statements (continued)

7(b) Property, plant and equipment *(continued)*

	Assets in development €'000	Assets in construction €'000	Landfill assets €'000	Material recycling facility assets €'000	Land €'000	Leasehold improvements €'000	Plant €'000	Motor vehicles €'000	Office equipment €'000	Total €'000
Depreciation and impairment										
At 1 January 2005	2,431	-	25,321	1,213	-	735	9,655	6,079	1,148	46,582
Charge for period	-	-	10,241	797		713	5,566	1,508	793	19,618
Impairment	406	-	-	-		-	-	-	-	406
Disposals	-	-	-	(82)	-	-	(694)	(1,909)	(3)	(2,688)
Transfers	(73)	-	5	-	-	29	41	-	(2)	-
At 31 March 2006	**2,764**	**-**	**35,567**	**1,928**	**-**	**1,477**	**14,568**	**5,678**	**1,936**	**63,918**
Net book value										
At 1 January 2005	11,675	38,852	7,679	28,582	9,539	1,649	10,834	2,713	1,363	112,886
At 31 March 2006	**12,796**	**13,996**	**56,345**	**29,769**	**9,539**	**1,420**	**16,771**	**1,774**	**1,653**	**144,063**

7 Property, plant and equipment *(continued)*

At 31 March 2007, the Group held land options which could potentially result in a capital spend of €4.1 million subsequent to 31 March 2007 *(31 March 2006: €6.2 million)*.

During the year ended 31 March 2007, the Directors considered the carrying value of certain assets in development and in the opinion of the Directors an amount of €384,000 *(31 March 2006: €406,000)* was impaired relating to costs capitalised for projects that will ultimately not be constructed. The Directors do not consider there to be any impairment in respect of the remaining carrying value of assets in development, assets in construction and land balances at 31 March 2007, all of which are not depreciated, based on expected future successful outturn in respect of these assets and the related projects.

Assets in development related to those costs capitalised on landfill projects, which have not yet commenced construction. Assets in construction represent assets in the course of constructions that have not been commissioned. In the opinion of the Directors, these capitalised costs are appropriately presented within property, plant and equipment.

The Directors do not consider the remaining useful lives of property, plant and equipment to be materially different from the period over which the assets are being depreciated.

Details of the key sources of estimated uncertainty and judgement in determining the carrying value of property, plant and equipment are set out in Note 27.

Leased plant and machinery

The Group leases equipment, principally items of plant, under a number of finance lease agreements. At the end of each lease term the Group has the option to purchase the equipment at a beneficial price. At 31 March 2007, the net carrying amount of leasehold plant was as follows:

	31 March 2007 €'000	31 March 2006 €'000
Net book value, start of year	**3,533**	5,104
Additions through business combinations	**538**	623
Depreciation for year	**(1,331)**	(2,194)
Net book value, end of year	**2,740**	3,533

Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on Waste Electrical and Electronic equipment was introduced on 13 August 2005. The Group has adopted a comprehensive policy on collection, treatment, recovery, reuse and recycling of waste and does not believe that the introduction of this directive will have a material effect on the carrying cost of property, plant and equipment purchased prior to 13 August 2005. The cost of collection, treatment, recovery and recycling of property, plant and equipment purchased subsequent to 13 August 2005 is financed through the payment of charges on acquisition. These charges are capitalised as part of the cost of the related asset and depreciated over the assets' expected useful life.

8 Intangible assets

The movements during the year in respect of intangible assets, which comprise computer software and customer lists, were as follows:

	Computer software €'000	Customer lists €'000	Total €'000
Cost			
Balance at 1 January 2005	1,047	-	1,047
Additions during period - through business combinations	-	2,448	2,448
- other	633	-	633
Balance at 31 March 2006	1,680	2,448	4,128
Additions during year - through business combinations	-	3,200	3,200
- other	170	-	170
Disposals	(22)	-	(22)
Transfers	329	-	329
Balance at 31 March 2007	**2,157**	**5,648**	**7,805**
Amortisation			
Balance at 1 January 2005	97	-	97
Amortisation for period	283	310	593
Balance at 31 March 2006	380	310	690
Amortisation for year	372	793	1,165
Disposals	(22)	-	(22)
Transfers	(4)	-	(4)
Balance at 31 March 2007	**726**	**1,103**	**1,829**
Net book value			
At 1 January 2005	950	-	950
At 31 March 2006	1,300	2,138	3,438
At 31 March 2007	**1,431**	**4,545**	**5,976**

The amortisation charge is recognised within administration expenses in the income statement.

9 Goodwill

Goodwill has arisen on the acquisition of various collection and transfer businesses across the Republic of Ireland, in respect of the following cash generating units:

	Leinster €'000	Munster €'000	Southeast €'000	Connaught €'000	Total €'000
Balance at 31 March 2006	18,697	6,709	1,188	196	26,790
Additions arising through					
- business combinations	-	-	9,690	-	9,690
- other	-	-	100	-	100
Balance at 31 March 2007	**18,697**	**6,709**	**10,978**	**196**	**36,580**

Impairment tests for cash-generating units containing goodwill

The recoverable amount of the underlying collection and transfer cash generating units was estimated based on value in use calculations. These calculations use cash flow projections based on actual operating results and financial budgets approved by management covering a 5 year period. A terminal value has been included based on normalised year 5 cash flows, a growth rate in perpetuity of 2% and a pre-tax weighted average cost of capital of 9.5% which are based on experience and are consistent with management's expectations for market development and growth in market share where applicable.

Based on the reviews as described above there is sufficient headroom in respect of each cash generating unit's recoverable amount and therefore, no impairment has arisen.

10 Investment in joint venture

Details of the Group's joint venture is provided in note 25.

The movement in the Group's joint venture balance during the year is as follows:

	€'000
At 31 March 2006	267
Share of profit for the financial year	162
Dividend received in year	(210)
At 31 March 2007	**219**

The Group's proportionate share of its joint venture's assets and liabilities at 31 March 2007 and 31 March 2006 was as follows:

	31 March 2007 €'000	31 March 2006 €'000
Non-current assets	**89**	77
Current assets	**370**	313
Share of gross assets	**459**	390
Current liabilities, being share of gross liabilities	**(240)**	(123)
Investment in joint venture (net)	**219**	267

11 Inventories

	31 March 2007 €'000	31 March 2006 €'000
Consumables	**-**	8

There is no material difference between the carrying values of the Group's inventories and the fair value less costs to sell.

