APPENDIX 2

AER 2006 & 2008

ANNUAL ENVIRONMENTAL REPORT

FOR GREENSTAR LTD

COOKSTOWN INDUSTRIAL ESTATE

TALLAGHT, DUBLIN 24

LICENCE NO. W0079-01

JANUARY 2006 – DECEMBER 2006

Prepared For: -

Greenstar Ltd.,
Floor 3, Burton Court,
Burton Hall Road,
Sandyford,
Dublin 18.

Prepared By: -

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

29th May 2007

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1. INTRODUCTION

This is the final Annual Environmental Report (AER) for Greenstar Ltd. (Greenstar), waste transfer and recycling facility at Unit 41, Cookstown Industrial Estate, Tallaght, Dublin 24. The AER covers the period from the 1st January 2006 to 31st December 2006.

Greenstar ceased operations at the facility on the 21st April 2006 and transferred all waste activities to its Greenogue Business Park Facility (WL W0188-01). Greenstar intends to surrender the Tallaght Waste Licence to the Agency (W0079-01). The Agency has been informed of Greenstar's intentions and an agreed process for surrendering the licence has begun.

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 The report format follows guidelines set in the "Draft Guidance on Environmental Management Systems and Reporting to the Agency" issued by the Agency.

2. SITE DESCRIPTION

2.1 Waste Management Activities

The Licence allows Greenstar to accept and process on-site for recovery and disposal 145,000 tonnes of waste per annum, comprising commercial/industrial non-hazardous waste and construction and demolition wastes. Greenstar ceased operations at the facility on the 21st April 2006.

2.1.1 Waste Types

The facility is licensed to accept the following waste types, as specified in Schedule H of the Licence: -

- Commercial & Industrial (30% of total tonnage per annum, 43,500 tonnes),
- Construction & Demolition (70% of total tonnage per annum, 101,500 tonnes).

No hazardous wastes or liquid waste can be accepted.

3. EMISSION MONITORING

Although waste activities stopped in April 2006 Greenstar continued to carry out the environmental monitoring programme specified in the licence. The programme includes surface water, wastewater, noise and dust monitoring at the monitoring locations shown on Figure 3.1. The monitoring results have submitted to the EPA at quarterly intervals. An overview of the monitoring results is presented in this Section, with summary data tables included in Appendix 1.

3.1 Surface Water Quality Monitoring

Although the Licence does not require Greenstar to monitor surface water, monitoring was carried out at the discharge point from the facility on a monthly basis. The range of analysis and the frequency was agreed with the Agency in the second quarter (Q2) of 2005 and subsequently amended in Q4 2005.

The discharge from the facility is rainfall dependent. OCM visited the site monthly throughout the reporting period. However, on several occasions it was not possible to collect samples as there was no flow in the drain. Samples were collected in March and August 2006 and the results are included in Appendix 1.

An elevated Total Suspended Solids (TSS) and ammonia was recorded in March. The elevated TSS is likely to be due to disturbance of the sediment during the collection of the sample. The ammonia level (4.2mg/l) was slightly above the previously established range however the source is unknown. In August the ammonia level (0.6mg/l) was significantly below that recorded in March.

3.2 Foul water Monitoring

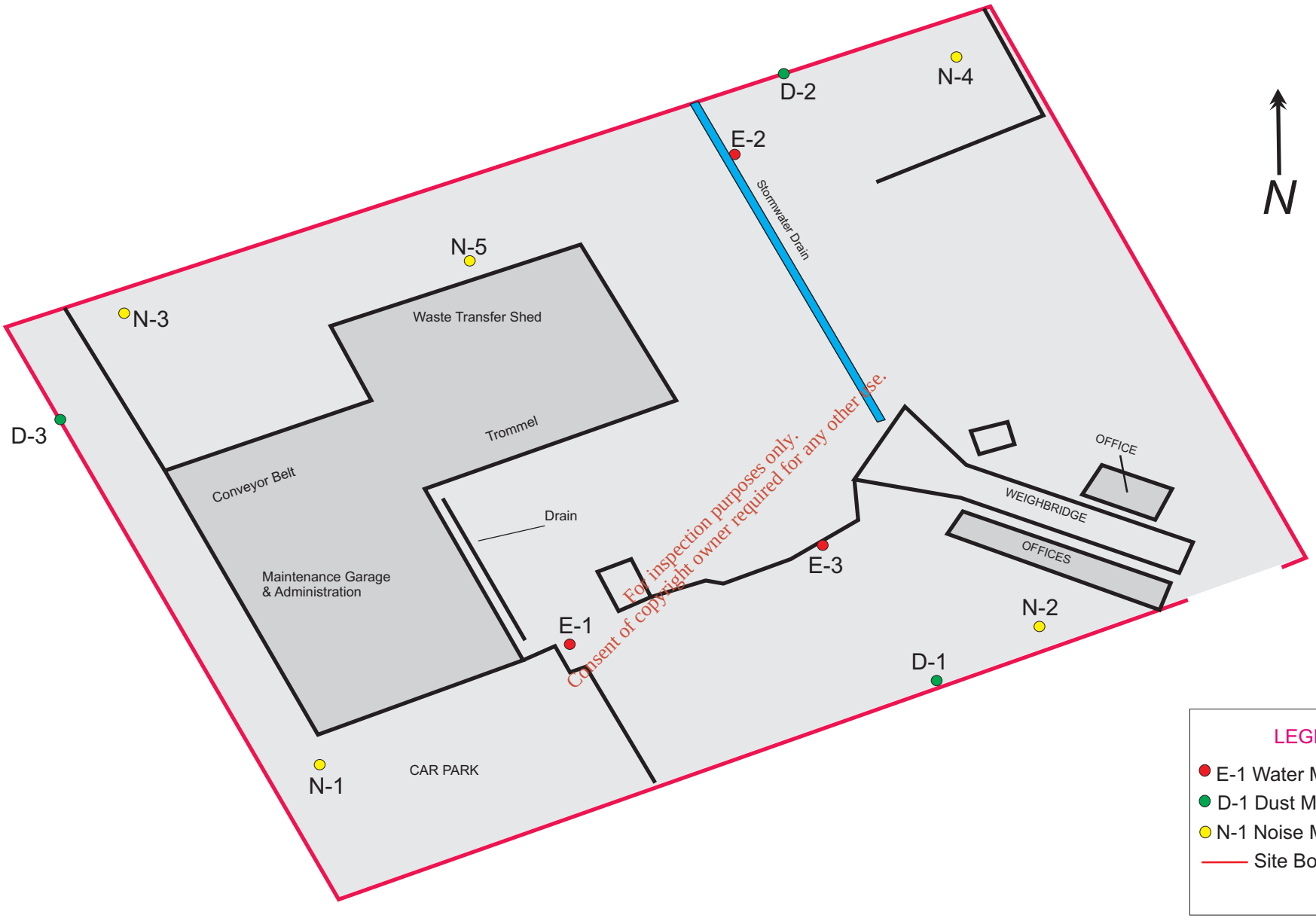
Emissions to the sewer are monitored quarterly at two locations (E-1 and E-3). E-1 is at the discharge point from the vehicle wash bay, and E-3 is at the outlet from the waste transfer building. Both discharges drain through separate oil interceptors. Only one foul water sample was collected during the reporting period (March 2006). As waste activities ended in April 2006 wastewater was no longer generated.

3.3 Noise Survey

Monitoring of noise emissions has been carried out within the site boundary bi-annually since the licence was issued. There are no emission limit values specified in the Licence and there are no off-site noise sensitive monitoring locations. The 2006 surveys were scheduled for June and December 2006. However, as operations at the site ceased in April 2006, these surveys were not deemed necessary.

3.4 Dust Monitoring

Dust monitoring was conducted monthly at three on-site locations (D-1, D-2 and D-3). The dust deposition limit (350 mg/m^2/day) was exceeded in seven of the monthly monitoring periods. Three of these exceedances occurred after Greenstar had ceased operations and therefore were not attributable to site activities. The Agency was informed of the exceedances by letter.



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CLIENT: Greenstar Ltd.

TITLE: Site Layout and Monitoring Locations

Details

FIGURE NUMBER: 3.1

Scale: Not To Scale

Revision

4. SITE DEVELOPMENT WORKS

4.1 Engineering Works

No site development works were carried out during the reporting period. As site operations have ceased, no development works will be carried out in 2007.

4.2 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 (green)	16,382 litres
Vehicle Diesel	115,993.1 litres
Hydraulic oil	1,837 litres
Water	650.33 units
Detergent	20 litres
Electricity	21,663 units

5. WASTE RECEIVED AND CONSIGNED FROM THE FACILITY

Table 5.1 shows the quantities of waste received and consigned from the facility for the period January 2006 to April 2006. 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 at the facility was 25,600.69 tonnes. The total waste consigned from the facility was 24,909.44 tonnes. The recycling rate for the facility is estimated at 75 %.

The records indicate that 691 tonnes of wastes were awaiting consignment at the end of the reporting period, but this was not the case. All wastes accepted at the facility were sent to authorised waste disposal and recovery facilities, however errors occurred in recording some waste movements (approximately 2.5% of the total) during the closure of the facility and the transfer of activities to other Greenstar facilities.

All the wastes consigned from the site went to recovery and disposal facilities agreed with the EPA. The name and location of the facilities are given in Table 5.3.

Table 5.1: Waste Received & Consigned January 2006 – April 2006

EWC	Description	Waste In	Waste Out	Destination
01 04 09	C&D Inert Mixed	2.88		
02 06 01	Food Ingredients	15.07		
02 07 04		0.55		
15 01 01	Cardboard Packaging	266.64	263.99	MRF Bray
			59.53	Smurfit Recycling
15 01 02	Plastic Packaging	21.30	38.21	Greenstar UK Collection
			9.24	Materials Recovery
			2.58	Greenstar Bray
	Packaging	24.79		
	Plastic Drums	29.78		
15 01 03	Mixed Packaging	0.14		
	Pallets	161.44		
	Wood	152.40	21.34	Greenstar Bray
15 01 04	Aluminium	0.49		
	Metal	23.26		
	Mixed Metals	64.52		
	Steel (IBC Cages)	0.14		
	Steel Barrels	2.93		
15 01 05	IBC	17.46		
15 01 06	Recyclables	0.91		
	Mixed Packaging	68.88		
15 01 07	Glass Packaging	0.36		
16 01 03	Tyres	1.56		
17 01 01	C&D Inert Mixed	282.02	54.44	Greenstar Bray
17 01 07	C&D Inert Mixed	7,380.49	23.78	KTK Landfill
			8,187.38	Greenstar Bray
			16.44	Greenstar St. Margarets
	C&I Dry Mixed	0.76		
17 02 01	Wood	44.71	47.59	Greenstar Bray
17 04 02	Metal	13.93	1.21	Davis Recycling Ltd.
17 04 05	Metal		269.98	Davis Recycling Ltd
17 05 04	C&D Inert Mixed	742.40	8.74	Greenstar Bray
	Soil & Stones	3.84		
17 08 02	C&D Inert Mixed	21.95		
17 09 04	C&D Inert Mixed	120.49		
19 05 03	Compost	3.41		
19 12 01	Cardboard & Paper		2.80	Greenstar Bray
19 12 07	Wood	9.57	6.77	Greenstar Bray
19 12 09	C&D Inert Mixed	0.93		
19 12 12	C&I Dry Mixed	296.34	172.15	BRP Baler
			5,997.325	KTK Landfill
			2,901.24	Greenstar Bray
			34.38	Greenstar Millennium Park
			1,983.88	Greenstar St Margarets
	MSW Municipal Mixed	298.77	2,261.70	BRP Baler
			75.93	Panda Waste

