

**Roadstone Wood Ltd.**

Fortunestown  
Tallaght  
Dublin 24



The Environmental Protection Agency,  
Office of Environmental Enforcement,  
Headquarters,  
PO Box 3000,  
Johnstown Castle Estate,  
Co. Wexford.

26<sup>th</sup> March 2012.

**Re: Annual Environmental Report 2011 for W0269-01, Fassaroe Waste Recovery Facility**

**The licence holder shall submit to the EPA an Annual Environmental Report before 31<sup>st</sup> March of the following year.**

To whom it may concern,

In compliance with waste licence W0269-01, please find enclosed the following details:

- (1) Emissions from the facility
- (2) Waste management record
- (3) Waste recovery report
- (4) Program of waste deposition works (including projected completion date).
- (5) Complaints summary
- (6) Schedule of environmental Objectives and Targets
- (7) Environmental management programme- report for previous year
- (8) Environmental management programme- report for current year
- (9) Pollutant release and Transfer Register- report for previous year
- (10) Pollutant release and Transfer Register- - report for previous year
- (11) Noise monitoring report summary
- (12) Dust monitoring report summary
- (13) Groundwater monitoring report summary
- (14) Monitoring report summary for (i) southern quarry pond (ii) concrete production yard sump (iii) supply pond Results of any environmental monitoring carried out at the facility
- (15) Tank and pipeline testing and inspection report
- (16) Reported incidents summary
- (17) Topographical survey report
- (18) Stability assessment report
- (19) Bird survey report
- (20) Resource use and energy efficiency summary report
- (21) Development/infrastructural works summary (completed in previous year or prepared for current year).
- (22) Reports on financial provision made under this licence, management and staffing structure of the facility, and a programme for public information.
- (23) Review of Closure, restoration & aftercare management Plan.
- (24) Statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities)
- (25) Environmental Liabilities Risk Assessment Review (every three years or more frequently as dictated by relevant on-site change including financial provisions).
- (26) Any other items specified by the agency

This is a summary of the activities for W0269-01, week beginning 7<sup>th</sup> April 2011 to 31<sup>st</sup> December 2011 for the recycling facility at Fassaroe waste facility, Fassaroe, Bray, Co. Wicklow.

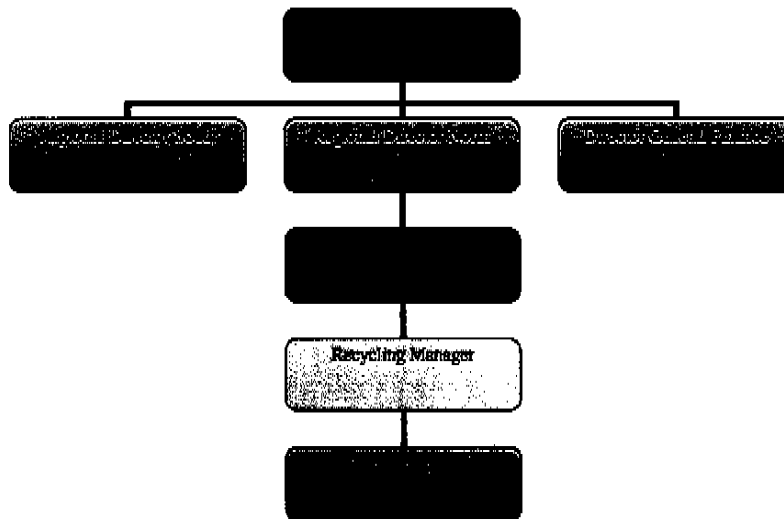
Regards,

Fearghal Phillips, Recycling Manager.

- (1) **Emissions from the facility**  
The emissions from the facility are covered in sections (11), (12), (13) and (14) of this report.
- (2) **Waste management record**  
Please find attached a monthly summary of our waste intake.
- (3) **Waste recovery report**  
All soil imported (17 05 04) was used as part of our backfilling activity. There was no further re-processing of C&D waste in 2011, ie 17 01 01. This is processed on a campaign basis and crushing is scheduled to take place in 2012. Any other waste recovered that is sent off site is covered in the PRTR report for Fassaroo which is submitted separately.
- (4) **Program of waste deposition works (including projected completion date)**  
Quarry backfilling activity at Fassaroo waste recovery facility is currently projected to be complete within 6 to 8 years. This is however very dependent on the availability of inert soil and stone generated by off-site construction activity and is subject to review. The current tiphead will continue towards the southern quarry pond. Topsoil will be used to cap the brought in soil and the land will be shaped to blend in with the existing field contours. More information about this is contained in the CRAMP (section 24 of this report, page 2). Please also see figure 2.6 from the EIS (attached) which shows the phasing plan for the site.
- (5) **Complaints summary**  
There were no complaints made to the facility within the reporting period.
- (6) **Schedule of Environmental Objectives and Targets**  
This is covered in section 7.
- (7) **Environmental Management Programme – report for previous year**  
Please find attached.
- (8) **Environmental Management Programme – report for current year**  
Please find attached.
- (9) **Pollutant Release and Transfer Register –report for previous year**  
This is covered in the PRTR report which has been submitted separately.
- (10) **Pollutant Release and Transfer Register –report for current year**  
N/A
- (11) **Noise monitoring report summary**  
Please find attached.
- (12) **Dust monitoring report summary**  
Please find attached.
- (13) **Groundwater monitoring report summary**  
Please find attached.
- (14) **Monitoring report summary for (i) southern quarry pond (ii) concrete production yard sump (iii) supply pond Results of any environmental monitoring carried out at the facility**  
Please find attached.
- (15) **Tank and pipeline testing and inspection report**  
Please find attached.

- (16) **Reported incidents summary**  
There were no reportable incidents to the EPA for the reporting period.
- (17) **Topographical survey report**  
A description of the topography is included in the ELRA (section 25 of this report, pages 1 to 8). Please find included the following:  
Figure 1 Site location.  
Figure 2 Aerial view of site on google earth.  
Figure 3 Surrounding land uses.  
Figure 4 Site detail and monitoring.
- (18) **Stability assessment report**  
Please find attached.
- (19) **Bird survey report**  
Please find attached.
- (20) **Resource use and energy efficiency summary report**  
Please find attached.
- (21) **Development/Infrastructural works summary (completed in previous year or prepared for current year).**  
The specified engineering works for the site are the installation of infrastructure for collection and diversion of rainwater from waste quarantine and inspection areas and the installation of a ground swale.  
Please find attached relevant reports.
- (22) **Reports on financial provision made under this licence, management and staffing structure of the facility, and a programme for public information.**  
A report on financial provisions is contained within the ELRA. Please also find included a copy of Roadstone Wood Ltd's insurance as well as a bank letter confirming our financial stability. Roadstone Wood is part of the CRH group of companies and is clearly in a strong position to offer a 'Parent Company Guarantee' to cover any possible financial risks that may occur.

**The management and staffing structure of the facility**



The diagram illustrates a section of the over all organisation to highlight the management and reporting structure of the recycling department. The recycling staff include as follows:

- Weighbridge staff,
- Sales staff,
- Loading shovel staff
- Contract crushing staff

The public can, by appointment, call in to the weighbridge office to view information about the facility. Some information is available on Roadstone's website.

- (23) **Review of Closure, restoration & aftercare management Plan.**  
Please find attached.
- (24) **Statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities)**  
Please find attached.
- (25) **Environmental Liabilities Risk Assessment Review (every three years or more frequently as dictated by relevant on-site change including financial provisions).**  
Please find attached.
- (26) **Any other items specified by the agency**  
if there any queries please do not hesitate to contact me.