Notes
to the consolidated financial statements (continued)

12 Trade and other receivables

	31 March 2007 €'000	31 March 2006 €'000
All falling due within one year		
Trade receivables	**25,820**	15,677
Other receivables and prepayments	**4,957**	2,871
Amounts due from related parties	**2,168**	464
	32,945	19,012

Trade receivables are shown net of impairment losses amounting to €2.9 million *(2006: €1.5 million)*. The impairment charge for trade receivables for the year was €277,000 *(2006: €206,000)*.

13 Cash and cash equivalents

	31 March 2007 €'000	31 March 2006 €'000
Bank balances, being cash and cash equivalents	**991**	1,254
Bank overdrafts	**(2,731)**	(4,124)
Cash and cash equivalents in the consolidated statement of cashflows	**(1,740)**	(2,870)

14 Assets classified as held for sale

Assets held for sale represents a property which the Group plans to sell in the next twelve months. In the opinion of the Directors, the sale of this property at above its carrying value is highly probable.

Notes
to the consolidated financial statements (continued)

15 Capital and reserves

Reconciliation of movement in capital and reserves

	Share Capital €'000	Share Premium €'000	Retained Earnings €'000	Cash flow hedge reserve €'000	Share capital redemption reserve €'000	Total €'000	Minority interests €'000	Total equity €'000
Balance at 1 January 2005 - before application of IAS 39	7,600	2,432	33,980	-	-	44,012		44,012
Effect of adoption of IAS 39	-	-		(388)	-	(388)	-	(388)
Balance at 1 January - with adoption of IAS 39	7,600	2,432	33,980	(388)	-	43,624	-	43,624
Total recognised income and expense	-	-	12,631	617	-	13,248	1	13,249
Balance at 31 March 2006	**7,600**	**2,432**	**46,611**	**229**	**-**	**56,872**	**1**	**56,873**
Balance at 1 April 2006	7,600	2,432	46,611	229	-	56,872	1	56,873
Total recognised income and expense	-	-	22,142	479	-	22,621	(52)	22,569
Share options exercised	21	290	(11)	-	11	311	-	311
Balance at 31 March 2007	**7,621**	**2,722**	**68,742**	**708**	**11**	**79,804**	**(51)**	**79,753**

Notes
to the consolidated financial statements (continued)

15 Capital and reserves *(continued)*

Share capital	**31 March 2007 €'000**	31 March 2006 €'000
Authorised		
4,999,999 ordinary shares of €1 each	**5,000**	5,000
5,000,000 'A' ordinary shares of €1 each	**5,000**	5,000
5,000,000 'B' ordinary shares of €1 each	**5,000**	5,000
1 'C' ordinary share of €1 each	**-**	-
500,000 'D' ordinary shares of €1 each	**500**	500
	15,500	15,500
Allotted, called up and fully paid		
3,800,000 'A' ordinary shares of €1 each	**3,800**	3,800
3,800,000 'B' ordinary shares of €1 each	**3,800**	3,800
1 'C' ordinary shares of €1 each	**-**	-
20,803 'D' ordinary shares of €1 each	**21**	-
	7,621	7,600

The A, B and D ordinary shares carry an entitlement to the same dividend per share while the C ordinary share carries no rights to dividends. The A, B, and C shares carry one vote per share while the D shares carry no right to vote except in the event of an offer being made to acquire the entire issued shares in the capital of the Company or if the shares of the Company become listed. All shares rank pari passu in a winding up of the Company except that the C share has no right to participate in any surplus assets.

16 Share based payments

During 2003, the Group established a share option programme that conditionally grants share options in the Company to management personnel.

All options are settled by physical delivery of shares or their cash equivalent value at the exercise date. The terms and conditions of the grants are as follows:

Grant date	Number of instruments	Vesting conditions	Earliest exercise date
25 April 2003	180,000	Service, EPS growth target, personal milestones	1 January 2006
15 March 2004	225,000	Service, EPS growth target, personal milestones	1 January 2006
11 May 2005	65,000	Service, EPS growth target, personal milestones	1 January 2007
25 May 2006	50,000	Service, EPS growth target, personal milestones	1 May 2008

The number and weighted average exercise prices of share options is as follows:

	Weighted average exercise price 2007 €	**31 March 2007 Number of options**	**31 March 2007 Employee benefit liability €'000**	Weighted average exercise price 2006 €	31 March 2006 Number of options	2006 Employee benefit liability €'000
Outstanding at beginning of year	**1**	**418,168**	**5,141**	1	385,000	2,194
Forfeited during year	**1**	**(18,244)**	**(290)**	1	(31,832)	(494)
Granted during year	**1**	**50,000**	**699**	1	65,000	303
Exercised during the year	**1**	**(32,278)**	**(473)**		-	-
Uplift in fair value during year		**n/a**	**1,837**		n/a	3,138
Outstanding at end of year		**417,646**	**6,914**		418,168	5,141
Exercisable at end of year		**274,872**			123,585	

Notes
to the consolidated financial statements (continued)

16 Share based payments *(continued)*

The options outstanding at 31 March 2007 all have an exercise price of €1 and a weighted average contractual life of 5.1 years.

The fair value of services received in return for share options granted are measured by reference to the fair value of share options granted. The estimate of the fair value of the services received is measured based on a binomial lattice model. The contractual life of the option (4-7 years) is used as an input into this model.

There is no expectation of early exercise incorporated into the model as the scheme only provides for an exit mechanism at the end of the scheme in 2010. Employees who leave the Company ahead of the closing date may exercise those shares which have vested at that time. The Company fully expects all members of the scheme to remain in the employment of the Company until the scheme's closing date.

Key assumptions	**Options granted during year ended 31 March 2007 €**	Options granted during 15 month period ended 31 March 2006 €
Fair value at measurement date	**20.48**	16.53
Share price	**21.37**	17.50
Exercise price	**1.00**	1.00
Expected volatility (expressed as weighted average volatility used in the model)	**30%**	30%
Option life (expressed as weighted average life used in the modelling under binomial lattice model)	**5.1 years**	5.2 years
Expected dividends	**-**	-
Risk-free interest rate (based on national government bonds)	**5%**	5%

The expected volatility is based on the historic volatility of similar companies (calculated based on the weighted average remaining life of the share options), adjusted for any expected changes to future volatility due to publicly available information.

As the Company's shares are not publicly listed, the share price used to determine the fair value of options granted during the year and prior period arises from periodic valuations of the Company's shares performed by external experts engaged by the Directors.

