Unit 15
Melbourne Business Park
Model Farm Road
Cork

O'Callaghan Moran & Associates
ENVIRONMENTAL MANAGEMENT FOR BUSINESS

E:info@ocallaghanmoran.com
www.ocallaghanmoran.com
T: 021 434 5366

ANNUAL ENVIRONMENTAL REPORT

STARRUS ECO HOLDINGS LTD

FASSAROE MATERIALS RECOVERY FACILITY

FASSAROE, BRAY,

COUNTY WICKLOW

LICENCE NO. W0053-03

JANUARY 2015 – DECEMBER 2015

Prepared For: -

Starrus Eco Holdings Ltd,
Fassaroe,
Bray,
Co. Wicklow

Prepared By: -

O' Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road,
Cork.

5th April 2016

Project	Annual Environmental Report 2015			
Client	Starrus Eco Holdings Ltd (Greenstar) W0053-03			
Report No	Date	Status	Prepared By	Reviewed By
0480605	30/03/2016	Draft	Martina Gleeson PhD.	Jim O'Callaghan MSc
0480605	05/04/2016	Final	Martina Gleeson PhD.	Jim O'Callaghan MSc

TABLE OF CONTENTS

PAGE

1. INTRODUCTION 1

2. SITE DESCRIPTION 2

2.1 SITE LOCATION & LAYOUT 2
2.2 WASTE MANAGEMENT ACTIVITIES 2
2.2.1 Waste Type & Processes 3
2.2.2 Plant List 5

3. EMISSION MONITORING 6

3.1 GROUNDWATER 6
3.1.1 Groundwater Levels 6
3.1.2 Groundwater Quality 6
3.1.3 Estimated Annual and Cumulative Quantity of Emissions to Groundwater 7
3.2 SURFACE WATER 9
3.3 WASTEWATER 9
3.4 LEACHATE 10
3.4.1 Leachate Levels 10
3.4.2 Leachate Quality 10
3.5 LANDFILL GAS 10
3.5.1 Landfill Gas Volumes 11
3.5.2 Landfill Gas Control 11
3.6 NOISE SURVEY 13
3.7 DUST MONITORING 13

4. SITE DEVELOPMENT WORKS 14

4.1 SPECIFIED ENGINEERING WORKS 14
4.2 SITE RESTORATION 14
4.3 SITE DEVELOPMENT 14
4.4 SUMMARY OF RESOURCE & ENERGY CONSUMPTION 14

5. WASTE RECEIVED AND CONSIGNED FROM THE FACILITY 15

6. ENVIRONMENTAL INCIDENTS AND COMPLAINTS 19

6.1 INCIDENTS 19
6.2 REGISTER OF COMPLAINTS 19

7. ENVIRONMENTAL DEVELOPMENT & CONTROL 20

7.1 ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT 20
7.1.1 Site Management Structure 20
7.1.2 Staff Training 21
7.2 ENVIRONMENTAL MANAGEMENT PROGRAMME PROPOSAL 21
7.2.1 Schedule of Objectives 2015 21
7.2.2 Schedule of Objectives 2016 21
7.3 REDUCTION OF WATER DEMAND 24
7.4 VOLUME OF WASTEWATER PRODUCED AND TRANSPORTED OFF SITE 24
7.5 POLLUTION EMISSION REGISTER 24

7.6 NUISANCE CONTROLS 24
7.7 TANK & PIPELINE TESTING 24
7.8 SLOPE STABILITY ASSESSMENT 25
7.9 PROGRAMME FOR PUBLIC INFORMATION 25
7.10 ELRA & REPORT ON FINANCIAL PROVISION 25
7.11 WASTE RECOVERY REPORT 26
7.12 REVISED CLOSURE, RESTORATION & AFTERCARE MANAGEMENT PLAN 26
8. OTHER REPORTS 27
8.1 EUROPEAN POLLUTANT RELEASE AND TRANSFER REGISTER REGULATION 27

APPENDIX 1 - Environmental Monitoring Summary Tables

APPENDIX 2 - European Pollutant Release and Transfer Register

APPENDIX 3 - Procedures Index

1. INTRODUCTION

This is the 2015 Annual Environmental Report (AER) for the Starrus Eco Holdings Ltd (Greenstar), Materials Recovery & Transfer facility (MRF) at Fassaroe, County Wicklow. It covers the period from the 1st January 2015 to the 31st December 2015. Transfer of the licence from Greenstar Limited to Starrus Eco Holdings Ltd was completed in March 2014.

The content is based on Schedule G of the Waste Licence (Reg. No. W0053-03) and the report format follows guidelines set in the "Guidance Note for Annual Environmental Report" issued by the Environmental Protection Agency (Agency)[1]. Account is also taken of the AER Draft Guidance Document and AER Information Templates issued by the Agency in January 2013[2].

[1] EPA (Environmental Protection Agency) 1999 Waste Licensing – Draft Guidance on Environmental Management Systems and Reporting to the Agency

[2] EPA (Environmental Protection Agency) 2012 Draft AER Guidance Document

2. SITE DESCRIPTION

2.1 Site Location & Layout

The facility is located close to the N11 at Fassaroe, Bray, County Wicklow. The site comprises three main waste processing buildings, the original transfer building located close to the site entrance at the southern side of the site and adjoining Phase 1 & 2 waste processing buildings which are located in the centre of the site. There is also an new administration building incorporating office, canteen and toilet facilities; a vehicle wash; 2 no. weighbridges and a weighbridge office; office type portacabins (formerly used as offices); truck and empty skip parking areas and vehicle maintenance shed which is adjacent the original transfer building. There is a surface water retention lagoon to the east of the processing building.

2.2 Waste Management Activities

The depot is an integrated waste management facility. The licence allows for 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. In December 2009, the agency technically amended the licence to allow for a change to the hours of operation so that Greenstar can carry out indoor processing of dry mixed recyclable material on a 24-hour day, 7-day week basis in the Phase 1 processing building.

With the exception of this activity, the facility can be operated only during the hours of 7:30 to 21:00 Monday to Saturday inclusive as conditioned in the Licence.

2.2.1 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 or recovery at a licenced 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 concrete/stone is sent to the on-site screener 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 screener. 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 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.

2.2.2 Plant List

A list of the plant in use at the facility is given in Table 2.1. The plant provides 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	Volvo Loading Shovel	L70E	20t/hr
1	Liebherr Loading Shovel	564	85t/hr
1	Volvo Loading Shovel	L90	85t/hr
1	Hyster Forklift		40hr/wk
1	Fuchs Grab	Terex 331	30t/hr
1	DMR Process line	Turmec	8t/hr
1	DMR Baler	Bollegraaf HBC 60	70t/day
1	Generator		standby
1	C&I/C&D Process Line	Waltec	35t/hr
1	Erin Stone Screener	Fingerscreen	400t/day
1	Doppstadt Trommel	SM-620	30t/hr
1	Beast Timber shredder	3680	40t/hr
1	Tractor	Massey Ferguson 4255	2hr/wk
1	MSW compactor		80t/day
1	Weighbridge 2 Scales	RiteWeigh Aran Series 18 m	62hr/wk

3. EMISSION MONITORING

Greenstar implements a comprehensive environmental monitoring programme to assess the significance of emissions from site activities. The programme for 2015 included groundwater, surface water, leachate, sewer emissions, landfill gas, 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 are four (4) on-site groundwater monitoring wells (BH-2, BH-5, BH-6 and BH-7). Monitoring wells BH-2, BH-5 and BH-7 are positioned downgradient of the former landfill area while BH-6 is upgradient. The upgradient monitoring well (BH-6) was installed in March 2009 to replace the previous well that was removed during construction of the administration building. This location was dry throughout 2015.

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

Observation 2 of the Agency's audit report for the Fassaroe Depot (W0053-03) dated the 26th April 2012 relates to the fact that the existing up-gradient well (BH-6) has been dry for a number of monitoring events. The Agency required Greenstar to complete an investigation of the feasibility of using an offsite groundwater well for monitoring purposes. A report was submitted to the Agency in June 2012 following this investigation confirming that there are no offsite upgradient groundwater wells suitable for use. In the absence of a suitable alternative off-site upgradient monitoring point and, for the purposes on interpreting the groundwater monitoring results, the Agency agreed to assume that the groundwater upgradient of the Greenstar facility is typical of unpolluted Irish groundwater.

Groundwater "Warning Levels" were agreed for use by the Agency on the 17th December 2013. These Warning Levels are to be recalculated annually as part of the annual environmental report (AER) and implemented in the following reporting year.

These warning levels have been in use from Q4 2013 onwards. The recalculated Warning levels for 2016 are summarised in Table 3.1.

Table 3.1 2016 Groundwater Warning Levels

2016 Revised Triggers	EC	Ammonia	Chloride	pH
BH-2	3.430	0.46	88.34	8.19
BH-5	3.024	0.34	82.55	8.11
BH-7	1.060	7.56	32.18	8.51

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 quarterly and annual analysis was as specified in Schedule C of the Waste Licence and includes pH, electrical conductivity and organic, inorganic and microbiological parameters. The summary of the results is included in Appendix 1.

The warning levels were not exceeded at any of the groundwater monitoring locations in 2015. 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.

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 some of the paved areas.

All surface water from the paved areas is diverted away from the filled areas to the on-site surface water lagoon thereby reducing the potential indirect impact of surface water on groundwater quality. Rainwater from roofed areas is now diverted to a water harvesting tank for use in dust suppression. Section 3.2 discusses the quantities of emissions to surface water.

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

#	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	218266.62
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	217958.30
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

LEGEND: MONITORING LOCATIONS

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

NOTES

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 salmonid river. Surface water run-off from the roof of the new administration building and new car park area discharges to the Glenmunder via a silt trap and oil interceptor.

Surface water quality is monitored at four locations (SW-1, SW-2, SW-3 and SW-4) on the Glenmunder and at one discharge point from the facility to the Glenmunder (SW-5). 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. SW-5 is the discharge point for rainfall runoff from the roof of the administration building and the car park area to the Glenmunder. Quarterly surface water sampling was carried out at all surface water locations in 2015.

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. A summary of the monitoring results are included in Appendix 1.

The monitoring has confirmed that the surface water quality is generally consistent with that in a rural area and there is no evidence that site activities or the surface water discharge at SW-5 is impacting on the stream. In Q2 2015, COD and ammonia, and in Q3 BOD, COD and TSS were detected at SW-5 at levels greater than that detected in the Glenmunder. The levels of indicator parameters including pH, conductivity, total suspended solids, chloride, ammonia, BOD and COD detected upstream and downstream of SW-5 indicate that the site is not having any impact on the surface water quality downstream of the site.

The last report on the biological assessment of the Glenmunder River was submitted to the Agency in November 2015. A biological assessment is carried out every two years and will be carried out again in 2017. Very few differences were noted between the survey results for 2015 and those of 2011 and 2013. Water quality in 2015 both up and down stream is classed as poor and at risk. There are no significant differences recorded between the upstream and downstream location therefore it is assumed that the drop in quality can be ascribed to an impact occurring upstream of SW-1.

3.3 Wastewater

Wastewater from the facility (floor wash downs, vehicle washing) 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 April, May, June, July and September 2015, 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. The monitoring results are included in Appendix 1.

With the exception of an exceedance of the ELV for COD in October 2015, the facility was compliant with the ELVs set in the Licence in 2015. The source of the COD in October was not identified. The waste water sample collected in November was also analysed for COD. The level of COD detected in November was significantly lower than the ELV.

3.4 Leachate

Leachate is generated by 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. In general the wells were either dry or contained very small volumes of liquid at the base which could not be sampled. As these wells have been consistently dry OCM investigated the feasibility of using the on-site gas wells as leachate monitoring points. The gas wells GS-07 and GS-08 were identified as suitable leachate monitoring points.

