Granary House
Rutland Street
Cork

Tel. [021]4321521
Fax. [021]4321522

Office of Environmental Enforcement,
South East Region,
Environmental Protection Agency,
P.O. Box 3000,
Johnstown Castle Estate,
Co. Wexford

31st March 2009

RE: 2008 Annual Environmental Report – Greenstar Ltd. – Fassaroe Depot – Reg. No. W0053-03

Dear Sir,

Please find enclosed an original and 2 no. copies of the 2008 Annual Environmental Report (AER) for the above referenced facility. The AER file has been uploaded to the EPA website and is a true copy of the original Annual Environmental Report. The AER/PRTR emissions data reporting workbook has also been uploaded to the EPA website.

.

If you have any queries, please call me.

Yours sincerely,

Jim O' Callaghan

0804804/JOC/MG
Enc.
c.c. Ms Suzanne Byrne, Greenstar Ltd.,
Mr. Cathal O'Cleirigh, Greenstar Ltd. - Fassaroe Depot

Granary House
Rutland Street
Cork

Tel. [021]4321521
Fax. [021]4321522

ANNUAL ENVIRONMENTAL REPORT

FOR GREENSTAR LTD.

INTEGRATED WASTE MANAGEMENT FACILITY

FASSAROE, BRAY,

COUNTY WICKLOW

LICENCE NO. W0053-03

JANUARY – DECEMBER 2008

Prepared For: -

Greenstar Ltd.,
Fassaroe,
Bray,
Co. Wicklow

Prepared By: -

O' Callaghan Moran & Associates,
Granary House,
Rutland Street,
Cork.

31st March 2009

TABLE OF CONTENTS

PAGE

1. INTRODUCTION

This is the 2008 Annual Environmental Report (AER) for the Greenstar Ltd. (Greenstar), Integrated Waste Management Facility at Fassaroe, Bray, County Wicklow (W0053-03) and covers the reporting period January 2008 to December 2008. The AER has been prepared in compliance with Condition 11.11 of the Licence.

The content of the AER is based on Schedule G of the Licence and the report format follows guidelines set in the "*Guidance Note For: Annual Environmental Report*" issued by the Environmental Protection Agency (Agency).

2. SITE DESCRIPTION

2.1 Waste Management Activities

The depot is an integrated waste management facility. The Licence allows the following activities:

- bulking of municipal solid waste prior to transfer off-site for disposal;
- in-vessel composting of biodegradable waste;
- wood shredding;
- processing/storage of dry recyclables;
- recovery of construction and demolition waste;
- acceptance of waste at a civic waste facility, which includes hazardous waste such as bonded asbestos waste, WEEE and chlorofluorocarbons.

With the exception of composting, which has not yet started, all of the other activities are on-going. Suitable inert materials recovered during the processing of the construction and demolition wastes are used to restore those portions of the site formerly used for landfill.

2.1.1 Waste Type & Processes

The facility is licensed to accept a maximum of 200,000 tonnes of waste annually. This comprises the following waste types and volumes, as specified in Schedule A of the Licence: -

- Household and Commercial (143,560 tonnes),
- Construction & Demolition (54,040 tonnes),
- Hazardous (2,400 tonnes).

The following processes are carried out:

Mixed Municipal Solid Waste (MSW)

All mixed MSW containing a putrescible fraction is handled inside the original Transfer Building. The incoming waste is deposited on the floor of the building and is then either pushed into an open trailer or compacted for removal and disposal at an approved off-site residual landfill facility.

Dry Mixed Recyclables (DMR)

DMR is deposited onto the floor of the Phase 1 Transfer Building. Mixed DMR is separated, using a sorting line, into paper, cardboard, aluminium, steel, plastic bottles and plastic film fractions, which are then baled separately and stored pending removal for recycling. Source segregated DMR is baled directly and stored pending consignment.

Non Putrescible Commercial and Industrial (C&I)

Non putrescible C&I waste delivered by waste contractors is off-loaded in the Phase 2 building. Non putrescible C&I from the site's civic waste facility (public and commercial enterprises) is transferred to the Phase 2 building.

The processing is carried out indoors. The materials are pre sorted to remove bulky items and the remaining waste is fed into the C&I/C&D processing line. A 3D trommel is used to remove oversize items and the material then passes through a star-screener unit to remove the fine fraction containing subsoil and topsoil. Over-band magnets are used to separate ferrous metals from the waste. Material is passed through a picking station to remove metals, concrete/stone, timber, hard plastics and residual material.

The fines are sent to landfill for use as cover material. The concrete/stone is sent to the on-site crusher for further processing. Timber is sent to the on-site timber shredder. Metals are stored pending consignment from the site to an approved facility.

Construction and Demolition (C& D) Waste

The material is processed inside the Phase 2 building using the same processing line as for the C& I wastes described above. The fines are sent to landfill for use as cover material. The concrete/stone is sent to the on-site crusher to produce an inert aggregate (some of which is used for onsite restoration). Timber is sent to the on-site timber shredder. Metals are stored pending consignment from the site.

Wood, Timber and Green Waste

The wood and timber recovered on-site is shredded externally in the north of the site and sent off-site for disposal or recovery. Untreated timber accepted at the site is classed as A-grade timber and segregated from treated & recovered timber.

Green waste is stored pending transfer to an off-site composting facility. Although the Licence allows for in-vessel composting of biodegradable waste, this has not yet started.

Civic Amenity Area

The civic amenity area is located to the Northwest of the original Transfer Building. There are two closed 14 yard skips for MSW and separate bays for timber, green waste, metals and mixed wastes.

Hazardous Wastes

The Licence allows the acceptance of small volumes of hazardous waste at the civic amenity area (WEEE, bonded asbestos materials and chlorofluorocarbons). These wastes are stored in the waste quarantine area in suitable receptacles pending removal off site to approved facilities.

2.1.2 Plant List

A list of the plant in use at the facility is given in Table 2.1. The plant provide 100% duty and 50% standby for waste processing.

Table 2.1 Existing Plant

No.	Plant	Model	Processing Capacity
1	Fuchs Grab F4	MHL340	30t/hr
1	Liebherr Grab/Excavator	R914	60t/hr
1	Hitachi Grab/Excavator	ZX200	60t/hr
1	Volvo Loading Shovel	L70E	20t/hr
2	Liebherr Loading Shovel	564	85t/hr
1	O&K Loading Shovel	L15.5	20t/hr
1	Mitsubishi Forklift	2.5t	15hr/wk
1	Mitsubishi Forklift	3.0t	65hr/wk
1	JCB Teletruk	3.5t	65hr/wk
1	Forklift Road Sweeper	MS 750 C	15hr/wk
1	DMR Process line	Turmec	8t/hr
1	DMR Baler	Bollegraaf HBC 60	70t/day
1	Generator	FG Wilson	78hr/week
1	C&I/C&D Process Line	Waltec	35t/hr
1	Erin Stone Screener	Fingerscreen	400t/day
1	Hammel Timber Pre Shredder	VB 750 D	30t/hr
1	Beast Timber shredder	3680	40t/hr
1	Tractor	Massey Ferguson 4255	2hr/wk
1	Extec stone crusher	Mega Bite	80t/hr
1	MSW compactor		80t/day
1	Weighbridge 2 Scales	RiteWeigh Aran Series	62hr/wk

3. EMISSION MONITORING

Greenstar implements a comprehensive environmental monitoring programme to assess the significance of emissions from site activities. The programme includes groundwater, surface water, leachate, sewer emissions, landfill gas, biological, noise and dust monitoring. The monitoring locations are shown on Figure 3.1. The monitoring results are submitted to the Agency at quarterly intervals. An overview of the monitoring conducted in the reporting period is presented in this Section, with summary data tables in Appendix 1.

3.1 Groundwater

There were three (3) on-site groundwater monitoring wells (BH-2, BH-5 and BH-7) in 2008. The wells are positioned downgradient of the former landfill area. An upgradient monitoring well (BH-6) was removed in September 2007 as part of the on-going construction works as agreed with the Agency. Greenstar agreed an alternative location for the replacement BH-6 with the Agency and this well was installed in March 2009.

3.1.1 Groundwater Levels

Groundwater levels were recorded at quarterly intervals in each of the wells. Based on the level data the direction of groundwater flow is north easterly.

3.1.2 Groundwater Quality

Groundwater quality was monitored at quarterly intervals. The sampling and analysis was carried out in accordance with recognised quality assurance and control procedures. The range of analysis was as specified in Schedule C of the Waste Licence and includes pH, electrical conductivity, organic, inorganic and microbiological parameters.

The water quality in the three wells was generally consistent with that established in the previous monitoring and is generally reflective of the sites historic use as a landfill. The facility operated as both a quarry and landfill between 1947 and 2000. In 2006 Greenstar submitted proposed groundwater trigger levels to the Agency for its approval. Since 2006 the proposed trigger levels for conductivity and chloride in BH-2 and BH-5 have occasionally been exceeded.

3.1.3 Estimated Annual and Cumulative Quantity of Emissions to Groundwater

There are no direct emissions to groundwater. Indirect emissions include incident rainfall and storm water run-off from paved areas. There were no changes to the site layout and operation during the reporting period that resulted in new or additional sources of direct or indirect discharges to groundwater.

All surface water from the paved areas and buildings is diverted away from the filled areas thereby reducing the potential indirect impact of surface water on groundwater quality. Section 3.2 discusses the quantities of emissions to surface water.

3.2 Surface Water

The surface water drainage system in and around the site is dominated by the proximity of the Glenmunder Stream along the north eastern boundary. The Glenmunder ultimately drains to the River Dargle, which is a designated salmonoid river. Surface water run-off from the roof of the new administration building and new car park area discharges to the Glenmunder via silt trap/oil interceptor.

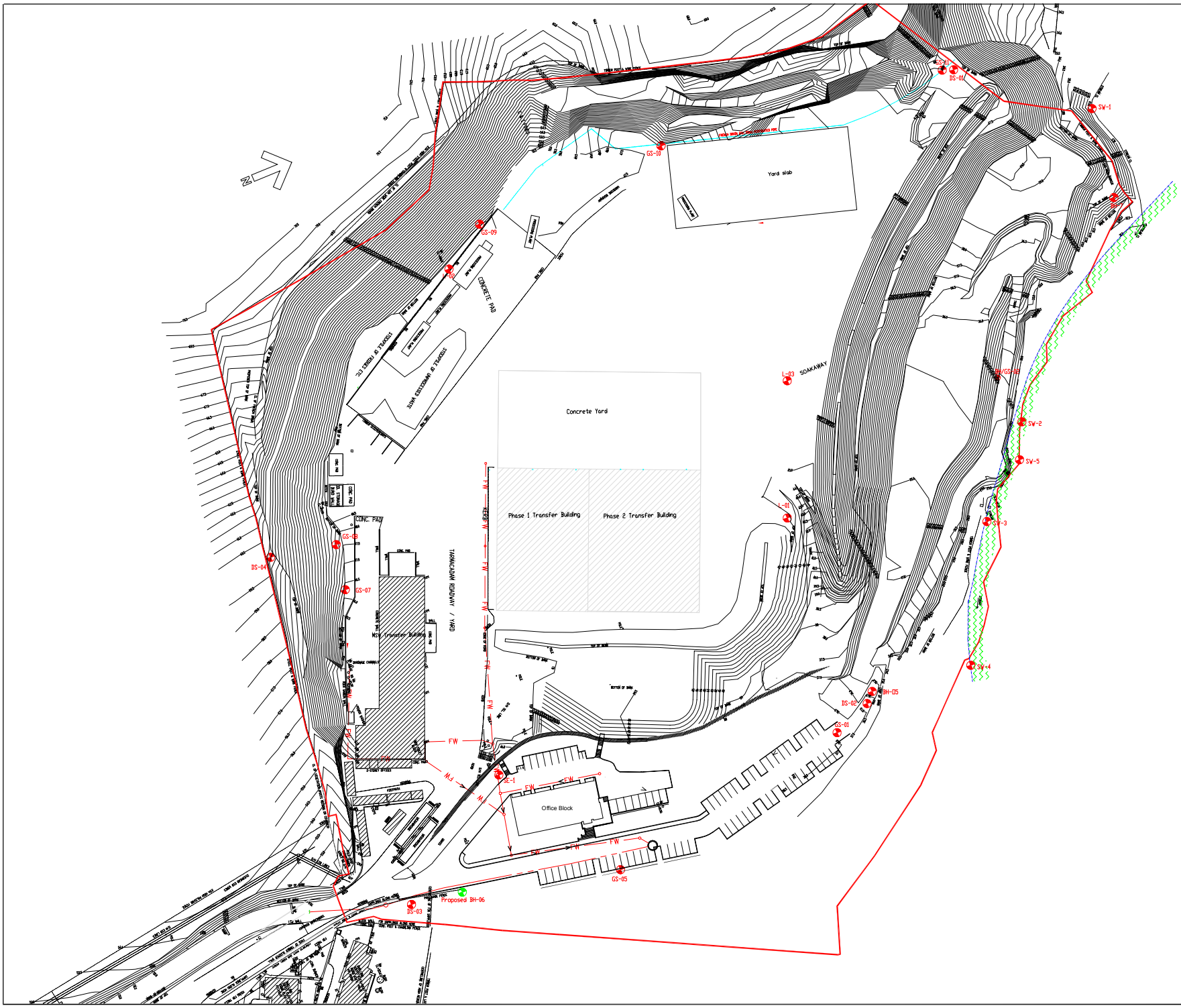
Surface water quality is monitored at four locations (SW-1, SW-2, SW-3 and SW-4) on the Glenmunder. SW-1 is upstream of the site, SW-2 and SW-3 are along the site boundary and SW-4 is downstream of the site. The surface water discharge point (SW-5) was included in the monitoring programme from Q3 2008 following approval from the Agency.