## **Section 2 Monthly Summary of waste intake**

**CONCRETE IN TAKE**

MONTH	TONNAGE
JANUARY	0
FEBUARY	0
MARCH	0
APRIL	288.32
MAY	205.71
JUNE	426.43
JULY	133.97
AUGUST	515.05
SEPTEMBER	1010.01
OCTOBER	1602.87
NOVEMBER	1392.43
DECEMBER	846.06
<b>TOTAL</b>	<b>6420.85</b>

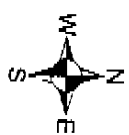
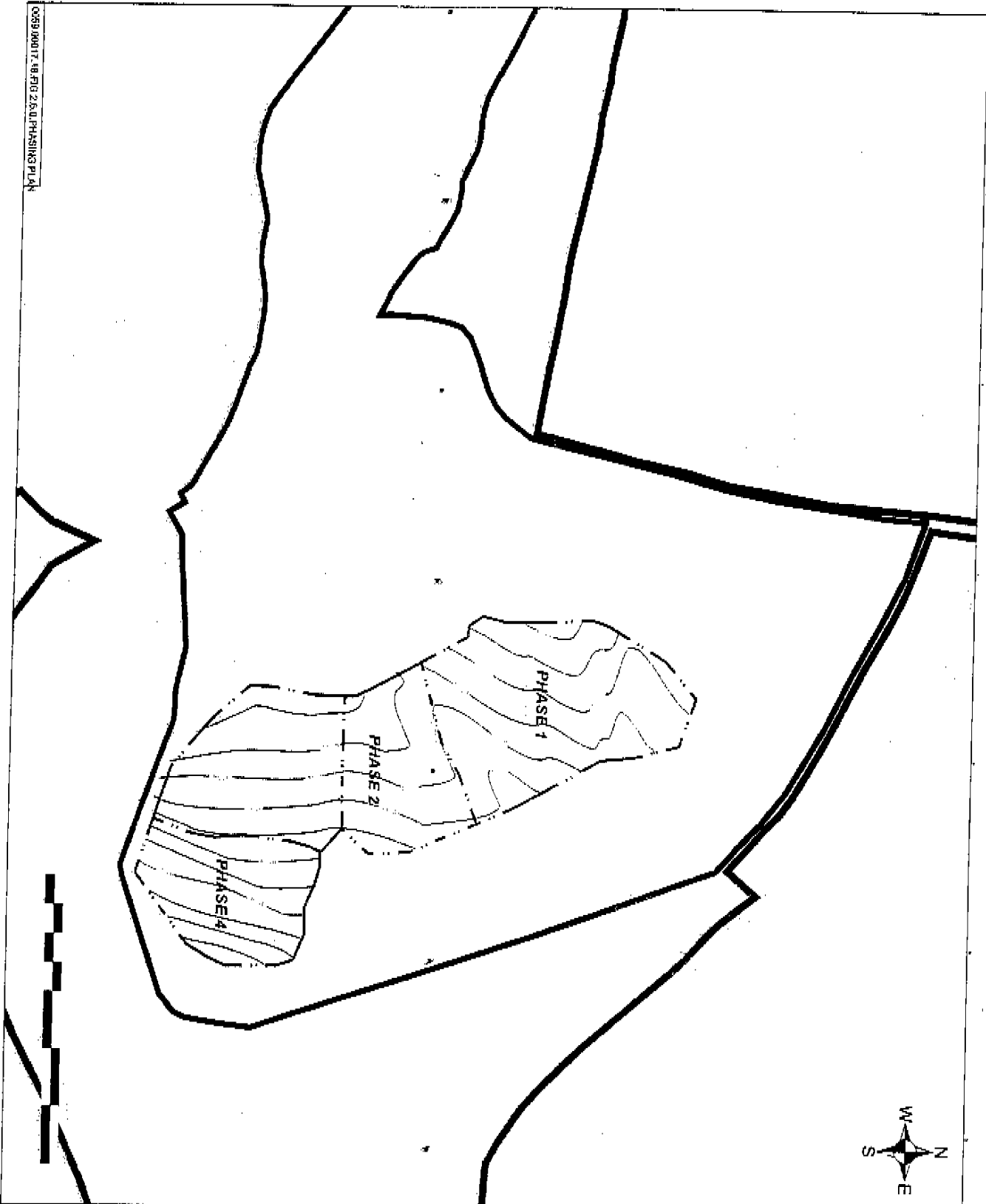
**CLAY INTAKE TOTALS**

MONTH	TONNAGE
JANUARY	0.00
FEBUARY	0.00
MARCH	0.00
APRIL	303.86
MAY	219.48
JUNE	265.00
JULY	1168.81
AUGUST	14122.83
SEPTEMBER	5847.91
OCTOBER	12286.94
NOVEMBER	12803.52
DECEMBER	5092.58
<b>TOTAL</b>	<b>52110.93</b>

## **Section 4 – Figure 2.6 from EIS**



0069 00017 - 18 FIG 2.6.U PHASING PLAN



- NOTES**
1. Based on OSI Draw sheet no. 27
  2. Ordnance Survey Map of Ireland no. SJU 000705  
49 Ordnance Survey of Ireland & Government of Ireland

**LEGEND**

- Applicant's Land/Highway (4x 65.7 Ha)
- Waste Licence Application Area (2x 27.4 Ha)
- Residential Area
- Restoration Contours

**ROADSTONE**  
 Environmental Solutions  
 TALLAGHT  
 DUBLIN 24

**SLR**  
 SLOAN LINDSAY & ROBERTS  
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ROADSTONE DUBLIN LTD.  
 WASTE LICENCE APPLICATION  
 FASSAROE WASTE LICENCE FACILITY  
 FASSAROE, BRAY, CO. WICKLOW  
 PHASING PLAN

FIGURE 2.6

Scale: 1:2,000 @ A3  
 Date: April 2012

## **Section 7 – Env Management Programme 2011**

## Roadstone Wood Group

Environmental Management Program  
 Year: 2011  
 Location: Fassaroe Recycling Facility

Doc.No: EMS/08

Page 1 of 1

Revision: 0

Date: May 2011

Approved By: Colin Doyle

### Impact:

<u>Process</u>	<u>Improvement</u>	<u>Cost</u>	<u>Resp.</u>	<u>Due Date</u>
Traffic/Transportation	Tarring of road after wheel-wash and repairs to existing wheel-wash.	20,000	Fearghal Phillips	June 2011
Groundwater Monitoring	De-commissioning of BH01 and installation of a new borehole, BH04.	10,000	Fearghal Phillips	Sept 2011
Surface water Oil Trap	Installation of a silt interceptor	10,000	Fearghal Phillips	Sept 2011

## **Section 8 Env Management Programme 2012**

## Roadstone Wood Group

**Environmental Management Program**  
**Year:2012**  
**Location: Fassaroe Recycling Facility**

**Doc.No: EMS/08**

**Page 1 of 1**

**Revision: 0**

**Date: February 2012**

**Approved By: Colin Doyle**

<u>Target</u>	<u>Improvement</u>	<u>Cost</u>	<u>Resp.</u>	<u>Due Date</u>
Minimise use of energy on site	Lighting Improvements	€1500	FP	Quarter 2 2012
Minimise use of water on site	Water leak detection and repair.	€10000	FP	Quarter 3 2012
Minimise impact of potential diesel spillage	A ground swale	€1500	FP	Quarter 2 2012
Minimise impact of potential diesel spillage	New hard-standing area around the diesel refuelling area	€1000	FP	Quarter 3 2012
Minimise impact of potential diesel spillage	Bund improvements for the green tank in the main garage.	€1000	FP	Quarter 2 2012

## Section 11 Noise Monitoring report



Fassaroe Noise Monitoring 2011

Date	Lab Ref	Location	L(A)eq	L(A)10	L(A)90	Limit
24/03/2011	97551	N1	46.3	49.9	38.3	55 dB(A)
		N2	51.9	54.1	44.6	55 dB(A)
		N3	41.8	44.3	38.6	55 dB(A)
		N4	49.1	50.5	47.3	55 dB(A)
		N5	48.2	49.8	46.4	55 dB(A)
21/09/2011	101169	N1	47.2	49.8	40.1	55 dB(A)
		N2	52.3	56.2	45.8	55 dB(A)
		N3	48.9	52.3	44.3	55 dB(A)
		N4	52.4	56.8	45.8	55 dB(A)
		N5	53.1	56.8	46.2	55 dB(A)
		Night	42.3	44.4	34.6	45 dB(A)