EWC	Description	Waste In	Waste Out	Destination
20 01 01	Confidential	0.06		
	Cardboard & Paper	11.06	19.38	Hannay John W. & company
	Cardboard Packaging	31.87	6.80	MRF Bray
	Paper	0.74		
20 01 02	Glass Packaging	7.81		
20 01 36	Electrics	0.51		
20 01 38	Beds	7.58		
	C&I Dry Mixed	0.86		
	Wood	541.33	599.70	Greenstar Bray
20 01 39	Metallised CDs	5.86		
	Plastic	50.88		
	Plastic Packaging	29.47	2.32	Greenstar Bray
20 01 40	C&I Dry Mixed	0.02		
	Metal	191.53	9.95	Davis Recycling
20 02 01	Green Biodegradable	10.84		
20 02 02	C&D Inert Mixed	304.69	9.38	Greenstar Bray
20 02 03	Green Mixed	8.98		
20 03 01	C&I Dry Mixed	1,354.37	22.92	BRP Baler
			68.59	KTK Landfill
			12.43	Greenstar Bray
	Mixed Packaging	0.52		
	MSW Municipal Mixed	3,724.78	1,329.52	BRP Baler
			64.69	Panda Waste
20 03 07	301 – General Waste	2.06		
	C&I Dry Mixed	9,192.71	103.01	KTK Landfill
			67.83	MRF Bray
			0.34	Greenstar Millennium Park
			150.56	Greenstar St. Margarets
	Canteen Waste	4.00		
	Compactor	16.00		
	Skip	26.83		
	Mixed Packaging	0.22		
	Total Received	**25,600.69**		
	Total Consigned		**24,909.44**	
	Total Recycled		**18,576.11**	
	Total Disposed		**6,333.325**	
	Recycling Rate		**75%**	

Table 5.3: Off-Site Disposal / Recovery Agents

Final Recovery or Disposal Destination	Waste Licence or Permit	Waste Type Accepted
Baileys Waste Paper , Rosemount Business Pk, Blanchardstown Dublin 16	WPT(1)B	Paper & Cardboard
Davis Recycling, Pigeon House Road, D4	WP 98067	Metal, Plastic & Mixed Electronics
Materials Recovery Ltd. Crossways, Bicester Road, Kingswood, Bucks, HP18 0RA	TWE/674462/B (UK)	Plastic
Smurfits Recycling Ltd. Ballymount Road, Dublin 12	WPR 021	Paper & Cardboard
BRP Baler, Ballyogan Landfill Facility, Ballyogan Road, Carrickmines, Dublin 18	W0015-01	MSW
Greenstar St. Margarets, Sandyhill, St. Margarets, Co. Dublin	W0134-01	C&I
John W. Hannay & Co., Environment Park, Bannow Road, Cabra, Dublin 7	WP98056	Cardboard & Paper
Greenstar Recycling, Millennium Business Park, Ballycoolin, Dublin 11	W0183-01	C&I
Greenstar UK, Skegness, UK	EA/WML/73134	Plastic Packaging
Greenstar Bantry, Colomane, Bantry, Co. Cork	CK (S) 182/04	Cardboard Packaging
KTK Landfill, Kilcullen, Co. Kildare	W0081-01	C&I
Greenstar Recycling, Fassaroe, Bray, Co. Wicklow	W0053-03	C&I, wood, Packaging
Panda Waste Ltd., Beauparc Business Park, Slane, Co. Meath	W0140-01	General Waste

6. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

6.1 Incidents

The surface water and foul water monitoring programme did not identify any environmental incidents. There were several exceedances of the dust deposition limit during the reporting period. However the majority occurred after waste activities had stopped. The Agency was informed of these exceedances in letters dated the 21st March, 27th March, 26th April, 19th May, 29th June, 25th July and 20th October 2006.

6.2 Register of Complaints

Greenstar maintains a register of complaints received in accordance with Condition 3.11 of the waste licence. There were no complaints received during the reporting period.

7. ENVIRONMENTAL DEVELOPMENT

7.1 Environmental Management Programme Report

Greenstar introduced an Environmental Management System (EMS) for the facility. Details of the EMS including the schedule of objectives and targets for 2006 are outlined below. As the facility ceased operations in April 2006 the majority of the objective and targets were not achieved.

7.1.1 Site Management Structure at cessation of activities

Management and Staffing structure: -

Name: Declan O'Reilly

Responsibility: General Manager, overall responsibility for the running of the business including environmental compliance

Experience: 4 years waste management experience, has completed the FAS waste management course.

Name: Tom O'Mahony

Responsibility: Operations Manager, overall responsibility for the day to day site operations, including environmental compliance

Experience: 4 years experience in operations management, has completed the FAS waste management course.

Name: Eamon Mitchell

Responsibility: Yard Manager, responsible for site operations and environmental compliance

Experience: 9 years in waste management, has completed the FAS waste management course.

7.1.2 Staff Training

The general manager, operations manager and yard manager have completed the FÁS management course. No staff training was undertaken during the reporting period.

7.2 Environmental Management Programme Proposal

7.2.1 Schedule of Objectives 2006

The objectives that were achieved during this reporting period are outlined in Table 7.1.

7.2.2 Schedule of Objectives 2007

As the facility has ceased operations there is no schedule of objectives for 2007.

Table 7.1: Schedule of Objective and Targets 2005 – 2006

No	Objective	Target	Responsibility	Timescale
1	**Reduce / Eliminate complaints to the site**	Improve nuisance management of dust, odour, noise, litter & vermin. Utilise dust management plan on site Improve waste management infrastructure at the site. - complete further work on site drainage infrastructure	Facility Manager	On-going
2	**Increase Recycling Rates**	For 2006, aim to achieve an increase in the overall recycling rate from 2005 of the total quantity of waste handled at the site; comprised of : C&D Wood Cardboard/Paper Metal Card	Facility Manager	31 December 2006
3	**Health and Safety**	Health & Safety at Work Certificate and Accident Investigation Training to be completed by key personnel. Reduction in reportable accidents Increased safety and risk awareness on-site	Facility Manager Facility Manager HS Manager	On-going
4	**Ensure that Hazardous waste does not cause pollution**	Continue to ensure that any unacceptable waste is quarantined and hazardous waste is disposed of using only fully certified carriers and only to fully certified facilities.	Facility Manager	On-going
		Ensure that quarantine area is labelled, bunded and maintained throughout the year.	Facility Manager	On-going
		Continue to ensure all tanks are labelled, bunded and decommissioned, if necessary.	Facility Manager	On-going

No	Objective	Target	Responsibility	Timescale
5	**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 Manager	31 December 2006
6	**Improve Record Keeping**	Update/Amend EMS documentation throughout 2006, as necessary, e.g. change of plant/infrastructure.	Environmental Dept / Facility Manager	31 December 2006
		Complete facility inspections on a daily basis, record non-conformances, and implement corrective action.	Facility Manager	-
7	**Training & Awareness**	Carry out all training requirements as specified in the EMS	Facility Manager	-
8	**Improve Monitoring & Reporting at the site**	Continue to include monitoring locations as part of daily facility inspections.	Facility Manager	31 December 2006
		Investigate any exceedances, and implement corrective actions to prevent reoccurrence.	Environmental Dept.	31 December 2006
		Monitor resource use on-site with GS030 Materials and Resources Register Form	Facility Manager	On-going

7.3 Communications Programme

Greenstar are 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 were facilitated in accessing environmental information at the facility. Prior to the closure of the facility in April 2006, the following documents were available for public viewing:-

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

7.4 Report Financial Provision

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

8. OTHER REPORTS

No other reports were requested by the Agency.

APPENDIX 1

Environmental Monitoring Summary Tables

SURFACE WATER MONITORING RESULTS

Surface Water Monitoring Results – Greenstar Ltd. – Tallaght W0079-01

Parameter	Units	E-2 Q1 2006	E-2 Q3 2006
Ammoniacal Nitrogen	N mg/l	4.2	0.6
COD	mg/l	140	<15
Suspended Solids	mg/l	3580	<10
Oils, Fats, Grease	mg/l	1	<1

FOUL WATER MONITORING RESULTS

Foul Water Monitoring Results – Greenstar Ltd. – Tallaght W0079-01

Parameter	Units	E1 Q1 2006	E3 Q1 2006	Waste Licence No. 79-1 Emission Limit Value
Ammoniacal Nitrogen	N mg/l	3.0	2.8	70
BOD	mg/l	355	138	2,000
COD	mg/l	530	303	4,000
Total Suspended Solids	mg/l	530	1775	700
Oils, Fats & Greases	mg/l	14	6	100
Surfactants	mg/l	4.0	2.0	100
Sulphate	mg/l	56	355	1000
Temperature	^{o}C	6.5	6.6	42^{o}C
pH	pH Units	7.03	7.99	6 to 10

DUST DEPOSITION RESULTS

Dust Monitoring Results – Greenstar Ltd. – Tallaght W0079-01

Sample Location	Jan 2006	Feb 2006	March 2006	April 2006	May 2006	June 2006	July 2006	Aug 2006	Sept 2006	Oct 2006	Nov 2006	Emission Limit ($mg/m^2/day$)
D1	170	191	N/A	N/A	352	200	N/A	172	328	182	201	350
D2	320	490	407	391	516	288	N/A	149	265	77	158	350
D3	379	375	308	382	697	811	N/A	189	857	138	142	350

N/A – Not available

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environmental management for business

Office of Environmental Enforcement,
Environmental Protection Agency,
McCumiskey House,
Richview,
Clonskeagh,
Dublin 14.

31st March 2009

RE: 2008 Annual Environmental Report – Greenstar Ltd –Tallaght - Reg. No. W0079-01

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.

Should you have any questions, please call me.

Yours sincerely,

Michael Watson.

Michael Watson

0904802/MG/JC
Encs.
c.c. Ms. Suzanne Byrne, Greenstar Ltd.,
Ms. Maria Andrews, MSM Ltd., Tallaght

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environmental management for business

ANNUAL ENVIRONMENTAL REPORT

FOR GREENSTAR LTD

COOKSTOWN INDUSTRIAL ESTATE

TALLAGHT, DUBLIN 24

LICENCE NO. W0079-01

JANUARY 2008 – DECEMBER 2008

Prepared For: -

Greenstar Ltd.,
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Ballyogan Road,
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31st March 2009

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1. INTRODUCTION

This is the Annual Environmental Report (AER) for Greenstar Ltd. (Greenstar), waste transfer and recycling facility at Unit 41, Cookstown Industrial Estate, Tallaght, Dublin 24. The AER covers the period from the 1st January 2008 to 31st December 2008.

Greenstar ceased operations at the facility on the 21st April 2006 and transferred all waste activities to its Greenogue Business Park Facility (W0188-01). Greenstar began the process of surrendering the Licence and the Agency agreed to the suspension of the environmental monitoring programme. No waste activities were carried out at the facility from 21st April 2006 up to 1st December 2008.