The monitoring was conducted at quarterly intervals and included in-situ and laboratory testing. The range of analysis was as specified in Schedule C of the Waste Licence and includes dissolved oxygen, pH, electrical conductivity, and organic and inorganic parameters. The sampling and analysis was carried out in accordance with recognised quality assurance and control procedures.

The monitoring confirmed that the quality of the surface water was generally good and that the facility was not impacting on the stream.

3.3 Wastewater

Wastewater from the facility discharges to the municipal foul sewer. A wastewater sample was collected monthly from monitoring location SE-1. It was not possible to collect samples in May and August 2008, as there was no flow at the monitoring location. The range of analysis was as specified in Schedule C of the licence and included pH, COD, BOD, suspended solids, sulphates, oils, fats and greases, mineral oils and detergents. All of the parameters were well below the Emission Limit Values (ELVs) set in the Licence.



NOTES

LEGEND: MONITORING LOCATIONS

Denotes Monitoring Location
(BH, GAS and LEACHATE)
(SURFACE WATER, SEWER and DUST)

#	I.D.	EASTING	NORTHING
1	SE-1	324309.01	218051.50
2	BH5/GS-01	324311.85	218157.81
3	BH/GS-02	324212.67	218255.62
4	BH-6	324212.67	218255.62
5	BH-7	324330.71	217905.07
6	GS-05	324331.23	218071.80
7	GS-07	324146.36	218021.76
8	GS-08	324118.57	218049.52
9	GS-09	324094.55	218100.07
10	GS-11	324100.93	218272.43
11	L-01	324231.96	218165.23
12	L-02	324108.57	218077.92
13	L-03	324552.44	218035.59
14	SW-1	324132.36	218322.94
15	SW-2	324247.97	218240.29
16	SW-3	324326.38	218166.72
17	SW-4	324359.53	218124.20
18	SW-5	324289.90	218185.10
19	N1	324310.04	217965.54
20	N2	324313.86	218013.03
21	N3	324325.62	218143.04
22	N4	324209.97	218262.19
23	NSL1	324305.76	217858.30
24	NSL2	324299.20	217845.31
25	DS-01	324122.92	218288.56
26	DS-02	324265.71	218205.11
27	DS-03	324315.24	218005.08
28	DS-04	324161.16	218013.86

PROPOSED LOCATIONS IN GREEN

REV	DATE	DESCRIPTION	DRN	CHKD	APP
A	05.06.2008	LAYOUT	MW	JOC	JOC

O' Callaghan Moran & Associates.
Granary House, Rutland Street,
Cork, Ireland.
Tel. (021) 4321521 Fax. (021) 4321522
email : info@ocallaghanmoran.com

CLIENT

GREENSTAR

TITLE

SITE LAYOUT
FASSAROE
Monitoring Locations

SCALE	FIGURE No.	REV.
1250 A3	3.1	A

3.4 Leachate

Leachate is generated by incident rainfall in the former landfill area. There are three leachate monitoring wells the locations of which are shown on the drawing in Figure 3.1.

3.4.1 Leachate Levels

Levels were monitored at monthly intervals during the reporting period. L-01 was not accessible in the first, second and fourth quarters 2008 due to the impact of restoration works. It was not possible to record levels at L-03 in Q1, as the pipe was obstructed. This obstruction has been cleared. In general the wells were either dry or contained small volumes of liquid at the base.

Greenstar has prepared a works programme to improve accessibility to the wells and this is included in the Schedule of Objectives and Targets for the facility for 2009.

3.4.2 Leachate Quality

The Licence requires routine monitoring. However, over the reporting period the wells were either dry or there was an insufficient volume to collect representative samples.

3.5 Landfill Gas

Monitoring was carried out in accordance with Schedule C of the Waste Licence. The monitoring locations specified in the Licence include seven landfill gas wells (GS-05, GS-06, GS-07, GS-08, GS-09, GS-10 and GS-11), the groundwater monitoring wells (BH-2, BH-5, BH-6 and BH-7) and the leachate boreholes (L-01, L-02 and L-03). GS-06 and BH-6 were removed in September during construction of the new administration building.

GS-01, GS-05, BH-2, BH-5 and BH-7 are located outside the fill area. GS-07, GS-08, GS-09, GS-10, GS-11, L-01, L-02 and L-03 are located in the fill area. The nearest buildings to the filled area are the waste processing buildings and the site offices. OCM conducted gas monitoring in the waste processing buildings and the site offices during all monitoring events. The monitoring did not detect the presence of carbon dioxide or methane in any of the buildings.

Out of one hundred and thirty four (134) landfill gas measurements made during the reporting period, methane was detected on twenty-nine (29) occasions in wells located in the fill area. Methane was not detected above the trigger level in any of the wells outside the waste body. Carbon Dioxide was measured at levels above the trigger level (1.5% v/v) on nineteen (19) occasions on wells outside the waste body.

3.5.1 Landfill Gas Volumes

The elevated carbon dioxide concentrations and the occasional presence of methane indicate that some degree of degradation of organic waste is occurring within the fill area. Based on the available information on the site history it appears that some biodegradable material may historically have been deposited at the site. The monitoring results do not indicate that landfill gas is migrating from the former fill area.

Given that the type and quantity of the biodegradable waste deposited on-site is not known, it is impossible to predict the volumes of landfill gas that may be generated. However, the monitoring results indicate that the volume of such degradable material is likely to be small and will reduce over time.

3.5.2 Landfill Gas Control

There is no landfill gas control system on-site. The landfill gas concentrations measured in the routine monitoring programme indicate there is no need for such control measures. However, this will be kept under review based on the results of the on-going landfill gas monitoring programme.

3.6 Noise Survey

Quarterly monitoring was carried out at the four on-site noise monitoring locations, N-1, N-2, N-3 and N-4 specified in the licence and two off-site noise sensitive locations NSL1 and NSL2. The surveys were conducted when the site was fully operational.

In Q1, the $L_{Aeq\ 30\ min}$ level recorded at NSL1 was 56 dB, which is marginally above the daytime noise limit 55 dB specified in the Licence. However the noise level was contributed to by onsite and offsite sources. In Q4 the noise survey found that although the L_{Aeq} levels recorded at one of the noise sensitive locations (59dB NSL2) were marginally above the 55 dB daytime noise limit, the levels were significantly influenced by sources other than the Greenstar facility. A summary of the results is included in Appendix 1.

3.7 Dust Monitoring

Dust monitoring is carried out monthly at four monitoring locations, DS-01, DS-02, DS-03 and DS-04. DS-01 is located at the northern portion of the facility within the site boundaries and approximately 250 m from the nearest sensitive receptor. DS-02 is located away from operational areas, close to a formerly vegetated area along the northern boundary. This location is at the edge of the car park for the new office building. DS-03 is located within the

site boundary close to the car park and to the east of the site weighbridges. DS-04 is located on the southern boundary of the facility at the top of an embankment.

Of the forty-eight dust measurements taken during the reporting period only four exceedances of the deposition limit value occurred. Two of these were at DS-01, one at DS-02 and one at DS-03. Each of these locations is within the site boundary away from sensitive receptors. The Agency were informed of the exceedances in accordance with Condition 11.2.a) and 11.2.b) of the Licence.

4. SITE DEVELOPMENT WORKS

4.1 Engineering Works

The following Agency approved engineering works were carried out:-

- Construction of the new site offices and welfare facilities were completed in February 2008;

- Installation of a processing line capable of handling both C&I and C&D waste inside the Phase 2 building. The C&I/C&D processing line was commissioned in June 2008;

- Concrete paving was installed in the area between the Phase 2 building and the previously concreted timber shredding area to the North-West of Phase 2. Concrete access road was installed through the area to the North and East of the Phase 2 building.

4.2 Site Restoration

The Licence permits the use of inert construction and demolition waste, both delivered to and recovered on-site, in the reclamation and restoration of the partially infilled areas of the site. The approved materials are listed in Table A.2 of Schedule A of the licence and include stones & soil, topsoil, brick, natural sand and concrete.

Greenstar continued the site restoration works on the north eastern boundary of the site in the reporting period. These works involved the construction of an embankment comprising two terraces adjoining the existing embankment on the north eastern border of the waste body in accordance with the Restoration Plan approved by the Agency.

4.3 Site Development

It is proposed to carry out a number of developments at the site:-

- It is intended to increase the hardstand area onsite, where necessary, in order to improve the general appearance of the facility. The detailed design for this has not yet been carried out but will be agreed with the Agency prior to works taking place;

- It is intended to relay the surface of the empty skip storage area using inert aggregate produced from the C&D process.

- Upgrade to the Waste Quarantine Area and Civic Amenity Area.

4.4 Summary of Resource & Energy Consumption

Table 4.1 presents an estimate of the resources used on-site during the reporting period.

Table 4.1 Estimate of Resources Used On-Site

Resources	Quantities
Diesel	288,886 litres
Hydraulic, Transmission and Engine Oil	24,974 litres
Gear Oil	300 litres
Odour Neutraliser	270 litres
Truck Wash Detergent	3,000 litres
Electricity	463,064 KWH
Gas	150,619 kWh
Antifreeze	75 litres

5. WASTE RECEIVED AND CONSIGNED FROM THE FACILITY

Table 5.1 shows the total quantities of waste received at and consigned from the facility in the reporting period. A breakdown of the waste types is provided in accordance with the European Waste Catalogue and Hazardous Waste list.

The total quantity of waste received was 152,695.89 tonnes. The total waste consigned was 138,814.22 tonnes. The difference between the accepted waste and consigned waste consists of waste on site at the end of 2007 (3,984 tonnes), which was consigned in 2008 and waste remaining on site at the end of 2008 (18,458 tonnes) which was consigned in 2009. The overall difference (593 tonnes more out than in) is approximately 0.25% of the total waste accepted and is considered insignificant. It is likely associated with discrepancies in the weighbridge over the course of the year.

For comparative purposes Table 5.2 shows the total quantities of waste received at and consigned from the facility in 2007. Table 5.3 shows the quantities of waste received and consigned in previous years

All the consigned wastes went to recovery and disposal facilities agreed with the Agency. The name and location of these destinations are given in Table 5.4. The recycling rate for the facility is estimated at 54%.