3.4.2 Leachate Quality

Leachate samples were collected from GS-07 and GS-08 in 2015. The results are not indicative of either the presence of a typical landfill leachate, or significant leachate contamination at these locations. Both locations are within the waste body but are located at the upgradient side and are close to the interface between the waste body and natural ground. The leachate results are summarised in Appendix 1.

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-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-01, GS-05, BH-2, BH-5, BH-6 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 and the results are included in Appendix 1. The monitoring did not detect the presence of carbon dioxide or methane in any of the buildings.

Out of one hundred and sixty one landfill gas measurements made during the reporting period, methane was detected on twenty eight (28 No.) occasions in wells located in the fill area. The highest level detected was 4.3% in GS-10 in January 2015. Methane was not detected in any of the wells outside the waste body. Methane trend data is presented in Figure 3.2. Carbon Dioxide was measured at levels above the trigger level (1.5% v/v) on fifteen (15 No.) occasion in wells outside the waste body. The highest level detected was 4.9% at BH-2.

The exceedances of the carbon dioxide trigger levels have neither been immediately reported nor treated as incidents issued as the levels are not unexpected i.e. they are not the result of incidents. Instead, to the Agency's satisfaction and agreement, results have been discussed in each quarterly report submitted for the facility.

3.5.1 Landfill Gas Volumes

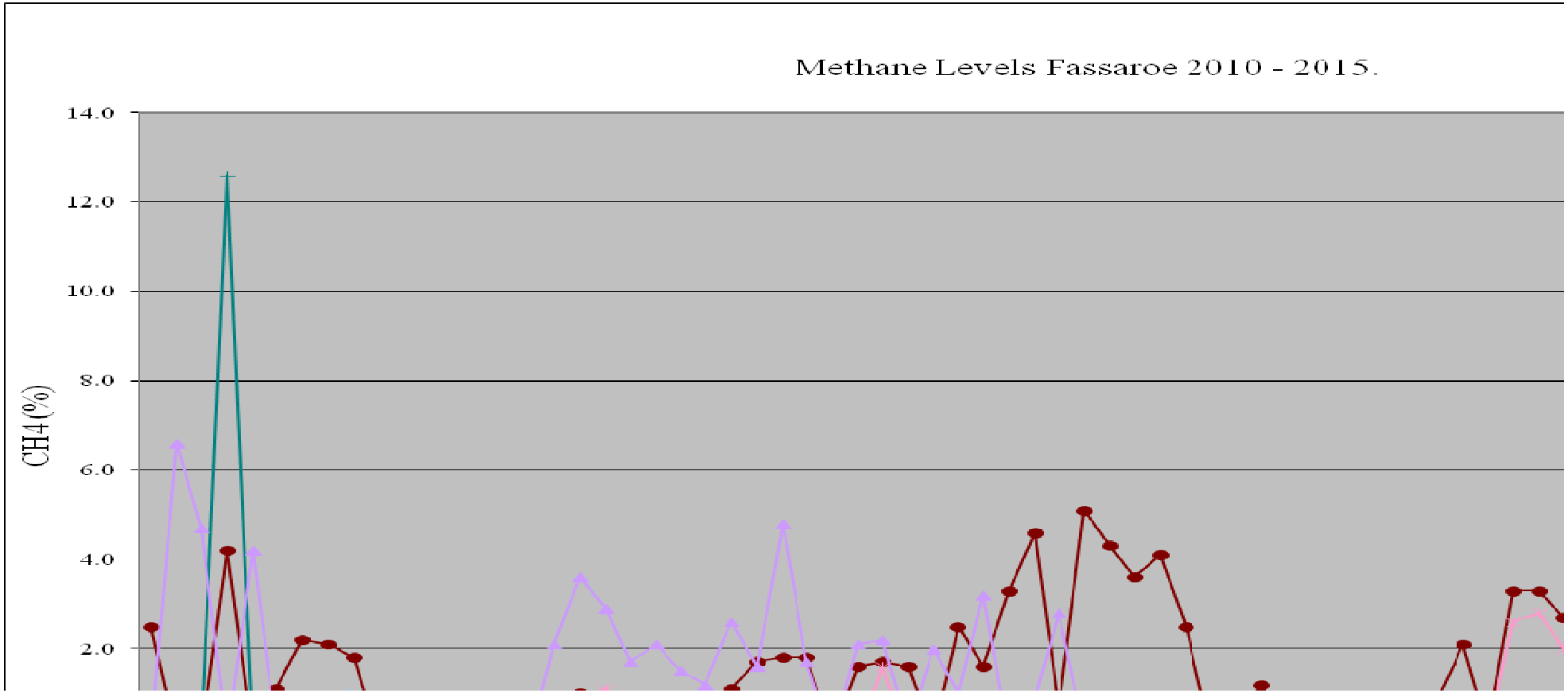
The occasional elevated carbon dioxide concentrations and the occasional presence of methane indicate that some degree of degradation of organic waste is occurring within the fill area. Based on the available information on the site history it appears that some biodegradable material may historically 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

The design of the recently constructed structures at the site, specifically the Phase 2 processing building and the new administration building, incorporate sub-surface landfill gas protection measures and recent landfill gas monitoring in buildings around the site have not detected methane or elevated levels of carbon dioxide. 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.

Figure 3.2 Methane Levels 2010-2015.



3.6 Noise Survey

The annual noise survey was carried out in accordance with International Standard ISO 1996-2 Acoustics – Description, measurement and assessment of environmental noise, Part 2: Determination of environmental noise levels (2007) and EPA document NG4 Guidance note for noise: Licence applications, surveys and assessments in relation to scheduled activities (2012). The survey measured daytime and night-time noise levels at four boundary stations (N1-N4) and two offsite stations (NSL1 and NSL2). The facility was found to be in compliance with the licence conditions.

Daytime $L_{Aeq\ 30\ min}$ levels at the onsite stations N1-N4 were 43-58 dB. Site noise sources were audible to varying degrees at three of these, with one event slightly audible at the fourth. Night-time $L_{Aeq\ 30\ min}$ levels measured 35-44 dB, with site activities audible at three stations. The 55 dB daytime and 45 dB night-time limits specified in the licence do not apply to these stations.

$L_{Aeq\ 30\ min}$ levels recorded at the noise sensitive locations NSL1 and NSL2 were 53-56 dB and 60-62 dB respectively during the daytime. Offsite noise sources, particularly road traffic, affected both. The contribution from the Greenstar facility was estimated at 52-55 dB at NSL1, and less than 52 dB at NSL2, chiefly resulting from truck movements through the entrance and weighbridge area. This contribution is lower than the 55 dB daytime limit. Night-time operations, when present, were slightly audible at NSL1, giving rise to a contribution of less than or equal to 38 dB. Operations were not audible at NSL2. If follows that night-time emissions were less than the 45 dB night-time limit. Greenstar operations did not give rise to tones or impulses at any station during the daytime or night-time.

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 administration 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. The site was 100% compliant with the dust limit (the limit is 350mg/m^2/day).

4. SITE DEVELOPMENT WORKS

4.1 Specified Engineering Works

No specified engineering works were carried out in 2015.

4.2 Site Restoration

No site restoration works were carried out in 2015.

4.3 Site Development

No site development was carried out in 2015.

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 Estimates of Resources Used On-Site 2015

Resources	2014	2015
Diesel	198,100 litres	198,304 litres
Hydraulic, Transmission and Engine Oil	3,536 Hydraulic 3,134 Engine Oil	7,848 Hydraulic 10,906 Engine Oil
Gear Oil	180 litres	70 litres
Electricity	712,448 kWh	1,589,793 kWh
Gas	58,839 kWh	59,549 kWh

5. WASTE RECEIVED AND CONSIGNED FROM THE FACILITY

Table 5.1 shows the quantities of wastes accepted and consigned for the reporting period. A more detailed description of the wastes received and consigned in 2015 is presented in the PRTR submission in Appendix 2.

The total quantity of waste received was 154,817.813 tonnes and the total amount consigned was 157,676.64 tonnes. The waste received and consigned in 2015 and 2014 are presented in Tables 5.1 and 5.2. For comparative purposes the amounts of waste received and consigned from 2006 to 2015 are presented in Table 5.3. As per Condition 11.12 of the Licence all the wastes consigned from the site went to authorised recovery and disposal facilities and a copy of the relevant Facility Permit or Waste Licences retained on site for Agency inspection.

The records show that more waste was consigned from the site than accepted. The difference was 2,858.82 tonnes. This is due to material being stored in the facility at the end of 2014 prior to consignment in Q1 2015.

Table 5.1 Waste Received and Consigned 2015

EWC	Description	Waste In	Waste Out
100211	Oil Filters	-	0.16
130208	Waste Oil		1.00
150101	Cardboard Packaging	2,806.90	7,196.02
150102	Plastic Packaging	156.35	6,622.95
150103	Wooden Packaging	51.52	7.28
150104	Metal Packaging	14.32	158.26
150105	Composite Packaging	2.30	
150106	Mixed Packaging	26,961.04	20.74
150107	Glass Packaging	17.31	
150109	Textile Packaging	1.27	
150203	Protective Clothing	2.29	
160504	Gas Cylinders		0.88
170203	Plastic	20.88	56.43
170302	Bitmac	19.50	19.40
170402	Aluminium Tubes	0.85	17.18
170504	Soil & Stones	184.88	
170904	C&D Inert Mixed	1,481.76	
190802	Grit	8.14	
190902	LDF Filter Cake	222.52	177.14
191204	Rubber	6.76	
191207	Wood	80.41	4,888.30
191209	C&D Inert Mixed	2,341.89	18,546.24
191210	Solid Recovered Fuel (SRF)	0.36	13,255.25
191212	C&I Dry Mixed	9,139.02	60,738.93
200101	Cardboard & Paper	3,353.67	16,594.89
200102	Glass	3.56	
200108	Biodegradable Kitchen & Canteen Waste	2,695.07	2,216.86
200111	Textile	81.74	
200135	REC Electronics & Electrics	0.20	12.00
200138	Wood	3,011.09	4,451.00
200139	Plastic	24.67	8.82
200140	Metal	133.07	2,908.64
200201	Green Biodegradable Waste	1,211.19	1,751.54
200301	MSW Municipal Mixed	27,085.86	11,181.52
200303	LDF Street Cleaning	4,725.82	4,069.31
200307	C&I Dry Mixed	68,965.08	2,775.90
		6.54	
	Total Received	154,817.81	
	Total Consigned		157,676.64
	Total Disposed		70,116.09
	Total Recovered		87,560.55
	Recovery Rate (%)		55.53%

Table 5.2 Waste Received & Consigned 2014

EWC	Description	Waste In	Waste Out
110110	LDF Filter Cake	64.50	
130208	Engine Oils		1.60
150101	Cardboard Packaging	2,711.68	6,717.33
150102	Plastic Packaging	261.07	2,436.39
150103	Wooden Packaging	593.57	22.50
150104	Metal Packaging	33.53	312.53
150106	Mixed Packaging	23,189.22	2,843.71
150109	Textile Packaging	3.35	
160505	Gas Cylinders		1.56
170203	Plastic	26.08	13.64
170402	Aluminium Tubes	1.82	13.01
170904	C&D Inert Mixed	2,611.56	
190801	LDF Screening	90.53	249.60
190802	Grit	93.00	
191207	Wood	118.12	5,394.36
191209	C&D Inert Mixed	918.52	29,214.17
191210	Solid Recovered Fuel (SRF)	1.58	
191212	C&I Dry Mixed	12,482.33	64,794.77
200101	Cardboard & Paper	3,702.31	12,386.61
200102	Glass	4.90	
200108	Biodegradable Kitchen & Canteen Waste	1,340.80	1,083.56
200111	Textile	69.31	
200133	Batteries		0.90
200135	REC Electronics & Electrics	0.99	
201036	WEE		8.26
200138	Wood	1,574.96	
200139	Plastic	69.67	122.80
200140	Metal	169.20	1,711.35
200201	Green Biodegradable Waste	1,233.64	1,185.04
200301	MSW Municipal Mixed	26,465.31	14,545.85
200303	LDF Street Cleaning	2,677.40	2,720.65
200307	C&I Dry Mixed	65,330.55	4,148.38
	Total Received	145,839.48	
	Total Consigned		149,928.57
	Total Disposed		67,473.33
	Total Recovered		82,455.24
	Recovery Rate (%)		55.00

Table 5.3 Total Tonnages Received, Consigned & Recovered in 2005-2015

Year	Total Received	Total Consigned	Total Recovered	Recovery Rate
2015	154,817.81	157,676.64	87,560.55	55.53%
2014	145,839.48	149,768.21	82,294.88	54.95%
2013	92,433.67	91,018.94	54,706.51	66.10%
2012	121,367.30	125,661.87	84,454.83	67.02%
2011	138,048.00	155,995	92,492.16	67%
2010	142,365.00	143,248.24	64,494.98	45.02%
2009	135,386.12	122,331.95	61,297.98	50.10%
2008	152,695.89	138,814.22	10,828.00	54.34%
2007	192,679.93	198,371.37	39,186.00	54.90%
2006	170,600.44	119,836.93	80,328.43	72%
2005	178,735.42	110,077.96	60,504	50%

6. ENVIRONMENTAL INCIDENTS AND COMPLAINTS

6.1 Incidents

The routine monitoring programme identified thirteen incidences where the trigger level for carbon dioxide was exceeded as described in Section 3. Landfill gas concentrations are monitored on a monthly basis at the facility. Historically the exceedances of the carbon dioxide trigger levels have neither been immediately reported nor treated as incidents issued as the levels are not unexpected i.e. they are not the result of incidents. Instead, to the Agency's satisfaction and agreement, results have been discussed in each quarterly report submitted for the facility. A summary of the gas monitoring data is presented in Appendix 1.