## Section 12- Dust Monitoring Report



## Roadstone Wood Ltd., Fassaroe.

## Dust Deposition Results

2011

Monitoring Period: April 2011		Laboratory: BHP		Report No:
	Location	Result	Limit	Units
	D1	30	350	mg/m <sup>2</sup> /day
	D2	21.1	350	mg/m <sup>2</sup> /day
	D3	29.4	350	mg/m <sup>2</sup> /day
	D4	N/A	350	mg/m <sup>2</sup> /day
<b>Comment</b>		<i>All results within limits</i>		

Monitoring Period: August 2011		Laboratory: BHP		Report No:
	Location	Result	Limit	Units
	D1	62.2	350	mg/m <sup>2</sup> /day
	D2	107.8	350	mg/m <sup>2</sup> /day
	D3	21.7	350	mg/m <sup>2</sup> /day
	D4	N/A	350	mg/m <sup>2</sup> /day
<b>Comment</b>		<i>All results within limits</i>		

Monitoring Period: September 2011		Laboratory: BHP		Report No:
	Location	Result	Limit	Units
	D1	166.1	350	mg/m <sup>2</sup> /day
	D2	36.6	350	mg/m <sup>2</sup> /day
	D3	57.9	350	mg/m <sup>2</sup> /day
	D4	N/A	350	mg/m <sup>2</sup> /day
<b>Comment</b>		<i>All results within limits</i>		

Monitoring Period: October 2011		Laboratory: BHP		Report No:
	Location	Result	Limit	Units
	D1	6.9	350	mg/m <sup>2</sup> /day
	D2	22	350	mg/m <sup>2</sup> /day
	D3	21.6	350	mg/m <sup>2</sup> /day
	D4	N/A	350	mg/m <sup>2</sup> /day
<b>Comment</b>	<i>All results within limits</i>			

Monitoring Period: November 2011		Laboratory: BHP		Report No:
	Location	Result	Limit	Units
	D1	237.8	350	mg/m <sup>2</sup> /day
	D2	97.2	350	mg/m <sup>2</sup> /day
	D3	118.9	350	mg/m <sup>2</sup> /day
	D4	N/A	350	mg/m <sup>2</sup> /day
<b>Comment</b>	<i>All results within limits</i>			

Monitoring Period: December 2011		Laboratory: BHP		Report No:
	Location	Result	Limit	Units
	D1	62.5	350	mg/m <sup>2</sup> /day
	D2	56.2	350	mg/m <sup>2</sup> /day
	D3	23	350	mg/m <sup>2</sup> /day
	D4	92.4	350	mg/m <sup>2</sup> /day
<b>Comment</b>	<i>All results within limits</i>			

## **Section 13 – Groundwater monitoring report summary**

Fassaroe Ground Water Monitoring 2011

Date	Lab Ref	Location	Water Level	pH	Conductivity	Ammonical Nitrogen	Chloride	Sulphate
24/03/2011	97526.1	BH02	19.59	7.24	408	<0.01	33.7	54.9
24/03/2011	97526.1	BH03	21.85	7.09	449	<0.01	47.9	61.1
27/04/2011	98051.1	BH02	19.2	7.67	948	0.35	16.7	28.8
27/04/2011	98051.1	BH03	17.8	7.3	1210	0.22	12.4	22.1
21/09/2011	100326.1	BH02	Dry	Dry	Dry	Dry	Dry	Dry
21/09/2011	100326.1	BH03	21.54	7.06	522	0.14	22.4	50.9
22/11/2011	101305.1	BH02	20.2	7.58	526	0.07	5.23	0.39
22/11/2011	101305.1	BH03	20.48	7.52	572	<0.01	5.62	1.75

## Section 14 – Surface water results

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Fassaroe Storm Water Monitoring 2011

Date	Lab Ref	Location	TOC	Suspended Solids	Mineral Oils	Dissolved Metals	List 1/11 Organic
27/04/2011	98052.2	SW1	4.9	<1	<0.01	See Attached	See Attached
27/04/2011	98052.2	SW2	8.1	<1	<0.01	See Attached	See Attached
25/10/2011	100865	SW1	18.9	66.4	<0.01		
25/10/2011	100865	SW2	16.3	<1	<0.01		
16/12/2011	101698	SW1	22	16	<0.01		
16/12/2011	101698	SW2	3	1	<0.01		

## **Section 15- Tank and pipeline inspection report**

9.NOV.2011 15:04

<b>Roadstone Wood Ltd.</b>	
<b>E/03 Bund Integrity Test</b> <i>FASSARDS - August 2011.</i>	Doc. No.: F/03
	Revision No: 00
	Date: May 2010
	Approved By: EO

**1.0 Scope**

Bund Integrity tests are carried out in accordance with the Guidelines set out in EMS 16 - Maintenance of Bulk Storage Tanks and Bund Procedure.

Material stored in tank:

Condition of bund structure (note any defects):

Volume capacity of tank:  
 Cylinder:  $\pi r^2 h$  (radius(m) squared x 3.1416) x length of tank(m)  
 Rectangular: length(m) x width(m) x depth(m)

Required bund capacity:  
 a x 1.1

Volume capacity of bund:  
 Length (m) x Width(m) x Depth(m)

Adequate Bund capacity:  
 c should be greater than b

DIESEL  
Very Good Condition  
70.686 m<sup>3</sup> a  
77.75 m<sup>3</sup> b  
116.4 m<sup>3</sup> c  
Yes

- i. Fill the bund to the 110% level (a x 1.1)
- ii. Note the time and leave for 6 hours
- iii. Check water level - if it has not changed, extend the test for a further 18 hours
- iv. Check water level - if there is no significant change, the bund integrity is good
- v. Fill the bund with an additional 0.2% (to represent rainwater)
- vi. If bund integrity remains, the test is complete

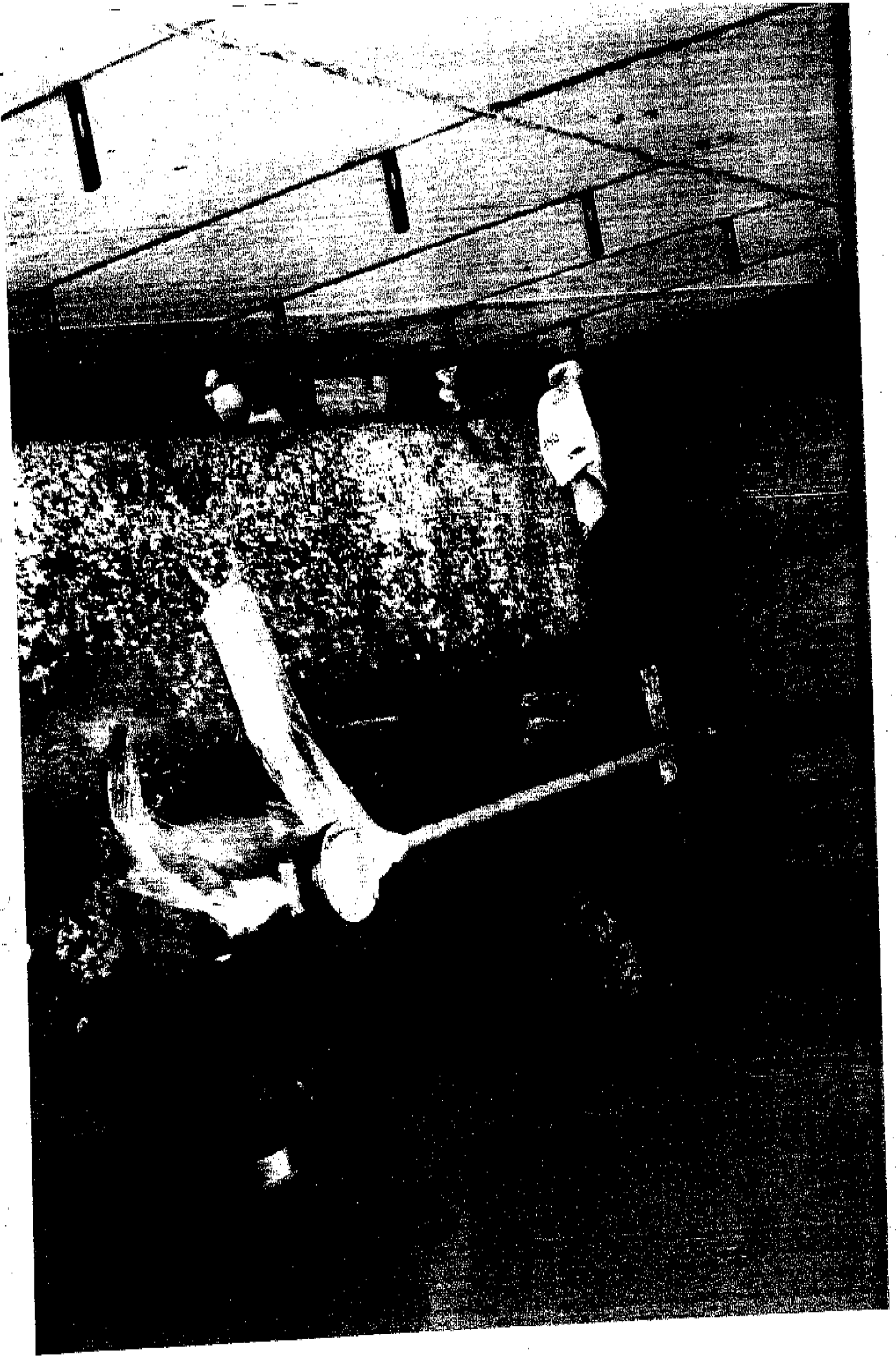
**Test notes:** Bund Effective  
This is a reasonably new bund ≈ 5 years old.