17 Interest-bearing loans and borrowings

This note provides information about the contractual terms of the Group's interest-bearing loans and borrowings. IAS 32 *Financial Instruments: Presentation and Disclosure* and IAS 39 *Financial Instruments: Recognition and Measurement* have been applied from 1 January 2005. The impact of adoption of these standards on 1 January 2005 is reflected in the Statement of Recognised Income and Expense. This note and note 22 set out the disclosures in accordance with IAS 32 and 39 for the year ended 31 March 2007 and for the period ended 31 March 2006.

	31 March 2007 €'000	31 March 2006 €'000
Non-current liabilities		
Bank loans (Note 17 (i) (a))	**71,683**	74,497
Finance lease liabilities (Note 17 (ii))	**1,234**	2,437
	72,917	76,934

Current liabilities	**31 March 2007 €'000**	31 March 2006 €'000
Finance lease obligations (Note 17 (ii))	**1,362**	1,453
Shareholder loans (Note 17 (i) (b))	**15,177**	15,177
	16,539	16,630

17 Interest-bearing loans and borrowings *(continued)*

(i) Bank and related party borrowings fall due as follows	**31 March 2007 €'000**	31 March 2006 €'000
- within one year	**-**	-
- one to two years	**-**	-
- two to five years (a)	**71,683**	74,497
- no fixed repayment date (shown as less than one year) (b)	**15,177**	15,177
	86,860	89,674

(a) The Group refinanced its bank facilities in February 2006. The new facility consists of €150.0 million to facilitate ongoing investment and a €50.0 million acquisition tranche. At 31 March 2007, €72.1 million of the new facility was drawn down and is shown net of unamortised fees of €0.4 million.

The €72.1 million drawn down at 31 March 2007 bears interest at a floating rate related to Euribor. The loan is repayable within two to five years from the balance sheet date and is secured by way of a floating charge over the assets of the Group. See note 22 for details of interest rate swaps.

(b) These loans are due 50:50 to NTR plc and Celtic Utilities Limited, and are interest free, unsecured and repayable on demand.

(ii) Finance lease obligations

Finance lease obligations fall due as follows:

	31 March 2007 €'000	31 March 2006 €'000
Between one and two years	**900**	1,265
Between two and five years	**334**	1,172
	1,234	2,437
Due within one year	**1,362**	1,453
	2,596	3,890

18 Employee benefits

	31 March 2007 €'000	31 March 2006 €'000
Greater than 1 year		
Share based payments accrual	**6,914**	5,141
Less than 1 year		
Pension costs outstanding	**128**	110

The Group's total pension costs in respect of its defined contribution plan for the year to 31 March 2007 was €0.6 million *(15 month period ended 31 March 2006: €0.7 million)*. Pension costs outstanding at 31 March 2007 were €0.1 million *(31 March 2006: €0.1 million)*.

19 Provisions

	Site Restoration €'000	Aftercare €'000	Restructuring €'000	Deferred consideration €'000	Other €'000	Total €'000
Balance, start of year	6,043	767	856	1,237	-	8,903
Provision made during the year	2,815	-	-	-	-	2,815
Aftercare charges for the year		1,308	-	-	-	1,308
Released during the year	(1,069)	-	-	-	-	(1,069)
Expenditure in the year	(792)	-	(500)	(1,237)	-	(2,529)
Unwinding of discount in the year	326	132	-	-	-	458
Acquisitions during year	-	-	-	500	300	800
Balance, end of year	**7,323**	**2,207**	**356**	**500**	**300**	**10,686**

Notes
to the consolidated financial statements (continued)

19 Provisions *(continued)*

	31 March 2007 €'000	31 March 2006 €'000
Payable within one year	**2,339**	3,410
Payable after more than one year	**8,347**	5,493
	10,686	8,903

In accordance with Accounting Policy (r), the Group makes provision for the costs expected to be incurred in order to restore and care for its landfill and other sites. The provisions are based on management's experience as to a best estimate of the costs that will ultimately be incurred and the timing of those costs. These estimates are reviewed annually.

Restoration provisions will become payable as landfill sites near their end of life.

The deferred consideration relates to conditional obligations in respect of certain acquisitions and is payable within one year of the acquisition date.

The restructuring provision is in relation to the cost of redundancy and remuneration restructuring programmes. It is expected that all costs will be payable within one year.

The other provision of €300,000 is in relation to a court case pending against one of the companies acquired during the year.

Notes
to the consolidated financial statements (continued)

20 Deferred tax assets/(liabilities)

	31 March 2007			31 March 2006		
	Assets €'000	**Liabilities €'000**	**Total €'000**	Assets €'000	Liabilities €'000	Total €'000
Property, plant and equipment	**29**	**(394)**	**(365)**	144	(260)	(116)
Intangible assets	**5**	**(269)**	**(264)**	-	(274)	(274)
Employee benefits	**8**	**-**	**8**	12	-	12
Provisions	**67**	**-**	**67**	96	-	96
Capitalised expenses	**-**	**(405)**	**(405)**	-	(338)	(338)
Tax value of tax losses carried forward recognised	**-**	**-**	**-**	39	-	39
Derivative financial assets/ liabilities	**-**	**(101)**	**(101)**	6	(38)	(32)
	109	**(1,169)**	**(1,060)**	297	(910)	(613)

At 31 March 2007 there were no unrecognised deferred tax assets.

20 Deferred tax assets/(liabilities) *(continued)*

Movement in temporary differences during the year

	Balance 1 January 2005 €'000	IAS 39 adoption 1 January 2005 €'000	Recognised in income €'000	Recognised in equity €'000	Business combinations €'000	Balance 31 March 2006 €'000	Recognised in income €'000	Recognised in equity €'000	Business combi-nations €'000	Balance 31 March 2007 €'000
Property, plant and equipment	(82)	-	(34)	-	-	(121)	(20)	-	(219)	(365)
Employee benefits	12	-	-	-	-	12	(4)	-	-	8
Provisions	41	-	55	-	-	96	(29)	-	-	67
Capitalised expenses	(173)	-	(165)	-	-	(338)	(67)	-	-	(405)
Tax value of loss carried forward recognised	39	-	-	-	-	39	(39)	-	-	-
Derivative financial assets/(liabilities)	-	55	-	(87)	-	(32)	-	(69)	-	(101)
Intangible assets	-	-	(5)	-	(269)	(274)	10	-	-	(264)
	(163)	55	(149)	(87)	(269)	(613)	(159)	(69)	(219)	(1,060)

21 Trade and other payables	**31 March 2007 €'000**	31 March 2006 €'000
Trade payables	**4,172**	4,971
Accruals	**23,595**	14,939
Deferred revenue	**2,847**	2,065
VAT payable	**812**	159
Amounts due to related parties	**24**	85
	31,450	22,219

22 Financial instruments

Exposure to credit and interest rate risk arises in the normal course of the Group's business. Derivative financial instruments are used to hedge exposure to fluctuations in interest rates.