Table 5.1 Waste Received and Consigned 2008

EWC	Description	Waste In	Waste Out	Destination
15 01 01	Cardboard Packaging	2,065.21	157.06	Bailey Waste
			157.02	Marwin Environmental
			741.34	SCA Recycling
	Multi Product Load	39.32		
	OCC Baled		188.34	Parry & Evans
			828.04	International Recycling
			137.94	Marwin Environmental
			315.50	NCH International
			165.40	Peute Papier Recycling
	Soft Mixed Baled		413.30	International Recycling
15 01 02	Plastic Film (Colour)		390.72	Greenway
	Plastic Film (Clear)		529.94	Greenway
	Plastic Bottles	47.88	80.58	Alternative Waste Solutions
			566.72	Greenway
			254.18	Thorndale Env. Recycling
	Plastic Packaging	201.08		
	Polystyrene	18.59		
	FIBC Bags PP		13.24	Greenway
15 01 03	Pallets	153.48		
	Wooden Packaging	3,921.13		
15 01 04	Aluminium	103.24		
	Aluminium Cans	23.34	52.61	Alutrade
	Metallic Packaging	11.51	80.95	Alutrade
	Steel Cans	2.04	190.64	Davis Recycling
15 01 05	Tetra Pak Cartons	13.60		
15 01 06	Mixed Packaging	22,909.04		
15 01 07	Glass Packaging	655.56	1,058.52	Glassco Recycling
16 05 04	Gas Cylinders		2.24	BOC Gas
17 01 07	C&D Inert Mixed	194.72	10,828.00	Bray Void
			190.70	Cullen Excavations
			23.52	KTK Landfill
			24.54	Ballynagran Landfill
17 04 01	Copper		4.63	Davis Recycling
17 04 11	Cable	4.83		
17 05 04	C&D Inert Mixed	5,859.27	68.70	Cullen Excavations
	Soil & Stones	55.36		
17 06 05	Asbestos	0.74		
17 08 02	Plasterboard	18.35		
19 05 01	Non composted Fractions		13.14	Ballynagran Landfill
19 08 99	Grit	91.80		
19 12 04	Rubber		7.48	Crumb Rubber
19 12 07	Wood	19.98		
19 12 09	Fines C&D	23.96	80.70	KTK Landfill
			22.02	Ballynagran Landfill
	Fines C&I	18.40	6,533.89	KTK Landfill
			9,219.09	Ballynagran Landfill

EWC	Description	Waste In	Waste Out	Destination
19 12 12	C&I Dry Mixed	3,100.33	15,302.01	KTK Landfill
			95.56	Greenstar Millennium
			5,424.58	Ballynagran Landfill
	MSW Municipal Mixed	17,254.78	42,657.83	Ballynagran Landfill
	Fines – Mech Treated Waste	1,076.60	1,240.70	Ballynagran Landfill
20 01 01	Cardboard & Paper	112.59	4,859.22	Marwin Environmental
			4,307.41	SCA Recycling
	Newsprint	64.50		
	Recy Paper	449.74		
	Mixed Paper Baled		715.98	Cellmark Recycling
			2,037.42	International Recycling
			869.43	Marwin Environmental
			3,545.56	Peute Papier Recycling
20 01 02	Glass	6.04		
20 01 08	Compost	480.74		
20 01 23*	Fridge Freezer CFC		3.38	KMK Metals Recycling
20 01 35*	Electronics & Electrics	14.82	15.53	Immark
			5.52	WEEE Recycling
	Electrical Equipment	9.02		
	Monitor TVs		12.14	WEEE Recycling
20 01 38	Wood	9,233.63	469.48	East Connaught Landfill
			43.38	Johnstown Recycling
			1,244.02	KTK Landfill
			40.16	Knockharley Landfill
			17,019.10	Ormonde Organics
			2,388.96	Ballynagran Landfill
20 01 39	Plastic	6.68	59.41	Greenway
20 01 40	Metal	791.86	2,823.87	Davis Recycling
20 02 01	Green Biodegradable Waste	3,831.84	292.88	Enrich Environmental Kilcock
	Green Mixed	57.33		
20 03 01	MSW Municipal Mixed	22,175.37		
	Unbaled MSW	2.74		
20 03 07	C&I Dry Mixed	57,574.86		
	Total Received	**152,695.89**		
	Total Consigned		**138,814.22**	
	Total Recovered		**64,601.80**	
	Total Disposed		**63,384.42**	
	Total Reused on Site		**10,828.00**	
	Recycling Rate		**54.34%**	

Table 5.2 Waste Received & Consigned 2007

EWC	Description	Waste In	Waste Out	Destination
15 01 01	Cardboard	9.44		
	Cardboard Packaging	3,642.17	1,782.72	Bailey Waste
			0.55	Leinster Environmentals
			2,266.35	SCA Recycling Ltd.
	Cardboard & Paper	2.36		
15 01 02	Plastic Packaging	268.45	9.30	Clearpoint Recycling
			2.43	Leinster Environmentals
			92.06	Thorndale Env.
	Polystyrene	1.66		
	Plastic Film		246.78	Greenway
			161.54	Greenstar UK
			70.52	Thorndale Env.
	Plastic Film Colour		105.32	Greenway
	Plastic Film Clear		82.00	Greenway
	Plastic Bottles	106.40	13.64	Clearpoint Recycling
			4.02	Leinster Environmentals
			696.92	Thorndale Env
15 01 03	Pallets	0.18		
	Wooden Packaging	730.23		
15 01 04				
	Aluminium Cans	191.68	41.14	Alutrade
			70.18	Greenstar UK
	Metallic Packaging	18.42		
	Steel Cans	12.89	153.82	Davis Recycling Ltd.
			19.48	Seaforde Metals
15 01 05	Tetra Pak Cartons	16.55		
15 01 06	Dry Mixed Recyclables	14.21		
	Mixed Packaging	18,033.54		
15 01 07	Glass Packaging	881.86	1,199.66	Glassco Recycling
16 01 21*	Batteries		1.26	Returnbatt
16 05 04	Gas Cylinders	0.50	1.60	Flo Gas
			3.82	BOC Gas Dublin
17 01 07	C&D Inert Mixed	17,411.11	397.11	Cullen Excavations
			1,921.98	Ballynagran Landfill
			36,264.00	Bray Void Landfill
17 04 11	Cable	8.96		
17 05 04	C&D Inert Mixed	3,376.07	2,922.00	Bray Void Landfill
			19.72	Greenstar Greenogue
	Soil & Stones	32.05		
17 06 05	Asbestos		2.32	KTK Landfill
17 08 02	Plasterboard	19.43		
19 05 01	LDF Non Composted Fraction	655.15	930.20	Ballynagran Landfill
19 08 01	LDF Screening	2.55		
19 08 99	Grit	84.20		
19 12 01	Cardboard & Paper		236.60	Bailey Waste
			1,552.50	Marwin Environmental
			12,361.52	SCA Recycling Ltd.

EWC	Description	Waste In	Waste Out	Destination
19 12 02	Metal		3,594.91	Davis Recycling Ltd
19 12 05	Glass		28.66	Glassco Recycling
19 12 07	Wood	582.36	7,117.48	KTK Landfill
			88.82	East Galway Landfill
			4.62	BRP Baler
			990.86	Ormonde Organic
			5,396.63	Ballynagran Landfill
19 12 09	Fines C&D	18.76		
	Fines C&I		4,199.42	KTK Landfill
			15,411.00	Ballynagran Landfill
	Building Materials		5,205.98	Ballynagran Landfill
			63.66	Greenstar Greenogue
19 12 12	Baled MSW	5.44		
	C&I Dry Mixed	29,075.72	25.02	Panda Waste
			4,950.24	KTK Landfill
			54,890.40	Ballynagran Landfill
			189.20	Knockharley Landfill
			22.66	BRP Baler
	MSW Municipal Mixed	15,334.00	821.60	Panda Waste
			24,530.73	Ballynagran Landfill
			1,655.22	Knockharley Landfill
			4,174.46	BRP Baler
	MSW Fines	115.48		
20 01 01	Newsprint	19.64		
	Confidential	0.96		
	Paper	451.14		
20 01 02	Glass	34.90		
20 01 08	Compost	73.92		
20 01 23	Fridge Freezer CFC		2.42	WEEE Recycle
20 01 36	Electronics & Electrics	22.26	19.03	Techrec
20 01 38	Wood	5,045.79		
20 01 39	Metallised CDs	0.02		
	Plastic	8.74		
20 01 40	Aluminium	6.49		
	Metal	953.43		
20 02 01	Green Mixed	16.94		
	Green Biodegradable Waste	1,595.99	1,355.30	Enrich Env. Kilcock
20 03 01	MSW Municipal Mixed	14,330.51		
20 03 07	C&I Dry Mixed	79,453.52		
91 00 00	None	13.88		
	Total Received	**192,679.93**		
	Total Consigned		**198,371.37**	
	Total Recycled		**72,717.98**	
	Total Disposed		**89,467.40**	
	Total Reused on Site		**39,186.00**	
	Recycling Rate		**54.90%**	

Table 5.3 – Waste Received and Consigned since 2005

	2007	2006	2005
Total Received	192,679.93	170,600.44	178,735.424
Total Consigned	198,371.37	119,836.93	110,077.96
Total Reused on Site	39,186.00	80,328.43	60,504
Recycling Rate	54.9%	72%	50%

Table 5.4 Off-Site Disposal / Recovery Agents

Final Recovery or Disposal Destination	Waste Licence or Permit	Waste Consigned
Alternative Waste Solutions (AWS), Unit 2, Britannia Business Park, Wallsend, Tyne and Wear NE28 6HA, England	IRE/G009/08	Plastic Bottles
Alutrade Ltd., Langley Forge House, Tat Bank Road, Oldbury, West Midlands, H69 4NH	BUT/773309	Aluminium Cans
Baileys Waste Paper, Rosemount Business Park, Blanchardstown, Dublin 16	WPT(1)B	Paper & Cardboard
Ballynagran Landfill, Coolbeg, Kilbride, Co. Wicklow	W0165-01	Residuals
BOC Gas, Bluebell Industrial Estate, Dublin 12	N/A	Gas Cylinders
BRP Baler	W0015-01	MSW
Cellmark Recycling Benelux BV, Heuvel 7 NL-5664 HK Geldrop The Netherlands	IRE/G003/08	Paper
Crumb Rubber Ireland Ltd , Mooretown, Dromiskin, Dundalk Co. Louth	WP 033/02	Tyres
Cullen Excavations Ltd.	N/A	Oversized stone
Davis Recycling Ltd. Pigeon House Road, Ringsend, Dublin 1	WP 98067	Metal
East Galway Landfill, Greenstar Ltd., Killagh More, Ballybaun, Ballintober, Ballinasloe, Co. Galway	W0178-01	Wood
Enrich Environmental Ltd. Kilcock	WMP 2004/57	Greenwaste
Flo Gas Ltd.	No Collection Permit required for Collecting their own gas bottles.	Gas Bottles. Reference Brian Walsh 041-9831041
Glassco Recycling	WP 160/2004	Glass
Greenstar Recycling, Millennium Business Park, Ballycoolin, Dublin 11	W0183-01	Wood, Cardboard Packaging
Greenway Ireland Ltd., 11 Porthill Road, Mountnorris, Co. Armagh, BT60 2TY	ROC 621 (NI 00611)	Plastics
Immark, Greenogue Industrial Estate, Rathcoole, County Dublin	W0185-01	Electronics & Electrics
International Recycling Ltd., Heath House, 5 Woolgate Court, Norwich, NR2 4AP, UK	IRE/G050/08	Cardboard, Paper