In October 2008, Greenstar informed the Agency of their intention to re-commence waste processing at the facility. In November 2008, Greenstar leased the site to Midland Scrap Metal Ltd (MSM) who began operations on 1st December. Greenstar retain responsibility for complying with the Licence conditions and resumed the environmental monitoring programme in accordance with Licence conditions in December 2009.

The content of the AER is based on Schedule C of the Waste Licence. The report format follows guidelines set in the "Guidance Note for Annual Environmental Report" issued by the Agency.

2. SITE DESCRIPTION

2.1 Waste Management Activities

The Licence allows the operator to accept and process on-site for recovery and disposal 145,000 tonnes of waste per annum, comprising commercial/industrial non-hazardous waste and construction and demolition wastes. During the reporting period metals recovery operations were carried out at the facility. The metals were sourced from construction and demolition sites, specialist industries that handle metal and existing waste recovery facilities.

Waste Processes 2008.

Ferrous Metals

All incoming waste is weighed at the weighbridge and then stockpiled prior to processing. Prior to tipping loads are subject to waste acceptance and inspection procedures. All contaminant material is removed and stored in a dedicated quarantine storage area prior to removal to a suitable licensed facility. The incoming metal is graded according to size before processing. The main process involves hydraulic shearing of material to a manageable size suitable for metal recovery. The sheared material is a product for reuse in the metals industry and is stored on-site pending loading and transfer to a processor. Material loading and unloading is by forklift/crane.

Non-ferrous Metals

All incoming non- ferrous metal loads are subject to the waste acceptance and inspection procedures prior to treatment. The material is subject to a selection or separation process, prior to baling. The majority of incoming material is pre-sorted to a certain degree to reflect different commercial values associated with different material. The material is sorted by size. Once baled, these smaller bales of non-ferrous material are stored in secure containers, prior to transfer. Oversized pieces are also be cut to ensure suitability for baling with the large bailer. If unsuitable for baling, pieces are stored separately prior to removal off-site.

Plant & Equipment

The plant and equipment that will be used are set out in Table 2.1.

Table 2.1: Plant & Equipment

Plant Item	Quantity
Mobile Shears Baler	1
Non Ferrous Baler	1
Atlas 1804-Scrap Handling Baler	1
Hand Held Cutters	4
Fork Lift	2
Cable Stripper	1

2.1.1 Waste Types

The facility is licensed to accept the following waste types, as specified in Schedule H of the Licence: -

- Commercial & Industrial (30% of total tonnage per annum, 43,500 tonnes),
- Construction & Demolition (70% of total tonnage per annum, 101,500 tonnes).

No hazardous wastes or liquid waste are accepted.

3. EMISSION MONITORING

3.1 Noise Survey

A noise survey was carried out on the 10th December 2008 and submitted to the Agency on the 18th December 2008. Monitoring was carried out at five (5) on-site monitoring locations (N1 to N5) and one off-site noise sensitive location (NSL1). The survey was conducted when the site was fully operational and the results confirmed that the facility was in compliance with its licence requirements. A summary of the results is included in Table 3.1.

Table 3.1 – Noise Monitoring Results December 2008

Station	Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Noise audible
N1	1331-1401	69	71	52	Grab operating from 1333-1345, following truck arrival at 1330. No other emissions audible over grab. From 1345, emissions dominated by movement of intermittent forklift truck, telescopic loader and van onsite near SW corner. Also emissions from waste management activities in shed near SW corner. Offsite emissions chiefly from local and distant traffic. Grab and baler-shears restarted 1357, and dominant until end of interval.
N2	1410-1440	65	67	52	Grab & baler-shears dominant until shut off at 1412, and again after start up at 1427. In between, noise audible from intermittent forklift truck onsite. Offsite emissions chiefly from local and distant traffic.
N3	1112-1142	69	71	64	Grab and baler-shears machine in continuous use at NE corner and dominant. No other noise audible.
N4	1243-1313	67	60-63*	45-48*	Located 1 m from corner due to safety considerations, thus **6 dB correction included** to correct for near field interference from two facades. Grab and baler-shears not operating. 1247-1252: Skip lorry tipping metal in sorting area. Emissions audible at low level from manual handling of waste and sporadic vehicle movements onsite. Intermittent traffic movements on industrial estate road outside entrance audible. Continuous emissions audible from air handling unit at premises to N. Emissions from other sources throughout surrounding industrial estate also audible continuously, including traffic, hammering, saws/grinders and horns. Aircraft.
N5	1210-1240	59	59	52	Grab and baler-shears machine dominant until shut off at 1215. Thereafter, emissions audible at low level from manual handling of waste and sporadic vehicle movements onsite. Offsite nose sources audible as described at N4.
NSL1	1520-1550	58	60	51	No site emissions discernible among all surrounding sources audible, including local traffic, distant traffic, pedestrians, aircraft and emissions from surrounding commercial premises such as reversing alarms.

3.2 Wastewater and Dust Monitoring

The routine monitoring of wastewater emissions and dust deposition began in Q1 of 2009 and the results will be submitted to the Agency in the quarterly reports.

OCM have been commissioned to carry out the full environmental monitoring programme specified in the licence for 2009.

4. SITE DEVELOPMENT WORKS

4.1 Engineering Works

No site development works were carried out during the reporting period. Greenstar will inform the Agency about any proposed specified engineering works as required by Condition 4.10.1 of the Licence.

4.2 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	1800 litres
Electricity	7,000 kWh
Heating Oil	260 litres

5. WASTE RECEIVED AND CONSIGNED FROM THE FACILITY

Table 5.1 shows the quantities of waste received and consigned from the facility since waste activities resumed. 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 at the facility was 1,026.86 tonnes. The total waste consigned was 848.94 tonnes. The difference is due to the amount of materials retained on site at the 31st December. The recycling rate for the facility is estimated at 100%.

All the wastes consigned from the site went to recovery and disposal facilities with the appropriate waste licences and permits as listed in Table 5.2.

Table 5.1: Waste Received & Consigned 2008

EWC	Description	Waste In	Waste Out	Destination
12 01 01	Swarf	15.9		
	½ Steel		639.08	MSM
15 01 04	Aluminium Cans	1.86		
15 01 07	Clear Glass Bottles	59.2	49.26	Glassco Recycling
	Mixed Bottle Glass		5	Glassco Recycling
16 01 06	Cars – depolluted	2.5		
16 01 17	Hydraulic Hoses	7.78		
16 01 20	Flat Glass –ELV	73.98	51.84	Vindor Glass Recycling
16 02 14	White Goods - depolluted		21.22	EMR Recycling
16 02 16	Components removed from white goods		21.46	EMR Recycling
17 02 02	Flat Glass – C&D	17.48		
17 04 01	Copper	10.06	1.16	FJ Church, Essex
	Brass	6.26	1.1	FJ Church, Essex
17 04 02	Aluminium	6.72	3.16	
17 04 05	Heavy Scrap	28.08		
	Light Iron	1.4		
	Profiles	17.58		
	Stainless Steel	17.62	15	FJ Church, Essex
17 04 07	Mixed Metals	2.54	6.84	Access Waste Recycling
			10.96	FJ Church, Essex
	Scrap	173.86		
	Shearing Scrap	558.5		
17 04 11	Aluminium Cable	4.9		
	Copper Cable	20.64	22.86	FJ Church, Essex
20 01 40	½ Steel		23.36	MSM
	Total Received	**1026.86**		
	Total Consigned		**848.94**	
	Total Recovered		**848.94**	
	Recovery Rate		**100%**	

Table 5.2: Off-Site Disposal / Recovery Agents

Final Recovery or Disposal Destination	Waste Licence or Permit	Waste Type Accepted
Access Waste Recycling, Unit 28 JFK Industrial Estate, Dublin 12	W0027-01	Metal
MSM Belview, Belview Bulk Terminal, Gurteens, Slieverue, Co. Kilkenny	WMP 02/2008	Metal
EMR Recycling, Liverpool Docks, Liverpool, UK	WML 50447	White Goods
FJ Church & Sons, Centenary Works, Manoc Way, Raintam, Essex, RM1 38RM,	WML 80771	Metal
Glassco Recycling, Unit 4 Osbertown Busniss Park, Carragh Road, Naas, Co. Kildare	WP 247/2006	Glass
Vindor Glass Recycling, Lanots Lane, St. Helens, Merseyside, WA9 3EX, UJ	IRE/AG010/08	Glass

6. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

6.1 Incidents

There were no incidents during the reporting period.

6.2 Register of Complaints

MSM maintains a register of complaints received in accordance with Condition 3.11 of the waste licence. There were no complaints received during the reporting period.

7. ENVIRONMENTAL DEVELOPMENT

7.1 Environmental Management Programme Report

MSM has introduced an Environmental Management System (EMS) for the facility. Details of the EMS including the schedule of objectives and targets for 2009 are outlined below

7.1.1 Site Management Structure

The Management and Staffing structure of MSM is: -

Name	Experience
Con Ward (Managing Director)	40 years in Waste Management
Anthony Ward (Recycling Manager/Director)	40 years in Waste Management
Jason Ward (Yard Manager)	5 Years in Waste Management
Premyslaw Szymko (Yard Manager)	8 Years in Waste Management
Maria Andrews (Environmental Manager)	1 Year in Waste Management

The Management and Staffing Structure for Greenstar is:

Name	Experience
Aidan Shanahan (Head of Leinster MRF Operations)	16 years in Operations Management. 5 years in Waste Management
Malcolm Dowling (Environmental Compliance Manager)	5 years in Waste Management
Suzanne Byrne (Environmental Executive)	3 Years in Waste Management

7.1.2 Staff Training

No staff training was undertaken during the reporting period.

7.2 Environmental Management Programme Proposal

7.2.1 Schedule of Objectives 2009

Table 7.1 shows the schedule of objectives for 2009.

7.3 Communications Programme

Greenstar are 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 were facilitated in accessing environmental information at the facility. The following documents are available for public viewing:-

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

7.4 Report Financial Provision

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

Table 7.1: Schedule of Objective and Targets 2009

No	Objective	Target	Responsibility	Timescale
1	**New quality procedures**	Identify and establish new quality procedures for site. Ensure all relevant staff follow procedures.	Environmental Manager	Ongoing
2	**Environmental procedures**	Identify and establish new environmental procedures for site. Ensure all relevant staff follow procedures.	Environmental Manager	Ongoing
3	**Housekeeping**	Improve housekeeping, segregate storage areas, improve quarantine area	Environmental Manager and Directors	Ongoing
4	**Drainage System**	Upgrade drainage system to divert surface water drainage from open yard areas to the foul sewer via a bypass separator	Environmental Manager	May 2009
5	**Licence compliance**	Ensure license compliance	Environmental Manager / Greenstar	Ongoing

8. OTHER REPORTS

8.1 European Pollutant Release and Transfer Register

Under the European Pollutant Release and Transfer Register Regulation (EC) No. 166/2006 Greenstar are required to submit information annually to the Agency. A copy of the information submitted to the Agency via the web-based data reporting system is included in Appendix 1.

APPENDIX 1

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 Materials Recovery Ltd
Facility Name	greenstar Materials Recovery Ltd
PRTR Identification Number	W0079
Licence Number	W0079-01

Waste or IPPC Classes of Activity

No.	class_name
4.13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.
3.13 4.3 4.4	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. Recycling or reclamation of metals and metal compounds. Recycling or reclamation of other inorganic materials.