Credit risk
Management has a credit policy in place and the exposure to credit risk is monitored on an ongoing basis. Credit evaluations are performed on all customers requiring credit over a certain amount. The Group does not require collateral in respect of financial assets.

Transactions involving derivative financial instruments are with counterparties with sound credit ratings. Given their high credit ratings, management does not expect any counterparty to fail to meet its obligations.

At the balance sheet date there were no significant concentrations of credit risk. The maximum exposure to credit risk is represented by the carrying amount of each financial asset in the balance sheet.

Interest rate risk

Hedging
The Group adopts a policy of ensuring that between 50 and 60 percent of its exposure to changes in interest rates on borrowings is on a fixed rate basis. Interest rate swaps, denominated in euro, have been entered into to achieve an appropriate mix of fixed and floating rate exposure within the Group's policy. The swaps mature between October 2007 and July 2010 and have fixed swap rates ranging from 2.76 per cent to 3.89 per cent. At 31 March 2007 the Group had interest rate swaps with a notional contract amount of €50 million.

The net fair value of interest rate swaps including deferred taxation at 31 March 2007 was an asset of €809,000 *(31 March 2006: €261,000)* comprising assets of €809,000 *(31 March 2006: €306,000)* and liabilities of €nil *(31 March 2006: €45,000)*. The net deferred taxation liability on the interest rate swaps at 31 March 2007 was €101,000 *(31 March 2006: €32,000)*. The cash flow hedge reserve comprises the effective provision of the cumulative net change in the fair value of cash flow hedging instruments related to the fair value of hedging transactions that have not yet occurred.

22 Financial instruments *(continued)*

Nature of derivative financial instruments

Nature of derivative as at 31 March 2007

Type of hedge	Hedge period	Underlying hedge	Notional payable amount of contracts outstanding €'000	Notional receivable amount of contracts outstanding €'000	Fair value asset €'000	Fair value liability €'000
Corporate debt facility	5 years	Interest rate	42,500	42,500	809	-

Nature of derivative as at 31 March 2006

Type of hedge	Hedge period	Underlying hedge	Notional payable amount of contracts outstanding €'000	Notional receivable amount of contracts outstanding €'000	Fair value asset €'000	Fair value liability €'000
Corporate debt facility	5 years	Interest rate	35,000	37,500	306	45

22 Financial instruments *(continued)*

Effective interest rates and re-pricing analysis

In respect of income-earning financial assets and interest-bearing financial liabilities, the following table indicates their effective interest rates at the balance sheet date and the periods in which they re-price.

	31 March 2007							31 March 2006						
	Next repricing date	**Effective interest rate***	**Total**	**6 months or less**	**6-12 months**	**1-2 years**	**2-5 years**	Next repricing date	Effective interest rate*	Total	6 months or less	6-12 months	1-2 years	2-5 years
Cash and cash equivalents														
Bank balances		**0.00%**	**991**	**991**	**-**	**-**	**-**		0.00%	1,254	1,254	-	-	-
Bank overdrafts		**3.80%**	**(2,731)**	**(2,731)**	**-**	**-**	**-**		2.92%	(4,124)	(4,124)	-	-	-
			(1,740)	**(1,740)**	**-**	**-**	**-**			(2,870)	(2,870)	-	-	-
Secured bank loans														
Non current bank loan	19/04/2007	**4.70%**	**(72,100)**	**-**	**-**	**-**	**(72,100)**	24/04/2006	3.55%	(75,105)	-	-	-	(75,105)
Prepaid arrangement fees			**417**	**-**	**-**	**275**	**142**			608	-	-	466	142
Shareholder loans		**0.00%**	**(15,177)**	**(15,177)**	**-**	**-**	**-**		0.00%	(15,177)	(15,177)	-	-	-
Finance lease liabilities		**6.39%**	**(2,596)**	**-**	**(1,362)**	**(900)**	**(334)**		7.48%	(3,890)	-	(1,453)	(1,265)	(1,172)
			(89,456)	**(15,177)**	**(1,362)**	**(625)**	**(72,292)**			(93,564)	(15,177)	(1,453)	(799)	(76,135)

* Post interest rate swaps, if applicable

The non current bank loan and bank overdraft bear interest at floating rates. In connection with the non current bank loan, interest rate swaps have been entered into, in order to fix the interest rate.

22 Financial instruments *(continued)*

Foreign currency risk

The Group incurs no foreign currency risk on sales and borrowings as they are all denominated in euro. The Group incurs immaterial foreign exchange currency risk on purchases.

Sensitivity analysis

In managing interest rate risks the Group aims to reduce the impact of short-term fluctuations on the Group's earnings. Over the long term, however, permanent changes in interest rates would have an impact on consolidated earnings.

At 31 March 2007 it is estimated that a general increase of one percentage point in interest rates would decrease the Group's profit before tax by approximately €0.7 million *(31 March 2006: €0.3 million*). Interest rate swaps have been included in this calculation.

Fair value

Fair values of foreign exchange derivatives have been determined with reference to closing exchange rates at the balance sheet date.

Fair values of interest rate derivatives have been determined with reference to closing interest rates at the balance sheet date.

Derivative financial instruments	**31 March 2007 €000**	31 March 2006 €000
Included in non-current assets		
Fair value of interest rate swaps	**809**	306
Included in non-current liabilities		
Fair value of interest rate swaps	**-**	(45)
Balance at end of year/period	**809**	261

23 Commitments and guarantees

Operating lease commitments

At 31 March 2007, the Group had the following operating lease commitments payable in respect of plant, premises and motor vehicles, where the lease term expires as follows:

	31 March 2007		31 March 2006	
	Annual commitment €'000	**Total commitment €'000**	Annual commitment €'000	Total commitment €'000
Less than 1 year (premises)	**416**	**416**	327	327
Less than 1 year (motor vehicle)	**109**	**81**	87	54
Less than 1 year (plant)	**-**	**-**	225	225
Between 2 and 5 years (premises)	**310**	**1,240**	468	1,545
Between 2 and 5 years (motor vehicle)	**2,530**	**9,785**	316	626
After 5 years (premises)	**548**	**7,842**	163	1,458
	3,913	**19,364**	1,586	4,235

The operating leases tend to have terms ranging from 1 to 20 years and all leases have standard lease terms and conditions. The property leases tend to have periodic rent reviews to reflect market rentals.