There was one incident in 2015 in relation to an exceedance of the wastewater ELV for COD. The cause of the elevated level was not identified. This was reported to the Agency and Wicklow County Council at the time of the incident. The waste water sample collected in November was also analysed for COD and the level was significantly lower than the ELV. A summary of the waste water data is presented in Appendix 1.

6.2 Register of Complaints

Greenstar maintains a register of complaints received in accordance with Condition 11.7 of the waste licence. Complaints regarding dust, noise and windblown litter were received from various neighbours during 2015. Details of each communication were documented in the Communications database on site. Each complaint was followed up, remedial actions taken and lines of communication kept open with the site neighbours at all times. No complaints were made to the Agency.

7. ENVIRONMENTAL DEVELOPMENT & CONTROL

7.1 Environmental Management Programme Report

Greenstar have implemented an Integrated Management System (IMS) in accordance with the requirements of Occupational Health and Safety Assessment Series (OHSAS) 18001:2007 and International Standard Organisation (ISO) 14001:2004 in order to manage the Health, Safety and Environmental performance of their business and to control health and safety risk and to minimise their environmental aspects and impacts.

The IMS has been developed for the achievement of continual improvement taking into the requirements of the Waste Licence Conditions. Greenstar has prepared and effectively implement documented procedures and instructions in accordance with the requirements of both the OHSAS 18001:2007 and ISO 14001:2004 and the site has been certified to these standards since 2010. The site underwent a successful external audit in September 2014.

As part of this IMS, Greenstar has developed a list of environmental, management, operating and maintenance procedures, details of which are outlined in Appendix 3. The schedule of Objectives and Targets, including their status for 2015 (Table 7.1), as well as the proposed Objectives and Targets for 2016 (Table 7.2) are presented below.

7.1.1 Site Management Structure

Details of the site management structure are given below.

Name: John Richardson **Title:** Site Operations Manager

Training & Experience: Diploma in Mechanical Engineering. Has completed FAS Waste Management Course. 18 years industrial experience, all in the waste industry.

Responsibilities: Daily responsibility and accountability for all aspects of Greenstar's processing divisions in Bray. Managing the waste flow process. Implementing ISO systems including environmental and H&S procedures and also meeting all KPIs.

Name: Ger O'Reilly **Title:** Operations Supervisor

Training & Experience: Certificate in Safety & Health at Work (UCD), Certificate in Training and Continuing Education (NUI). Has completed FAS Waste Management Course. 30+ years industrial experience, 9 in the waste industry.

Responsibilities: Day to day operations including direct supervision to ensure appropriate handling, processing & throughput of material in accordance with environmental and H&S procedures, and also meeting all KPIs. Providing Manual Handling & Safety Training.

7.1.2 Staff Training

Job specific equipment training and manual handling training was carried out in 2015. Training undertaken include forklift training, 360 excavator training, front end loading shovel training, lock out/tag out training and machine safety training.

7.2 Environmental Management Programme Proposal

7.2.1 Schedule of Objectives 2015

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

7.2.2 Schedule of Objectives 2016

The schedule of targets and objectives for 2016 are presented in Table 7.2.

Table 7.1 Schedule of Objective and Targets 2015

No.	Objective	Target	Timescale	Responsibility	Status
1	**Document a Preventative Maintenance (PM) plan for the inspection and cleaning of plant & equipment wrt fire**	Incorporate into existing Site Inspection Database (EF-10A) and site specific PM plans	**Q1-Q2**	**Site Management/ EHS**	On going, site specific PM plans currently under review
2	**Document PM plan for all hardstand and drainage infrastructure on site**	Incorporate into existing Site Inspection Database (EF-10A)	**Q1-Q2**	**Site Management/ EHS**	Completed
3	**Review EWC codes in active use group wide and implement recommendations at each site**	Review EWC codes with Finance/WIMS & advise changes to site management	**Q2-Q3**	**EHS/Finance/ WIMS**	Completed
4	**Increase awareness of Odour Management on site group wide**	Specify Odour detection in Site Inspection Database (EF-10A) on a daily basis and generate actions as appropriate	**Q1-Q2**	**Site Management/ EHS**	Completed
5	**Track Energy Usage on site**	Record electricity, gas, water and fuel consumption on site group wide	**Q2-Q3**	**Site Management/ EHS**	On going
6	**Install new Fire Detection (Aspiration) System**	Reduce risk of fire and enable early detection	**Q1**	**Site Management/ EHS**	Completed
7	**Reassess litter netting requirement site wide**	Reduce occurrence of wind-blown litter	**Q2**	**Site Management/ EHS**	Completed

Table 7.2 Schedule of Objective and Targets 2016

No.	Objective	Target	Timescale	Responsibility
1	**Increase awareness of Odour Management on site group wide**	Specify Odour detection in Site Inspection Database (EF-10A) on a daily basis and generate actions as appropriate	Q1-Q2	Site Management/EHS
2	**Waste storage practices**	Review waste storage practices on each site to ensure that they are in line with licence conditions, fire prevention and insurance recommendations	Q2	Site Management/EHS
3	**Emergency response procedures - ER pack update**	Review the Emergency Response Pack on each site and ensure that all information & equipment required in case of an emergency is available. Confirm that relevant staff training adequately addresses.	Q2	Site Management/EHS
4	**CRAMP, ELRA & Financial Provision**	CRAMP, ELRA & Financial Provision to be reviewed	Q2/Q3	EHS team
5	**Waste acceptance, classification & records**	EWC training for all weighbridge ops. Centralisation of all licences & permits inc NWCPs for hauliers.	Q2/Q3	EHS team
6	**Pipeline integrity & bund testing**	Arrange for integrity testing of pipelines and bunds as per licence requirements.	Q2/Q3	Site Management/EHS
7	**Energy Audit**	Completed energy audit as per amended licence conditions	Q4	Site Management/EHS
8	**Containment measures to combat windblown litter**	Investigate measures to contain windblown litter on site.	Q1/Q2	Site Management/EHS

7.3 Reduction of Water Demand

Greenstar upgraded the surface water drainage system as agreed with the Agency in March 2012. The works included the installation of an attenuation tank to collect the roof water from the processing building and this is reused for dust suppression on site. In late 2014, a water bath was removed from the C&I line, this has lead to a reduction in water usage for 2015.

7.4 Volume of Wastewater Produced and Transported off site

The total amount of wastewater produced during the reporting period was 7,946 m^3 which was discharged to the municipal sewer.

7.5 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 2.

7.6 Nuisance Controls

Greenstar has contracted a vermin control company Eastern Pest Control to carry out nuisance control at the facility. Eastern Pest Control undertake a six weekly review of the vermin activity on-site along with an inspection of the bait traps that are located throughout the facility.

7.7 Tank & Pipeline Testing

Bund testing was carried out in 2013 and was confirmed to be fit for purpose. Testing will be required again in 2016. The bund report was submitted via Alder.

Pipeline integrity testing of the foul and surface water networks was carried out in June 2013 by Boyne Waste Services and the pipelines found to be watertight. Written records of this inspection are maintained on site.

7.8 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 and was reported to the Agency as part of the 2008 AER. No further site restoration work was carried out and therefore it was not necessary to carry out a further stability assessment.

7.9 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, Health & Safety Policy makes a specific commitment to make the 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, Health & Safety 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.

7.10 ELRA & Report on Financial Provision

A Decommissioning Management Plan (DMP) and Environmental Liabilities Risk Assessment (ELRA) including Financial Provision (FP) were submitted to the Agency in 2013 as part of the transfer of the licence which occurred in Q1 2014. Both the DMP and ELRA have been approved by the Agency.

7.11 Waste Recovery Report

The facility, which is designed to increase the recycling of biodegradable materials and reduce the volume of waste disposed to landfill, meets the needs identified in EU and national waste policy statements and contributed to the achievement of these goals as out of approximately 154,817 tonnes of waste accepted approximately 47% was sent for recovery.

7.12 Revised Closure, Restoration & Aftercare Management Plan

A revised CRAMP and ELRA was approved by the Agency in Feb 2014 during the licence transfer to Starrus Eco Holdings Ltd t/a Greenstar

8. OTHER REPORTS

8.1 European Pollutant Release and Transfer Register Regulation

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 return submitted to the Agency via the web-based data reporting system is included in Appendix 2.

APPENDIX 1

Environmental Monitoring Summary Tables

GROUNDWATER SUMMARY TABLES

Groundwater Results 2015 Fassaroe W0053-03: BH-2

Parameter	Units	1st Quarter 2015 04/02/2015	2nd Quarter 2015 05/05/2015	3rd Quarter 2015 05/08/2015	4th Quarter 2015 10/11/2015
Temperature	°C	11.5	11.1	11.5	11.2
Chloride	mg/l	34.2	47.3	32.5	18.8
Ammoniacal Nitrogen -N	mg/l	0.03	0.04	0.05	0.04
Conductivity	mS/cm	1.937	1.582	1.774	2.177
Dissolved Oxygen	mg/l	9	9	8	8
pH	pH Units	7.54	7.09	7.39	7.52
Nitrate	mg/l				3
Boron	mg/l				0.643
Calcium	mg/l				558.9
Potassium	mg/l				29.3
Sodium	mg/l				26.5
Magnesium	mg/l				37
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				965.88
Mercury	mg/l				<0.001
Cadmium	µg/l				<0.5
Chromium	mg/l				0.0022
Copper	µg/l				<7
Iron	µg/l				<20
Manganese	µg/l				<2
Lead	µg/l				13
Nickel	µg/l				2
Zinc	µg/l				5
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0
Faecal Coliforms	cfu/100ml				0