Address 1	Unit 41
Address 2	Cookstown Industrial Estate
Address 3	Tallaght
Address 4	Dublin 24
Country	Ireland
Coordinates of Location	536500.000
River Basin District	EEA
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	Declan O Reilly
AER Returns Contact Email Address	suzanne.byrne@greenstar.ie
AER Returns Contact Position	
AER Returns Contact Telephone Number	
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name

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 Materials Recovery Ltd

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

4.2 RELEASES TO WATERS

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

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

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

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

SECTION B : REMAINING PRTR POLLUTANTS

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

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

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

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

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

4.3 RELEASES TO WASTEWATER OR SEWER

SECTION A : PRTR POLLUTANTS

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

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

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

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

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

4.4 RELEASES TO LAND

SECTION A : PRTR POLLUTANTS

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

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

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

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

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR# : W0079 | Facility Name : greenstar Materials Recovery Ltd | Filename : W0079_2008.xls | Return Year : 2008 | 09/04/2009 09:58

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	12 01 01	No	639.08	half inch steel	R4	M	Weighed	Offsite in Ireland	MSM, WMP 02/2008	Belview Bulk Terminal, Slieverue, Co Kilkenny		
Within the Country	15 01 04	No	54.26	Glass bottles	R5	M	Weighed	Offsite in Ireland	Glassco Recycling, WP 247/2006	Unit 4, Oberstown Business Park, Naas, Co Kildare		
To Other Countries	16 01 20	No	51.84	Glass	R5	M	Weighed	Abroad	Vindor Glass Recycling, IRE/AG010/08	Vindor Glass, Lanots Lane, St Helens, Merseyside, WA9 3EX Uj		
To Other Countries	16 02 14	No	21.22	Depolluted White Goods	R4	M	Weighed	Abroad	EMR, WML 50447	EMR, Liverpool Docks, Liverpoll UK		
To Other Countries	16 02 16	No	21.46	Components from white goods	R4	M	Weighed	Abroad	EMR, WML 50447	EMR, Liverpool Docks, Liverpoll UK		
To Other Countries	17 04 01	No	2.26	Copper, Brass	R4	M	Weighed	Abroad	FJ Church, WML 80771	FJ Church, Raintam, Esses Uk. RM1 38RM		
To Other Countries	17 04 02	No	3.16	Aluminium	R4	M	Weighed	Abroad	FJ Church, WML 80771	FJ Church, Raintam, Esses Uk. RM1 38RM		
To Other Countries	17 04 05	No	15.0	Stainless Steel	R4	M	Weighed	Abroad	FJ Church, WML 80771	FJ Church, Raintam, Esses Uk. RM1 38RM		
Within the Country	17 04 07	No	6.84	Mixed Metals	R4	M	Weighed	Offsite in Ireland	Access Waste Recycling, W0027-01	Unit 28 JFK Industrial Estate, Dublin 12		
To Other Countries	17 04 07	No	10.96	Mixed Metals	R4	M	Weighed	Abroad	FJ Church, WML 80771	FJ Church, Raintam, Esses Uk. RM1 38RM		
To Other Countries	17 04 11	No	22.86	Copper cable	R4	M	Weighed	Abroad	FJ Church, WML 80771	FJ Church, Raintam, Esses Uk. RM1 38RM		
Within the Country	20 01 40	No	23.36	half inch steel	R4	M	Weighed	Offsite in Ireland	MSM, WMP 02/2008	Belview Bulk Terminal, Slieverue, Co Kilkenny		

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

APPENDIX 3

Drainage Upgrade Report

IE CONSULTING
CIVIL-WATER-ENVIRONMENTAL

Drainage Upgrading Works at Greenstar Tallaght – Summary of Works Undertaken

The surface water drainage works at the Greenstar Tallaght facility have recently been upgraded. The purpose of these works was to improve the hydraulics of surface water run-off within the facility and to protect existing surface water sewers from potentially polluting surface water run-off. All roof water runoff generated within the facility is piped directly to the surface water drainage system.

This summary description should be read in conjunction with *Drawing Number IE502-001-A*.

The following works were undertaken:-

- *A reinforced concrete dished drainage channel, approximate length 35.5m, was constructed within the upper yard area, between the waste transfer shed and the northern boundary wall. This drainage channel collects all surface water runoff generated within the upper yard area. The drainage channel conveys the collected surface water runoff to the lower main yard area.*

- *A reinforced concrete dished drainage channel, approximate length 32.2m, was constructed within the lower main yard area. This drainage channel collects all surface water runoff generated within the lower main year area. This dished drainage channel discharges to a settlement sump tank.*

- *Surface water fun-off from the upper and lower yard areas ultimately discharges to a 3.0m x 1.5m x 1.5m deep reinforced concrete settlement sump tank. This sump allows for settlement and collection of any solids within the surface water run-off.*

- *A high level overflow pipe within the sump conveys surface water run-off to a Class 2 Bypass Separator system which is located between the weigh bridge and the southern boundary fence. This separator system will intercept and collect any hydrocarbon contamination within the surface water run-off.*

- *Following the Bypass Separator system all surface water run-off discharges to the adjacent local authority foul water drainage system.*

- *A number of existing and redundant manholes and drains within the main yard area have been decommissioned and sealed by backfilling with mass concrete. This will ensure that no surface water run-off from the yard areas can discharge directly to the 600mm diameter or 900mm diameter local authority surface water drainage pipes which pass through the northern area of the site.*

- *Existing circular cast iron manholes which were sited within the main yard area, and which were used to access the existing local authority 600mm and 900mm drainage pipes, have been removed and replaced with 1.3m x 0.9m reinforced concrete cover slabs.*

APPENDIX 4

Surface water and Sewer Monitoring Results

Jones Environmental Forensics Ltd

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

O'Callaghan Moran & Associates
Granary House
Rutland Street
Cork

UKAS TESTING
No.4225

Attention: Martina Gleeson

Date:	28th May 2009
Your reference:	09-048-02
Our reference :	Test Report 09-1319
Location :	Tallaght
Date samples received:	19th May 2009
Status:	Final Report
Issue:	1

Two water samples were received for analysis on 19th May 2009 which was completed on 28th May 2009. Please find attached our Test Report which should include all sections if reproduced. All interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Signed

J W Farrell- Jones CChem FRSC
Chartered Chemist

Jones Environmental Laboratory

Client Name:	O'Callaghan Moran & Associates
Reference:	09-048-02
Location:	Tallaght
Contact:	Martina Gleeson
JE Job No.:	09-1319

Report- liquids

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle

H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-3	4-5											
Sample ID	Waste water	Surface water											
Depth													
Containers	H,P,G	H,G											
Sample Date													
Sample Type	Water	Water											
Batch Number	1	1											
Date of Receipt	19/05/09	19/05/09											
												LOD	Units	Method No.
pH#	8.26	8.23										<0.01	pH units	TM19/PM11
Sulphate#	299.72	~										<0.05	mg/l	TM038W
Total Suspended Solids	122	114										<10	mg/l	TM037W
Detergents	3.4	~										<0.2	mg/l	TM033W
Oil, fats & greases	4027	<10										<10	µg/ l	TM5/PM9
Mineral Oil (interpretation & calculation)	201	<10										<10	µg/ l	TM5/PM9
BOD**	65	5										<1	mg/l	subcontracted
COD**	350	39										<7	mg/l	subcontracted
Electrical Conductivity# @25°C	2060	597										<100	µS/cm	TM28/PM11
Ammoniacal Nitrogen as N low#	1.78	0.17										<0.01	mg/l	TM038W

SS Calibrated against single subst
** Subcontracted
M MCERTS Accredited
UKAS Accredited

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

APPENDIX 5

Noise Monitoring Surveys

DixonBrosnan

environmental consultants

dixonbrosnan.com

Project

Compliance noise survey at Greenstar Ltd., Cookstown Industrial Estate, Tallaght - EPA waste licence W0079-01

Client

O'Callaghan Moran & Associates

Project no	No pages	Client reference
08160	13	W0079-01

v261108

DixonBrosnan Shronagreehy Kealkill Bantry Co Cork
Tel 086 813 1195 | damian@dixonbrosnan.com | www.dixonbrosnan.com

Report no	Date	Status	Prepared by	Chkd
08160.2.1	06.03.09	Release to client	Damian Brosnan	PC

Do you *really* need a printed copy of this report?

Contents

1. Introduction

1.1 DixonBrosnan Environmental Consultants were commissioned by O'Callaghan Moran & Associates, on behalf of their client Greenstar Ltd., to carry out a noise survey at the latter's premises at Unit 41, Cookstown Industrial Estate, Tallaght, Dublin 24. Metal recycling is currently undertaken at the premises. The Environmental Protection Agency (EPA) has issued waste licence W0079-01 in respect of the site. The licence includes several conditions relating to noise as summarised in Appendix 2. This report describes the first of two compliance noise surveys to be undertaken in 2009 as required by the licence.

1.2 The noise survey was undertaken on Friday 06.02.09 at six monitoring stations shown in Appendix 3. Five of these (N1-N5) were located at the site boundaries as specified by licence W0079-01. Schedule F.2 of the licence also specifies that monitoring is to be undertaken at an offsite noise sensitive location. As the nearest sensitive receptor consists of Tallaght Hospital, located on grounds to the west and southwest of the waste facility, the sixth monitoring station (NSL1) was located at the northeast gate to the hospital complex, 200 m from the facility. The nearest dwellings are situated 450 m north of the facility.

1.3 The waste facility was operating throughout the survey. Emissions arose chiefly from a grab and combination baler-shears machine located at the northeast corner of the site. When not operating, emissions were audible from sporadic vehicle movements onsite, and from occasional use of a forklift truck and telescopic loader. Emissions also arose from a temporary mobile lift platform associated with onsite construction works. Offsite sources audible consisted of local and distant traffic, as well as emissions from local commercial premises. Survey methodology, equipment specification and weather conditions are presented in Appendix 4.

2. Results & analysis

2.1 Noise levels recorded are presented in Appendix 5. Frequency spectra are presented in Appendix 6. $L_{Aeq\ 30\ min}$ levels recorded at the onsite stations measured 56-83 dB, with louder stations being significantly influenced by the grab, baler-shears machine and temporary mobile lift platform. There are no noise sensitive receptors located immediately adjacent to the site boundary. While several commercial premises adjoin the northern, eastern and western boundaries of the site, these are screened by mass concrete walls erected around these boundaries. The facility's position within an industrial/commercial zone is clearly evident on page 9.

2.2 The $L_{Aeq\ 30\ min}$ level recorded at NSL1 was 57 dB. The noise environment at this station was influenced by a multitude of sources, including local and distant traffic and emissions from surrounding commercial premises. It was not possible for the survey operator to definitively determine if Greenstar emissions were audible here due to

the variety of noise sources audible, including another waste management facility located 100 m to the east of NSL1. If Greenstar emissions were audible at this station, their contribution to the overall noise level was negligible due to the dominance of local sources. This contribution is likely to have been less than 50 dB.

2.3 No tones were detected at the sensitive station NSL1. Tones detected variously in the 16, 31.5, 63 and 1250 Hz bands at the onsite stations N3 and N4 most likely arise from onsite plant operating near these stations, chiefly the baler-shears and mobile lift platform.