Final Recovery or Disposal Destination	Waste Licence or Permit	Waste Consigned
Johnstown Recycling, Johnstown, Slanemore, Mullingar, Co. Westmeath	WP-161-2007	Wood
KMK Metals Recycling Limited, t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	W0113-01	Fridge
Knockharley Landfill, Navan, Co. Meath	W0146-01	Wood, MSW
KTK Landfill, Kilcullen, Co. Kildare	W0081-02	Wooden packaging, C&D, Asbestos, C&I, bulky waste
Marwin Environmental, 7 Glyntown Heights, Glanmire, Co. Cork	926 (Waste Broker Cork City Council Registry)	Recyclables
NCH International LCC Ltd., 3 Clarendon Road, Herts AL5 4NS, England	IRE/G113/08	Cardboard
Ormonde Organics Ltd., Unit 643, Greenogue Industrial Estate, Rathcoole, Co. Dublin	W0237-01	Green Waste
Parry and Evans, Severn Farm Industrial Estate, Welshpool, Powys, SY217DF, UK	NOW/268322	Paper, Cardboard & Plastic
Peute Papier Recycling BV, Veerplaat 40, 3313 LJ Dordrecht, Netherlands	IRE/G006/08	Cardboard, Paper
Returnbatt, Kill, Co. Kildare	W0150-01	Batteries
SCA Recycling UK Ltd., Armstrong Road, Daneshill Industrial Estate, Basingstoke, Hampshire, RG24 0NU	EA Exporter Accreditation, PD Flaherty Ltd WCP/WW/295/05A	Newsprint, Cardboard & Paper
Thorndale Environmental Recycling Ltd., 77 Clooney Road, Campsie, Co. Derry BT473PA	WDL-14	Plastics

6. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

6.1 Incidents

The routine monitoring programme identified a number of incidents during the reporting period, mainly associated with exceedance of the dust deposition limit. The Agency was informed of the exceedances by letter in accordance with Condition 11.2.a) and 11.2.b) of the Licence. Exceedances of the carbon dioxide trigger levels in the landfill gas monitoring boreholes also occurred and were reported in the quarterly reports, as agreed with the Agency. A summary of the incidents is shown on Table 6.1.

Table 6.1 Summary of Incidents

Date	Nature of Incidents	Cause	Corrective Action
Landfill Gas Monitoring			
08/01/2008 05/02/2008 05/03/2008 02/04/2008 07/05/2008 05/07/2008 04/09/2008 07/10/2008 06/11/2008 04/12/2008	Carbon dioxide > trigger limit at monitoring borehole at GS-01 in 6 events, at GS-05 in 8 events, and at BH-5 in 5 events.	Possible anaerobic degradation of small quantities of organic waste.	Continue routine monitoring to determine if landfill gas is being produced and is migrating off-site.
Dust Monitoring			
February, April, August	Dust exceedances were recorded at DS-01 in 2 events, DS-02 in 1 event and DS-03 in 1 event.	Construction, Operations and internal traffic.	Greenstar intend to increase the hardstanding area. These measures will allow the effective control of dusts generated from these sources.

6.2 Register of Complaints

No complaints were received in 2008.

7. ENVIRONMENTAL DEVELOPMENT & CONTROL

7.1 Environmental Management Programme Report

With the exception of the Schedule of Objectives and Targets, which are amended annually as part of the AER, and a revision of a number of the operating procedures, the environmental management programme was not amended in 2008. The schedule of Objectives and Targets, including their status for 2008 (Table 7.1), as well as the proposed Objectives and Targets for 2009 (Table 7.2) are presented below. An index of procedures used at the facility is included in Appendix 2. In 2008 a new procedure for the handling of gypsum waste was developed, a copy of which is included in Appendix 2

7.1.1 Schedule of Objectives and Targets 2008

The 2008 Schedule included 7 objectives, which are summarised in Table 7.1. An evaluation of what has been achieved to date is presented below.

Objective 1 – Site and Process Development.

Construction of the new administration building was completed in March 2008. Installation of the new C&I/C&D processing line was completed in mid June 2008 and the processing of C&I/C&D waste has moved indoors. Concrete surface onsite was extended to the East of the Phase 2 building, concrete roadway was installed through the area to the North of the Phase 2 building.

Objective 2 – Continue to hold quarterly and annual Environmental management review meetings at the site, as required in the EMS. Update/Amend EMS documentation throughout 2008, as necessary to reflect site developments and process changes. Complete facility inspections on a daily basis, record non-conformances, and implement corrective action. The implementation of a combined environment and health and safety integrated management system has been proposed for the site.

Environmental management review meetings have been held as scheduled. Facility inspections have been carried out by the facility supervisors.

Objective 3 – Determine training frequency required for each type of training. Prepare Training Matrix for 2008 & Review Progress with completing the training programme to continue for 2008

This has been completed.

Objective 4 – Summarise energy/resource usage on a quarterly basis. Review and implement recommendations from Energy Audit to be carried out. Review progress made on implementing energy audit recommendations from Energy Audit.

Resource usage was recorded for the facility energy audit. Audit was completed and submitted to the Agency in January 2009.

Objective 5 – Ensure monitoring results comply with licence limits & investigate any exceedances of emission limit values (ELV's)

Ongoing.

Objective 6 – Ensure all drains and interceptors are maintained, and regularly serviced. Use drain cover mats to prevent release of liquid spills to sewer.

Drains and interceptors have been maintained throughout 2008.

Objective 7 – Continually Review and assess all nuisance control procedures to ensure minimal impact on the surrounding area. Continue to ensure that litter is removed at the end of each working day.

Nuisance monitoring has been carried out by facility supervisors. Litter is removed each day by litter patrols. In addition, a forklift-mounted road sweeper was purchased in Q4 2008 and is operated on a daily basis.

7.1.2 Site Management Structure

Details of the site management structure are included on Table 7.3.

7.2 Energy Efficiency Audit Report Summary

An energy audit was carried out by Byrne Ó Cléirigh in the second half of 2008 and a report was submitted to the Agency on the 6th January 2009. The audit identified that Greenstar should establish an energy management programme and also install electricity meters on the diesel generator and CHP unit, which would improve the collection and assessment of energy data and consumption trends.

7.3 Reduction of Water Demand

A water bath separator is used to separate sinking and floating fractions of the waste stream on the C&I/C&D line. This water is circulated in a closed loop system, thus minimising water demand.

Water is not used in the process and the majority of the buildings are not washed down (the dry recyclables waste stream is kept as dry as possible). The water users at the site include welfare facilities, canteen, dust suppression measures and a truck wash.

7.4 Pollution Emission Register

The Pollution Emission Register (PER) has been replaced by the European Pollutant Release and Transfer Register Regulation (EC) No. 166/2006. A copy of the information submitted to the Agency via the web-based data reporting system is included in Appendix 3.

Table 7.1 Schedule of Objective and Targets 2008

No.	2008 Objective	Target	Responsibility	Timescale
1	**Site and process development**	Complete installation of C+I line Increase hardstand area throughout site	Site management	July 2008
2	**Maintain and improve the EMS**	Continue to hold quarterly and annual Environmental management review meetings at the site, as required in the EMS.	Environmental Compliance	On-going
		Update/Amend EMS documentation throughout 2008, as necessary to reflect site developments and process changes	Site Supervisors	On-going
		Complete facility inspections on a daily basis, record non-conformances, and implement corrective action.	Site Supervisors	On-going
		The Implementation of an Integrated Environment/Health & Safety Management System has been proposed for the site	Environmental Compliance Dept	2009
3	**Training & Awareness Programme**	Determine training frequency required for each type of training.	Environment-Health & Safety	Q3/4 2008
		Prepare Training Matrix for 2008 & Review Progress with completing the training programme to continue for 2008		
4	**Assess & Continually Review Resources & Energy Consumption at the site**	Summary energy/resource usage on a quarterly basis.	Operations Manager	Q3 2008
		Review & Implement recommendations from Energy Audit to be carried out.		
		Review progress made on implementing energy audit recommendations from Energy Audit.		
5	**Environmental Monitoring**	Ensure monitoring results comply with licence limits & investigate any exceedances of emission limit values (ELV's)	Facility Manager	Ongoing
6	**Prevent Water Pollution from run-off, fire-water, flooding, etc.**	Ensure all drains and interceptors are maintained, and regularly serviced Use drain cover mats to prevent release of liquid spills to sewer	Facility Manager / Supervisor Facility Manager	Ongoing
7	**Review & Assess the Effectiveness of Nuisance Control Procedures**	Continually Review and assess all nuisance control procedures to ensure minimal impact on the surrounding area	Facility Manager	Ongoing
		Continue to ensure that litter is removed at the end of each working day		

Table 7.2 Schedule of Objective and Targets 2009

No.	2009 Objective	Target	Responsibility	Timescale
1	**Site development**	Relay surface in the empty skip storage area with crushed stone	Site management	Q2 2009
2	**Maintain and improve the EMS**	Continue to hold quarterly and annual Environmental management review meetings at the site, as required in the EMS.	Environmental Compliance	On-going
		Update/Amend EMS documentation throughout 2008, as necessary to reflect site developments and process changes	Site Supervisors	On-going
		Complete facility inspections on a daily basis, record non-conformances, and implement corrective action.	Site Supervisors	On-going
		The Implementation of an Integrated Environment/Health & Safety Management System has been proposed for the site	Environmental Compliance Dept	2009
3	**Assess & Continually Review Resources & Energy Consumption at the site**	Summary energy/resource usage on a quarterly basis.	Operations Manager	Q2 2009
		Review & Implement recommendations from Energy Audit		
		Review progress made on implementing energy audit recommendations from Energy Audit.		
4	**Environmental Monitoring**	Ensure monitoring results comply with licence limits & investigate any exceedances of emission limit values (ELV's). Improve accessibility to the monitoring wells.	Operations Manager	Ongoing
5	**Prevent Water Pollution from run-off, fire-water, flooding, etc.**	Ensure all drains and interceptors are maintained, and regularly serviced Use drain cover mats to prevent release of liquid spills to sewer	Operations Manager/ Supervisor	Ongoing
6	**Review & Assess the Effectiveness of Nuisance Control Procedures**	Continually Review and assess all nuisance control procedures to ensure minimal impact on the surrounding area	Operations Manager	Ongoing
		Continue to ensure that litter is removed at the end of each working day		

Table 7.3 Site Management Structure

Name	Responsibility	Education/Training	Experience
Aidan Shanahan (Head of Leinster MRF Operations)	Overall responsibility for the management of the business including environmental compliance	Qualified Engineer Completed the FAS waste management course.	16 years in Operations Management. 5 years in Waste Management
Sara Smyth (Operations Manager)	Responsibility for the management of the site operations and environmental compliance	Chartered Engineer M.Eng.Sc in waste management Completed FAS waste management course	8 years in Waste Management
Arthur Walsh (Transport & Logistics Manager)	Responsible for the management of vehicle movement on and off site including environmental compliance	Completed FAS waste management course.	15 years in Operations Management.

7.5 Tank & Pipeline Testing

No tank and pipeline testing was carried out in 2008.

7.6 Slope Stability Assessment

An assessment of the stability of the slopes was carried out in compliance with Condition 6.10 of the licence in April 2008. The full report is included in Appendix 4.

7.7 Programme for Public Information

Greenstar is committed to setting the standard in waste management and ensuring environmental compliance in all operations. In addition, Greenstar's Environmental Policy makes a specific commitment to make the environmental policy and records available to the public and interested parties. To this end Greenstar has drawn up a Communications Programme, which details how members of the public are facilitated in accessing environmental information at the facility. Records available for public inspection on site include:-

- Environmental Policy,
- Waste Licence,

- Licence Application and Review documentation,
- Monitoring Records,
- Complaints File,
- EPA Correspondence File.

Visits to the site should be arranged in advance by ringing the Facility Manager or Supervisor at 1890 600 900.

7.8 Revised Closure, Restoration & Aftercare Management Plan

A Closure, Restoration & Aftercare Management Plan was prepared and submitted to the Agency in May 2008.