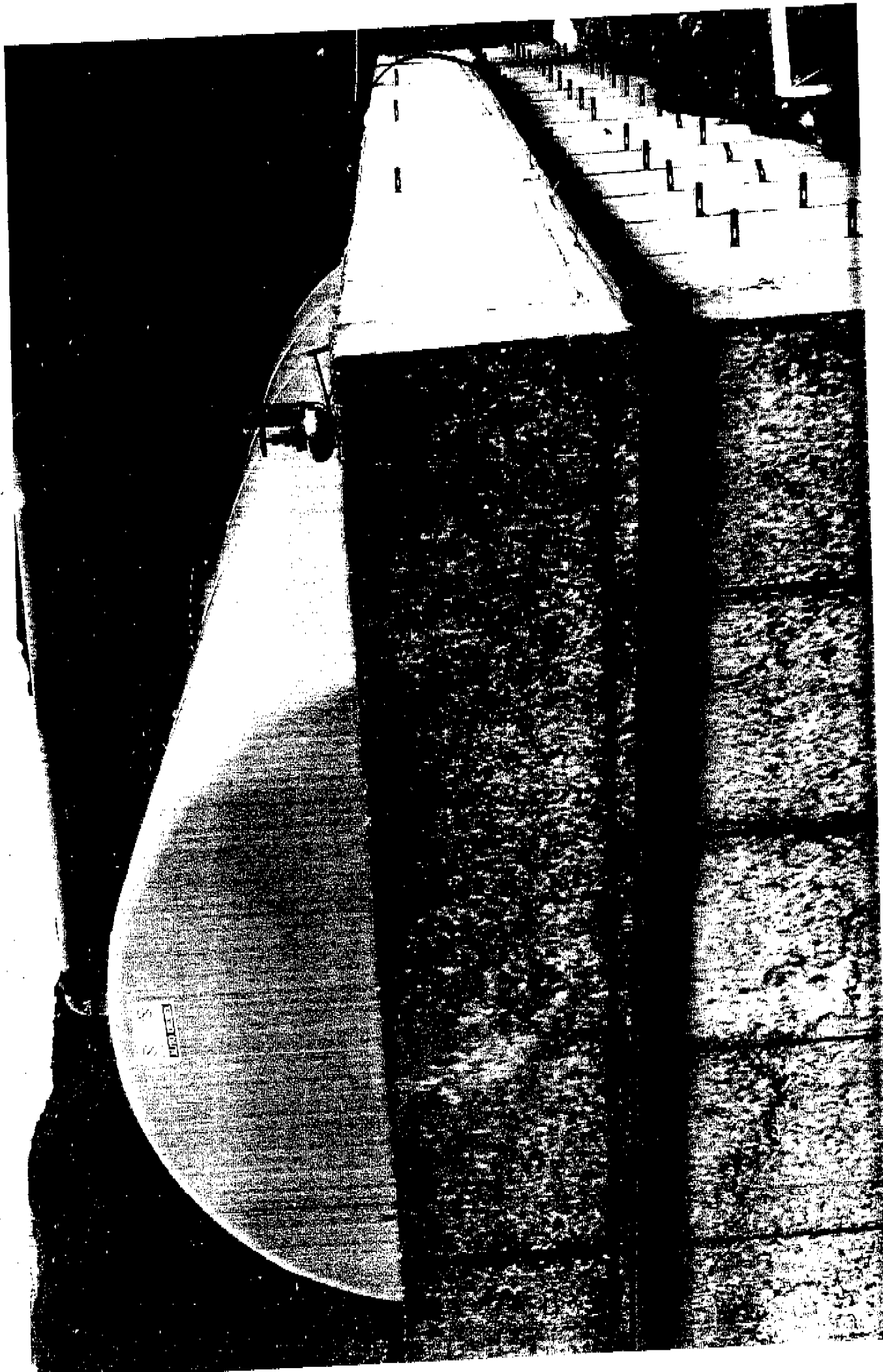
Keep this on file as record of bund integrity test

August 10<sup>th</sup> 2011.

Colin Doyle









## **Section 18 Stability Assessment Report**



# SLR

27 March 2012

Mr. Fearghal Philips  
 Facility Manager  
 Roadstone Wood Ltd.  
 Fassaroe  
 Bray  
 Co. Wicklow

Our Ref: 501.00180.00028  
 Your Ref: WL0269-01

Dear Fearghal

**RE: GEOTECHNICAL INSPECTION OF SLOPES AT ROADSTONE WOOD WASTE RECOVERY FACILITY, FASSAROE, BRAY, CO. WICKLOW WASTE LICENCE REF. NO. W0269-01**

Further to my visit to your soil / construction and demolition waste recovery facility in Fassaroe earlier today to undertake a geotechnical inspection of existing slope stability, I write to formally advise of my findings.

At the time of the inspection, infilling of the void created by sand and gravel extraction was progressing gradually south and eastwards from the north-western corner of the former pit. The weather at the time of the inspection was warm, dry and sunny. Weather in the weeks immediately preceding the inspection had also been largely dry.

### Backfilled Soil Slopes

In general, the temporary slopes developed in backfilled material around the north-western corner of the former pit, estimated to vary from approximately 12m to 16m high and approximately 20° to 30°, were observed to be marginally stable. Photographs of the existing slopes in backfilled material are presented in Plates 1 and 2.

The slopes comprise variable imported natural soils excavated at construction and utilities works sites. The soils principally comprise clayey glacial till, granitic sand and/or weathered granite rock. There were occasional inclusions of construction and demolition type waste within the natural soils, principally lumps of ready mixed concrete and fragments of blocks, bricks and ceramics.

The marginal stability of the backfilled slopes is only to be expected, given that they comprise imported material which has been end-tipped from HGV lorries and had not been spread or compacted by bulldozers or other earthmoving plant. That said, there was no evidence at the time of the site inspection of any recent or imminent instability across the temporary backfilled slopes such as development of tension cracks behind the crest, toe bulging, near-vertical backscarps etc.