Capital commitments

	31 March 2007 €'000	31 March 2006 €'000
The Group had the following capital commitments:		
Contracted for	**766**	1,239
Committed but not contracted for	**11,188**	10,903
	11,954	12,142

Financial guarantee contracts

Where the Company enters into financial guarantee contracts to guarantee the indebtedness of other parties including companies within the Group or joint ventures, the Company considers these to be insurance arrangements and accounts for them as such. The Company treats the guarantee contract as an insurance contract until such time as it becomes probable that the Company will be required to make a payment under the guarantee.

24 Control of the Group and related party transactions

Identity of related parties

The Company is a subsidiary of NTR plc, which holds 50% of the issued share capital plus one voting share. The remainder of the issued share capital is held by Celtic Utilities Limited, which is a 76.95% owned subsidiary of NTR plc. NTR plc thus has a total interest in the Company of 88.45%.

During the year and previous period, the Group incurred expenses and earned income from the following related parties (NTR plc and subsidiary companies), which resulted in the following amounts being charged/(credited) to the income statement:

		Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
NTR Finance Luxembourg Sarl	Interest	**-**	69
NTR Treasury Luxembourg Sarl	Interest & commitment fees	**-**	2,587
NTR plc	Expenses incurred on behalf of the Group	**22**	74
NTR plc	Central services	**93**	101
NTR plc	Management fees	**5**	26
NTR plc	Expenses incurred on behalf of the Parent	**(115)**	-
NTR Leasing Limited	Rent	**25**	-
Airtricity Limited	Revenue earned	**(1,032)**	(506)
Bioverda Limited	Transfer of development assets	**1,600**	-
Bioverda Limited	Expenses incurred on behalf of group	**64**	-
Bioverda Limited	Interest charged on loans	**(73)**	-

25 Subsidiaries

At 31 March 2007, the Company had the following subsidiaries, all of which were incorporated in the Republic of Ireland and have their registered office at Burton Court, Burton Hall Road, Sandyford, Dublin 18:

Name	Activity	Ownership
KTK Landfill Limited	Landfill operation	100%
Greenstar Connaught Limited	Landfill operation	100%
Greenstar North East Limited	Landfill operation	100%
Greenstar South East Limited	Waste collection and recycling	100%
Greenstar Properties Limited	Property holding and development	100%
Greenstar Finance Company Limited	Treasury operations	100%
Celtic Waste Recycling Limited	Non trading	100%
Greenstar Limited	Waste collection and recycling	100%
Greenstar Recycling (Munster) Limited	Waste collection and recycling	100%
Greenstar Recycling Limited	Non trading	100%
Leeway 20/20 Limited*	Non trading	50%
Greenstar Gas Energy Limited	Landfill gas electricity generation	75%
KSP Recycling Services Limited	Non trading	100%
Greenbed Holdings Limited *(formerly Arklumber Limited)*	Non trading	100%
Glyntown Enterprises Limited	Waste collection and recycling	100%
Greenstar Waterford Limited *(formerly Ormonde Waste Limited)*	Waste collection and recycling	100%
Greenstar Wexford Limited *(formerly Ormonde Waste Holdings Limited)*	Waste collection and recycling	100%
South East Recycling Limited	Non-trading	100%
Sewmar Limited	Non-trading	100%
Waterford Utility Services (Waste Disposal) Limited	Non-trading	100%

During the year, Casa Sandy Downes One Limited, Casa Sandy Downes Two Limited and Completion Limited were liquidated.

* Treated as a subsidiary because the Group has the power to control more than 50% of the share capital of the entity.

25 Subsidiaries *(continued)*

Joint venture

At 31 March 2007, the Company had the following joint venture which was incorporated in the Republic of Ireland.

Name	Activity	Registered office	Ownership
Milltown Composting Systems Limited	Composting facility	Sarsfield House Sarsfield Road Wilton Cork	50%

26 Business combinations

On 1 October 2006, the Group acquired 100% of the ordinary share capital of Ormonde Waste Limited; a holding company with three subsidiaries in the collection and transfer business: Sewmar Limited, South East Recycling Limited and Waterford Utility Services Limited.

The profit after tax in respect of the companies acquired, for the period from date of acquisition to 31 March 2007, was €501,000.

If the acquisition had occurred on 1 April 2006, Group revenue and profit after tax for the year ended 31 March 2007 would have increased by €18,575,000 and €1,056,000 respectively.

26 Business combinations *(continued)*

The Group acquired the following aggregate assets and liabilities during the year:

	Carrying value €'000	Fair value adjustments €'000	Fair value €'000
Intangible assets	-	3,200	3,200
Property, plant & equipment	3,771	1,077	4,848
Trade receivables	4,096	(619)	3,477
Cash and cash equivalent acquired	-	-	(395)
Interest bearing loans	(5,103)	-	(5,103)
Trade payables	(4,568)	(162)	(4,730)
Other payables	-	(468)	(468)
Restoration provision	-	(300)	(300)
Deferred tax		(219)	(219)
Net identifiable assets/(liabilities)	(1,804)	2,977	310
Goodwill			9,690
Consideration			10,000
Less: deferred consideration			(500)
Consideration paid, satisfied in cash			9,500
Cash and cash equivalent acquired			395
Net cash outflow			9,895

During the prior period the Group made a number of acquisitions of collection and transfer businesses as follows:

- 100% of the trade and assets of Seamus A. Kelly & Sons on 31 March 2005
- 75% of the ordinary share capital of KSP Recycling Services Limited on 24 February 2005 and the remaining 25% on 13 March 2006.
- 50% of the ordinary share capital of Milltown Composting Systems Limited on 30 May 2005
- 100% of the trade and assets of Waste Disposal Sligo on 23 September 2005
- 100% of the ordinary share capital of Glyntown Enterprises Limited on 27 February 2006

26 Business combinations *(continued)*

The profit or loss after tax in respect of each of the acquisitions, for the period from date of acquisition to 31 March 2006, is detailed below:

Seamus A. Kelly & Sons	€54,000 loss
KSP Recycling Services Limited	€352,000 loss
Milltown Composting Systems Limited	€222,000 profit
Waste Disposal Sligo	€12,000 profit
Glyntown Enterprises Limited	€70,000 profit

If the acquisitions had occurred on 1 January 2005, Group revenue and profit after tax for the 15 month period ended 31 March 2006 would have increased by €7,883,000 and €1,116,000 respectively.