7.9 Measures in Relation to Prevention of Environmental Damage and Remedial Actions (Environmental Liabilities)

A revised Environmental Liabilities Risk Assessment was submitted to the Agency in June 2008 and a final report was submitted in February 2009.

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

The facility has an Environmental Management Programme (EMP) in place. The EMP serves as a guidance document for facility staff and describes operational control and management practices that are applied at the facility. The EMP is also the core element of the Environmental Management System (EMS) for the facility and is designed to ensure that management of site activities complies with regulatory requirements and best practice. The EMS includes a detailed Emergency Response Procedure which sets out the steps to be taken in the event of an incident at the facility with the potential to cause environmental damage. Greenstar also implements a comprehensive monitoring programme which will highlight any potential environmental incidents with the potential to cause environmental damage.

8. OTHER REPORTS

There were no other reports requested by the Agency.

APPENDIX 1

Environmental Monitoring Summary Tables

SURFACE WATER SUMMARY TABLES

Surfacewater Results 2008 Fassaroe W0053-03: SW-1

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	8.1	14.8	14.6	9.7
Chloride	mg/l	26	23	20	26
COD	mg/l	<20	<20	<15	<15
BOD	mg/l	<1	<1	<2	<2
Ammoniacal Nitrogen -N	mg/l	0.6	<0.3	<0.2	0.4
Tot. Susp. Solids	mg/l	22	7	2198	<10
Conductivity	mS/cm	0.464	0.47	0.461	0.565
Dissolved Oxygen	mg/l	3.5	4.9	9.9	10.5
pH	pH Units	8.4	8.1	8.29	8.29
Nitrate	mg/l			10.7	
Calcium	mg/l			69.74	
Magnesium	mg/l			5.59	
Orthophosphate	mg/l			0.11	
Sulphate	mg/l			20	
Mercury	µg/l			<0.05	
Potassium	mg/l			3.7	
Sodium	mg/l			13.1	
Boron	mg/l			0.037	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			3	
Iron	µg/l			32	
Manganese	µg/l			3	
Nickel	µg/l			25	
Lead	µg/l			<1	
Zinc	µg/l			10	
VOC	µg/l			<5	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				1500
Faecal Coliforms	cfu/100ml				500

Surfacewater Results 2008 Fassaroe W0053-03: SW-2

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	7.9	15.8	14.8	10.2
Chloride	mg/l	26	22	20	26
COD	mg/l	<20	<20	18	<15
BOD	mg/l	<1	<1	<2	<2
Ammoniacal Nitrogen -N	mg/l	0.6	0.4	<0.2	0.5
Tot. Susp. Solids	mg/l	17	10	<10	<10
Conductivity	mS/cm	0.466	0.478	0.466	0.576
Dissolved Oxygen	mg/l	3.2	3.5	9.9	10.9
pH	pH Units	8.4	8.2	8.31	8.29
Nitrate	mg/l			10.9	
Calcium	mg/l			67.49	
Magnesium	mg/l			5.54	
Orthophosphate	mg/l			0.09	
Sulphate	mg/l			21	
Mercury	µg/l			<0.05	
Potassium	mg/l			3.5	
Sodium	mg/l			13.6	
Boron	mg/l			0.032	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			3	
Iron	µg/l			4	
Manganese	µg/l			2	
Nickel	µg/l			24	
Lead	µg/l			<1	
Zinc	µg/l			5	
VOC	µg/l			<5	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				1000
Faecal Coliforms	cfu/100ml				124

Surfacewater Results 2008 Fassaroe W0053-03: SW-3

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	7.8	14.3	14.4	10
Chloride	mg/l	26	22	21	26
COD	mg/l	<20	30	18	<15
BOD	mg/l	2	<1	<2	<2
Ammoniacal Nitrogen -N	mg/l	0.3	<0.3	<0.2	<0.2
Tot. Susp. Solids	mg/l	22	11	<10	<10
Conductivity	mS/cm	0.463	0.44	0.478	0.581
Dissolved Oxygen	mg/l	2.4	4.6	10	10.7
pH	pH Units	8.3	8.1	8.3	8.28
Nitrate	mg/l			11.3	
Calcium	mg/l			71.5	
Magnesium	mg/l			5.83	
Orthophosphate	mg/l			0.1	
Sulphate	mg/l			25	
Mercury	µg/l			<0.05	
Potassium	mg/l			3.8	
Sodium	mg/l			14	
Boron	mg/l			0.034	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			19	
Manganese	µg/l			3	
Nickel	µg/l			27	
Lead	µg/l			<1	
Zinc	µg/l			2	
VOC	µg/l			<5	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				1200
Faecal Coliforms	cfu/100ml				200

Surfacewater Results 2008 Fassaroe W0053-03: SW-4

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	7.7	14.7	14.5	10.3
Chloride	mg/l	26	22	21	26
COD	mg/l	<20	<20	15	<15
BOD	mg/l	<1	<1	<2	<2
Ammoniacal Nitrogen -N	mg/l	<0.3	<0.3	<0.2	<0.2
Tot. Susp. Solids	mg/l	21	7	<10	<10
Conductivity	mS/cm	0.462	0.453	0.482	0.586
Dissolved Oxygen	mg/l	3.2	4	10	9.4
pH	pH Units	8.3	8.2	8.27	8.31
Nitrate	mg/l			11.2	
Calcium	mg/l			68.17	
Magnesium	mg/l			5.57	
Orthophosphate	mg/l			0.06	
Sulphate	mg/l			30	
Mercury	µg/l			<0.05	
Potassium	mg/l			3.9	
Sodium	mg/l			13.7	
Boron	mg/l			0.031	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			3	
Iron	µg/l			3	
Manganese	µg/l			<1	
Nickel	µg/l			28	
Lead	µg/l			<1	
Zinc	µg/l			4	
VOC	µg/l			<5	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				900
Faecal Coliforms	cfu/100ml				200

Surfacewater Results 2008 Fassaroe W0053-03: SW-5

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C			15.2	10.9
Chloride	mg/l			78	23
COD	mg/l			54	21
BOD	mg/l			<2	<2
Ammoniacal Nitrogen -N	mg/l			<0.2	<0.2
Tot. Susp. Solids	mg/l			<10	<10
Conductivity	mS/cm			2.631	0.311
Dissolved Oxygen	mg/l			10.1	9.1
pH	pH Units			7.93	7.81
Nitrate	mg/l			7.3	
Calcium	mg/l			480	
Magnesium	mg/l			21.2	
Orthophosphate	mg/l			<0.03	
Sulphate	mg/l			1285	
Mercury	µg/l			<0.05	
Potassium	mg/l			44.8	
Sodium	mg/l			92.5	
Boron	µg/l			321	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			9	
Iron	µg/l			<2	
Manganese	µg/l			4	
Nickel	µg/l			15	
Lead	µg/l			<1	
Zinc	µg/l			8	
VOC	µg/l			<5	
SVOC	µg/l			<1	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				10000
Faecal Coliforms	cfu/100ml				300

GROUNDWATER SUMMARY TABLES

Groundwater Results 2008 Fassaroe W0053-03: BH-2

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	9.7	13	14.3	11
Chloride	mg/l	104	116	54	82
Ammoniacal Nitrogen -N	mg/l	<0.3	<0.3	<0.2	1.1
Conductivity	mS/cm	2.63	2.434	2.895	2.935
Dissolved Oxygen	mg/l	7.8	2.2	9.9	10.7
pH	pH Units	7.9	7.5	7.73	7.89
Nitrate	mg/l			2.2	
Boron	mg/l			0.977	
Calcium	mg/l			493.7	
Potassium	mg/l			76.3	
Sodium	mg/l			122.6	
Magnesium	mg/l			47.69	
Orthophosphate	mg/l			<0.03	
Sulphate	mg/l			1392	
Mercury	mg/l			<0.05	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			7	
Iron	µg/l			<2	
Manganese	µg/l			91	
Lead	µg/l			91	
Nickel	µg/l			28	
Zinc	µg/l			6	
VOC	µg/l			<1	
SVOC	µg/l			<3	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				6000
Faecal Coliforms	cfu/100ml				7

Groundwater Results 2008 Fassaroe W0053-03: BH-5

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	12.3	13	13	12.4
Chloride	mg/l	50	56	64	61
Ammoniacal Nitrogen -N	mg/l	0.4	0.8	<0.2	<0.2
Conductivity	mS/cm	1.56	1.564	2.31	2.125
Dissolved Oxygen	mg/l	3.7	3.2	10	10.9
pH	pH Units	7.1	6.9	6.89	6.92
Nitrate	mg/l			30.9	
Boron	mg/l			0.124	
Calcium	mg/l			458.8	
Potassium	mg/l			3.7	
Sodium	mg/l			69.6	
Magnesium	mg/l			27.95	
Orthophosphate	mg/l			<0.03	
Sulphate	mg/l			890	
Mercury	mg/l			<0.05	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			2	
Iron	µg/l			13	
Manganese	µg/l			6	
Lead	µg/l			<1	
Nickel	µg/l			26	
Zinc	µg/l			4	
VOC	µg/l			<1	
SVOC	µg/l			<3	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				55
Faecal Coliforms	cfu/100ml				<1

Groundwater Results 2008 Fassaroe W0053-03: BH-7

Parameter	Units	05/02/2008	08/05/2008	07/08/2008	06/11/2008
Temperature	°C	10.9	12.1	11.2	11.3
Chloride	mg/l	31	24	26	25
Ammoniacal Nitrogen -N	mg/l	1.2	0.5	0.8	1
Conductivity	mS/cm	0.582	0.512	0.622	0.573
Dissolved Oxygen	mg/l	0.5	0.7	9.4	10.3
pH	pH Units	7.2	7	7.12	7.22
Nitrate	mg/l			<0.3	
Boron	mg/l			0.035	
Calcium	mg/l			95.53	
Potassium	mg/l			1.5	
Sodium	mg/l			15.7	
Magnesium	mg/l			7.78	
Orthophosphate	mg/l			0.06	
Sulphate	mg/l			35	
Mercury	mg/l			<0.05	
Cadmium	µg/l			<0.4	
Chromium	mg/l			<0.05	
Copper	µg/l			<1	
Iron	µg/l			227	
Manganese	µg/l			939	
Lead	µg/l			<1	
Nickel	µg/l			20	
Zinc	µg/l			6	
VOC	µg/l			<1	
SVOC	µg/l			<3	
Pesticides	µg/l			<0.01	
Total Coliforms	cfu/100ml				700
Faecal Coliforms	cfu/100ml				2

DUST SUMMARY TABLES

Dust Results 2008 Fassaroe W0053-03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DS-01	*	327	*	400	219	119	*	*	*	*	97	142
DS-02	*	795	33	*	*	212	324	345	*	180	149	72
DS-03	*	*	*	313	136	269	194	353	261	198	102	30
DS-04	24	52	42	191	248	339	182	*	*	230	89	91

GAS SUMMARY TABLES

Landfill Gas Results 2008 Fassaroe W0053-03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sample Station Number	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**	**CH_4 (% v/v)**
GS-01	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
GS-05	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
GS-06	-	-	-	-	-	-	*	-	-	-	-	-
GS-07	0.0	0.0	0.1	0.0	0.1	0.0	*	0.0	0.0	0.1	0.0	0.0
GS-08	0.0	0.0	0.1	0.0	0.3	0.0	*	0.0	0.0	0.1	0.0	0.0
GS-09	0.0	0.0	0.1	0.0	0.1	0.0	*	0.0	0.0	0.0	0.0	0.0
GS-10	9.3	4.5	0.0	1.0	1.7	0.0	*	0.0	0.0	0.0	5.0	3.1
GS-11	0.1	0.0	0.0	0.0	0.1	0.0	*	0.1	0.0	0.1	0.0	0.0
BH-2	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
BH-5	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.2	0.0
BH-6	-	-	-	-	-	-	*	-	-	-	-	-
BH-7	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
L-01	-	-	-	-	-	10.0	*	7.3	0.0	-	-	-
L-02	0.0	0.0	0.1	0.0	0.2	0.1	*	0.0	0.1	0.1	0.0	0.0
L-03	3.8	0.0	0.0	0.0	0.1	-	*	0.0	0.0	0.0	7.5	4.4