Although there was also no evidence of small scale localised erosion of the exposed soils by surface water run-off and no obvious development of downslope erosion gullies or channels, it is considered likely that this is a reflection of the largely dry weather in the weeks immediately preceding the site inspection. It is however likely that some localised surface erosion could arise in loose materials placed across these slopes during and after intense rainfall events, particularly over the wetter winter months.

SLR Consulting Ireland, 7 Dundrum Business Park, Windy Arbour, Dublin 14, Ireland  
 T: +353 1 296 4667 F: +353 1 296 4676 www.slrconsulting.com

Directors: R. O'Dowd, N. O'Neill, T. Paul, N. Penhall (British), P. Richards (British), I. Roberts (British), Secretary: R. O'Dowd  
 Registered in Ireland as: SLR Environmental Consulting (Ireland) Limited, Registered No. 253332, VAT No. B253332

The marginal stability of the slopes is not considered to present any environmental risk for the following reasons:

- (i) Although the stability of slopes developed in backfilled material is marginal and there may be a potential instability risk, it generally only arises for a short period of time until such time as the slope is covered by newly imported materials or the slope is re-worked and re-profiled by bulldozers and other earthworks plant;
- (ii) The imported material is being placed within a closed depression (the former pit) which provides a topographic constraint to migration of slipped material downslope / overground to surface watercourses.

From a facility management perspective, the key issue is to ensure that trucks which are end-tipping imported soil do not reverse too close to the crest of the backfilled slope and that site personnel avoid the area around the toe of the backfilled slopes as material is end tipped over it. It is understood that safety awareness and management programs are in place to address associated health, safety and welfare issues for both drivers and site operatives.

### Former Pit Side Slopes

In general, the side slopes around the eastern and southern perimeter of the former pit developed in natural overconsolidated sand and gravel were estimated to vary from approximately 5m to 10m in height and to have typical gradients of 35° to 50°, increasing locally to near-vertical along the southern perimeter. Photographs of perimeter side slopes around the former pit are presented in Plates 3 and 4.

Strong and resilient vegetation growth has established across the lower, shallower slopes along much of the eastern and southern perimeter of the former pit. This vegetation growth testifies to the stability of these slopes and also serves to enhance it. Where slope instability does occur around the edge of the former pit, it is largely confined to bare (ie. unvegetated), steep (near-vertical) side slopes.

There does not appear to be any evidence of large scale (global) slope failure around the bare side slopes, rather it would appear that they are experiencing gradual regression, erosion and re-grading under both gravitational and climatic influences. No tension cracking or other sign of imminent instability was identified upslope or behind the crest of the steeper side slopes. The side slopes were generally dry, with no evidence of groundwater seepage, other than locally east of the descent ramp in the south-western corner of the former pit. It was also observed that

- (i) vegetation growth (grass and shrubbery) upslope and behind the steeper slopes was well established,
- (ii) small to medium sized trees were growing vertically upwards across these slopes and
- (iii) vegetation was managing to establish itself over eroded sand and gravel which had accumulated at the toe of these slopes.

Taken together these observations indicate that the existing steep perimeter side slopes are relatively stable, albeit they are likely to be experiencing ongoing small scale spalling and erosion. This assessment concurs with experience and observations of Roadstone Wood's local site management.

It was observed in the course of the slope inspection that perimeter fencing had been installed behind the perimeter side slopes of the former pit as a safety precaution and to prevent trespass / access to the pond in the south eastern corner of the former pit.

### Conclusions

The backfilled slopes of imported inert soil are likely to be only marginally stable given that they generally comprise imported material which has been end-tipped from HGV lorries. However any instability risk is only likely to arise for a short period of time until such time as the slope is

Roadstone Wood Ltd.  
Fassaroe Waste Recovery Facility : Geotechnical Assessment

3

Ref: 501.00180.00016  
26 March 2012

covered by newly imported materials or the slope is re-worked and re-profiled by bulldozers and other earthworks plant.

There is no environmental risk associated with instability of backfilled materials as the slope is located within a closed depression which provides a topographic constraint to migration of slipped material downslope / overground to surface watercourses. The key issue with slope stability is to manage health and safety risks and to

- ensure that trucks which are end-tipping imported soil do not reverse too close to the crest of the backfilled slope
- ensure site personnel avoid the area around the toe of the backfilled slopes as material is end tipped over it.

As regards the perimeter side slopes of the former sand and gravel pit, given

- their relative stability,
- that no site personnel are required to work immediately beyond the toe of these slopes and
- that any slope instability which may arise will be topographically constrained within the former pit void,

it is considered that there is no requirement for any specific management or remedial measures in respect of side slope stability, other than ongoing regular visual inspection and monitoring.

Should you wish to discuss this assessment or any of the issues raised herein, please contact the undersigned.

Yours sincerely  
SLR Consulting Ireland

Derek Luby  
Technical Director



**Plate 1 : Global View of Slope in Backfilled Material in NW Corner of Former Pit**



**Plate 2 : View Southwards across Existing Backfilled Slope**





Plate 3 : View of Eastern and Southern Slopes of Former Pit from NW Corner



Plate 4 : View of Both Vegetated and Bare-Perimeter Side Slopes in SE Corner of Former Pit

## **Section 19 Bird survey report**

# Roadstone Wood Ltd

## Bird Survey (2011)

### Fassaroe Waste Recovery Facility.

October 2011

TOBIN CONSULTING ENGINEERS



**TOBIN**  
Patrick J. Tobin & Co. Ltd.



# REPORT

**PROJECT:**

**Bird Survey (2011)  
Fassaroe Waste Recovery Facility**

**CLIENT:**

**Roadstone Wood Ltd**

**COMPANY:**

**TOBIN Consulting Engineers  
Block 10-4  
Blanchardstown Corporate Park  
Dublin 15**

**[www.tobin.ie](http://www.tobin.ie)**



Bird Survey (2011) – Fassaroe Waste Recovery Facility

DOCUMENT AMENDMENT RECORD

Client: Roadstone Wood Ltd  
 Project: Fassaroe Waste Recovery Facility  
 Title: Bird Survey (2011)

PROJECT NUMBER: 3959				DOCUMENT REF: Fassaroe BS 2011			
Revision	Description & Rationale	Originated	Date	Checked	Date	Authorised	Date
A	Draft Report	RM	13/10/11	ST	17/10/11	DG	17/10/11
TOBIN Consulting Engineers							





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## 1 INTRODUCTION

Tobin Consulting Engineers were commissioned by Roadstone Wood Ltd to undertake a bird survey at the Fassaroe Waste Recovery Facility and environs near Bray, County Wicklow. The site consists of a former sand quarry. Much of the site is inactive now and a range of habitats occur which influence the bird fauna on site. It should be noted though that existing works on site allow for the retention of key habitats for potential breeding birds of conservation concern on the site.

The aim of this survey was to address Condition 6.17 of the EPA Waste Licence W0269-01 which requests a bird survey to record species of conservation concern. It should be noted that the survey was conducted outside the breeding season for birds but nevertheless provides a reasonable assessment of birds of conservation concern likely to be recorded.

## SITE DESCRIPTION

The survey area included the Roadstone Wood site at Fassaroe and surrounding farmland. The area surveyed extended to approximately 48 hectares<sup>1</sup>. The Roadstone Wood site is a former sand quarry much of which is now undisturbed by development. Hence many habitats have developed as a result of vegetation re-colonising former bare sand in the last number of years.

This re-vegetation has likely led to an increase in bird diversity and abundance compared to when the site was more actively quarried. Habitats on the site are detailed below with key habitats of importance for birds highlighted;

- **Extensive fringing scrub around the site boundary**
- **Deciduous woodland plantation**
- **Established deciduous woodland**
- **Mature hedgerows**
- **Unimproved grasslands**
- **Arable farmland**
- **Wetlands and willow scrub in former siltation ponds**
- **Bare ground where materials are being deposited**
- **Built areas (buildings, road surfaces etc)**
- **Re-colonising bare ground (weed growth)**

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<sup>1</sup> [HTTP://webgis.npws.ie](http://webgis.npws.ie)



## 2 METHODOLOGY

The site was surveyed for the presence of birds on 13<sup>th</sup> October 2011. The weather was mild and warm and hence suitable for surveying.