The Group acquired the following aggregate assets and liabilities during the 15 month period ended 31 March 2006:

	Carrying value €'000	Fair value adjustments €'000	Fair value €'000
Intangible assets	-	2,448	2,448
Property, plant & equipment	1,991	-	1,991
Inventories	30	-	30
Trade receivables	1,013	(148)	865
Cash and cash equivalents	108	-	108
Interest bearing loans	(453)	-	(453)
Trade payables	(277)	-	(277)
Restoration provision	-	(150)	(150)
Deferred tax	-	(269)	(269)
Net identifiable assets and liabilities	2,412	1,881	4,293

Notes
to the consolidated financial statements (continued)

26 Business combinations *(continued)*

The prior period acquisitions had the following effect on the Group's assets and liabilities:

Name of entity/trade and assets acquired	Seamus A. Kelly & Sons €'000	KSP Recycling Services Limited €'000	Milltown Composting Systems Limited €'000	Waste Disposal Sligo €'000	Glyntown Enterprises Limited €'000	Total €'000
Intangible assets	1,296	-	-	752	400	2,448
Property, plant & equipment	268	48	495	588	592	1,991
Inventories	-	30	-	-	-	30
Trade receivables	-	-	24	-	841	865
Cash and cash equivalents	-	(56)	50	-	114	108
Interest bearing loans	-	-	-	-	(453)	(453)
Trade payables	-	(148)	(68)	-	(61)	(277)
Restoration provision	-		-	(150)	-	(150)
Deferred tax	-		-	19	(288)	(269)
Net identifiable assets and liabilities	1,564	(126)	501	1,209	1,145	4,293
Goodwill	1,188	213	-	196	1,201	2,798
Consideration	2,752	87	501	1,405	2,346	7,091
Less deferred consideration	-	-	-	-	(1,237)	(1,237)
Less other payables	(600)	-	-	-	-	(600)
Consideration paid, satisfied in cash	2,152	87	501	1,405	1,109	5,254
Cash and cash equivalents acquired (including bank overdraft)	-	56	(50)	-	(114)	(108)
Net cash outflow	**2,152**	**143**	**451**	**1,405**	**995**	**5,146**

Goodwill acquired represents the premium paid for entry into new geographic and product markets and for synergystic opportunities that will deliver enhanced Group profitability.

Assets and liabilities have been fair valued at date of acquisition. The intangible assets acquired above represent the significant fair value adjustments made to the carrying value of assets acquired.

27 Accounting estimates and judgements

Key sources of estimation uncertainty and critical accounting judgements in applying the Group's accounting policies

Landfill depreciation

In the year ended 31 March 2007, the Group charged landfill depreciation of €12,622,000 to the income statement. Landfill assets are depreciated over the life of the landfill project based on the rate of fill of void space, commencing from the start of landfill operations. Available void space is measured annually, and any resulting impact on the depreciation is recognised prospectively.

Share based payments

See note 16 to the consolidated financial statements.

Intangible assets

Customer Lists
At 31 March 2007, the net book value of customer lists was €4,545,000. The cost of customer lists acquired through business combinations is stated at fair value at the date of acquisition less accumulated amortisation and impairment losses. Customer lists are amortised on a straight line basis, based on predicted churn rate for customer classes acquired.

Computer Software
At 31 March 2007, the net book value of computer software was €1,431,000. Costs that are directly attributable to the production of identifiable and unique software products controlled by the Group, and that will probably generate economic benefits exceeding costs beyond one year, are recognised as intangible assets.

Goodwill

See Note 9 to the consolidated financial statements.

Notes
to the consolidated financial statements (continued)

27 Accounting estimates and judgements *(continued)*

Provisions

Deferred consideration
At 31 March 2007, the provision for deferred consideration was €500,000, which relates to conditional obligations in respect of certain acquisitions. Provision has been made for the likely future payment.

Restoration & aftercare
At 31 March 2007, the site restoration and aftercare provisions were €9,530,000. The provisions are made for the net present value of the Group's costs in relation to restoration liabilities at its landfill sites and of post-closure costs based on the quantity of waste input into the landfill during the period. Current cost estimates are supported by external engineering consultant studies and revised each period. Any resulting change is reflected in the carrying amount of the relevant assets.

Assets in development

At 31 March 2007 the Group had capitalised the costs of assets in development with a net book value of €3,138,000. Costs in relation to assets in development are capitalised where, in the opinion of the directors, the related project will be successfully developed and the economic benefits arising from future operations will at least equal the amount of capitalised expenditure incurred to date.

In the opinion of the Directors, assets in development are appropriately presented within property, plant and equipment – see note 7 to the consolidated financial statements.

28 Post balance sheet events

There have been no significant events since the balance sheet date.

29 Approval of financial statements

The consolidated financial statements were approved by the Directors on 2 August 2007.

Greenstar Holdings Limited

Company balance sheet
at 31 March 2006

	Notes	**31 March 2007 €'000**	31 March 2006 €'000
Fixed assets			
Tangible assets	*2*	**8,071**	20,127
Financial assets	*3*	**39,544**	47,840
		47,615	67,967
Current assets			
Debtors	*4*	**9,090**	796
Cash at bank and in hand		**2,150**	941
		11,240	1,737
Creditors: amounts falling due within one year	*5*	**(34,697)**	(45,921)
Net current liabilities		**(23,457)**	(44,184)
Total assets less current liabilities		**24,158**	23,783
Creditors: amounts falling due after one year	*6*	**(7,874)**	(7,077)
Provisions for liabilities and charges	*7*	**(345)**	(123)
Net assets		**15,939**	16,583
Capital and reserves			
Called up share capital	*10*	**7,621**	7,600
Share premium account		**2,722**	2,432
Profit and loss account		**5,596**	6,551
Shareholders' funds	11	**15,939**	16,583

Notes 1 to 17 form part of these Company financial statements.

On behalf of the board

S. Cowman
Director

A. G. Bailey
Director

Greenstar Holdings Limited

Notes
to the Company financial statements

1 Basis of preparation and summary of significant accounting policies

The financial statements have been prepared in euro in accordance with generally accepted accounting principles under the historical cost convention and comply with financial reporting standards of the Accounting Standards Board, as promulgated by the Institute of Chartered Accountants in Ireland. The accounting policies have been applied consistently throughout the year and the preceding period in dealing with items which are considered material in relation to the Company's financial statements.

Financial assets

Interests in subsidiary undertakings are stated in the Company balance sheet as financial fixed assets, at cost less, where necessary, provisions for impairment.

Tangible assets

Tangible assets are stated at original cost, net of accumulated depreciation and any provisions for impairment.