* Equipment error

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sample Station Number	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**	**CO_2 (% v/v)**
GS-01	1.5	0.0	1.9	0.5	1.5	3.2	*	1.3	2.3	2.9	3.5	3.9
GS-05	1.8	1.7	1.0	2.6	3.3	3.2	*	0.0	0.6	3.8	5.8	2.9
GS-06	-	-	-	-	-	-	*	-	-	-	-	-
GS-07	2.1	7.7	3.3	3.7	2.9	6.5	*	7.2	7.9	6.0	3.5	9.1
GS-08	1.4	4.6	1.3	4.4	6.4	5.4	*	5.6	0.0	5.4	4.4	5.8
GS-09	2.0	0.0	2.9	3.3	3.3	0.0	*	0.0	4.2	0.1	5.0	4.9
GS-10	12.0	9.3	2.5	12.0	12.0	0.0	*	0.1	0.0	0.0	14.0	12.0
GS-11	6.6	0.0	2.0	5.5	6.4	0.4	*	4.1	0.5	7.4	4.5	3.2
BH-2	0.0	0.0	0.1	0.0	0.0	0.1	*	0.7	0.2	0.1	0.1	0.2
BH-5	6.4	0.2	5.6	1.5	3.7	0.0	*	1.3	0.0	0.0	8.5	3.5
BH-6	-	-	-	-	-	-	*	-	-	-	-	-
BH-7	0.4	0.0	0.3	0.0	0.3	0.1	*	0.8	0.0	0.2	0.8	0.0
L-01	-	-	-	-	-	7.2	*	3.9	0.0	-	-	-
L-02	7.1	8.7	4.5	2.0	1.7	6.0	*	7.1	6.3	2.1	6.6	12.0
L-03	12.0	0.0	0.1	0.5	0.4	-	*	0.1	0.0	0.0	12.0	13.0

* Equipment error

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sample Station Number	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**	**O_2 (% v/v)**
GS-01	17.1	21.0	18.9	21.0	17.0	12.0	*	16.6	14.4	11.1	13.8	8.9
GS-05	18.4	18.5	19.9	13.0	14.5	12.8	*	21.1	19.8	15.4	14.5	14.7
GS-06	-	-	-	-	-	-	*	-	-	-	-	-
GS-07	18.6	10.9	18.1	14.8	18.0	11.1	*	10.8	10.3	15.6	16.6	6.4
GS-08	19.5	16.2	20.3	15.3	10.3	11.8	*	12.7	21.0	15.2	13.9	10.7
GS-09	16.4	20.6	15.0	14.2	13.2	20.9	*	20.9	14.4	21.0	13.6	11.3
GS-10	0.0	3.3	16.4	1.5	0.0	20.4	*	20.9	20.9	21.0	0.1	0.2
GS-11	10.0	20.6	19.1	10.5	7.5	19.9	*	12.8	2.5	11.9	15.1	15.0
BH-2	20.6	20.7	20.7	20.1	20.1	20.0	*	19.7	21.3	20.7	21.5	20.3
BH-5	8.4	20.6	13.7	17.1	13.5	20.8	*	16.6	20.7	20.9	7.2	12.0
BH-6	-	-	-	-	-	-	*	-	-	-	-	-
BH-7	20.0	20.3	20.4	20.6	20.6	20.2	*	20.6	21.6	20.7	20.8	20.4
L-01	-	-	-	-	-	0.7	*	12.0	20.9	-	-	-
L-02	5.3	4.7	15.7	18.0	17.8	5.2	*	7.5	11.6	18.1	11.7	0.9
L-03	0.0	20.4	20.7	19.0	19.0	-	*	21.3	20.9	20.9	0.2	0.5

* Equipment error

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sample Station Number	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**	**Barometric Pressure (mb)**
GS-01	1006	1006	1037	1013	1013	1017	*	1003	994	995	1009	973
GS-05	1006	1006	1036	1013	1013	1017	*	1002	994	995	1005	973
GS-06	-	-	-	-	-	-	*	-	-	-	-	-
GS-07	1006	1006	1038	1013	1013	1017	*	1002	992	994	1007	973
GS-08	1006	1006	1038	1013	1013	1017	*	1002	994	994	1007	973
GS-09	1006	1006	1036	1013	1013	1017	*	1002	994	994	1007	973
GS-10	1006	1006	1035	1013	1013	1017	*	1002	994	994	1007	973
GS-11	1006	1006	1036	1013	1013	1017	*	1002	994	994	1007	973
BH-2	1006	1006	1037	1013	1013	1017	*	1005	994	995	1011	973
BH-5	1006	1006	1036	1013	1013	1017	*	1003	994	995	1009	973
BH-6	-	-	-	-	-	-	*	-	-	-	-	-
BH-7	1006	1006	1037	1013	1013	1017	*	1003	994	995	1011	973
L-01	-	-	-	-	-	1017	*	1002	994	-	-	-
L-02	1006	1006	1036	1013	1013	1017	*	1002	994	994	1007	973
L-03	1006	1006	1036	1013	1013	-	*	1002	994	994	1007	973

* Equipment error

NOISE SUMMARY TABLES

Noise Results 2008 Fassaroe W0053-03 Q1

Location	Time	Measured Noise Levels (dB re. 2x10-5 Pa)			Comments
		L_{Aeq}	L_{A10}	L_{A90}	
N1	0805-0835	65	65	53	Onsite air handling units audible continuously at low level. Vehicles frequently entering/leaving site dominant when present. Road sweeper truck audible continuously from within site and dominant. Road traffic at roundabout outside entrance significant. Birdsong. Overhead aircraft.
N2	0910-0940	59	61	51	Road sweeper truck audible continuously within site and approaching weighbridge area. Vehicles frequently entering/leaving site significant. Cars accessing car park passing adjacent to SLM*. Onsite waste operations audible, including air handling units. Birdsong. Overhead aircraft.
N3	0943-1013	47	50	43	Noise emissions from onsite waste operations continuously audible at a low level, including road sweeper truck around yard. Not significant. Trucks using site entrance audible at low level. Crows significant. Overhead aircraft.
N4	1019-1049	53	54	52	No site noise audible. Local stream dominant. Birdsong and crows.
NSL1	0837-0907	56	60	52	Road sweeper truck audible continuously at low level within site and near weighbridge area. Vehicles using site entrance also audible. Road traffic on adjacent roads and through roundabout significant. Birdsong. N11 traffic slightly audible continuously. Overhead aircraft.
NSL2	1100-1130	54	55	48	Intermittent local traffic. Rustling vegetation. Birdsong and crows. No site noise audible apart from faintly audible road sweeper truck. Overhead aircraft.

Noise Results 2008 Fassaroe W0053-03 Q2

Location	Time	Measured Noise Levels (dB re. 2x10-5 Pa)			Comments
		L_{Aeq}	L_{A10}	L_{A90}	
N1	0830-0900	60	63	53	Regular truck movements through site entrance dominant. Continuous site emissions audible at low level in background particularly road sweeper truck around yards. N11 traffic to E and local road traffic dominant in background. Birdsong and crows. Overhead aircraft.
N2	0901-0931	59	60	52	Regular truck movements through site entrance dominant, including trucks idling at weighbridge. Sporadic vehicle movements passing adjacent to SLM. Continuous site emissions audible at low level in background, particularly road sweeper truck around yards. N11 traffic to E audible continuously in background. Birdsong and crows. Overhead aircraft.
N3	0933-1003	56	55	50	Site emissions audible continuously at low level. Not significant. N11 traffic audible continuously and dominant in background. Birdsong and crows. Overhead aircraft.
N4	1004-1034	51	52	49	Site emissions faintly audible. Noise dominated by N11 traffic audible to E continuously, birdsong and crows. Overhead aircraft
NSL1	0800-0830	55	57	60	Site noise emissions slightly audible continuously in background, not significant. Regular truck movements through entrance audible. Road sweeper truck audible moving around the site from 08.20, particularly during one pass through site entrance. Noise dominated entirely by N11 traffic to E and local road traffic. Birdsong and crows. Overhead aircraft.
NSL2	1048-1118	53	53	47	No site noise audible apart from sporadic isolated emissions. Noise dominated entirely by N11 traffic to E and also reflecting off house opposite. Birdsong and crows significant. Intermittent local traffic. Overhead aircraft. Rustling vegetation. Chainsaw audible in distance.

Noise Results 2008 Fassaroe W0053-03 Q3

Location	Time	Measured Noise Levels (dB re. 2x10-5			Comments
		L_{Aeq}	L_{A10}	L_{A90}	
N1	0857-0927	62	64	54	Waste Processing emissions continuously audible from within site. Intermittent truck movements through site gate adjacent to N1 dominant. Vehicle movements through roundabout outside gate audible. Crows. Road sweeper truck audible occasionally around site yard.
N2	0928-0958	63	63	53	Waste processing emissions continuously audible from within site. Intermittent truck movements through site gate significant. Crows. Road sweeper truck audible manoeuvring around site.
N3	1037-1107	49	52	43	Waste processing operations audible continuously and dominant from main site building. Emissions gradually decreased during interval, following which N11 traffic becoming audible. Birdsong.
N4	1004-1034	44	45	42	No site emissions audible apart from sporadic skip movements above bank. Water flowing in nearby stream dominant continuously. Birdsong significant. Low hum audible continuously from within site.
NSL1	0823-0853	53	55	46	Waste processing emissions audible at low level, not significant. Intermittent truck movements through entrance clearly audible. N11 traffic continuously audible at low level in background. Birdsong and crows. Intermittent traffic movements through roundabout outside entrance and on local road audible. Road sweeper truck audible through entrance at 0848.
NSL2	1115-1145	50	50	45	N11 traffic continuously dominant in background. Birdsong. No site emissions audible other than moving skips and warning alarms. Processing line emissions slightly audible from 1140. Offsite, sporadic local emissions from worker at van. Sporadic local traffic. Passing helicopter at low level intrusive.

Noise Results 2008 Fassaroe W0053-03 Q4

Location	Time	Measured Noise Levels (dB re. 2x10-5 Pa)			Comments
		L_{Aeq}	L_{A10}	L_{A90}	
N1	1110-1140	57	60	49	Frequent traffic movements through site entrance and at weighbridge area dominant. Forklift truck in regular use at weighbridge during bridge calibration procedure audible. Emissions from with site also audible at low level. Birdsong. Local traffic on public roads significant. N11 traffic also audible in background continuously.
N2	1005-1035	56	58	49	Frequent traffic movements through site entrance and at weighbridge area dominant. Emissions from within site also audible.
N3	0932-1002	53	56	74	C&I line emissions continuously audible until shut down 0945. N11 traffic audible continuously in background. Sporadic vehicle movements in carpark. Birdsong
N4	0859-0929	48	49	47	C&I line emissions slightly audible continuously. Nearby watercourse also audible continuously and dominant. Birdsong.
NSL1	1038-1108	52	53	47	Frequent traffic movements through site entrance and at weighbridge area audible. Emissions from within site also audible at low level. Birdsong. Local traffic on public roads significant. N11 traffic also audible in background continuously
NSL2	0817-0847	59	63	50	Continuous Greenstar C&I line emissions audible at low level from approx 0830 during traffic lulls. LA90 considered partly representative. Regular local traffic dominant. N11 traffic continuously audible and significant. Birdsong.

APPENDIX 2

Updated Procedures Index

DOCUMENT TYPE		
TITLE	**Complete Procedures list**	
Controlled Document		

This document is issued and controlled by the Environmental Department. This is a controlled document subject to change at any time and therefore, should not be copied. Only signed, authorised copies may be issued as working documents.