The survey area "site" included the entire property including habitats immediately surrounding the site boundary.

Bird species, numbers and distribution on the site were assessed by carrying out a complete walkover survey broadly following procedures detailed in the methodology devised for the Countryside Bird Survey (CBS). The CBS is a scheme organised by BirdWatch Ireland that is used to assess populations of breeding birds throughout Ireland.

The methodology involved walking transects across the survey area recording birds seen. In addition all specific habitats within the site likely to conceal birds of conservation note e.g. wetlands and scrub were checked.

The locations of birds were recorded on field maps in order to ensure that no birds were counted twice.

During the survey regular stops were made to scan and listen for birds, including immediately adjoining areas beyond the proposed boundary. The site visit was made to coincide with the diurnal peak of bird activity (0600 – 1300).

### 3 RESULTS

The site is a locally diverse area for common farmland and woodland birds and attracts birds in from surrounding areas. This diversity is also a reflection of habitats here (see above). A total of 29 different bird species were recorded during the bird field surveys.

A summary of conservation status of key species of conservation concern (Lynas *et al.*, 2006)<sup>2</sup> noted is as follows:

#### **Species listed on Annex 1 Birds Directive**

No species were noted. The site is unsuitable for Peregrine which often breeds in stone quarries. Kingfisher may possibly occur though this would be in wetland areas which will remain undisturbed.

#### **Species of High Conservation Concern (Red listed Birdwatch Ireland)**

The site attracts Yellowhammer from surrounding farmland. A minimum of 10 were noted and this species also likely breeds in fringing scrub at the site boundary where birds were noted. These habitats will be retained.

#### **Species of Moderate Conservation Concern (Amber listed Birdwatch Ireland)**

##### Coot

A pair of coot was noted in wetlands (siltation ponds) on site. These areas will remain undisturbed.

##### Skylark

A small flock (6+) were noted foraging in grasslands on the site. These areas will be retained.

##### Sand Marten

Two colonies are present on the site which following checks could be confirmed as having been active this summer. The larger colony (c.a. 50 burrows) is located at the west of the site at Irish Grid reference O23348 17700. A smaller colony (c.a. 10 burrows) is located at Irish Grid reference O23906 17604. These areas will be retained undisturbed.

<sup>2</sup> Species of conservation concern in Ireland; Lynas P., Newton S.F. & Robinson J.A. 2007. The status of birds in Ireland: an analysis of conservation concern 2008-2013. *Irish Birds* 8 :149-166.

Linnet

A large flock of >100 individuals was noted feeding in weeds on the north of the site. Smaller flocks were also scattered over the site. This species is attracted to the site by weeds and scrub vegetation (shelter).

**Species not currently of conservation concern (Green listed species Bird Watch Ireland)**

The site is used by a diverse range of common bird species. The following were all noted in varying numbers on site: Pheasant, Blue Tit, Great Tit, Coal Tit, Robin, Wren, Dunnock, Hooded Crow, Jackdaw, Magpie, Rook, Jay, Mistle thrush, Song thrush, Blackbird, Siskin, Goldcrest, Greenfinch, Chaffinch, Grey Wagtail, Meadow pipit, Goldfinch, Wood pigeon and Moorhen.

#### 4 DISCUSSION

The site attracts flocks of farmland birds from surrounding farmland as scrub, grasslands and woodlands in particular provide an important autumnal source of food and shelter.

The site is locally important for one species of high conservation concern – Yellowhammer. This species is locally common and scrub and hedgerow habitats used for breeding will be retained.

The sand quarry habitat on site is not suitable for nesting Peregrine (listed on Annex 1 Birds Directive). This species often nests in stone quarries with high cliff faces which are not present on site.

Open ground on site is unlikely to be suitable for breeding wader species e.g. Lapwing and Ringed Plover as scrub is encroaching (predator cover) and these areas are unlikely to be extensive enough for secure nesting. They are also subject to flooding.

The status of species of moderate conservation concern and important habitats, with continued waste management activities, are likely to be as follows:

- Sand martin breeding sites will be retained in an undisturbed state within the site.
- Skylark may breed on site in undisturbed grassland which will be retained
- Wetlands and associated waterfowl will be retained
- Nesting habitat for linnet (scrub) will largely be retained

Key habitats on the site for birds are scrub, woodlands and unimproved grasslands. These areas are undisturbed and likely to remain so as the works area consists largely of bare ground, recolonising bare ground and built ground habitats which are of low importance for birds.

If future clearance works are required in areas of scrub and wetlands during the bird breeding season (late March to end August) then it should be noted that all birds and their nesting places are protected under the Irish Wildlife Act (1976) and under the Irish Wildlife Amendment Act, (2000). It would be recommended that a breeding bird study be conducted prior to starting these works between (late March and end August) so as to inform regarding requirements to comply with Irish Wildlife legislation.

## 5 CONCLUSION

Ongoing waste management activities are not having a significant negative impact on birds and hence no impact would be expected from future waste management activities to breeding birds.

The undisturbed nature of large areas of the site means that this area is locally important for common passerines bird species including Yellowhammer, and this will likely continue to be the case with ongoing current activities.

To strictly comply with condition item 6.17 of the EPA Waste Licence W0269-01 it is recommended that an updated bird survey be conducted in April/ May 2012 (within breeding bird season). The site may possibly have additional breeding species of conservation concern though impacts are unlikely to arise given current management.

## **Section 20 Resource use and energy efficiency summary report**

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<b>Fassaroe Quarry Energy Management Guidance Document</b>	<b>Doc. No.:</b> EnMS 19.1
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	<b>Approved By:</b> KD



## **Fassaroe Quarry**

# **Location Energy Management Guidance Document**

<b>EN 16001 - Roadstone Wood Ltd.</b>	
<b>Fassaroe Quarry Energy Management Guidance Document</b>	<b>Doc. No.: EnMS 19.1</b>
	<b>Revision No: 1</b>
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	<b>Approved By: KD</b>

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	<b>Approved By: KD</b>

## 1 Scope and Distribution

### 1.1 Confidentiality Statement

This document is the property of Roadstone Wood Ltd., and its issue is controlled. The information contained herein may not be disclosed, in whole or in part, either verbally or in writing without the prior consent of the Managing Director.

### 1.2 Distribution List

The following have been issued with a complete copy of the Location Energy Management Guidance Document:-

1	Property Manager
2	Operations Manager
3	Group Energy Management Representative
4	Location Manager

### 1.3 Scope of Application

This guidance document outlines the general requirements for an energy management system at the smaller scale Roadstone Wood Locations. This document is 'EN 16001 Lite' and facilitates development of best practice in Energy Management by adopting EN 16001 primary principles that can be implemented at smaller scale locations.

A series of initiatives have been taken in the past to improve energy management identified throughout the Locations. In order to maintain and improve on the benefits of these initiatives the company decided in 2007 to implement the energy standard I.S. 393 in a number of locations across the group. This Irish Standard specified requirements for an energy management system, to enable an organisation to formulate a policy and objectives taking into account legislative requirements and information about significant impacts on energy consumption and CO<sub>2</sub> production.

Subsequently in July 2009 I.S. EN16001:2009 was released. Roadstone Wood implemented a transition policy for all locations that had successfully achieved accreditation to I.S 393 that subsequently achieved certification for EN16001:2009 in July 2010. Roadstone Wood intend to roll out the new standard as desired from 2010 onwards.

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'EN 16001 Lite' is also being developed so that smaller scale locations can develop in line with best practise in energy management.

## **1.4 Process Description**

### **1.4.1 Description of the Company**

Roadstone Wood Ltd. is one of the major suppliers of construction aggregates, ready mixed concrete, concrete products, road surfacing materials, agricultural lime and architectural products in Ireland. They are part of a leading international building materials group, Cement Roadstone Holdings (CRH). Headquartered in Belgard Castle, Dublin, Ireland, CRH has over 150 locations across Ireland alone.