Groundwater Results 2015 Fassaroe W0053-03: BH-5

Parameter	Units	1st Quarter 2015 04/02/2015	2nd Quarter 2015 05/05/2015	3rd Quarter 2015 05/08/2015	4th Quarter 2015 10/11/2015
Temperature	°C	12.1	11.8	11.7	11.3
Chloride	mg/l	50.7	23.6	45.1	70.3
Ammoniacal Nitrogen -N	mg/l	0.04	0.04	0.05	0.04
Conductivity	mS/cm	1.575	2.273	1.479	1.578
Dissolved Oxygen	mg/l	6	9	7	8
pH	pH Units	7.04	7.53	7.09	7.06
Nitrate	mg/l				4
Boron	mg/l				0.221
Calcium	mg/l				353.6
Potassium	mg/l				10.7
Sodium	mg/l				48.6
Magnesium	mg/l				17.8
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				495.98
Mercury	mg/l				<0.001
Cadmium	µg/l				<0.5
Chromium	mg/l				<0.0015
Copper	µg/l				<7
Iron	µg/l				<20
Manganese	µg/l				<2
Lead	µg/l				<2
Nickel	µg/l				<2
Zinc	µg/l				<3
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0
Faecal Coliforms	cfu/100ml				0

Groundwater Results 2015 Fassaroe W0053-03: BH-7

Parameter	Units	28/01/2015	1st Quarter 2015 04/02/2015	2nd Quarter 2015 05/05 2015	3rd Quarter 2015 04/09/2015
Temperature	°C	11.8	12	11.7	11.9
Chloride	mg/l		27.1	27.1	28.1
Ammoniacal Nitrogen -N	mg/l	0.03	1.93	2.83	0.02
Conductivity	mS/cm		0.781	0.855	0.721
Dissolved Oxygen	mg/l		4	4	8
pH	pH Units		7.06	7.08	7.72
Nitrate	mg/l				
Boron	mg/l				
Calcium	mg/l				
Potassium	mg/l				
Sodium	mg/l				
Magnesium	mg/l				
Orthophosphate	mg/l				
Sulphate	mg/l				
Mercury	mg/l				
Cadmium	µg/l				
Chromium	mg/l				
Copper	µg/l				
Iron	µg/l				
Manganese	µg/l				
Lead	µg/l				
Nickel	µg/l				
Zinc	µg/l				
VOC	µg/l				
SVOC	µg/l				
Pesticides	µg/l				
Total Coliforms	cfu/100ml				
Faecal Coliforms	cfu/100ml				

SURFACE WATER SUMMARY TABLES

Surfacewater Results 2015 Fassaroe W0053-03: SW-1

Parameter	Units	1st Quarter 2015 04/02/2015	2nd Quarter 2015 05/05/2015	3rd Quarter 2015 05/08/2015	4th Quarter 2015 10/11/2015
Temperature	°C	4.2	8.1	12.1	9.8
Chloride	mg/l	27.2	19.6	25.1	23.3
COD	mg/l	<7	16	<7	10
BOD	mg/l	<1	2	<1	<1
Ammoniacal Nitrogen -N	mg/l	0.02	0.08	0.03	0.04
Tot. Susp. Solids	mg/l	10	,10	<10	<10
Conductivity	mS/cm	0.563	0.415	0.521	0.495
Dissolved Oxygen	mg/l	11	9	8	10
pH	pH Units	8.36	8.03	8.16	8.27
Nitrate	mg/l				9.6
Calcium	mg/l				82.9
Magnesium	mg/l				7.7
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				18.68
Mercury	µg/l				<1
Potassium	mg/l				2.6
Sodium	mg/l				14.5
Boron	mg/l				0.02
Cadmium	µg/l				<0.5
Chromium	mg/l				<0.0015
Copper	µg/l				<7
Iron	µg/l				<20
Manganese	µg/l				5
Nickel	µg/l				<2
Lead	µg/l				<5
Zinc	µg/l				<3
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0.00
Faecal Coliforms	cfu/100ml				0
- Not Required					

Surfacewater Results 2015 Fassaroe W0053-03: SW-2					
Parameter	**Units**	**1st Quarter 2015 04/02/2015**	**2nd Quarter 2015 05/05/2015**	**3rd Quarter 2015 05/08/2015**	**4th Quarter 2015 10/11/2015**
Temperature	°C	4.2	8.1	12.2	9.8
Chloride	mg/l	27.3	20.1	25.3	23.5
COD	mg/l	<7	11	<7	<7
BOD	mg/l	<1	2	<1	<1
Ammoniacal Nitrogen -N	mg/l	0.02	0.09	0.02	0.03
Tot. Susp. Solids	mg/l	<10	95	<10	<10
Conductivity	mS/cm	0.57	0.436	0.523	0.496
Dissolved Oxygen	mg/l	12	9	9	10
pH	pH Units	8.37	8.03	8.19	8.31
Nitrate	mg/l				9.9
Calcium	mg/l				88.2
Magnesium	mg/l				7.9
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				19.23
Mercury	µg/l				<1
Potassium	mg/l				2.5
Sodium	mg/l				14.7
Boron	mg/l				0.016
Cadmium	µg/l				<0.5
Chromium	mg/l				<0.015
Copper	µg/l				<7
Iron	µg/l				<20
Manganese	µg/l				2
Nickel	µg/l				<2
Lead	µg/l				<5
Zinc	µg/l				<3
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0.00
Faecal Coliforms	cfu/100ml				0
- Not Required					

Surfacewater Results 2015 Fassaroe W0053-03: SW-3					
Parameter	**Units**	**1st Quarter 2015 04/02/2015**	**2nd Quarter 2015 05/05/2015**	**3rd Quarter 2015 05/08/2015**	**4th Quarter 2015 10/11/2015**
Temperature	°C	4.3	8.1	12.1	9.7
Chloride	mg/l	27.2	20.5	26.9	23.6
COD	mg/l	<7	20	<7	<7
BOD	mg/l	<1	1	<1	<1
Ammoniacal Nitrogen -N	mg/l	1	0.1	0.05	0.03
Tot. Susp. Solids	mg/l	0.02	43	<10	<10
Conductivity	mS/cm	12	0.433	0.526	0.502
Dissolved Oxygen	mg/l	0.542	9	9	10
pH	pH Units	12	8.04	8.2	8.29
Nitrate	mg/l	8.35			10
Calcium	mg/l				83.8
Magnesium	mg/l				7.8
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				20.64
Mercury	µg/l				<1
Potassium	mg/l				2.3
Sodium	mg/l				14.6
Boron	mg/l				0.025
Cadmium	µg/l				<0.5
Chromium	mg/l				<0.01
Copper	µg/l				<7
Iron	µg/l				<20
Manganese	µg/l				6
Nickel	µg/l				<2
Lead	µg/l				<5
Zinc	µg/l				<3
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0.00
Faecal Coliforms	cfu/100ml				0
- Not Required					

Surfacewater Results 2015Fassaroe W0053-03: SW-4					
Parameter	**Units**	**1st Quarter 2015 04/02/2015**	**2nd Quarter 2015 05/05/2015**	**3rd Quarter 2015 05/08/2015**	**4th Quarter 2015 10/11/2015**
Temperature	°C	4.1	8.1	12.1	9.8
Chloride	mg/l	27.3	20.7	30.2	23.8
COD	mg/l	<7	17	<7	<7
BOD	mg/l	<1	1	<1	<1
Ammoniacal Nitrogen -N	mg/l	0.02	0.09	0.02	0.02
Tot. Susp. Solids	mg/l	11	24	<10	<10
Conductivity	mS/cm	0.587	0.435	0.531	0.513
Dissolved Oxygen	mg/l	12	9	9	10
pH	pH Units	8.36	8.06	8.19	8.26
Nitrate	mg/l				10.8
Calcium	mg/l				89.5
Magnesium	mg/l				8
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				22.42
Mercury	µg/l				<1
Potassium	mg/l				2.6
Sodium	mg/l				14.6
Boron	mg/l				0.017
Cadmium	µg/l				<0.5
Chromium	mg/l				<0.0015
Copper	µg/l				<7
Iron	µg/l				20
Manganese	µg/l				6
Nickel	µg/l				<2
Lead	µg/l				<5
Zinc	µg/l				<3
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0.00
Faecal Coliforms	cfu/100ml				0

- Not Required

Surfacewater Results 2015 Fassaroe W0053-03: SW-5

Parameter	Units	1st Quarter 2015 04/02/2015	2nd Quarter 2015 05/05/2015	3rd Quarter 2015 05/08/2015	4th Quarter 2015 10/11/2015
Temperature	°C	4.4	8.1	13.2	9.2
Chloride	mg/l	27.6	3.9	16.8	23.7
COD	mg/l	<7	27	25	<7
BOD	mg/l	<1	5	5	<1
Ammoniacal Nitrogen -N	mg/l	0.02	0.68	0.95	0.05
Tot. Susp. Solids	mg/l	13	<10	13	41
Conductivity	mS/cm	0.562	0.171	0.119	0.509
Dissolved Oxygen	mg/l	12	8	11	10
pH	pH Units	8.34	7.4	7.59	8.27
Nitrate	mg/l				10
Calcium	mg/l				90.6
Magnesium	mg/l				8.1
Orthophosphate	mg/l				<0.06
Sulphate	mg/l				19.72
Mercury	µg/l				<1
Potassium	mg/l				2.7
Sodium	mg/l				15.1
Boron	µg/l				0.024
Cadmium	µg/l				<0.5
Chromium	mg/l				<0.0015
Copper	µg/l				<7
Iron	µg/l				<20
Manganese	µg/l				2
Nickel	µg/l				<2
Lead	µg/l				<5
Zinc	µg/l				<3
VOC	µg/l				ND
SVOC	µg/l				ND
Pesticides	µg/l				ND
Total Coliforms	cfu/100ml				0.00
Faecal Coliforms	cfu/100ml				0

- Not Required

WASTEWATER SUMMARY TABLES

Wastewater Results 2015 Fassaroe W0053-03: SE-1

Parameter	units	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
pH	pH Units	5.09	7.61	5.27	DRY	DRY	DRY	DRY	6.51	DRY	6.47	6.94	7.06
Temperature	°C	6.1	7.2	6.9	DRY	DRY	DRY	DRY	11.5	DRY	11.7	11	12
BOD	mg/l	186	6	195	DRY	DRY	DRY	DRY	20	DRY	NDP	50	52
COD	mg/l	N/A	54	N/A	DRY	DRY	DRY	DRY	526	DRY	911	293	N/A
Sulphate	mg/l	N/A	545.54	N/A	DRY	DRY	DRY	DRY	82.65	DRY	191.81	N/A	N/A
TSS	mg/l	N/A	112	N/A	DRY	DRY	DRY	DRY	167	DRY	65	N/A	N/A
Surfactants	mg/l	N/A	1	N/A	DRY	DRY	DRY	DRY	1.2	DRY	6.2	N/A	N/A
Oils, Fats & Greases	mg/l	N/A	<0.01	N/A	DRY	DRY	DRY	DRY	3.66	DRY	<0.0.1	N/A	N/A
Mineral Oil	mg/l	N/A	<0.01	N/A	DRY	DRY	DRY	DRY	3.66	DRY	<0.01	N/A	N/A

LANDFILL GAS SUMMARY TABLES

Landfill Gas Results 2015 Fassaroe W0053-03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Trigger
Sample Station Number	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	**CH_4**	Level
	(% v/v)	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**
GS-01	0	0	0	0	0	0	0	0	0	0	0	0	1.0
GS-05	0	0	0	0	0	0	0	0	0	0	0	0	1.0
GS-07*	0.2	0	1.3	1	0	0	0	0	1.6	0	0	0	1.0
GS-08*	1.3	0	0.6	0	0	0	0	0	0.3	0	0	0	1.0
GS-09*	1	0	0	0	0	0	0	0.1	1.5	0	0	0	1.0
GS-10*	4.3	0.6	1.9	2.2	0.3	0.5	No access	1.2	2.2	2.1	0	4.1	1.0
GS-11*	0	0	0	0	0	0	0	0	0	0	0	0	1.0
BH-2	0	0	0	0	0	0	0	0	0	0	0	0	1.0
BH-5	0	0	0	0	0	0	0	0	0	0	0	0	1.0
BH-6	0	0	0	0	0	0	0	0	0	0	0	0	1.0
BH-7	0	0	0	0	0	0	0	No Access	0	0	0	0	1.0
L-01*	0	0	0	0	0.1	0	**	**	**	**	**	**	1.0
L-02*	**	**	**	**	**	**	0	0.3	0	0	0	0	1.0
L-03*	1.6	0.5	1.3	2.2	0	0	0.2	1.5	2.1	0	0	0	1.0