Costs related to assets in development are deferred where, in the opinion of the Directors, the related project is likely to be successfully developed and the economic benefits arising from future operations will at least equal the amount of deferred expenditure incurred to date. Full provision is made for any impairment in the value of the asset. Interest incurred up to the time that separately identifiable major assets in development are ready for service is capitalised on a gross basis as part of the cost of the assets.

Assets in development and assets in construction are not depreciated. Depreciation is provided on all other tangible assets, at rates calculated to write off the cost, less estimated residual value on a straight line basis over their expected useful lives, as follows:

Equipment	10% - 33%
Motor vehicles	20% - 33%
Leasehold improvements	Over the shorter of the life of the lease or the asset

Notes
to the Company financial statements (continued)

1 Basis of preparation and summary of significant accounting policies *(continued)*

Taxation

Corporation tax is provided on taxable profits at current rates.

Deferred tax is recognised in respect of all timing differences that have originated but not reversed at the balance sheet date where transactions or events that result in an obligation to pay more tax in the future or a right to pay less tax in the future have occurred at the balance sheet date. Timing differences are differences between the Group's taxable profits and its results as stated in the financial statements that arise from the inclusion of gains and losses in tax assessments in periods different from those in which they are recognised in the financial statements.

A net deferred tax asset is regarded as recoverable and therefore recognised only when, on the basis of all available evidence, it can be regarded as more likely than not there will be suitable taxable profits from which the future reversal of the underlying timing differences can be deducted.

Deferred tax is measured at the average tax rates that are expected to apply in the periods in which the timing differences are expected to reverse, based on tax rates and laws that have been enacted or substantively enacted by the balance sheet date. Deferred tax is measured on a non-discounted basis.

Pensions

The Company provides pensions to certain employees through defined contribution schemes. The amount charged to the profit and loss account represents contributions payable in respect of the financial period. Differences between contributions payable in the period and the contributions actually paid are included in either debtors or creditors in the balance sheet.

Leases

Assets held under finance leases, which confer rights and obligations similar to those attached to owned assets, are capitalised as tangible assets and are depreciated over the shorter of the lease terms and their useful lives. The capital elements of the future lease obligations are recorded as liabilities, while the interest elements are charged to the profit and loss account over the period of the leases to produce a constant rate of charge on the balance of capital repayments outstanding.

Rentals under operating leases are charged on a straight line basis over the lease term.

Notes
to the Company financial statements (continued)

1 Basis of preparation and summary of significant accounting policies *(continued)*

Share-based payment transactions

The Company operates a cash settled share based programme which allows employees of the Group to acquire shares in the Company. The fair value of awards granted is recognised as an employee expense with a corresponding increase in liabilities.

The fair values of cash settled awards are initially measured at grant date and spread over the period during which the employee becomes unconditionally entitled to payment. The liability is re-measured to fair value at each balance sheet date until the awards vest and thereafter at settlement amount until settlement date. Any changes in the fair value of the liability are reflected in profit or loss as an employee benefits expense.

Foreign currencies

Transactions denominated in foreign currencies are translated at the exchange rates ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are translated into euro at the rates of exchange ruling at the balance sheet date. The resulting profits and losses are dealt with in the profit and loss account.

Dividends

Dividends on ordinary shares are recognised in equity in the period in which they are approved by the Company's shareholders, or, in the case of an interim dividend, when it has been approved by the Board of Directors and paid.

Cash flow statement

Under the provisions of Financial Reporting Standard No. 1, 'Cash Flow Statements', a cash flow statement has not been prepared as the Company is a wholly owned subsidiary of a company which publishes consolidated financial statements.

Related party transactions

Under the exemption granted by Financial Reporting Standard No. 8, 'Related Party Disclosures', the Company as a wholly owned subsidiary of a group which publishes consolidated financial statements in which the Company is included, is not required to, and does not, disclose transactions with fellow members, associated undertakings and joint ventures of that group.

Notes
to the Company financial statements (continued)

2 Tangible assets

	Assets in development €'000	Assets in construction €'000	Leasehold improvements €'000	Equipment €'000	Motor vehicles €'000	Total €'000
Cost						
Start of year	14,705	4,972	911	3,911	173	24,672
Additions	4,284	1,698	42	331	6	6,361
Disposals	(12,934)	(4,332)	(152)	(243)	(92)	(17,753)
Transfers	-	(640)	-	640	-	-
End of year	**6,055**	**1,698**	**801**	**4,639**	**87**	**13,280**
Depreciation						
Start of year	2,751	-	248	1,398	148	4,545
Charge for year	93	-	38	881	11	1,023
Disposals	-	-	(152)	(129)	(78)	(359)
End of year	**2,844**	**-**	**134**	**2,150**	**81**	**5,209**
Net book value						
Start of year	11,954	4,972	663	2,513	25	20,127
End of year	**3,211**	**1,698**	**667**	**2,489**	**6**	**8,071**

The Company bears obligations under finance leases in relation to assets held by certain subsidiaries.

Notes
to the Company financial statements (continued)

3	**Financial assets**	**31 March 2007**	31 March 2006
	Interest in subsidiaries	**€'000**	€'000
	Share capital – unlisted shares at cost	**39,544**	47,840
	Movement for the year was as follows:	**€'000**	€'000
	At start of year	**47,338**	44,846
	Additions (a)	**10,468**	2,566
	Transfer to group company	**-**	(74)
	Write off of investment (b)	**(18,764)**	-
	At end of year	**39,042**	47,338
	Interest in joint venture		
	At start of year	**502**	-
	Additions	**-**	502
	At end of year	**502**	502
	Total	**39,544**	47,840

(a) Additions represent the investment made during the year in Ormonde Waste Limited. Refer to Note 26 to the consolidated financial statements.

(b) The write off of the investments arises as a number of dormant subsidiary companies were liquidated during the current and previous accounting periods.

In the opinion of the Directors, the value to the Company of the unlisted investments in subsidiary companies and joint venture is not less than the carrying amount. The Company's subsidiaries and joint venture are listed in note 25 to the Group financial statements.

Notes
to the Company financial statements (continued)

4 **Debtors**	**31 March 2007 €'000**	31 March 2006 €'000
Sundry debtors and prepayments	**2,176**	796
Amounts due to group company with respect to the share based payments (note 8)	**6,914**	-
	9,090	796

5 **Creditors:** amounts falling due within one year	**31 March 2007 €'000**	31 March 2006 €'000
Finance lease obligations (note 9)	**979**	945
Shareholder loans	**15,177**	15,177
Accruals	**7,595**	4,901
Corporation tax	**260**	162
Amounts due to related parties/ group undertakings	**10,186**	24,736
Deferred consideration	**500**	-
	34,697	45,921

Deferred consideration arises on the acquisition of Ormonde Waste Limited and is payable within one year.