CRH is an environmentally responsible organisation and recognises that both energy management and environmental issues present both an existing challenge and a rewarding opportunity for its business operations.

The company is dedicated to the principle of quality, which is reflected in the products it sells and in the systems it uses. The company has been independently assessed and has achieved registration to the International Standards IS EN ISO 9001 and ISO 14001.

### **1.4.2 Definition of Processes**

*Quarrying* – This involves the excavation of solid rock by drilling and blasting. The rock obtained is processed through two or three crushing and screening stages to produce granular materials ranging from graded fills to screened aggregates.

*Ready Mixed Concrete Production* - Screened Aggregates produced at the location are used in the production of ready mixed concrete. Cement, sand, water and admixtures are mixed with aggregate to produce ready mixed concrete. This is discharged to special mixer trucks for placement at the customer's site.

*Lime Production* - Imported Limestone chips are fed to a mill where they are ground into a fine lime dust. This dust is then stockpiled in a shed from where it is sold directly as agricultural lime, or transported to other processes on site where it is used as a limestone dust or filler.

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### 1.5.2 Legal Obligations and Other Requirements

Roadstone Wood employs the following methods to identify and have access to legal and other requirements to which the organisation subscribes and that are applicable to the energy aspects of its activities, products and services:

- Relevant Legislation is first identified as part of the Initial Energy Review of the location.
- The Register of Legislation is made available and updated by TMS Consultancy Ltd. via their website ([www.registeroflegislation.com](http://www.registeroflegislation.com)). This register will detail all current and proposed legislation, industry codes of practice and particularly legal requirements dealing with identified significant energy impacts
- The determination of how legal obligations apply to the company's activities is achieved through the completion of a questionnaire by the Group Energy Management Representative (GEMR). This questionnaire issued by TMS Consultancy will evaluate the extent to which a particular piece of legislation applies to Roadstone Wood Ltd.
- This evaluation of compliance is updated regularly by the GEMR and issued to the relevant personnel. The compliance to relevant legislation and other requirements is discussed at Management Reviews.
- The master copy of the Register of Legislation will be available via the TMS website [www.registeroflegislation.com](http://www.registeroflegislation.com). The list of the legislation relevant to the location will be filed in the Energy Management System Working Folder and the Location Manager and/or Energy Officer will be responsible for ensuring this is up to date.
- In addition to legal requirements, Roadstone Wood aims to conform and agree to any other requirements that may be relevant to or have a beneficial impact on energy efficiency. These may include best practices or agreements with third parties, such as with Sustainable Energy Ireland.
- It will be the responsibility of the GEMR to keep the Location Manager aware of any new agreements entered into and of how they apply to the location. Additional requirements or agreements will be filed in the Register of Legislation contained in the Energy Management System Working Folder.

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### **1.5.3 Energy Objectives, Targets and Programmes**

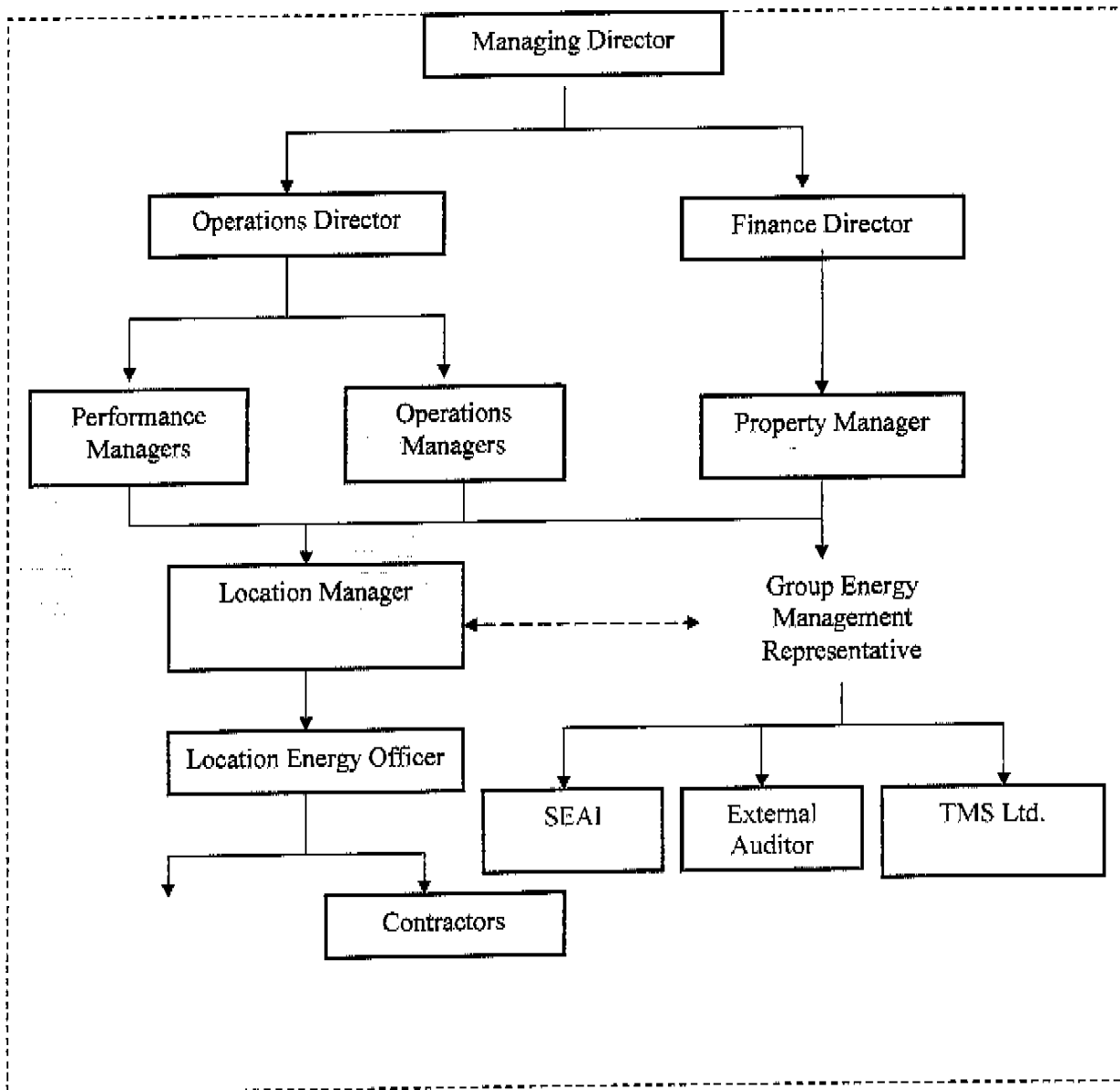
Following the internal energy audit and during the subsequent energy management meeting, the Location Manager and energy management representative will have a ranked list of significant aspects and factors. It is then the responsibility of the Location Manager to devise objectives and targets for these aspects and factors, and where possible initiate projects or Energy Improvement Programmes to reduce energy consumption or improve energy efficiency.

During the initial stages of Energy Improvement Programmes, specific objectives and targets are set by the Location Manager and/or the Energy Officer. These must include target values for energy use, responsibilities and time frames, and are documented on the relevant Energy Improvement Programme Cover Form (EF/07).

On occasions, the assessment and setting of these objectives and targets may involve input from the Group Energy Management Representative and/or the Performance Managers.

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• Resources, roles, responsibility and authority



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#### **1.5.4 Training, Awareness and Competence**

Energy awareness plays a key role in helping to achieve the objectives and targets established as part of the energy management system. All location employees shall be made aware of:

- The location energy management programmes;
- The impact, actual or potential, with respect to energy consumption, of their activities and how their activities and behaviour contribute to the achievement of energy objectives and targets;
- The benefits of improved energy efficiency.