2.4 Waste licence W0079-01 does not specify maximum noise limits to be applied to site operations. With an issue date of 24.01.00, the licence is now considered relatively old. Waste licences currently issued by the EPA usually specify that waste operations at licensed facilities shall not give rise to levels above 55 dB during daytime hours when measured at any noise sensitive location in the vicinity, and 45 dB during night-time hours. From 2.2 above, it is highly unlikely that noise emissions from the Greenstar facility contributed significantly to the 57 dB $L_{Aeq\ 30\ min}$ level recorded at NSL1. The contribution is likely to have been less than 50 dB. It is therefore concluded that noise emissions from the Greenstar facility did not exceed the 55 dB daytime limit typically specified in recent waste licences. The facility does not operate during night-time hours.

Appendix 1: Glossary

Ambient	The total noise environment at a location, including all sounds present.
Amplitude	The parameter which indicates the loudness of a noise measured in decibels.
A-weighting	The weighting or adjustment applied to sound level recordings to approximate the non-linear frequency response of the human ear. The A-weighting is denoted by the suffix A in the parameters listed below such as L_{Aeq}, L_{A10}, etc.
Background noise	The A-weighted sound pressure level of the residual noise in decibels exceeded for 90% of a given time interval. The L_{A90}.
Decibel (dB)	The units of the noise measurement scale. Based on logarithmic scale so cannot be simply added or subtracted. A 3 dB difference is the smallest change perceptible to the human ear. A 10 dB difference is perceived as a doubling or halving of the sound level. Throughout this report noise levels are presented as decibels relative to 20 µPa. Examples of decibel levels are as follows: 20 Very quiet room; 35 Rural environment at night; 65 Conversation; 80 Busy pub; 100 Nightclub; 120 Jet take-off; 140 Threshold of pain
Free-field	Noise environment away from all surfaces other than the ground. Noise levels recorded near walls will be artificially increased due to reflections. Where there is more than one wall, noise levels will be further increased. Levels recorded within such 'near-field' conditions will be increased by up to 3 dB, and up to 6 dB near a corner. In practice, free-field conditions will be achieved by maintaining a separation distance of at least 3.5 m from walls.
Frequency	The number of cycles per second of a sound or vibration wave. An example of a low frequency noise is a hum, while a whine represents a higher frequency. The range of human hearing approaches 20-20,000 Hz.
Hertz (Hz)	The unit of frequency measurement.
Impulse	A noise which is of short duration, typically less than one second, the sound pressure level of which is significantly higher than the background.
Interval	The time period t over which noise monitoring is conducted. May be 5-60 minutes, depending on the standard applied. The interval is usually denoted by t as in $L_{Aeq\,t}$, $L_{A90\,t}$, etc.
L_{AE}	The sound exposure level is a measure of the noise level of an event, standardised to an interval of one second, and containing the same acoustical energy as the actual event.

$L_{Aeq\ t}$	The equivalent continuous sound level during a measurement interval, effectively representing the average A-weighted noise level.
L_{AF}	The A-weighted sound pressure level measured using a fast time weighting and averaged over one second. The L_{AF} value therefore changes each second.
L_{AIeq}	The A-weighted sound pressure level at a particular instant, measured using an impulse time weighting on the sound level meter. May be used in the assessment of impulse noise.
$L_{An\ t}$	The A-weighted sound level which is exceeded for n% of the measurement interval.
L_{Cpeak}	The peak C-weighted sound pressure level recorded during the measurement interval. The highest peak on the sound pressure wave before any time constant is applied. The C-weighting is used rather than the A-weighting as the latter screens out low frequency sources.
$L_{Req\ t}$	The rating noise level, derived from the $L_{Aeq\ t}$ plus specified adjustments for tonal and impulsive characteristics.
$L_{AF10\ t}$	The A-weighted sound level measured using a fast time weighting which is exceeded for 10% of the measurement interval, usually used to quantify traffic noise.
$L_{AF90\ t}$	The A-weighted sound level measured using a fast time weighting which is exceeded for 90% of the measurement interval, usually used to quantify background noise. May also be used to describe the noise level from a continuous steady or almost-steady source, particularly where the local noise environment fluctuates.
Near-field	Area where free field conditions do not apply.
Noise sensitive location	Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
1/3 octave band analysis	Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one third of an octave each. An octave is taken to be a frequency interval, the upper limit of which is twice the lower limit in Hertz.
Residual noise	The noise level remaining at a given position in a given situation when the specific noise source is absent or does not contribute to the noise level.
Specific noise	The noise source under investigation for assessing the likelihood of complaints.
Tone	A character of the noise caused by the dominance of one or more frequencies which may result in increased noise nuisance.
Z-weighting	Standard weighting applied by sound level meters to represent linear scale.

Appendix 2: EPA waste licence W0079-01

Condition 7.1

No specified emission from the facility shall exceed the emission limit values set out in schedule G of this licence. There shall be no other emissions of environmental significance. (Note: Schedule G does not include noise limits).

Condition 7.3

There shall be no clearly audible tonal component or impulsive component in the noise emissions from the activity at the facility boundary.

Condition 9.1

Subject to condition 9.6 [relating to dust], the licensee shall carry out such monitoring at such locations and frequencies as set out in schedule F: Monitoring and in the conditions of this licence.

Condition 9.5

Noise monitoring is to be undertaken at the site within three months of the date of grant of the licence. Subsequently, unless otherwise agreed with the Agency, the licensee shall carry out a noise survey of the site operations biannually. A survey programme (including the timing, nature and extent of the survey) shall be submitted to the Agency in writing at least two months before the survey is to be carried out. A record of the survey results shall be available for inspection by any authorised persons of the Agency, at all reasonable times.

Schedule F.2: Noise

Table F.2.1 Noise monitoring locations

Station	Easting	Northing
N1	308329E	228235N
N2	308371E	228265N
N3	308313E	228291N
N4	308375E	228317N
N5 (SL1)	308249E	228183N
Other Note 1		

Note 1: Any other noise sensitive location which the Agency deems appropriate.

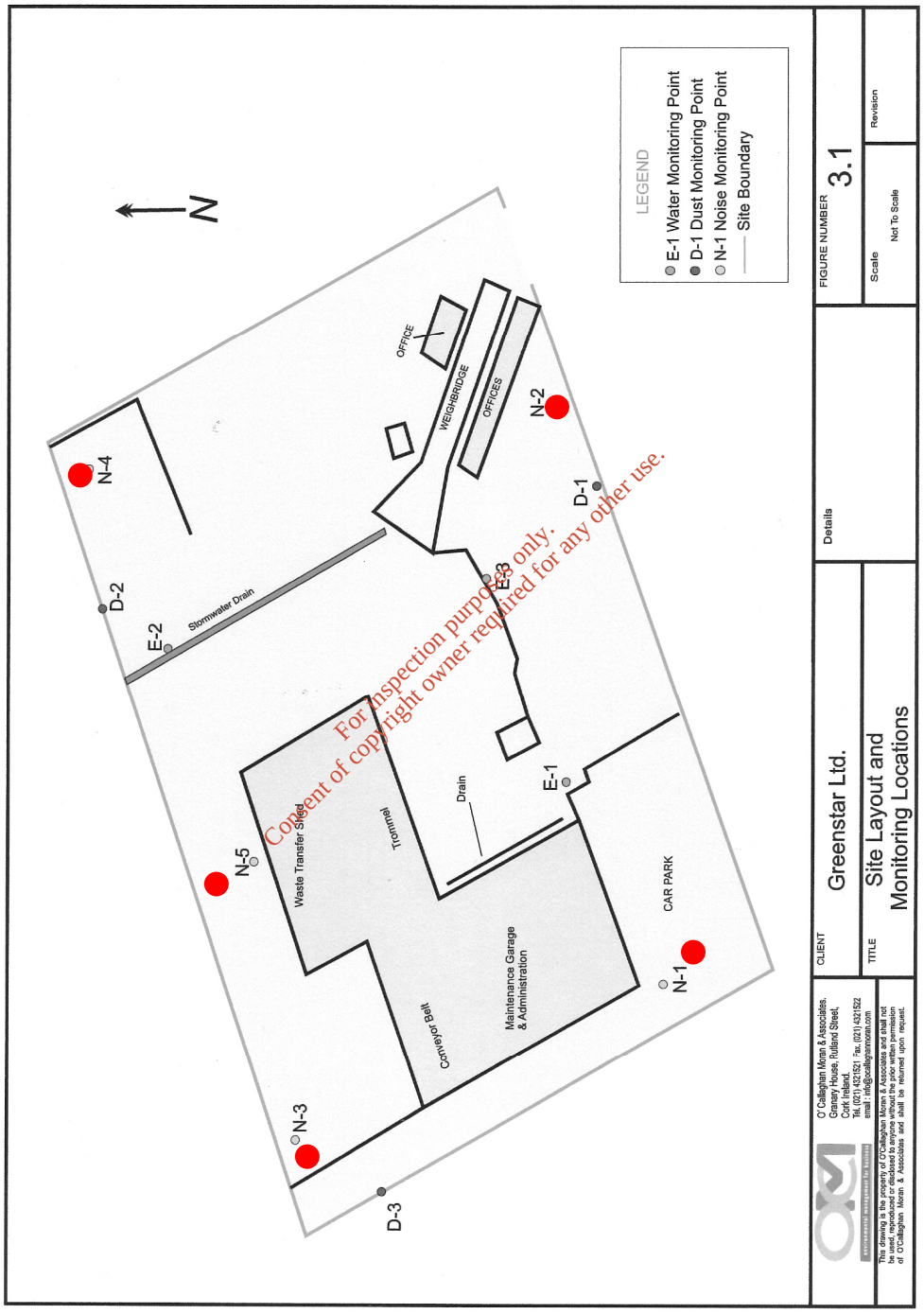
Table F.2.2 Noise monitoring

Parameter	Monitoring frequency	Analysis method/technique
$L_{Aeq\ 30\ min}$	Biannually	Standard Note 1
$L_{AF10\ 30\ min}$	Biannually	Standard Note 1
$L_{AF90\ 30\ min}$	Biannually	Standard Note 1
Frequency analysis (1/3 octave band analysis)	Biannually	Standard Note 1