** - well damaged

Landfill Gas Results 2015 Fassaroe W0053-03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Trigger
Sample Station Number	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	**CO_2**	Level
	(% v/v)	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**
GS-01	0	0	0	0	0	0	1.4	0.5	0.8	1.1	2.8	1.7	1.5
GS-05	1	0	0	0	3.5	0	2.6	2.9	1.1	0.1	2.9	0	1.5
GS-07*	2.1	0.9	2.3	1.1	5.3	1.3	7.4	0.6	3.5	5.5	7.5	1.8	1.5
GS-08*	7.3	1	2	1.2	4.7	0.9	4.3	5.6	1.6	3.6	6.2	2.6	1.5
GS-09*	3.6	0.2	2.3	3.1	3.4	0	6.5	3.6	5.6	6.6	5.9	11	1.5
GS-10*	10.2	1.8	3.9	4.2	16	3.1	No access	8.9	6.5	10.6	11	16	1.5
GS-11*	1.3	0	0	0	3	1.3	1.2	0	0	3.2	3.5	6.5	1.5
BH-2	0	0.3	1.1	0	4.9	0.2	1.2	1.4	0.5	0	1.2	0	1.5
BH-5	0	0	0	0	0.4	0	2.8	0.7	0	1.3	3.3	0	1.5
BH-6	1.3	1.4	1.1	0.8	2.2	0	2.1	2.3	0.9	1.3	2.1	2.1	1.5
BH-7	0	0.5	0.9	0	5.3	0.6	0.9	No Access	1	1.2	1.5	1.4	1.5
L-01*	0	0	0.3	1.1	12	1.1	**	**	**	**	**	**	1.5
L-02*	**	**	**	**	**	**	5.4	4.2	2.1	1.1	1.1	2.8	1.5
L-03*	5.2	2.5	3.6	4.1	1.2	1.9	9	7.5	5.6	4.9	1.4	0	1.5

** - well damaged

Landfill Gas Results 2015 Fassaroe W0053-03

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sample Station Number	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**	**O_2**
	(% v/v)	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(% v/v)**	**(%v/v)**
GS-01	20.9	20.1	20.6	21	21	21.2	18.4	20.1	20.3	19	15.1	18
GS-05	1.5	21.8	21	20.9	17.8	21.4	18.3	18.3	20.8	20.1	18.5	21.4
GS-07*	19.3	20.8	16.3	17.2	13.2	19.9	11.6	20.3	12.6	16.2	11.6	18.1
GS-08*	9.3	20.1	18.2	19.3	14.9	19.6	16.4	13.6	18.2	16.8	13.5	18.7
GS-09*	15.2	21.6	19	18.3	17.5	20.6	12.3	17.9	14.2	14.9	12.6	5.4
GS-10*	1.3	16.8	17	13.1	0.1	18.1	No access	8.9	12.1	1.2	6.5	0
GS-11*	18.9	21.5	21.9	21.3	16	18.9	1.91	21	21.2	17.3	17.5	15.9
BH-2	19.8	21.6	19.8	20.8	6.88	20.9	19.2	18.2	20.3	20.9	19.3	20.8
BH-5	20.6	20.3	21.1	20.9	20.7	21.5	15.6	19.8	20.9	19.5	13.2	21.5
BH-6	19	20.5	19.8	19.5	18.1	21.2	19	18.6	20	19.5	18.6	18.4
BH-7	20.1	21.3	20.5	21	13.2	20.8	19.6	No Access	19.5	19.2	18.8	19.8
L-01*	21.9	21.8	20.1	18.9	0.2	19.2	**	**	**	**	**	**
L-02*	**	**	**	**	**	**	14.6	15	18.9	19.2	18.5	17.9
L-03*	16.2	18.5	16.3	15.9	18.5	19	6.3	7.2	10.2	16.4	19.2	21.1

** - well damaged

Landfill Gas Results 2015 Fassaroe W0053-03

	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	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
GS-05	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
GS-07*	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
GS-08*	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
GS-09*	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
GS-10*	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
GS-11*	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
BH-2	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
BH-5	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
BH-6	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
BH-7	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
L-01*	990	1002	1000	997	983	1020	**	**	**	**	**	**
L-02*	990	1002	1000	997	983	1020	1012	999	1001	1010	1001	1012
L-03*	990	1002	1000	997	983	1020	1012	999	1001	1010	100	1012

** - well damaged

DUST SUMMARY TABLES

Dust Results 2015 Fassaroe W0053-03

	DS-01	DS-02	DS-03	DS-04
Jan-15	16.3	22.6	27.7	8.2
Feb-15	23.2	35.4	36.4	33
Mar-15	71.4	12.3	95.6	56.7
Apr-15	18	22.3	45.2	13.9
May-15	18.8	27.1	50.2	13.2
Jun-15	8.1	*	2.8	29.2
Jul-15	1.7	47.6	25.6	36.8
Aug-15	26.6	52.4	38.6	40.5
Sep-15	**	81.74	67.38	48.36
Oct-15	57.73	2.13	43.82	4.6
Nov-15	22.89	74.67	23.17	3.36
Dec-15	18.74	2.92	13.69	7.91

* Sample jar contaminated with bird excrement

** Sample jar damaged

NOISE SUMMARY TABLES

Noise Results 2015 Fassaroe W0053-03 Q2

Station N1

Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Specific L_{Aeq} dB*	Noise audible
0929-0959 12.06.15	57	58	49	56	**Site:** Intermittent truck movements through weighbridge dominant when present. When absent operations within site audible at low level (plant and truck movements, and continuous processing emissions), partially masked by N11 traffic. **Extraneous:** N11 traffic to N and NE continuously clearly audible. Bird song/calls and aircraft. Occasional traffic on Thornhill Road audible at low level.
1248-1318 12.06.15	58	60	51	57	**Site:** As above. Measurement paused due to local intrusion at 1255 **Extraneous:** As above.
1531-1601 12.06.15	57	59	49	56	**Site:** Occasional truck movements through entrance and weighbridge dominant when present, less frequent than earlier. Otherwise, plant and truck movements and processing operations continuously audible at low level, partially masked by N11. **Extraneous:** As above. Crows significan throughout interval.
2338-0008 11/12.06.15	44	42	34	37	**Site:** DMR compressor audible at low level when cutting in. Loader in building slightly audible (reversing alarm and bucket on ground). Several car movements through exit after 0000 dominant when present. **Extraneous:** N11 traffic continuously clearly audible and dominant. Sporadic aircraft. Sporadic vehicle movements through roundabout outside entrance and on Thornhill Road clearly audible when present
0127-0157 12.06.15	36	39	30	<<30	**Site:** No site emissions, apart from slightly audible welding arc and faint transformer buzz. **Extraneous:** Distant N11 traffic continuously clearly audible. Distant dog barking and aircraft.

*Specific L_{Aeq}: Level considered attributable to facility during interval, determined using real time assessment, field notes,

time history profiles, statistical analysis, frequency spectra, spectral statistics and near field correction if applicable.

Noise Results 2015 Fassaroe W0053-03 Q2

Station N2

Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Specific L_{Aeq} dB*	Noise audible
1041-1111 12.06.15	55	58	51	54	**Site:** Intermittent vehicle movements through weighbridge dominant when present, with some periods of queuing. Emissions within site continuously audible at low level, from processing and truck movements. **Extraneous:** Crows locally significant. N11 traffic continously clearly audible. Aircraft
1359-1429 12.06.15	57	60	61	56	**Site:** As above. **Extraneous:** As above.
1711-1741 12.06.15	55	59	49	54	**Site:** Intermittent vehicle movements through weighbridge dominant when present, with some periods of queuing. When trucks absent, emissions within site continuously audible at low level, from processing and truck movements. **Extraneous:** Crows locally significant. N11 traffic continously clearly audible. Aircraft
0012-0042 12.06.15	41	40	33	40	**Site:** DMR line shut down. No site emissions audible apart from several cars departing at start of interval and loader in building slightly audible (engine, reversing alarm and bucket scrape) 0021-35. Car pass at 0037 **Extraneous:** Road traffic to N clearly audible continuously. No other noise audible apart from slightly audible dog barking in distance.
0201-0231 12.06.15	40	38	30	<<30	**Site:** No site emissions audible **Extraneous:** N11 traffic clearly audible continuously. No other noise audible . Helicopter passing during last 2 min intrusive.

*Specific L_{Aeq}: Level considered attributable to facility during interval, determined using real time assessment, field notes,

time history profiles, statistical analysis, frequency spectra, spectral statistics and near field correction if applicable.

Noise Results 2015 Fassaroe W0053-03 Q2

Station N3

Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Specific L_{Aeq} dB*	Noise audible
1007-1037 12.06.15	50	51	45	49	**Site:** Mobile grab operating on yard on E side of building continuously clearly audible to 1012, dominating noise environmnet, although N11 traffic noise remaining significant. Thereafter, site emissions audible from truck and skip manoeuvring on yard above embankment, and mobile plant in C+I building audible through open roller shutter door. **Extraneous:** N11 traffic continuously clearly audible. Bird song/calls and aircraft. Low helicopter pass at 1027.
1324-1354 12.06.15	51	55	46	50	**Site:** Ejector trailer engine at neares corner of C+I building continuously dominant until 1332. Thereafter, occasional truck and skip movements on corner of yard above embankment clearly audible, and waste processing operations in building. Sporadic car movements audible in carpark. **Extraneous:** As above.
1608-1638 12.036.15	**47**	49	44	45	**Site:** Sporadic yard activity above embankment clearly audible when present. Continuous processing emissions in building audible at low level. Sporadic car movements in car park clearly audible. **Extraneous:** As above.
2302-2332 12.06.15	41	44	35	34	**Site:** Loader reversing alarm and bucket on ground in building slightly audible. Loader engine faintly discernible. DMR compressor slightly audible when cutting in. **Extraneous:** N11 traffic continuously dominant to E and NE. Sporadic Thornhill Road traffic also slightly audible. Water flow in valley faintly audible continuously. Occasional aircraft (at 3-5 min intervals approx.) significantly loud. Distant dog barking audible.
0238-0308 12.06.15	35	35	29	<<29	**Site:** No site emissions audible **Extraneous:** N11 traffic reduced (although still dominant), allowing water flow in valley to become more audible. Sporadic aircraft.

*Specific L_{Aeq}: Level considered attributable to facility during interval, determined using real time assessment, field notes,

time history profiles, statistical analysis, frequency spectra, spectral statistics and near field correction if applicable.

Noise Results 2015 Fassaroe W0053-03 Q2

Station N4

Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Specific L_{Aeq} dB*	Noise audible
1005-1035 12.06.15	47	44	38	<38	**Site:** No site emissions audible **Extraneous:** N11 traffic continuously audible at low level, in addition to water flow in valley, bird song/calls, and aircraft. Low helicopter pass at 1027.
1322-1352 12.06.15	44	46	39	<39	**Site:** No site emissions audible apart from ejector trailer engine continuously slightly audible to 1332. No emissions audible thereafter. **Extraneous:** As above.
1606-1636 12.06.15	43	43	37	<37	**Site:** No site emissions audible. **Extraneous:** As above.
2300-2330 11.06.15	40	43	34	<34	**Site:** No emissions audible **Extraneous:** N11 traffic continuously audible to E and NE, codominant with water flow in valley . No other noise audible apart from occasional aircraft (significant).
0235-0305 12.06.15	35	34	32	<<32	**Site:** No emissions audible. **Extraneous:** Water flow in valley dominant. N11 traffic audible at low level. Sporadic aircraft.

*Specific L_{Aeq}: Level considered attributable to facility during interval, determined using real time assessment, field notes,

time history profiles, statistical analysis, frequency spectra, spectral statistics and near field correction if applicable.