Revision	Description	Issued By	Approved	Date

Ref	Procedure	Issue No.	Date
	ISO standard procedures		
SOP 001	Document control	0	03/08/06
SOP 002	Management Review	0	03/08/06
SOP 003	Environmental Aspects	0	03/08/06
SOP 004	Objectives & Targets, Environmental Management Programme	0	03/08/06
SOP 005	Environmental Legislation	0	03/08/06
SOP 006	Environmental Management System Audit	0	03/08/06
SOP 007	Environmental Complaints	0	03/08/06
SOP 008	Non-Conformance & Corrective action	0	03/08/06
SOP 009	Environmental Training	0	03/08/06
SOP 010	Communications	0	03/08/06
SOP 011	Records	0	03/08/06
SOP 012	Emergency Response Procedure	0	03/08/06
SOP 013	Environmental Monitoring & Reporting/Emissions Management	0	03/08/06
	Operating Procedures-all facilities		
SOP 014	Facility Inspection	0	03/08/06
SOP 015	Incident Recording and Reporting	0	03/08/06
SOP 071	Accident Incident Procedure	0	03/08/06
SOP 016	Waste Management Facility /Collector approval	0	03/08/06
SOP 017	Maintenance	0	03/08/06
SOP 018	Unacceptable Waste	0	03/08/06
SOP 019	Nuisance Management	0	03/08/06
SOP 020	Raw materials/Resource control and usage	0	03/08/06
SOP 021	Permits to work	0	03/08/06
SOP 022	Health and Safety	0	03/08/06
SOP 023	Operation of Forklift	0	03/08/06
	Operating Procedures – Transfer only		
SOP 024	Customer Enquiries	0	03/08/06
SOP 025	Control of Visitors and Contractors	0	03/08/06
SOP 026	Vehicle Movements	0	03/08/06
SOP 027	Load Receipt and Acceptance Route	0	03/08/06
SOP 028	Inspection and Testing of Waste	0	03/08/06
SOP 029	Processing, Recovery, Storage and Transfer of Non-hazardous waste and recyclables	0	03/08/06
SOP 030	Site Closure	0	03/08/06
	Operating Procedures – Bray Only		
SOP 031	Processing of Commercial & Industrial Waste	0	03/08/06
SOP 032	Processing of Construction & Demolition Waste	0	03/08/06

DOCUMENT TYPE		
TITLE	**Complete Procedures list**	
Controlled Document		

Ref	Procedure	Issue No.	Date
SOP 033	Chipping of Timber	0	03/08/06
SOP 034	Processing of Dry Recyclables	0	03/08/06
SOP 035	Operation of Baler	0	03/08/06
SOP 080	Gypsum Based Material	0	
SOP 081	Timber Shredding	0	10/09/08
SOP 082	Quality Control of A-Grade Woodchip	0	20/11/09
	Other		
SOP 070	Addition of Vehicles to Collection Permit	0	03/08/06
SOP 071	See Operating Procedures Section Above	0	03/08/06
SOP 072	Risk Assessment & Evaluation	0	03/08/06
SOP 073	Training	0	03/08/06
SOP 074	Record Management	0	03/08/06
SOP 075	Communication	0	03/08/06
SOP 076	Understanding & Sign Off of HSOP Procedures	0	03/08/06

1. SCOPE/OBJECTIVE

This procedure will apply to all Greenstar facilities.
The purpose of this procedure is to ensure the safe and efficient handling, rejection and/or quarantining of gypsum based material.

2. RESPONSIBILITY

The Facility Manager (FM) will implement this procedure.
The FM, Environment Manager (EM), Site Operatives (SO) and Customer Care (CC) personnel will follow this procedure.

3. DEFINITION

"Non -hazardous gypsum-based materials" typically include plaster board waste from construction and demolition sites which can often be present in general C&D waste skips. In terms of the European Waste Catalogue, separately collected gypsum based construction material is coded as 17 08 02 and source separation of this material is encouraged. Typically, however, gypsum wastes arising from works of demolition in particular may arise in general C&D waste loads. In this instance the appropriate code is 17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03).

COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of Annex II to Directive 1999/31/EC states:
"2.2.3. Gypsum Waste;
Non hazardous gypsum-based materials should be disposed of only in landfills for non-hazardous waste in cells where no biodegradable waste is accepted".

Mixing gypsum wastes with biodegradable wastes can lead to the evolution of hydrogen sulphide and consequently where gypsum based material is accepted at a non landfill site, this material must be segregated from the general (C&D) waste accepted.

Site Safety Statement

4. PROCEDURE

4.1. <u>Generalities</u>

Gypsum based material may arrive on site mixed with general Construction and Demolition (C&D) waste. Where possible and practicable, all gypsum-based products must be segregated from other types of C&D waste and stored separately in a suitable, clearly labelled, covered container pending removal off-site to a licensed or permitted facility.

Where large proportions of gypsum waste are found to be contaminating skips received from a particular customer on an on-going basis, the FM must contact the Customer Account Manager to explain that further loads of this nature will not be received at the facility, giving reasons why and insisting that the customer site in question avail of separate covered storage and collection of gypsum-based waste for removal to licensed facilities.

The FM will arrange for the transport and disposal off-site of segregated gypsum based material by an approved third party specialist contractor (Ref. SOP 016, and GS028).

This material will only be sent to a fully approved (licensed or permitted) facility.

APPENDIX 3

European Pollutant Release and Transfer Register

Environmental Protection Agency

AER Returns Worksheet

Version 1.1.04

REFERENCE YEAR	2008

1. FACILITY IDENTIFICATION

Parent Company Name	Greenstar Limited
Facility Name	Greenstar Limited
PRTR Identification Number	W0053
Licence Number	W0053-03

Waste or IPPC Classes of Activity

No.	class_name
3.12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.11	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.
4.2	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).
4.3	Recycling or reclamation of metals and metal compounds.
4.4	Recycling or reclamation of other inorganic materials.
4.11	Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.
4.12	Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.
4.13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.

Address 1	Bray Depot
Address 2	La Vallee House
Address 3	Fassaroe
Address 4	Bray, Co. Wicklow
Country	Ireland
Coordinates of Location	0.000
River Basin District	IEEA
NACE Code	382
Main Economic Activity	Waste treatment and disposal
AER Returns Contact Name	Suzanne Byrne
AER Returns Contact Email Address	suzanne.byrne@greenstar.ie
AER Returns Contact Position	Environmental Executive
AER Returns Contact Telephone Number	01-2947949
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	01-2947900
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

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

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

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

4.1 RELEASES TO AIR

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

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

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

SECTION B : REMAINING PRTR POLLUTANTS

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

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

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

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

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

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Greenstar Limited

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

4.2 RELEASES TO WATERS

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

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

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used		SW-5			
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
79	Chlorides (as Cl)	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	141.4	141.4	0.0	0.0
20	Copper and compounds (as Cu)	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	0.0252	0.0252	0.0	0.0
22	Nickel and compounds (as Ni)	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	0.042	0.042	0.0	0.0
24	Zinc and compounds (as Zn)	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	0.0224	0.0224	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

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

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

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

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
			Method Used		SW-5			
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
306	COD	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	105.0	105.0	0.0	0.0
327	Nitrate (as N)	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	4.6154828	4.6154828	0.0	0.0

305	Calcium	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	1344.0	1344.0	0.0	0.0
320	Magnesium	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	59.36	59.36	0.0	0.0
343	Sulphate	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	3598.0	3598.0	0.0	0.0
338	Potassium	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	125.44	125.44	0.0	0.0
341	Sodium	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	259.0	259.0	0.0	0.0
321	Manganese (as Mn)	E	Estimate	Flow was estimated based on rainfall amount over the year and the area of the facility. The analysis was ISO accredited	0.0112	0.0112	0.0	0.0

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

4.3 RELEASES TO WASTEWATER OR SEWER

| PRTR# : W0053 | Facility Name : Greenstar Limited | Filename : W0053_2008.xls | Return Year : 200 31/03/2009 17:20

SECTION A : PRTR POLLUTANTS

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

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

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

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
			Method Used		SE-1			
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
303	BOD	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	641.3333	641.3333	0.0	0.0
306	COD	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	1602.0	1602.0	0.0	0.0
343	Sulphate	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	157.5	157.5	0.0	0.0
240	Suspended Solids	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	885.75	885.75	0.0	0.0
308	Detergents (as MBAS)	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	22.9	22.9	0.0	0.0
314	Fats, Oils and Greases	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	9.0	9.0	0.0	0.0
324	Mineral oils	E	Estimate	Based on an estimate of water used in the wheel wash. Analysis is ISO accredited	3.627	3.627	0.0	0.0

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

4.4 RELEASES TO LAND

SECTION A : PRTR POLLUTANTS

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

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

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

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

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR# : W0053 | Facility Name : Greenstar Limited | Filename : W0053_2008.xls | Return Year : 2008 |

31/03/2009 17:23

0

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					
Within the Country	15 01 01	No	157.06	Cardboard Packaging	R3	M	Weighed	Offsite in Ireland	Bailey Waste WPT (1) B	Rosemount Businiess Park, Blanchardstown, Dublin 16		
Within the Country	15 01 01	No	157.02	Cardboard Packaging	R3	M	Weighed	Offsite in Ireland	Marwin Environmental 926	7 Glyntown Heights, Glanmire, Co.Cork		
To Other Countries	15 01 01	No	741.34	Cardboard Packaging	R3	M	Weighed	Abroad	SCA Recycling Ltd WCP/WW/295/05A	Armstrong Road, Daneshill Industrial Estatem Basingstoke, Hampshire REG24 0NU, UK		
To Other Countries	15 01 01	No	188.34	OCC Baled	R3	M	Weighed	Abroad	Parry & Evans NOW/268322	Severn Farm Industrial Estate, Welshpool, Powys, SY217DF, UK		
To Other Countries	15 01 01	No	828.04	OCC Baled	R3	M	Weighed	Abroad	International Recycling Ltd. IRE/G050/08	Heath House, 5 Woolgate Court, Norwich, NR2 4AP, UK		
Within the Country	15 01 01	No	137.94	OCC Baled	R3	M	Weighed	Offsite in Ireland	Marwin Environmental 926	7 Glyntown Heights, Glanmire, Co.Cork		
To Other Countries	15 01 01	No	315.5	OCC Baled	R3	M	Weighed	Abroad	NCH International LCC Ltd. IRE/G113/08	3 Clarendon Road, Herts, AL5 4NS, England		
To Other Countries	15 01 01	No	165.4	OCC Baled	R3	M	Weighed	Abroad	Peute Papier Recycling BV IRE/G006/08	Veerplaat 40, 3313 LJ Dordrecht, Netherlands		
To Other Countries	15 01 01	No	413.3	Soft Mixed Baled	R3	M	Weighed	Abroad	International Recycling Ltd. IRE/G050/08	Heath House, 5 Woolgate Court, Norwich, NR2 4AP, UK		
To Other Countries	15 01 02	No	390.72	Plastic Film (colour)	R5	M	Weighed	Abroad	Greenway Ireland Ltd. ROC 621 (NI 00611)	11 Porthill Road, Mountnorris, Co. Armagh, BT60 2TY		
To Other Countries	15 01 02	No	529.94	Plastic Film (clear)	R5	M	Weighed	Abroad	Greenway Ireland Ltd. ROC 621 (NI 00611)	11 Porthill Road, Mountnorris, Co. Armagh, BT60 2TY		
To Other Countries	15 01 02	No	80.58	Plastic Bottles	R5	M	Weighed	Abroad	Alternative Waste Solutions IRE/G009-08	Unit 2, Britannia Business Park, Wallsend, Tyne and Wear, NE28 6HA, England		
To Other Countries	15 01 02	No	566.72	Plastic Bottles	R5	M	Weighed	Abroad	Greenway Ireland Ltd. ROC 621 (NI 00611)	11 Porthill Road, Mountnorris, Co. Armagh, BT60 2TY		
To Other Countries	15 01 02	No	254.18	Plastic Bottles	R5	M	Weighed	Abroad	Thorndale Env. BT473PA	77, Clooney Road, Campsie, Co. Derry		
To Other Countries	15 01 02	No	13.24	FIBC Bags PP	R5	M	Weighed	Abroad	Greenway Ireland Ltd. ROC 6	11 Porthill Road, Mountnorris, Co. Armagh, BT60 2TY		
To Other Countries	15 01 04	No	52.61	Aluminium Cans	R4	M	Weighed	Abroad	Alutrade Ltd. BUT/773309	Langley Forge House, Tat Bank Road, Oldbury, West Midlands, H69 4NH		
To Other Countries	15 01 04	No	80.95	Metallic Packaging	R4	M	Weighed	Abroad	Alutrade Ltd. BUT/773309	Langley Forge House, Tat Bank Road, Oldbury, West Midlands, H69 4NH		
Within the Country	15 01 04	No	190.64	Steel Cans	R4	M	Weighed	Offsite in Ireland	Davis Recycling Ltd WP98067	Pigeon House Road, ringsend, Dublin 1		
Within the Country	15 01 07	No	1058.52	Glass Packaging	R5	M	Weighed	Offsite in Ireland	Glassco Recycling WP 160/2004	Naas , Co. Kildare		
Within the Country	16 05 04	Yes	2.24	Gas Cylinders	R4	M	Weighed	Offsite in Ireland	BOC Gas Dublin	Bluebell Industrial Estate, Dublin 12	BOC Gas, Bluebell Industrial Estate, Dublin 12	N/A
Within the Country	17 01 07	No	10828.0	C&D Inert Mixed	R5	M	Weighed	Onsite in Ireland	Bray Void Landfill	Fassaroe, Co. Wicklow		
Within the Country	17 01 07	No	190.7	C&D Inert Mixed	R5	M	Weighed	Offsite in Ireland	Cullen Excavations	Newtownmountkennedy, Co. Wicklow		
Within the Country	17 01 07	No	23.52	C&D Inert Mixed	R5	M	Weighed	Offsite in Ireland	KTK landfill W0081-02	Kilcullen Co. Kildare		
Within the Country	17 01 07	No	24.54	C&D Inert Mixed	R5	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		