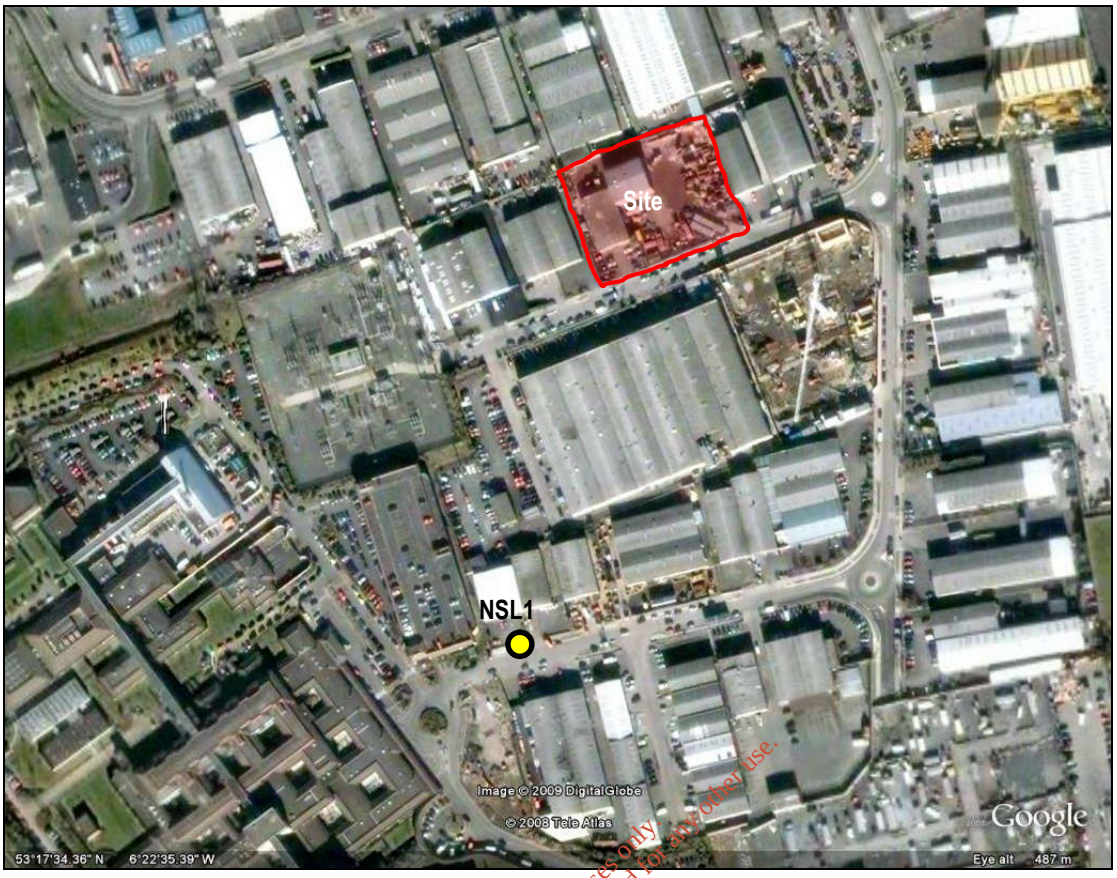
Note 1: *International Standards Organisation ISO1996 Acoustics: Description and measurement of environmental noise Parts 1, 2 and 3.*

Appendix 3: Monitoring locations

Stations N1-N5



Station NSL1



Appendix 4: Methodology

Survey	Project ref.	08160
	Purpose	Greenstar Tallaght 2009 1/2 compliance survey
	Locations	N1 N2 N3 N4 N5 NSL1
	Comment	Facility operating
Event	Date	06.02.09
	Day	Friday
	Time	Morning
Operator	On behalf of DixonBrosnan	Damian Brosnan
Conditions	Cloud cover	0%
	Precipitation	0 mm
	Temperature	-1 rising to 3 ^{0}C
Wind	Speed	0 m/s
	Direction	-
	Measurement	Anemo anemometer 2 m above ground level
Sound level meter	Instrument	Bruel & Kjaer Type 2250-L
	Instrument serial no.	2566801
	Microphone serial no.	2571655
	Application	BZ7130 Version 2.0
	Bandwidth	Broadband
	Max input level	142.66 dB
	Broadband weightings	Time: Fast Frequency: AC
	Peak weighting	Frequency: C
	Windscreen correction	UA-0237
	Sound Field correction	Free-field
	UKAS calibration	30.09.08
	UKAS calibration certificate	Available on request
Onsite calibration	Time	06/02/2009 08:49:42
	Calibration type	External
	Sensitivity	40.03 mV/Pa
	Post measurement check	93.9 dB
Onsite calibrator	Instrument	Bruel & Kjaer Type 4231
	Instrument serial no.	2342544
	UKAS calibration	04.03.08
	UKAS calibration certificate	Available on request
Monitoring methodology	International Standard ISO 1996	*Acoustics: Description and measurement of environmental noise Part 1 (2003) & Part 2 (2007)*
	Exceptions	Station N4: located in corner for safety considerations
	Intervals	30 min

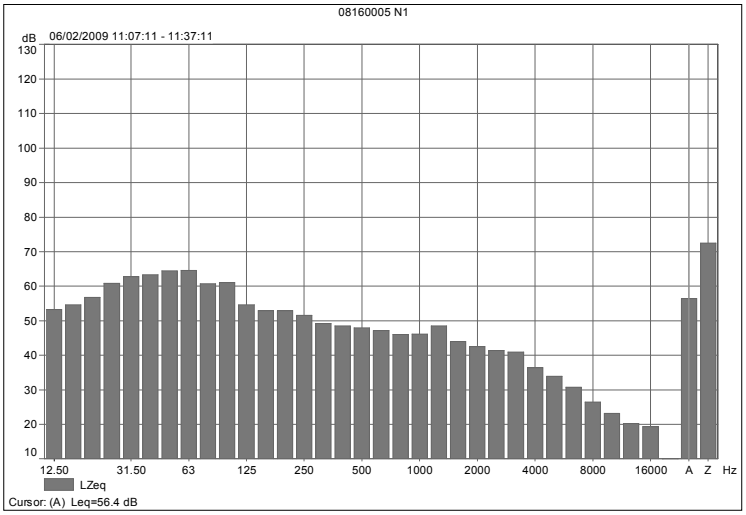
Appendix 5: Noise data

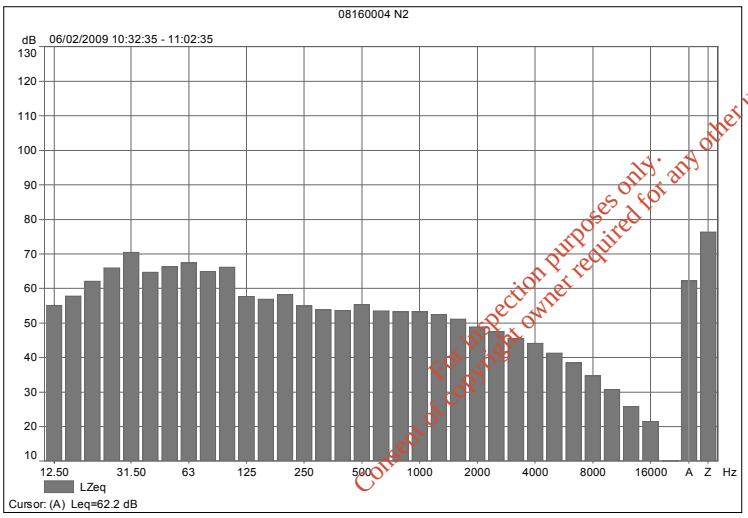
Recorded 06.02.09.

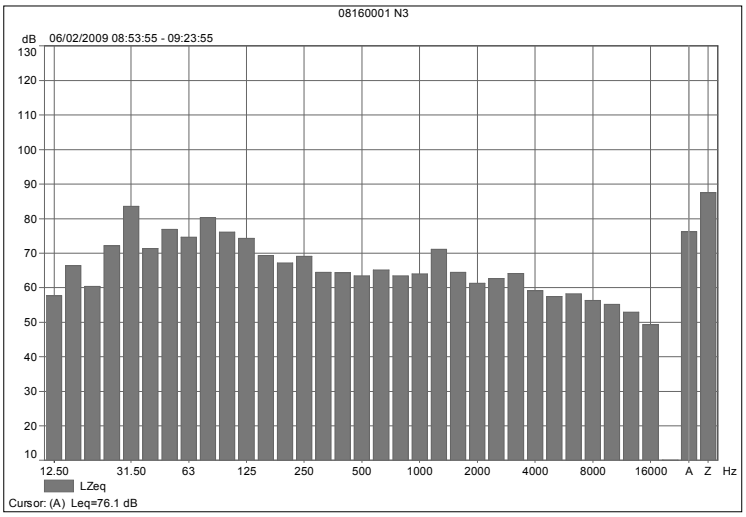
Station	Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Noise audible
N1	1107-1137	56	59	51	Plant noise continuously audible at site: forklift truck, baler-shears machine, grabs x2, trucks. Noise emissions from across industrial estate continuously audible in background. Sporadic traffic on adjacent roadway. Consaw in distance clearly audible.
N2	1032-1102	62	65	52	Emissions from various sources onsite audible until 1045: forklift truck, mobile lift platform and trucks. Grab and baler-shears machine restarted 1045 and dominant thereafter. Wheeled grab manoeuvring near N2 1044-1048 intrusive. Sporadic traffic on adjacent roadway. Distant emissions from across industrial estate audible in background. Emissions from consaw in distance significant. Passing helicopter x1.
N3	0853-0923	76	78	61	Emissions from mobile generator and mobile platform lift associated with adjacent construction works continuously dominant until shut off at 0910. Thereafter grab and baler-shears machine dominant. No other noise audible.
N4	0957-1027	83	85-91*	48-54*	Located 1 m from corner due to safety considerations, thus **6 dB correction included** to correct for near field interference from two facades. A 9 dB correction may arguably apply. Sound level meter 2 m from baler-shears machine engine, so engine continuously dominant until shut off at 1015. Thereafter emissions audible from manoeuvring forklift truck. Emissions from truck manoeuvring, tipping metal and dropping skip 1020-1025 significant. Offsite AHU emissions from nearby premises audible in background.
N5	0925-0955	73	74	71	Grab and baler-shears machine continuously dominant. Forklift truck audible moving around yard.
NSL1	1144-1214	57	60	48	No emissions specifically discernable from facility. Local noise environment dominated by almost continuous traffic within and on roadway to hospital. Also pedestrians. Distant emissions of varying character arising from across the industrial estate.

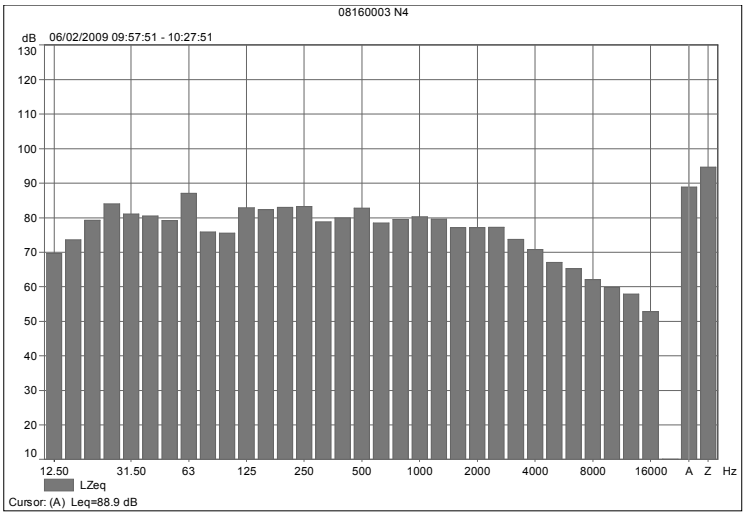
*6 dB correction cannot be applied to L_{AF10} and L_{AF90} values as these are statistical parameters. Corrected values presented are estimates.