Noise Results 2015 Fassaroe W0053-03 Q2

Station

NSL1

Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Specific L_{Aeq} dB*	Noise audible
0928-0958 12.06.15	53	55	51	52	**Site:** Intermittent truck movements through entrance and weighbridge dominant when present, with some idling on bridge. When absent, operations within site audible at low level (plant and truck movements, and continuous processing emissions), codominant with N11 traffic. L_{AF} falling to approx 51 dB when trucks absent, due to site and N11 noise. **Extraneous:** N11 traffic to N and NE continuously clearly audible. Bird song/calls and aircraft.
1247-1317 12.06.15	56	59	52	55	**Site:** As above. Measurement paused due to local intrusion at 1255 **Extraneous:** As above.
1530-1600 12.06.12	55	57	51	54	**Site:** Intermittent trucks through entrance and weighbridge dominant when present, less frequent than earlier. Operations within site audible at low level continuously, partially masked by N11 traffic noise. **Extraneous**: As above.
2336-0003 11/12.06.15	41	43	35	38	**Site:** DMR compressor audible at low level when cutting in (L_{AF} approx 39 when on, and 34 when off). Loader in building slightly audible (reversing alarm and bucket on ground). Several car movements through exit after 0000 dominant when present. **Extraneous:** N11 traffic continuously clearly audible and dominant. Sporadic aircraft. Sporadic vehicle movements through roundabout outside entrance and on Thornhill Road clearly audible when present
0125-0155 12.06.15	37	40	32	<<32	**Site:** No emissions audible apart from faint transformer buzz. **Extraneous:** Distant N11 traffic to N and NE continuously clearly audible. No other noise audible apart from faint dog barking and aircraft.

*Specific L_{Aeq}: Level considered attributable to facility during interval, determined using real time assessment, field notes,

time history profiles, statistical analysis, frequency spectra, spectral statistics and near field correction if applicable.

Noise Results 2015 Fassaroe W0053-03 Q2

Station

NSL2

Time	$L_{Aeq\ 30\ min}$ dB	$L_{AF10\ 30\ min}$ dB	$L_{AF90\ 30\ min}$ dB	Specific L_{Aeq} dB*	Noise audible
1210-12240 12.06.15	62	58	52	<52	**Site:** Truck movements through weighbridge area slightly audible. **Extraneous:** N11 traffic to N continuously clearly audible. Occasional Thornhill Road traffic dominant when present. Birdsong and crows. Aircraft. Dog barking 1204-1204 at 50m signficant. Data not near-field corrected.
11436-1506 12.06.15	61	58	49	<49	**Site:** As above. **Extraneous:** N11 traffic remaining clearly audible with occasional Thornhill Road traffic dominant. Birdsong, crows and aircraft. Lightly rustling vegetation Data not near-field corrected.
1746-1816 12.06.15	60	58	47	<47	**Site:** Truck movements on weighbridge audible at low level. Processing operations in building slightly audible continuously. **Extraneous:** As above. Several car movements through surrounding gateways. Data not near-field corrected.
0048-0118 12.06.15	39	41	34	<34	**Site:** No emissions audible, apart from single car movement in carpark slightly audible 0057 and again 0105 **Extraneous:** N11 traffice to N and NE continuously clearly audible. No other noise audible apart from sporadic aircraft, several car movements through roundabout and faint dog barking in distance. No traffic on Thornhill Road. Data not near-field corrected.
0235-0305 12.06.15	35	34	32	<<32	**Site:** No emissions audible **Extraneous:** N11 traffic to N continuously clearly audible and dominant, although reducing. No other noise audible. Sporadic aircraft. No traffic on Thornhill Road. Data not near-field corrected.

*Specific L_{Aeq}: Level considered attributable to facility during interval, determined using real time assessment, field notes,

time history profiles, statistical analysis, frequency spectra, spectral statistics and near field correction if applicable.

LEACHATE SUMMARY TABLES

Leachate Analysis Q-1 2015

Parameters	Units	GS-07	GS-08
BOD	mg/l	3	1
COD	mg/l	61	87

ND – denotes not present at levels greater than the detection limit

* - not analysed

Leachate Analysis Q-2 2015

Parameters	Units	GS-07	GS-08
BOD	mg/l	31	<1
COD	mg/l	50	10

ND – denotes not present at levels greater than the detection limit

* - not analysed

Leachate Analysis Q-3 2015

Parameters	Units	GS-07	GS-08
BOD	mg/l	4	2
COD	mg/l	98	20

ND – denotes not present at levels greater than the detection limit

* - not analysed

Leachate Analysis Q-4 2015

Parameters	Units	GS-07	GS-08
Boron	ug/l	93	63
Cadmium	ug/l	<0.5	0.7
Calcium	mg/l	2665	204.1
Chromium	ug/l	<1.5	<1.5
Copper	ug/l	<7	<7
Iron	ug/l	<20	<20
Lead	ug/l	10	9
Magnesium	mg/l	18.2	16.9
Manganese	ug/l	354	237
Mercury	ug/l	<1	<1
Nickel	ug/l	<2	5
Potassium	mg/l	5.8	4
Sodium	mg/l	15.2	13.3
Zinc	ug/l	357	150
Fluoride	mg/l	<0.3	<0.3
Sulphate	mg/l	47.26	107.66
Chloride	mg/l	16.1	14.3
Ortho Phosphate	mg/l	<0.06	<0.06
Total Oxidised Nitrogen	mg/l	<0.2	<0.2
Total Cyanide	mg/l	<0.01	<0.01
Ammonia	mg/l	0.43	0.12
BOD	mg/l	2	1
COD	mg/l	13	<7
Electrical Conductivity	uS/cm	1,128	1,028
pH	pH units	7.06	7.08
VOC	ug/l	ND	ND
sVOC	ug/l	ND	ND
Pesticides	ug/l	ND	ND

ND – denotes not present at levels greater than the detection limit

* - not analysed

Leachate Level Results 2015 Fassaroe W0053-03

	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
L-01	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
L-02	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
L-03	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
GS-07	7.56	7.68	7.59	7.61	7.60	7.65	7.71	7.53	7.62	7.69	7.5	7.52
GS-08	9.49	9.86	9.56	9.55	9.80	9.61	9.63	9.75	9.70	9.72	9.69	9.71

APPENDIX 2

European Pollutant Release and Transfer Register

Environmental Protection Agency

Guidance to completing the PRTR workbook

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2015

1. FACILITY IDENTIFICATION

Parent Company Name	Starrus Eco Holdings Limited
Facility Name	Starrus Eco Holdings Limited (Fassaroe)
PRTR Identification Number	W0053
Licence Number	W0053-03

Classes of Activity

No.	**class_name**
-	Refer to PRTR class activities below

Address 1	Bray Depot
Address 2	La Vallee House
Address 3	Fassaroe
Address 4	Bray
	Wicklow
Country	Ireland
Coordinates of Location	-6.141357577 53.19976882
River Basin District	IEEA
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Malcolm Dowling
AER Returns Contact Email Address	malcolm.dowling@greenstar.ie
AER Returns Contact Position	Group Compliance Manager
AER Returns Contact Telephone Number	012947976
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	Increased levels of BOD, COD, Sulphate, Suspended Solids, detergents and mineral oils were detected in 2015. All results were within the licence limits.
Web Address	

2. PRTR CLASS ACTIVITIES

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

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

Is it applicable?	
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. WASTE IMPORTED/ACCEPTED ONTO SITE

Guidance on waste imported/accepted onto site

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	

4.1 RELEASES TO AIR

Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
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					Please enter all quantities in this section in KGs			
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					Please enter all quantities in this section in KGs			
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: Starrus Eco Holdings Limited (Fassaroe)

Please enter summary data on the quantities of methane flared and / or utilised	T (Total) kg/Year	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Facility Total Capacity m3 per hour	
Total estimated methane generation (as per site model)	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

Link to previous years emissions data

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					Please enter all quantities in this section in KGs			
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					Please enter all quantities in this section in KGs			
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					Please enter all quantities in this section in KGs			
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

Link to previous years emissions data | PRTR# : W0053 | Facility Name : Starrus Eco Holdings Limited (Fassaroe) | Filename : W00 18/03/2016 10:22

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs				
POLLUTANT		METHOD			QUANTITY				
			Method Used						
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	Emission Point 2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0	0.0

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

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

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
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	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	674.087	674.087	0.0	0.0
306	COD	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	3543.916	3543.916	0.0	0.0
343	Sulphate	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	2171.907	2171.907	0.0	0.0
240	Suspended Solids	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	911.1413	911.1413	0.0	0.0
314	Fats, Oils and Greases	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	29.08236	29.08236	0.0	0.0
308	Detergents (as MBAS)	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	22.2488	22.2488	0.0	0.0
324	**Mineral oils**	C	PER	Calculated based on annual flow rate. Analysis is ISO accredited.	29.08236	29.08236	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

Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND					Please enter all quantities in this section in KGs		
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					Please enter all quantities in this section in KGs		
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 : Starrus Eco Holdings Limited (Fassaroe) | Filename : W0053_2015.xls | Return Year : 2015 | 05/04/2016 18:53