6 **Creditors:** amounts falling due after more than one year	**31 March 2007 €'000**	31 March 2006 €'000
Finance lease obligations (note 9)	**960**	1,936
Share based payments (note 8)	**6,914**	5,141
	7,874	7,077

Notes
to the Company financial statements (continued)

7	**Provisions for liabilities and charges**	**31 March 2007 €'000**	31 March 2006 €'000
	Deferred tax	**45**	123
	Provision for legal fees	**300**	-
		345	123

The movement on deferred tax liability during the year was as follows:

	Asset €'000	**Liability €'000**	**Total €'000**
At 31 March 2006	-	(123)	(123)
Income statement charge	-	78	78
At 31 March 2007	**-**	**(45)**	**(45)**

The deferred tax liability relates to timing difference resulting in an excess of capital allowances claimed and finance lease obligations met over the depreciation charged in relation to the company's fixed assets.

The provision for the legal fees relates to a legal proceeding which is pending against one of the company's subsidiaries acquired during the year.

8 Share based payments

The employees entitled to share based payments were transferred to another group company at the beginning of the year. The cost of such options was borne by the group company. All options are settled by physical delivery of shares in the company or their cash equivalent at the exercise date. The share based payment liability was €6.9m at 31 March 2007 *(31 March 2006: €5.1m).* At 31 March 2007, a corresponding intergroup receivable has been recognised within debtors as the ultimate liability will be borne by the group company.

See note 16 to the consolidated financial statements for further details of the share based payments.

Notes
to the Company financial statements (continued)

9 Finance lease obligations

Finance lease obligations fall due as follows:	**31 March 2007 €'000**	31 March 2006 €'000
Between one and two years	**737**	976
Between two and five years	**223**	960
	960	1,936
Due within one year (Note 5)	**979**	945
	1,939	2,881

10 Called up share capital

See note 15 to the consolidated financial statements.

11 Movement on reserves

(a) Reconciliation of movement on shareholders' funds	**31 March 2007 €'000**	31 March 2006 €'000
Balance at start of year – as originally stated	**16,583**	20,430
Prior year adjustment	**-**	(2,194)
Balance at start of year – as restated	**16,583**	18,236
Loss for the year	**(955)**	(1,653)
Transactions with shareholders		
Shares issued including premium	**505**	-
Shares redeemed including premium	**(194)**	-
Balance at end of year	**15,939**	16,583

11 Movement on reserves *(continued)*

(b) Movement on reserves	**share Premium Account €'000**	**Capital Redemption Reserve €'000**	**Profit and loss account €'000**	**Total €'000**
Opening balance	2,432	-	6,551	8,983
Loss for the year	-		(955)	(955)
Share premium on issue of shares	473	-	-	473
Share premium on redemption of shares	(183)	-	-	(183)
Transfer to capital redemption reserve	-	11	(11)	-
Closing balance	2,722	11	5,585	8,318

12 Pensions

The Company's total pension costs in respect of its defined contribution plan for the year to 31 March 2007 were €0.6 million *(15 month period ended 31 March 2006: €0.7 million)*. Pension costs outstanding at 31 March 2007 were €0.1 million *(31 March 2006: €0.1 million)*.

13 Operating lease commitments

At 31 March 2007, the Company had operating lease commitments payable during the next 12 months in respect of premises and motor vehicles, where the lease term expires as follows:

	31 March 2007 €'000	31 March 2006 €'000
Less than 1 year (premises)	**49**	91
Less than 1 year (motor vehicles)	**110**	86
Between 2 and 5 years (premises)	**310**	203
Between 2 and 5 years (motor vehicle)	**223**	316
After 5 years (premises)	**-**	-
	692	696

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14 Guarantees in respect of subsidiaries

The Company has guaranteed the liabilities of the subsidiaries listed below for the purpose of obtaining the exemptions allowed under Section 17 of the Companies (Amendment) Act 1986, in relation to the filing of financial statements. This irrevocable guarantee covers the financial year ended 31 March 2007.

Subsidiaries guaranteed
KTK Landfill Limited
Greenstar Properties Limited
Greenstar Limited
Greenstar Finance Company Limited
Greenstar Recycling (Munster) Limited
Greenstar Recycling Limited
Greenstar North East Limited
Greenstar Connaught Limited
Greenstar South East Limited
Glyntown Enterprises Limited
Greenstar Waterford Limited
Greenstar Wexford Limited
South East Recycling Limited
Sewmar Limited
Waterford Utility Services (Waste Disposal) Limited

Where the Company enters into financial guarantee contracts to guarantee the indebtedness of other parties including companies within its Group or joint ventures, the Company considers these to be insurance arrangements and accounts for them as such. The Company treats the guarantee contract as an insurance contract until such time as it becomes probable that the Company will be required to make a payment under the guarantee.

Notes
to the Company financial statements (continued)

15 Employee numbers and expenses

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Wages and salaries	**2,177**	4,125
Social security costs	**249**	518
Defined contribution pension and life assurance costs	**196**	417
Share based payments	**-**	2,948
Other staff costs	**117**	182
	2,739	8,190

The directors' emoluments were borne by another group company during the year. The employees entitled to share based options were transferred to another group company at the beginning of the year. The cost of such options were borne by the group company.

The average number of persons employed by the Company was 25. At the year end there were no employees in the company as all employees were transferred to another group company during the year. The group company has recharged the company for the wages and salaries borne by the group company during the year.

Details of other employee benefits, including transactions with Directors, are set out in note 3 to the Group financial statements.

16 Statutory information

	Year ended 31 March 2007 €'000	15 month period ended 31 March 2006 €'000
Auditor's remuneration	**145**	161
Directors' remuneration	**-**	3,600
Depreciation	**992**	1,449

See Note 25 to the Group financial statements for details of the Company's subsidiaries.

As permitted by Section 148(8) of the Companies Act, 1963 no separate profit and loss account is presented in respect of the Company. The Company recorded a loss for the year of €955,000 *(15 month period ended 31 March 2006: loss of €1,653,000).*

17 Approval of financial statements

The Company financial statements were approved by the Directors on 2 August 2007.

Greenstar Holdings Limited

Directors' report and consolidated financial statements

Year ended 31 March 2007

Registered number: 295816