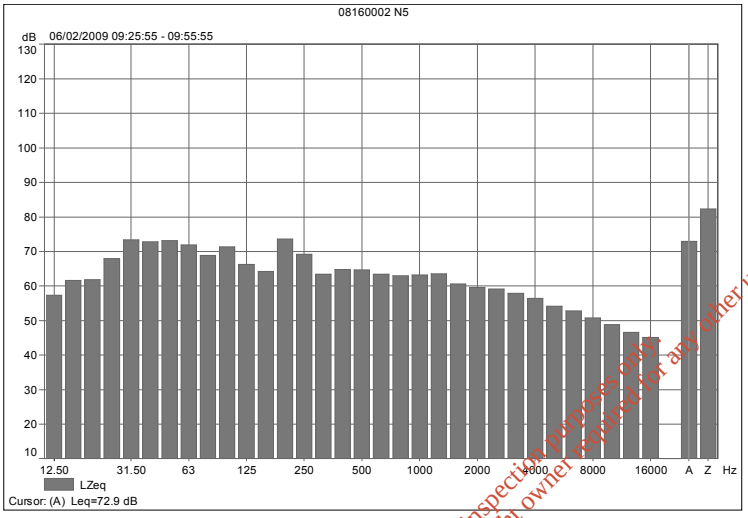
Appendix 6: Frequency spectra

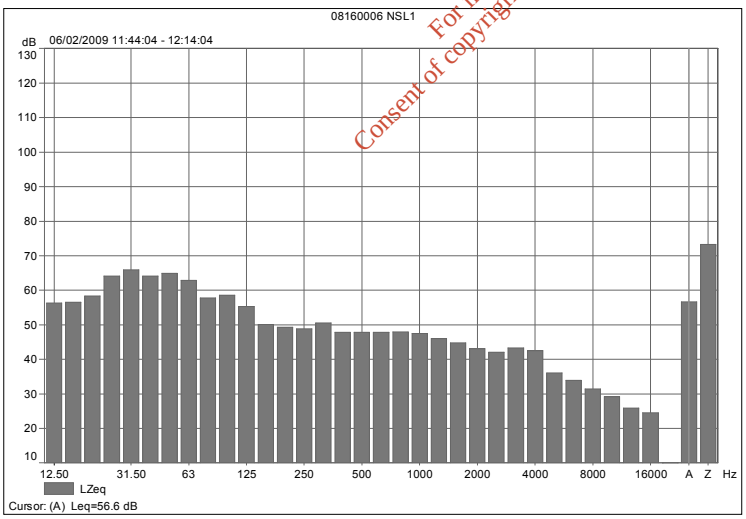












DixonBrosnan

environmental consultants

dixonbrosnan.com

Project

2009 H2 noise survey at Greenstar Ltd., Cookstown Industrial Estate, Tallaght - EPA waste licence W0079-01

Client

O'Callaghan Moran & Associates

Project no	No pages	Client reference
08160	12	W0079-01

v250809

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Report no	Date	Status	Prepared by	Chkd
08160.3.1	28.08.09	Release to client	Damian Brosnan	CD

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Contents

1 Introduction

1.1 DixonBrosnan Environmental Consultants were commissioned by O'Callaghan Moran & Associates, on behalf of their client Greenstar Ltd., to carry out a noise survey at the latter's premises at Unit 41, Cookstown Industrial Estate, Tallaght, Dublin 24. Metal recycling is currently undertaken at the premises. The Environmental Protection Agency (EPA) has issued waste licence W0079-01 in respect of the site. The licence includes several conditions relating to noise as summarised in **Appendix 2**. This report describes the second of two compliance noise surveys to be undertaken in 2009 as required by the licence (survey 2/2 of 2009).

1.2 The 2009 2/2 noise survey was undertaken on Wednesday 12.08.09 at six monitoring stations shown in **Appendix 3**. Five of these (N1-N5) were located at the site boundaries as specified by licence W0079-01. Schedule F.2 of the licence also specifies that monitoring is to be undertaken at an offsite noise sensitive location. As the nearest sensitive receptor consists of Tallaght Hospital, located on grounds to the west and southwest of the waste facility, the sixth monitoring station (NSL1) was located at the northeast gate to the hospital complex, 200 m from the facility. The nearest dwellings are situated 450 m north of the facility.

1.3 The waste facility was operating throughout the survey. Emissions arose from a grab and combination baler-shears machine located at the northeast corner of the site. Emissions also arose from similar plant in use at the northwest corner. When these machines were not operating, emissions were audible from sporadic vehicle movements onsite, and from occasional use of a forklift truck and telescopic loader. Power cutting tools were in use in the open yard area. Offsite sources audible consisted of local traffic, as well as emissions from local commercial premises. Survey methodology, equipment specification and weather conditions are presented in **Appendix 4**.

2 Results & analysis

2.1 Noise levels recorded are presented in **Appendix 5**. Frequency spectra are shown in **Appendix 6**. $L_{Aeq\ 30\ min}$ levels recorded at the onsite stations measured 59-88 dB, with louder stations being significantly influenced by nearby grab and baler-shears machines. There are no noise sensitive receptors located immediately adjacent to the site boundary. While several commercial premises adjoin the northern, eastern and western boundaries of the site, these are screened by mass concrete walls erected around these boundaries. The facility's position within an industrial/commercial zone is clearly evident on page 9.

2.2 The $L_{Aeq\ 30\ min}$ level recorded at NSL1 was 53 dB. The noise environment at this station was influenced by a multitude of sources, including local traffic, a distant road sweeper machine and emissions from surrounding commercial premises. It was not possible for the survey operator to definitively determine if Greenstar emissions were audible here due to the variety of noise sources audible. If Greenstar emissions were audible at this station, their contribution to the overall noise level was negligible due to the dominance of local sources. This contribution is likely to have been less than 50 dB.

2.3 No tones were detected at the sensitive station NSL1. Tones detected variously in the 40, 50, 63, 80 and 200 Hz bands at the onsite stations N1, N2, N3 and N4 were traced to plant operating near these stations, chiefly the grabs, baler-shears machines and power cutting tools.

2.4 Waste licence W0079-01 does not specify maximum noise limits to be applied to site operations. With an issue date of 24.01.00, the licence is now considered relatively old. Waste licences currently issued by the EPA usually specify that waste operations at licensed facilities shall not give rise to levels above 55 dB during daytime hours when measured at any noise sensitive location in the vicinity, and 45 dB during night-time hours. From 2.2 above, it is highly unlikely that noise emissions from the Greenstar facility contributed significantly to the 53 dB $L_{Aeq\ 30\ min}$ level recorded at NSL1. The contribution is likely to have been less than 50 dB. It is therefore concluded that noise emissions from the Greenstar facility did not exceed the 55 dB daytime limit typically specified in recent waste licences. The facility does not operate during night-time hours.

3 Conclusions

3.1 $L_{Aeq\ 30\ min}$ levels measured at the onsite stations were 59-88 dB. Tones across several bands were detected at four of these stations. There are no noise sensitive receptors near the site boundary.

3.2 The $L_{Aeq\ 30\ min}$ level measured at NSL1 was 53 dB, with the contribution attributable to the Greenstar facility likely to have been lower than 50 dB. This level is less than the 55 dB daytime noise limit typically specified by the EPA in waste licences. No tones were detected at NSL1.

Appendix 1: Glossary

Ambient	The total noise environment at a location, including all sounds present.
A-weighting	The weighting or adjustment applied to sound level recordings to approximate the non-linear frequency response of the human ear. The A-weighting is denoted by the suffix A in the parameters listed below such as L_{Aeq}, L_{A10}, etc.
Background noise	The A-weighted sound pressure level of the residual noise in decibels exceeded for 90% of a given time interval. The L_{A90}.
Decibel (dB)	The units of the noise measurement scale. Based on logarithmic scale so cannot be simply added or subtracted. A 3 dB difference is the smallest change perceptible to the human ear. A 10 dB difference is perceived as a doubling or halving of the sound level. **Throughout this report noise levels are presented as decibels relative to 20 µPa**. Examples of decibel levels are as follows: 20 Very quiet room; 35 Rural environment at night; 65 Conversation; 80 Busy pub; 100 Nightclub; 120 Jet take-off
Free-field	Noise environment away from all surfaces other than the ground. Noise levels recorded near walls will be artificially increased due to reflections. Where there is more than one wall, noise levels will be further increased. Levels recorded within such 'near-field' conditions will be increased by up to 3 dB and up to 6 dB near a corner. In practice, free-field conditions will be achieved by maintaining a separation distance of at least 3.5 m from walls.
Frequency	The number of cycles per second of a sound or vibration wave. An example of a low frequency noise is a hum, while a whine represents a higher frequency. The range of human hearing approaches 20-20,000 Hz.
Hertz (Hz)	The unit of frequency measurement.
Impulse	A noise which is of short duration, typically less than one second, the sound pressure level of which is significantly higher than the background.
Interval	The time period t over which noise monitoring is conducted. May be 5-60 minutes, depending on the standard applied. The interval is usually denoted by t as in $L_{Aeq\,t}$, $L_{A90\,t}$, etc.
L_{AE}	The sound exposure level is a measure of the noise level of an event, standardised to an interval of one second, and containing the same acoustical energy as the actual event.
$L_{Aeq\,t}$	The equivalent continuous sound level during a measurement interval, effectively representing the average A-weighted noise level.

L_{AF}	The A-weighted sound pressure level measured using a fast time weighting and averaged over one second. The L_{AF} value therefore changes each second.
L_{AIeq}	The A-weighted sound pressure level at a particular instant, measured using an impulse time weighting on the sound level meter. May be used in the assessment of impulse noise.
$L_{An\ t}$	The A-weighted sound level which is exceeded for n% of the measurement interval.
L_{Cpeak}	The peak C-weighted sound pressure level recorded during the measurement interval. The highest peak on the sound pressure wave before any time constant is applied. The C-weighting is used rather than the A-weighting as the latter screens out low frequency sources.
$L_{Req\ t}$	The rating noise level, derived from the $L_{Aeq\ t}$ plus specified adjustments for tonal and impulsive characteristics.
L_{den}	A description of the day-evening-night noise level. Calculated from separate daytime, evening and night-time noise levels using a specified formula.
$L_{AF10\ t}$	The A-weighted sound level measured using a fast time weighting which is exceeded for 10% of the measurement interval, usually used to quantify traffic noise.
$L_{AF90\ t}$	The A-weighted sound level measured using a fast time weighting which is exceeded for 90% of the measurement interval, usually used to quantify background noise. May also be used to describe the noise level from a continuous steady or almost-steady source, particularly where the local noise environment fluctuates.
Near-field	Area where free field conditions do not apply.
Noise sensitive location	Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
1/3 octave band analysis	Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one third of an octave each. An octave is taken to be a frequency interval, the upper limit of which is twice the lower limit in Hertz.
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Specific noise	The noise source under investigation for assessing the likelihood of complaints.
Tone	A character of the noise caused by the dominance of one or more frequencies which may result in increased noise nuisance.
Z-weighting	Standard weighting applied by sound level meters to represent linear scale.

Condition 7.1

No specified emission from the facility shall exceed the emission limit values set out in schedule G of this licence. There shall be no other emissions of environmental significance. (Note: Schedule G does not include noise limits).

Condition 7.3

There shall be no clearly audible tonal component or impulsive component in the noise emissions from the activity at the facility boundary.

Condition 9.1

Subject to condition 9.6 [relating to dust], the licensee shall carry out such monitoring at such locations and frequencies as set out in schedule F: Monitoring and in the conditions of this licence.

Condition 9.5

Noise monitoring is to be undertaken at the site within three months of the date of grant of the licence. Subsequently, unless otherwise agreed with the Agency, the licensee shall carry out a noise survey of the site operations biannually. A survey programme (including the timing, nature and extent of the survey) shall be submitted to the Agency in writing at least two months before the survey is to be carried out. A record of the survey results shall be available for inspection by any authorised persons of the Agency, at all reasonable times.