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					
Within the Country	17 04 01	No	4.63	Copper	R4	M	Weighed	Offsite in Ireland	Davis Recycling Ltd WP98067	Pigeon House Road, ringsend, Dublin 1		
Within the Country	17 05 04	No	68.7	C&D Inert Mixed	R5	M	Weighed	Offsite in Ireland	Cullen Excavations	Newtownmountkennedy, Co. Wicklow		
Within the Country	19 05 01	No	13.14	Non Composted Fraction	R3	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
Within the Country	19 12 04	No	7.48	Rubber	R5	M	Weighed	Offsite in Ireland	Crumb Rubber WP 033/02	Mooretown, Dromiskin, Dundalk, Co. Louth		
Within the Country	19 12 09	No	80.7	Fines C&D	R5	M	Weighed	Offsite in Ireland	KTK landfill W0081-02	Kilcullen Co. Kildare		
Within the Country	19 12 09	No	22.02	Fines C&D	R5	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
Within the Country	19 12 09	No	6533.89	Fines C&I	R5	M	Weighed	Offsite in Ireland	KTK landfill W0081-02	Kilcullen Co. Kildare		
Within the Country	19 12 09	No	9219.09	Fines C&I	R5	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
Within the Country	19 12 12	No	15302.01	C&I Dry Mixed	D5	M	Weighed	Offsite in Ireland	KTK landfill W0081-02	Kilcullen Co. Kildare		
Within the Country	19 12 12	No	95.56	C&I Dry Mixed	R5	M	Weighed	Offsite in Ireland	Greenstar Millennium W0183-01	Millennium Business Park, Grange, Ballycoolin, Co. Dublin		
Within the Country	19 12 12	No	5424.58	C&I Dry Mixed	D5	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
Within the Country	19 12 12	No	42657.83	MSW Municipal Mixed	D5	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
Within the Country	19 12 12	No	1240.7	Fines - Mech Treated Waste	R5	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
Within the Country	20 01 01	No	4859.22	Cardboard & Paper	R5	M	Weighed	Offsite in Ireland	Marwin Environmental 926	7 Glyntown Heights, Glanmire, Co.Cork		
To Other Countries	20 01 01	No	4307.41	Cardboard & Paper	R5	M	Weighed	Abroad	SCA Recycling Ltd WCP/WW/295/05A	Armstrong Road, Daneshill Industrial Estatem Basingstoke, Hampshire REG24 0NU, UK		
To Other Countries	20 01 01	No	715.98	Mixed Paper Baled	R5	M	Weighed	Abroad	Cellmark Recycling Benelux BV IRE/G003/08	Heuvel 7, NL-5664 HK Geldrop, The Netherlands		
To Other Countries	20 01 01	No	2037.42	Mixed Paper Baled	R5	M	Weighed	Abroad	International Recycling Ltd. IRE/G050/08	Heath House, 5 Woolgate Court, Norwich, NR2 4AP, UK		
Within the Country	20 01 01	No	869.43	Mixed Paper Baled	R5	M	Weighed	Offsite in Ireland	Marwin Environmental 926	7 Glyntown Heights, Glanmire, Co.Cork		
To Other Countries	20 01 01	No	3545.56	Mixed Paper Baled	R5	M	Weighed	Offsite in Ireland	Peute Papier Recycling BV IRE/G006/08	Veerplaat 40, 3313 LJ Dordrecht, Netherlands		
Within the Country	20 01 23	Yes	3.38	Fridge Freezer CFC	R5	M	Weighed	Offsite in Ireland	KMK Metals W0133-01	KMK Metals t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	KMK Metals t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	W0113-01
Within the Country	20 01 35	Yes	15.53	Electronics & Electrics	R5	M	Weighed	Offsite in Ireland	Immark W0185-01	Immark, Greenogue Industrial Estate, Greenogue Industrial Estate, Rathcoole, Co. Dublin	Immark, Greenogue Industrial Estate, Rathcoole, County Dublin	W0185-01
Within the Country	20 01 35	Yes	5.52	Electronics & Electrics	R5	M	Weighed	Offsite in Ireland	WEEE Recycle W0113-01	KMK Metals t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	KMK Metals t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	W0113-01
Within the Country	20 01 35	Yes	12.14	Monitor, TVs	R5	M	Weighed	Offsite in Ireland	WEEE Recycle W0113-01	KMK Metals t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	KMK Metals t/a WEEE Recycle, Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly	W0113-01
Within the Country	20 01 38	No	469.48	Wood	R3	M	Weighed	Offsite in Ireland	East Glaway landfill Greenstar Ltd W0178-01	Killagh More, Ballybaun, ballintober, Ballinasloe, Co.Galway		
Within the Country	20 01 38	No	43.38	Wood	R3	M	Weighed	Offsite in Ireland	Johnstown Recycling WP-161-2007	Johnstown, Slanemore, Mullingar, Co. Westmeath		
Within the Country	20 01 38	No	1244.02	Wood	R3	M	Weighed	Offsite in Ireland	KTK landfill W0081-02	Kilcullen Co. Kildare		
Within the Country	20 01 38	No	40.16	Wood	R3	M	Weighed	Offsite in Ireland	Knockharley Landfill W0146-01	Navan, Co. Meath		

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					
Within the Country	20 01 38	No	17019.1	Wood	R3	M	Weighed	Offsite in Ireland	Ormonde Organic Ltd W0237-01	Unit 643, Greenogue industrial Estate, Rathcoole, Co. Dublin		
Within the Country	20 01 38	No	2388.96	Wood	R3	M	Weighed	Offsite in Ireland	Ballynagran landfill W0165-01	Ballynagran, Co. Wicklow		
To Other Countries	20 01 39	No	59.41	Plastic	R5	M	Weighed	Abroad	Greenway Ireland Ltd. ROC 621 (NI 00611)	11 Porthill Road, Mountnorris, Co. Armagh, BT60 2TY		
Within the Country	20 01 40	No	2823.87	Metal	R4	M	Weighed	Offsite in Ireland	Davis Recycling Ltd WP98067	Pigeon House Road, ringsend, Dublin 1		
Within the Country	20 02 01	No	292.88	Green Biodegradable Waste	R3	M	Weighed	Offsite in Ireland	Enrich Env. Ltd WMP 2004/57	Kilcock		

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

APPENDIX 4

Slope Stability Assessment

Mott MacDonald

GREENSTAR RECYCLING HOLDINGS LTD.

FASSAROE

REPORT ON

SLOPE STABILITY

Greenstar Recycling Holdings Ltd.,
Unit 6,
Ballyogan Business Park,
Ballyogan,
Dublin 18.

Mott MacDonald Pettit,
South Block,
Rockfield,
Dundrum
Dublin 16.

Job Nr.: PB8589 **April 2008**

Revision Control Table

User is Responsible for Checking the Revision Status of this Document

		For and on Behalf of Mott MacDonald Pettit			
Rev Nr.	**Description of Changes**	**Prepared by**	**Checked by**	**Approved by**	**Date**
A	Initial Issue	SKNO	JSHE	JSHE	Apr. 08

TABLE OF CONTENTS

1. INTRODUCTION

Greenstar operate a waste management facility at their site in Fassaroe, Bray Co. Wicklow. Historically the site operated as a quarry, and following the cessation of quarry excavations there was a large difference in level between the old quarry floor and the adjacent land.

As part of the Greenstar site development Mott MacDonald's brief was to design a Civil Engineering solution to tie the ground levels on the adjacent land to the proposed finished site levels. It was also stipulated that the solution should maximise the Greenstar site area.

The solution proposed by Mott MacDonald comprised the use of graded earth embankments and retaining walls. This brief report outlines the method of design and analysis for the embankments.

2. DISCUSSION

As noted above the best engineering solution, given the large difference in levels, was a combination of embankments, and where necessary reinforced concrete retaining walls.

Scheme and detailed design of the embankments was carried out with reference to BS6031: 1981 Code of Practice for Earthworks, particularly Section 2 'Cuttings and Embankments, grading and levelling'. Although the client brief was to minimise the embankment widths, (and therefore maximise site area), it was soil properties that would determine the extent of the embankments and the embankment profiles.

Calculations were carried out to determine the maximum gradients allowable with the fill material available on site. The embankments were checked for the following failure modes:

- Rotational Sliding (Circular and non-circular)
- Transitional Sliding (Slab sliding, Wedge failures and Debris slides)
- Compound Sliding

The design calculations were based on fill material soil properties, and as the fill material tended to be variable, appropriate factors of safety were applied to the results for allowable embankment gradients.

Random samples of fill materials were inspected by Mott MacDonald Pettit Engineers to determine soil properties for use in calculations.

The embankments were constructed by a competent Civil Engineering Contractor, Coffey Construction. Mott MacDonald Pettit carried out periodic inspections of the construction work. Any random pockets of poor quality or loose material, that was likely to cause a debris slide, was removed at construction stage following site inspections.

The embankments were seeded with grass following construction. The grass sward will provide protection against wind and water erosion, and therefore help maintain embankment stability.

The embankments have performed adequately to date. Mott MacDonald Pettit, with Greenstar site staff, inspect the embankments periodically, especially during severe weather conditions, to assess their condition. Site Management at the Fassaroe Facility have also been briefed on the importance of informing Mott MacDonald Pettit of any noted movement in the embankment profile.

3. SUMMARY

In summary:

- The embankments were designed using best practice with reference to BS6031: 1981 Code of Practice for Earthworks, particularly Section 2 'Cuttings and Embankments, grading and levelling'.

- Soil Properties from Ground Investigation Reports were used in the design of the embankments and factors of safety have been built-in.

- Samples of fill material used in construction was inspected by Mott MacDonald Pettit.

- The embankments have been seeded to prevent erosion and maintain stability.

- Greenstar Site Management have established an embankment inspection programme.

- The embankments are performing well to date.