Please enter all quantities on this sheet in Tonnes 0

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	13 02 08	Yes	1.0	other engine, gear and lubricating oils	R3	M	Weighed	Offsite in Ireland	Enva Ltd.,W0184-01	Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland	Enva Ltd.,W0184-01,Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland	Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland
To Other Countries	15 01 01	No	378.08	paper and cardboard packaging	R3	M	Weighed	Abroad	Cellmark USA,IRE/G180/11	200 Tamal Plaza,California,.,95245,United States		
To Other Countries	15 01 01	No	5.3	paper and cardboard packaging	R3	M	Weighed	Abroad	Rebox Recycking,CP D95/1	Unit 2B Kylemore Industrial Estate ,Killen Road ,Ballyfermot ,Dublin 10,ireland		
To Other Countries	15 01 01	No	4408.02	paper and cardboard packaging	R3	M	Weighed	Abroad	MLM (ACN Europe) Ltd ,TFS Broker IRE/G022/11	.,.,.,.,United Kingdom		
Within the Country	15 01 01	No	203.84	paper and cardboard packaging	R3	M	Weighed	Offsite in Ireland	Materia Environmental Ltd,IRE/AG161/11 The Kipper House Scilly Scilly Kinsale Co Cork	The Kipper House ,Scilly,Scilly,Kinsale,Co Cork		
To Other Countries	15 01 01	No	1258.32	paper and cardboard packaging	R3	M	Weighed	Abroad	Mark Lyndon Paper Enterprises,IRE/G021/12 12 The Triangle Nottingham Nottinghamshire NG2 1AE . United Kingdom	12 The Triangle ,Nottingham ,Nottinghamshire NG2 1AE,.,United Kingdom		
To Other Countries	15 01 01	No	896.9	paper and cardboard packaging	R3	M	Weighed	Abroad	Peute Papier Recycling BV,IRE/G006/08	Veeplaat 40,3313 LJ Dordrecht,.,.,Netherlands		
To Other Countries	15 01 02	No	4233.63	plastic packaging	R3	M	Weighed	Abroad	WRC Recycling,IRE/AG121/15	Floors St ,Johnstone ,Renfrewshire , PA5 8QS scotland,united kingdom		
To Other Countries	15 01 02	No	16.24	plastic packaging	R3	M	Weighed	Abroad	Cherry Pipes,IRE/G037/08	Unit 5 Nutts Corner Business Park,Dundrod Road,Crumlin,Co. Antrim BT29 4SR,United Kingdom		
To Other Countries	15 01 02	No	112.96	plastic packaging	R3	M	Weighed	Abroad	Peute Papier Recycling BV,IRE/G006/08	Veeplaat 40,3313 LJ Dordrecht,.,.,Netherlands		
Within the Country	15 01 02	No	461.8	plastic packaging	R3	M	Weighed	Offsite in Ireland	Leinster Environmentals,WP 2008/06	Clermont Business Park,Haggardstown,Dundalk, Co. Louth,Ireland		
Within the Country	15 01 02	No	586.22	plastic packaging	R3	M	Weighed	Offsite in Ireland	Boost Recycling,IRE/G082/17	c/o M Whelan,Meadow View House,Lisgriffin,Co. Cork,Ireland		
Within the Country	15 01 02	No	376.98	plastic packaging	R3	M	Weighed	Offsite in Ireland	Marwin Environmental Trading,IRE/G027/15	Rubicon Centre , C.I.T Campus Bishopstown ,cork,-,ireland		
Within the Country	15 01 02	No	61.4	plastic packaging	R3	M	Weighed	Offsite in Ireland	Materia Environmental Ltd,IRE/AG161/11 The Kipper House Scilly Scilly Kinsale Co Cork	The Kipper House ,Scilly,Scilly,Kinsale,Co Cork		
Within the Country	15 01 02	No	335.86	plastic packaging	R3	M	Weighed	Offsite in Ireland	Shabra Recycling,WFP-MN-08-0022-01	Killycard Industrial Estate,Castleblayney,Co. Monaghan,.,Ireland		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	15 01 03	No	3.24	wooden packaging	R3	M	Weighed	Offsite in Ireland	CJ Sheeran,P0337-01	The Sawmills ,Shannon Street ,Mountrath ,Co. Laois ,ireland		
Within the Country	15 01 03	No	4.04	wooden packaging	R3	M	Weighed	Offsite in Ireland	Max Pallet Services,Not Required	Colemanstown,Rathcoole,Co. Dublin,.,Ireland		
Within the Country	15 01 04	No	110.9	metallic packaging	R4	M	Weighed	Offsite in Ireland	Green Dragon Recycling, WFP-CK-10-0060-02 CORBALLY NORTH GLANMIRE CO. CORK Cork Ireland	CORBALLY NORTH ,GLANMIRE ,CO. CORK,Cork,Ireland		
Within the Country	15 01 06	No	20.74	mixed packaging	R13	M	Weighed	Offsite in Ireland	Panda,W039-02	Ballymount Cross,Tallaght,Dublin 24,- ,ireland		
Within the Country	17 02 03	No	25.39	plastic	R3	M	Weighed	Offsite in Ireland	Leinster Environmentals,WP 2008/06	Clermont Business Park,Haggardstown,Dundalk, Co. Louth,Ireland		
To Other Countries	17 02 03	No	31.04	plastic	R3	M	Weighed	Abroad	Marwin Environmental Trading,IRE/G027/15	Rubicon Centre , C.I.T Campus Bishopstown ,cork,-,ireland		
Within the Country	17 04 02	No	17.18	aluminium	R4	M	Weighed	Offsite in Ireland	Green Dragon Recycling, WFP-CK-10-0060-02 CORBALLY NORTH GLANMIRE CO. CORK Cork Ireland	CORBALLY NORTH ,GLANMIRE ,CO. CORK,Cork,Ireland		
Within the Country	19 09 02	No	177.14	sludges from water clarification	D5	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		Long Mile Road,Dublin 12,-,- ,Ireland
Within the Country	17 03 02	No	19.4	bituminous mixtures containing other than those mentioned in 17 03 01	R5	M	Weighed	Offsite in Ireland	Breffni Group,COR-MH-14-0001-01	Milltown,Ashbourne,Co. Meath,.,Ireland		Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland
Within the Country	19 12 07	No	4581.92	wood other than that mentioned in 19 12 06	R3	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		
Within the Country	19 12 07	No	249.86	wood other than that mentioned in 19 12 06	R3	M	Weighed	Offsite in Ireland	Clonmel Waste Disposal Ltd ,WP-008-02	Lawlesstown , Clonmel , Co. Tipperary ,-,ireland		
Within the Country	19 12 12	No	108.92	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	R3	M	Weighed	Offsite in Ireland	Irish Cement,P0030-04	Platin Works,Drogheda,Co.Louth,.,Ireland		
Within the Country	19 12 10	No	13255.25	combustible waste (refuse derived fuel)	R3	M	Weighed	Offsite in Ireland	Panda,W039-02	Ballymount Cross,Tallaght,Dublin 24,- ,ireland		
Within the Country	19 12 07	No	56.52	wood other than that mentioned in 19 12 06	R3	M	Weighed	Offsite in Ireland	Waddocks Composting,WP11/04 & WP 01/02	Killamaster,Co. Carlow,.,.,Ireland		
Within the Country	19 12 09	No	10718.92	minerals (for example sand, stones)	R3	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		
Within the Country	19 12 09	No	1174.86	minerals (for example sand, stones)	R3	M	Weighed	Offsite in Ireland	Greenstar Ltd Knockharley Landfill ,W0146-02 Kentstown Co. Meath - - Ireland	Kentstown ,Co. Meath ,-,- ,Ireland		
Within the Country	19 12 09	No	6652.46	minerals (for example sand, stones)	R3	M	Weighed	Offsite in Ireland	Marrakesh Landfill,W0048-01	Kilmurry South ,Bray ,Co Wicklow ,.,ireland		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	19 12 12	No	38904.94	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	D5	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		
Within the Country	19 12 12	No	374.12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	R13	M	Weighed	Offsite in Ireland	Panda,W039-02	Ballymount Cross,Tallaght,Dublin 24,-,ireland		
Within the Country	19 12 12	No	27.2	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	R3	M	Weighed	Offsite in Ireland	Greenstar,W0136-03	Sarsfieldcourt Industrial Estate,Glanmire,Cork,-,ireland		
Within the Country	19 12 12	No	8003.42	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	D5	M	Weighed	Offsite in Ireland	Greenstar Ltd Knockharley Landfill ,W0146-02 Kentstown Co. Meath - - Ireland	Kentstown ,Co. Meath ,-,-,Ireland		
Within the Country	19 12 12	No	2919.48	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	R13	M	Weighed	Offsite in Ireland	Oxigen Environmental Limited,W-0208-1	Ballymount Industrial Estate ,Ballymount Road Lower ,Clondalkin ,Dublin 22,ireland		
Within the Country	19 12 12	No	1495.88	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	D5	M	Weighed	Offsite in Ireland	Bord na Mona. Drehid Landfill,W0201-03 Carbury Co Kildare - - Ireland	Carbury ,Co Kildare ,-,-,Ireland		
Within the Country	19 12 12	No	6729.75	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	R13	M	Weighed	Offsite in Ireland	Greenstar Limited,W0183-01	Millennium Business Park,Grange,Ballycoolin,Dublin 11,Ireland		
Within the Country	19 12 12	No	2175.22	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	R13	M	Weighed	Offsite in Ireland	Greyhound Recycling,W205-01	Crag Avenue,Clondalkin Industrial Estate,Clondalkin ,Dublin 22,Ireland		
Within the Country	20 01 38	No	153.6	wood other than that mentioned in 20 01 37	R3	M	Weighed	Offsite in Ireland	Waddocks Composting,WP11/04 & WP 01/02	Killamaster,Co. Carlow,.,.,Ireland		
To Other Countries	20 01 01	No	9007.66	paper and cardboard	R3	M	Weighed	Abroad	MLM (ACN Europe) Ltd ,TFS Broker IRE/G022/11	.,.,.,.,United Kingdom		
To Other Countries	20 01 01	No	1905.25	paper and cardboard	R3	M	Weighed	Abroad	Mark Lyndon Paper Enterprises,IRE/G021/12 12 The Triangle Nottingham Nottinghamshire NG2 1AE . United Kingdom	12 The Triangle ,Nottingham ,Nottinghamshire NG2 1AE,.,United Kingdom		
To Other Countries	20 01 01	No	5038.54	paper and cardboard	R3	M	Weighed	Abroad	Peute Papier Recycling BV,IRE/G006/08	Veeplaat 40,3313 LJ Dordrecht,.,.,Netherlands		
Within the Country	20 01 08	No	2216.86	biodegradable kitchen and canteen waste	R3	M	Weighed	Offsite in Ireland	Waddocks Composting,WP11/04 & WP 01/02	Killamaster,Co. Carlow,.,.,Ireland		
Within the Country	20 01 38	No	745.36	wood other than that mentioned in 20 01 37	R3	M	Weighed	Offsite in Ireland	Clonmel Waste Disposal Ltd ,WP-008-02	Lawlesstown , Clonmel , Co. Tipperary ,-,ireland	Multi Metals ,WFP-WW-09-0014-01	Blessington ,Co Wicklow ,.,.,ireland
To Other Countries	20 01 35	Yes	12.0	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and and 20 01 23 containing hazardous components	R4	M	Weighed	Abroad	MLM (ACN Europe) Ltd ,TFS Broker IRE/G022/11	.,.,.,.,United Kingdom	MLM (ACN Europe) Ltd.,IRE/G022/11,.,.,.,.,United Kingdom	.,.,.,.,United Kingdom
To Other Countries	15 01 02	No	113.58	plastic packaging	R3	M	Weighed	Abroad	Envirogreen Polymers,WMEX 03/68 & WCP/MH/10/0008-01	227 Battleford Road ,Armagh ,Co. Armagh ,BT71 7NN,ireland		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	20 01 39	No	2.58	plastics	R3	M	Weighed	Offsite in Ireland	North Chemicals,NA	Unit 6C Malahide Road Industrial Park ,Coolock , Dublin 17.,- ,Ireland		
Within the Country	20 01 39	No	6.24	plastics	R3	M	Weighed	Offsite in Ireland	Leinster Environmentals,WP 2008/06	Clermont Business Park,Haggardstown,Dundalk, Co. Louth,Ireland		
Within the Country	20 01 40	No	156.5	metals	R4	M	Weighed	Offsite in Ireland	Davis Recycling Ltd,W0134-01	10 The Anchorage Business Park,Charlotte Quay,Dublin 4,.,Ireland		
Within the Country	20 01 40	No	860.18	metals	R4	M	Weighed	Offsite in Ireland	Clearcirlce,WCP-LK-08-589-01	ClearCircle Metals (Limerick) Ltd ,Ballysimon Road ,Limerick,.,ireland		
Within the Country	20 01 40	No	1889.8	metals	R4	M	Weighed	Offsite in Ireland	Multi Metals ,WFP-WW-09-0014-01	Blessington ,Co Wicklow ,.,.,ireland		
Within the Country	20 01 38	No	1876.76	wood other than that mentioned in 20 01 37	R3	M	Weighed	Offsite in Ireland	Ormonde Organics,W0237-01	Unit 643 Greenogue Industrial Estate,Rathcoole,Co. Dublin,.,Ireland		
Within the Country	20 02 01	No	1751.54	biodegradable waste	R3	M	Weighed	Offsite in Ireland	Enrich Environmental,WMP 2004/57	Kilcock Co. Kildare,.,.,.,Ireland		
Within the Country	20 03 01	No	23.9	mixed municipal waste	D5	M	Weighed	Offsite in Ireland	Bord na Mona. Drehid Landfill,W0201-03 Carbury Co Kildare - - Ireland	Carbury ,Co Kildare ,-,- ,Ireland		
Within the Country	20 03 01	No	8080.48	mixed municipal waste	D5	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		
Within the Country	20 03 01	No	929.64	mixed municipal waste	R1	M	Weighed	Offsite in Ireland	Indaver IWMF ,W0167-02	Carlanstown , Duleek , Co Meath ,.,ireland		
Within the Country	20 03 01	No	20.32	mixed municipal waste	R13	M	Weighed	Offsite in Ireland	Oxigen Environmental Limited,W-0208-1	Ballymount Industrial Estate ,Ballymount Road Lower ,Clondalkin ,Dublin 22,ireland		
Within the Country	20 03 01	No	2029.34	mixed municipal waste	D5	M	Weighed	Offsite in Ireland	Greenstar Ltd Knockharley Landfill ,W0146-02 Kentstown Co. Meath - - Ireland	Kentstown ,Co. Meath ,-,- ,Ireland		
Within the Country	20 03 01	No	9.1	mixed municipal waste	R13	M	Weighed	Offsite in Ireland	Greenstar Limited,W0183-01	Millennium Business Park,Grange,Ballycoolin,Dublin 11,Ireland		
Within the Country	20 03 01	No	88.74	mixed municipal waste	R13	M	Weighed	Offsite in Ireland	Greyhound Recycling,W205-01	Crag Avenue,Clondalkin Industrial Estate,Clondalkin ,Dublin 22,Ireland		
Within the Country	20 03 07	No	19.02	bulky waste	D5	M	Weighed	Offsite in Ireland	Bord na Mona. Drehid Landfill,W0201-03 Carbury Co Kildare - - Ireland	Carbury ,Co Kildare ,-,- ,Ireland		
Within the Country	20 03 03	No	4069.31	street-cleaning residues	D5	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		
Within the Country	20 03 07	No	26.3	bulky waste	R3	M	Weighed	Offsite in Ireland	Greenstar,W0136-03	Sarsfieldcourt Industrial Estate,Glanmire,Cork,- ,ireland		
Within the Country	20 03 07	No	2730.58	bulky waste	D5	M	Weighed	Offsite in Ireland	Greenstar Holdings Ltd.,W0165-02	Ballynagran,Coolbeg & Kilcandra,Co. Wicklow,.,Ireland		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	15 01 04	No	12.78	metallic packaging	R4	M	Weighed	Abroad	WRC Recycling,IRE/AG121/15	Floors St ,Johnstone ,Renfrewshire , PA5 8QS scotland,united kingdom		
Within the Country	15 01 01	No	45.56	paper and cardboard packaging	R3	M	Weighed	Offsite in Ireland	Greenstar Limited,W0183-01	Millennium Business Park,Grange,Ballycoolin,Dubl in 11,Ireland		
Within the Country	20 01 01	No	81.66	paper and cardboard	R3	M	Weighed	Offsite in Ireland	Killarney Waste Disposal,W0217-01	Aughacurreen,Killarney ,Co. Kerry,.,Ireland		
Within the Country	20 01 01	No	561.78	paper and cardboard	R3	M	Weighed	Offsite in Ireland	Agnail Ltd.,IRE/AG117/16	Ballymacken Industrial Estate,Ballymacken ,Portlaoise,Co. Laois,Ireland		
Within the Country	20 01 38	No	1505.96	wood other than that mentioned in 20 01 37	R3	M	Weighed	Offsite in Ireland	Eirebloc Ltd,WFP-CK-13-0127-01	Dunisky ,Lissarda,Co. Cork,.,Ireland		
Within the Country	15 01 02	No	30.58	plastic packaging	R3	M	Weighed	Offsite in Ireland	Clearplas Irl Ltd,WFP-MH-14-0001-01	Gibstown,Kells,Co. Meath,.,Ireland		
To Other Countries	15 01 02	No	135.32	plastic packaging	R3	M	Weighed	Abroad	Nevis Resources Limited,IRE/G422/16	Unit 30 Innovation House,26 Longfield Road,Bishop Auckland,Co. Durham DL14 6XB,United Kingdom		
Within the Country	20 01 40	No	2.16	metals	R4	M	Weighed	Offsite in Ireland	St Margarets Recycling & Transfer Centre,WFP-FG-13-0002-01	Sandyhills,St. Margarets,Co. Dublin,.,Ireland		
To Other Countries	15 01 02	No	155.52	plastic packaging	R3	M	Weighed	Abroad	Resource and Fuels Ltd.,IRE/AG211/16	Unit C1 Magna Drive,Magna Business Park,Citywest,Dublin 24,Ireland		
Within the Country	15 01 04	No	34.58	metallic packaging	R4	M	Weighed	Offsite in Ireland	Wilton Waste Recycling Ltd,WFP-CN-15-0003-01	Kiffagh,Crosserlough,Ballyja mesduff,Co. Cavan,Ireland		
Within the Country	20 01 38	No	169.32	wood other than that mentioned in 20 01 37	R4	M	Weighed	Offsite in Ireland	OCR Waste Management,WFG-RN-10-0001-01	Roxborough,Rosscommon,Co. Rosscommon,.,Ireland		
Within the Country	16 05 04	Yes	0.88	gases in pressure containers (including halons) containing dangerous substances	R4	M	Weighed	Offsite in Ireland	Harbour Trading Company,N/A	Harbour Industrial Estate,Harbour Road,Bray,Co. Wicklow,Ireland	Harbour Trading Company,N/A,Harbour Industrial Estate,Harbour Road,Bray,Co. Wicklow,Ireland	Harbour Industrial Estate,Harbour Road,Bray,Co. Wicklow,Ireland
To Other Countries	15 01 02	No	2.86	plastic packaging	R3	M	Weighed	Abroad	Glenn Drums Recycling Ltd,ROC 2443	38 Upper Lisdrumchor Road,Glenane,Co. Armagh,BT60 2LD,United Kingdom		
Within the Country	10 02 11	Yes	0.16	wastes from cooling-water treatment containing oil	R3	M	Weighed	Offsite in Ireland	Enva Ltd.,W0184-01	Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland	Enva Ltd.,W0184-01,Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland	Clonminam Industrial Estate,Portlaoise,Co. Laois,.,Ireland