Schedule F.2: Noise

Table F.2.1 Noise monitoring locations

Station	Easting	Northing
N1	308329E	228235N
N2	308371E	228265N
N3	308313E	228291N
N4	308375E	228317N
N5 (SL1)	308249E	228183N
Other Note 1		

Note 1: Any other noise sensitive location which the Agency deems appropriate.

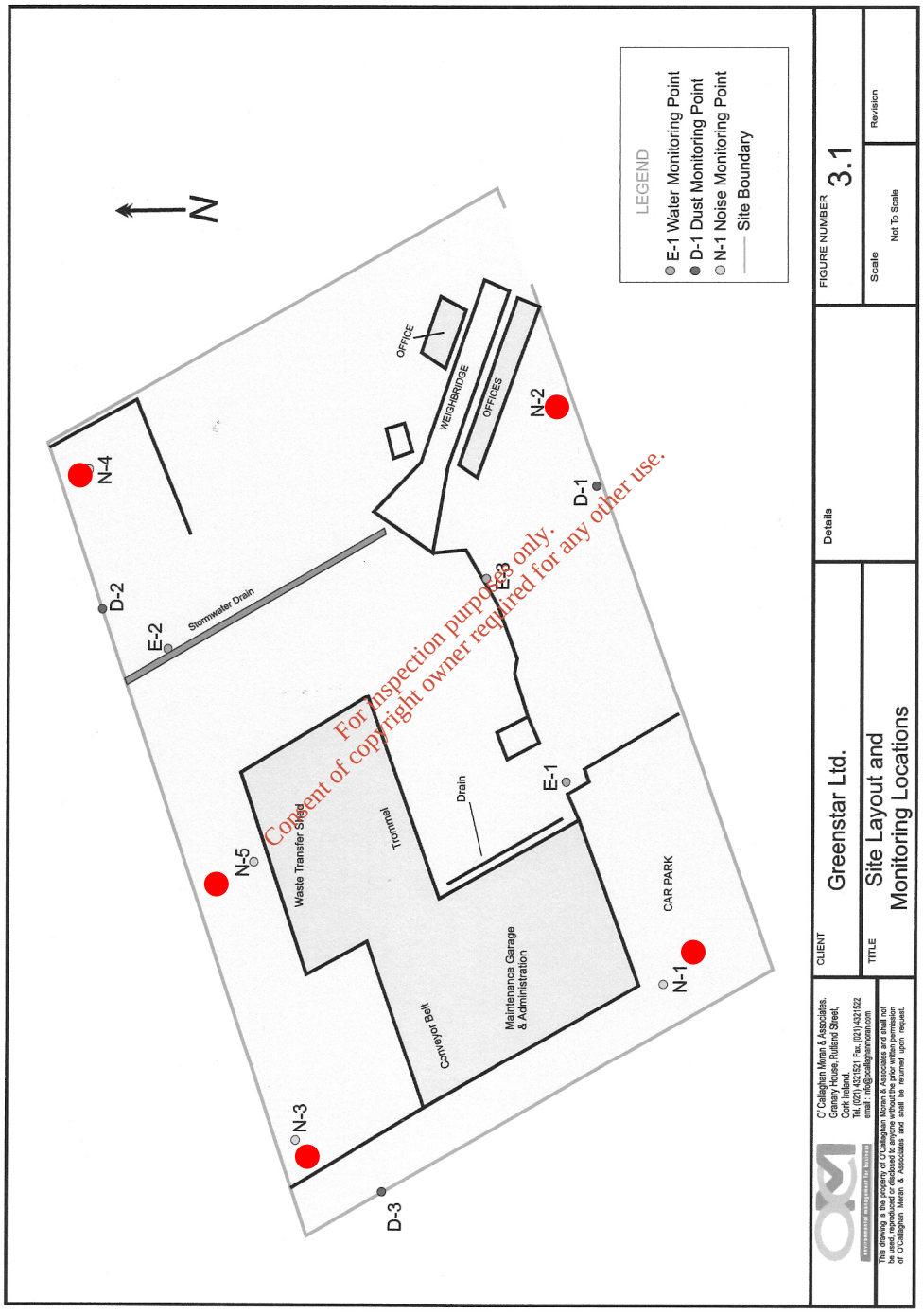
Table F.2.2 Noise monitoring

Parameter	Monitoring frequency	Analysis method/technique
$L_{Aeq\ 30\ min}$	Biannually	Standard Note 1
$L_{AF10\ 30\ min}$	Biannually	Standard Note 1
$L_{AF90\ 30\ min}$	Biannually	Standard Note 1
Frequency analysis (1/3 octave band analysis)	Biannually	Standard Note 1

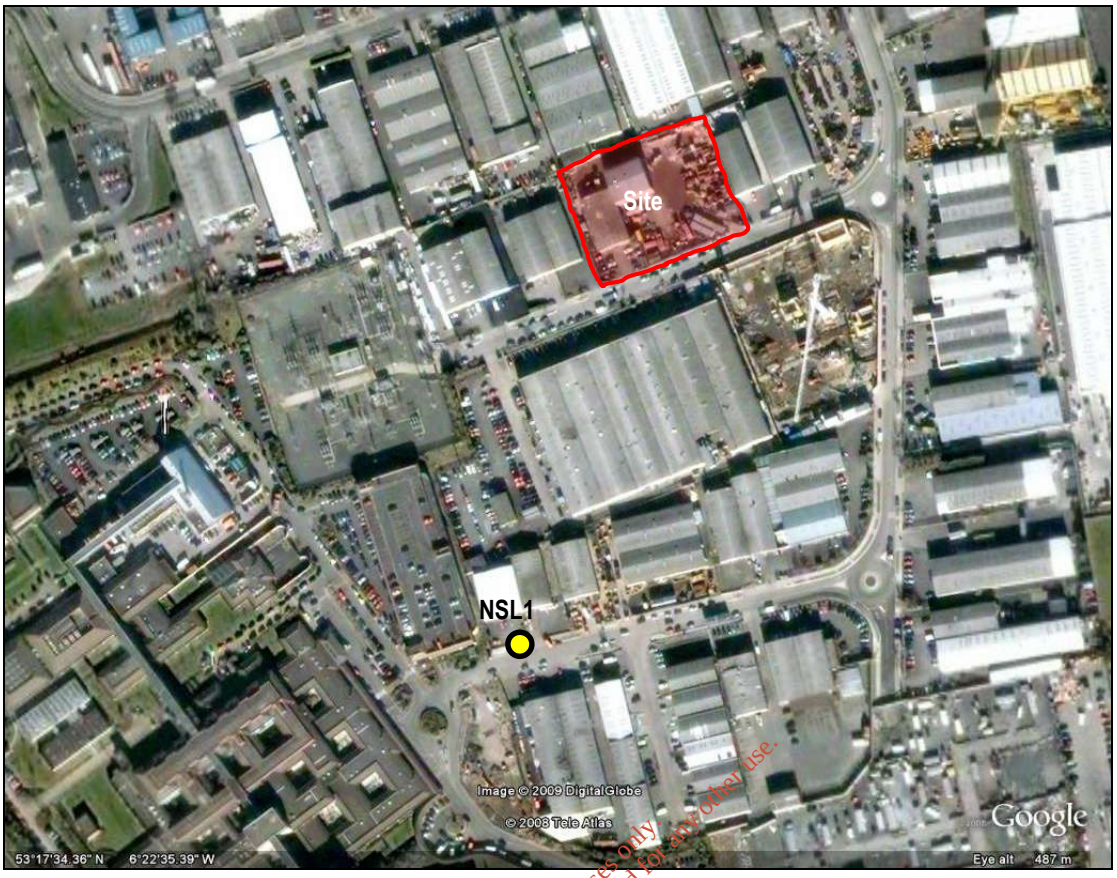
Note 1: *International Standards Organisation ISO1996 Acoustics: Description and measurement of environmental noise Parts 1, 2 and 3.*

Appendix 3: Monitoring locations

Stations N1-N5



Station NSL1



Appendix 4: Methodology

Survey	Project ref.	08160
	Purpose	Greenstar Tallaght 2009 2/2 compliance survey
	Locations	N1 N2 N3 N4 N5 NSL1
	Comment	Facility operating
Event	Date	12.08.09
	Day	Wednesday
	Time	Morning
Operator	On behalf of DixonBrosnan	Damian Brosnan
Conditions	Cloud cover	100 %
	Precipitation	Passing bands of mist
	Temperature	17-18 ^{0}C
Wind	Speed	0-1 m/s
	Direction	W
	Measurement	Anemo anemometer 2 m above ground level
Sound level meter	Instrument	Bruel & Kjaer Type 2250-L
	Instrument serial no.	2566801
	Microphone serial no.	2571655
	Application	BZ7130 Version 2.0
	Bandwidth	Broadband
	Max input level	142.66 dB
	Broadband weightings	Time: Fast Frequency: AC
	Peak weighting	Frequency: C
	Windscreen correction	UA-0237
	Sound Field correction	Free-field
	UKAS calibration	30.09.08
	UKAS calibration certificate	Available on request
Onsite calibration	Time	12/08/2009 09:02:26
	Calibration type	External
	Sensitivity	40.88 mV/Pa
	Post measurement check	93.9 dB
Onsite calibrator	Instrument	Bruel & Kjaer Type 4231
	Instrument serial no.	1723667
	UKAS calibration	14.08.08
	UKAS calibration certificate	Available on request
Monitoring methodology	International Standard ISO 1996	*Acoustics: Description and measurement of environmental noise Part 1 (2003) & Part 2 (2007)*
	Exceptions	Stations N3 & N4 located in corners for safety
	Intervals	30 min

Appendix 5: Noise data

Recorded 12.08.09.

Station	Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Noise audible
N1	1119-1149	59	63	50	Power cutting tool in site yard in intermittent use and dominant. Grab and BS machine in NE corner also audible. Offsite, sporadic vehicle movements on industrial estate access road audible.
N2	1010-1040	64	66	48	No emissions onsite until 1015 when operations gradually recommenced. Site fully operational by 1020, from which grab and BS machine manipulating metal at NE corner dominant.
N3	1043-1113	88	93*	82*	Located 1 m from corner due to safety considerations, thus **6 dB correction included** to correct for near field interference from two facades. A 9 dB correction may arguably apply. BS machine immediately adjacent to SLM dominant continuously. Grab loading metal into machine also audible. Both machines shut down from 1106, following which grab manipulating metal at NE corner dominant.
N4	0906-0936	81	84*	77*	Located 1 m from corner due to safety considerations, thus **6 dB correction included** to correct for near field interference from two facades. A 9 dB correction may arguably apply. BS machine continuously dominant. Grab loading metal also audible. No other emissions audible.
N5	0938-1008	77	81	52	Grabs manipulating metal at NE and at NW corners dominant. BS machines also audible. Mobile plant audible when passing close to SLM. No offsite emissions audible. Site quietening down from 0955, until complete silence at 1000, after which one offsite source dominant: FLT at adjacent premises.
NSL1	1159-1229	53	55	46	No emissions specifically audible from facility, although noise audible at low level from several surrounding commercial premises. Local traffic movements frequent and dominant. Also pedestrian voices. Continuous whine audible from road sweeper truck in distance. Aircraft.

*6 dB correction cannot theoretically be applied to L_{AF10} and L_{AF90} values as these are statistical parameters. Corrected values presented are estimates.

BS: Baler-shears machine.

FLT: Forklift truck.

SLM: Sound level meter.

Appendix 6: Frequency spectra