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

APPENDIX 3

Procedures Index

Integrated Procedures - IP		
IP-01	Document & Record Control Procedure	Rev 01, 28/04/14
IP-02	Health & Safety Risk Assessment Procedure	Rev 01, 28/04/14
IP-03	Environmental Aspects & Impacts Procedure	Rev 01, 28/04/14
IP-04	Legal & Regulatory Requirements Procedure	Rev 01, 28/04/14
IP-05	Objectives, Targets & Management Programmes Procedure	Rev 01, 28/04/14
IP-06	Competence, Training & Awareness Procedure	Rev 01, 28/04/14
IP-07	Communication & Consultation Procedure	Rev 01, 28/04/14
IP-08	Monitoring, Measurement & Improvement Procedure	Rev 01, 28/04/14
IP-09	Evaluation of Compliance Procedure	Rev 01, 28/04/14
IP-10	Non Conformances, Corrective/Preventive Actions Procedure	Rev 01, 28/04/14
IP-11	Internal Audit Procedure	Rev 01, 28/04/14
IP-12	Management Review Procedure	Rev 01, 28/04/14
IP-13	Control of Contractors/Visitors Procedure	Rev 01, 28/04/14
IP-14	Health & Safety & Environmental Monitoring	Rev 01, 28/04/14
IP-15	Emergency Preparedness & Response Procedure	Rev 01, 28/04/14
IP-16	Fire Prevention Procedure	Rev 01, 28/04/14
IP-17	Bin Washing Procedure	Rev 01, 28/04/14

Safety Procedures - SP		
SP-01	Permit to Work Procedure	Rev 01, 28/04/14
SP-02	Maintenance & Calibration Procedure	Rev 01, 28/04/14
SP-03	Mobile Plant Procedure	Rev 01, 28/04/14
SP-04	Fork Truck Procedure	Rev 01, 28/04/14
SP-05	Operation of Fixed Plant Procedure	Rev 01, 28/04/14
SP-06	Lock Out / Tag Out Procedure	Rev 01, 28/04/14
SP-07	Health & Safety Notification Procedure	Rev 01, 28/04/14
SP-08	MSW Shredder routine Maintenance & Clearing of Blockages Procedure (SCGT)	Rev 01, 28/04/14
SP-09	Weighbridge & Tipping Procedure (SCGT)	Rev 01, 28/04/14
SP-10	Cleaning of Washing Bay (Greenogue)	Rev 01, 28/04/14

Environmental Procedures - EP		
EP-01	Office Waste & Energy Management Procedure	Rev 01, 28/04/14
EP-02	Decommissioning and Aftercare Procedure	Rev 01, 28/04/14
EP-03	Environment Communications Procedure	Rev 01, 28/04/14
EP-04	Waste Permits & Licences Procedure	Rev 01, 28/04/14
EP-05	Waste Acceptance Procedure	Rev 01, 28/04/14
EP-06	Unacceptable Waste Procedure	Rev 01, 28/04/14
EP-07	Waste & Material Storage Procedure	Rev 01, 28/04/14
EP-08	Waste Processing Procedure	Rev 01, 28/04/14
EP-09	Site Infrastructure Procedure	Rev 02, 06/05/15
EP-10	Nuisance Management Procedure (Site Specific)	(Site Specific) Rev 01, 28/04/14
EP-11	Civic Amenity Site Procedure	Rev 01, 28/04/14

Amendment History

Date	Amendment No.	Procedure No:	Revision No:	Comment	Authorised By
05.07.10	01	All	01	Initial Issue	M.D & O.C
13.09.10	02	EP-03	02	Issue of Incident Reports	M.D
20.09.10	03	IP-10	02	Env issues not logged on WIMS Database	M.D
29.10.10	04	IP-13	02	Use of M&M equipment by contractors	M.D & O.C
29.10.10	05	IP-14	02	Use of M&M equipment by contractors	M.D & O.C
29.10.10	06	SP-02	02	Inclusion of Maintenance Schedule	M.D & O.C
05.11.10	07	IP-04	02	Inclusion of other requirements	S.B & O.C
01.02.11	08	SP-08	01	Inclusion of new procedure	O.C
01.02.11	09	IP-10	03	Inclusion of SP-08	O.C
01.02.11	10	IP-15	02	Removal of SF-022	O.C
01.02.11	11	Contents	As shown	EP-10 Site Specific	M.D & O.C
01.02.11	12	IP-06	02	Addressing Agency Staff needs	M.D & O.C
01.02.11	13	Circ List	02	Amendment to document control	M.D & O.C
04.04.11	14	SP-02	03	Inclusion of Site Specific Maintenance schedules	O.C
07.06.11	15	IP-11	02	Inclusion of H&S & Env Internal Audit Schedules	M.D & O.C
14/09/11	16	EP-02	02	Inclusion of decommissioning of plant/equipment	S.B
15/09/11	17	IP-09	02	Inclusion of Statutory Inspections	O.C
01/12/11	18	SP-09	01	Inclusion of new procedure for SCGT	O.C
01/12/11	19	SP-10	01	Inclusion of new procedure for SCGT	O.C
03/05/12	20	SP-01	02	Amendment to remove SF 028	O.C
05/05/12	21	SP-11	01	Inclusion of a new procedure for Greenogue	O.C
28/05/12	22	IP-11	03	General Amendments to internal audit procedure	M.D & O.C
08/06/12	23	IP-13	03	Grammatical amendment	M.D & O.C
15/04/13	24	IP-06	03	Agency staff – sign-off record sufficient proof of training. TMS optional	M.D & O.C

Date	Amendment No.	Procedure No:	Revision No:	Comment	Authorised By
30/06/13	25	IP-16	01	Inclusion of new procedure	M.D.
09/09/13	26	IP-03	02	Use of Scannell Software Solutions (EnviroManager) instead of IF-03A	M.D & O.C
09/09/13	27	IP-04	30	Use of Scannell Software Solutions (EnviroManager) instead of IF-03A	M.D & O.C
09/09/13	28	IP-05	02	Use of Scannell Software Solutions (EnviroManager) instead of IF-03A	M.D & O.C
16/10/13	29	EP-03	03	Introduction of EPA ALDER Portal	K.B
28/04/14	30	All EP's & IP's	01	Change of Company name and review of all Integrated and Env procedures	M.D & O.C
28/04/14	31	SP's	01	Change of Company name and review of all safety procedures including re-numbering & deletion of Motor Claim Notification Procedure – SP 08	O.C
06/05/15	32	EP-09	02	Ref to new form EF-11 added	SS

Circulation List

The Integrated Procedures Manual is a controlled document. Copies of the Procedures Manual are available as follows;

Copy Number	***Holder***
1 (Master Copy)	Group H&S Manager
2	Greenstar EnviroManager
3	Greenstar Intranet – Electronic Copy