This is achieved through general energy awareness training at all locations. The Group Energy Management Representative (GEMR) is responsible for developing an annual schedule of general energy awareness training for all locations (EF 08). This will include regular energy awareness campaigns and annual energy awareness talks at each location. General energy awareness campaigns will be based on a variety of means including, but not limited to; posters, notice boards, seminars and talks. The GEMR is responsible for the compilation and dissemination of energy awareness material to all locations, developing and delivering energy awareness talks and seminars. Each location Manager is responsible for providing specific input into the energy awareness material as requested by the GMER and for implementing all awareness material at the location, ensuring that all relevant employees attend energy awareness sessions and compiling/maintaining energy training records (EF 09 and Location Training Files).

The Group Energy Management Representative is responsible for ensuring that each level of management, both above and below the GEMR, are informed and appropriately trained in the field of energy management.

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### 1.5.5 Communication

Effective handling of all communications with regard to energy aspects and the EnMS is essential.

Communication can be broken down to two levels:

- Internal communications between the various levels and functions of the location
- Receiving, documenting and responding to relevant communication from external interested parties.

#### Internal Communication

Internal communication will focus on and include the following issues:

- *Objectives & Targets* – Once decided upon by the Location Manager and Location Energy Officer, objectives and targets are documented in their corresponding Energy Improvement Programme Cover Sheet (EF 07). Summaries of programmes and their objectives and targets are displayed on notice boards for all employees and visitors to see by the Location Energy Officer or Location Manager.
- *Further Information* – All employees, through training, awareness schemes and notice boards must be made aware of persons they may contact for further information, details or to whom they can offer thoughts or ideas on energy matters to.

Location Energy Meetings are held on a annual basis to discuss all of the above issues. Minutes of these meetings will be maintained in the locations Energy Management System Working Folder on the Location Energy Meeting Record Form (EF 02).

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## **1.6 Checking**

### **1.6.1 Monitoring and Measurement**

A critical part of the Energy Management System is the ability to accurately measure energy consumption. Monitoring and measurement should be appropriate to the needs of the organisation and should facilitate the analysis of energy consumption within a site.

The most useful way of monitoring energy consumption is to relate it to a quantifiable output. This is done through the use of Energy Performance Indicators (EPIs). EPIs for each location will be identified in the Internal Energy audit and formally adopted if appropriate following the annual energy meeting.

These EPIs may change from year to year with new ones being created and old ones being discarded. This is done during the Annual Energy Meeting by the Location Manager and Energy Officer but may include input from the Group Energy Management Representative (GEMR) or Performance Managers.

Target EPI values are set along with upper control limits and lower control limits where necessary. These values are chosen by the Location Manager following discussion with the companies Performance Managers and/or the GEMR.

From time to time the need may arise to monitor EPIs for a particular factor that a location wishes to investigate. In this instance, it is the responsibility of the Location Manager or Energy Officer to maintain a spreadsheet on which the data will be recorded.

The interval of monitoring and measurement of energy consumption needs to be assessed and evaluated at a frequency that allows the deterioration of energy efficiency to be detected, investigated and rectified. This is done by assessing the likelihood of an energy factors consumption exceeding its control limits versus the severity of the consequences of that event happening.



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### 1.6.2 Internal audit of the energy management system

An Energy Management internal audit is an independent review of energy management at the location. The purpose of the internal audit is to determine if the plans and activities described in the management system are being conducted in the manner as agreed in the energy management meeting.

The requirements for an internal auditor are that they are competent to perform the audit and that they are independent from the location being audited.

In order to be competent, Roadstone Wood Ltd has determined that the internal auditor must have reasonable experience and technical understanding of:

- The Energy Management System
- I.S EN 16001 Standard
- Internal Auditing Processes & Procedures
- The processes to be examined

To be suitably independent, the auditor must not have direct involvement in the management of the locations' system, or be based at the location being audited.

The internal auditor must also have experience and knowledge of how to conduct internal audits. This expertise will be developed through a combination of training (internal and/or external) and experience of observing, participating in, and leading audits. Detailed steps and tips for performing an Energy Management System audit are available in the SEI Internal Audit Guide.

The Group Energy Management Representative is responsible for establishing an annual internal audit schedule. The internal audit will be carried out by the Group Energy Management Representative or somebody designated to carry out the internal audit on his behalf.

Internal Audit Report Form (EF/04) must be completed by the Auditor for each internal audit that is carried out. The report will detail;

- Audit date
- Audit location
- Audit type
- Audit Reference Number
- Auditor
- Finding reference
- Area/system clause
- Description of the finding
- Category

All internal audit findings shall be agreed between the GEMR or designate with the Location Manager at the end of the audit and prior to the GEMR issuing the final report.

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The GEMR will provide all location managers with a final Internal Audit Report (EF/04) and copies of the audit trail forms. The Location Manager shall file these reports in the locations Energy Management System Working Folder.

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### **1.7 Review of the energy management practises**

A Energy Management Meeting will be held each year following the internal audit to review the organisations energy management practises to ensure continuing suitability, adequacy and effectiveness.

This annual energy rmeeting should include specific inputs and outputs, described as follows.

#### **Inputs to the Management Meeting**

Inputs to the Management Meeting will include;

- a. Follow-up actions from previous management meeting;
- b. Evaluation of legal compliance and changes in legal obligations and other requirements to which the organisation subscribes;
- c. The extent to which the energy objectives and targets have been met;
- d. Energy management system audit results;
- e. The overall energy performance of the location;
- f. Projected energy consumption for the following period;
- g. Recommendations for improvement.

#### **Outputs from the Management Meeting**

Outputs from the Management Meeting will include any decisions are actions related to;

- a. The improvement in energy performance of the location following the last review
- b. Changes to objectives, targets or other elements of the management system for energy consistent with the locations commitment to continual improvement

The recommendations for improvements shall include any new energy savings initiatives or projects. It shall also address the need for any new Energy Performance Indicators or to refine existing Indicators.

#### **Records**

Minutes of the meeting and any follow-up actions will be documented and recorded by the Group Energy Management Representative and filled in the Energy Management System Working Folder in each location.

## **Section 21 Development/ Infrastructural works summary**

**Silt Interceptor – Validation Report**

**Description of works:** Installation of a silt trap and oil interceptor as required by section 3.11 of waste licence W0269-01 at Fassaroe waste facility. This interceptor has been installed in the bottom corner of the concrete production yard at SW1. The silt trap and oil interceptor is in accordance with I.S. EN-858-2: 2003.

**Drawings of the Works:** Please find attached a technical specification sheet for the interceptor including dimensions.

**Records and results of tests carried out:** Please see attached technical specification sheet.

**Drawings and sections showing the location of all samples and tests carried out:**  
N/A

**Name of contractor responsible for carrying out the specified engineering works:**  
Maclan Construction

**Records of any problems and the remedial work carried out to resolve those problems:** None

**Any other information:** None

Date: \_\_\_\_\_

Signed: \_\_\_\_\_

## Section 22 – Financial Provisions

# Bank of Ireland



Corporate Banking

Lower Baggot Street  
Dublin 2, Ireland  
Tel +353 (0)1 604 4000  
Fax +353 (0)1 604 4005  
[www.boi.ie/corporatebanking](http://www.boi.ie/corporatebanking)

07.03.2011

Mr Paul O Flaherty  
ISAC CRH Ltd  
Chestnut House  
Millenium Business Park  
Naas  
Co Kildare

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## SUBJECT: Roadstone Wood Ltd

Subject is a subsidiary of a publicly quoted limited company whose financial information is freely available. We would consider their management capable and trustworthy and would consider them good in the way of business generally and in our opinion they would not undertake any commitment that they could not fulfil.

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## **Section 23 – CRAMP**



# SLR



global environmental solutions

**Fassaroe Inert Waste Recovery Facility  
Fassaroe, Bray, Co. Wicklow**

## **Closure, Restoration and Aftercare Management Plan (CRAMP)**



**November 2011  
SLR Ref: 501.00180.00028.Rev0**

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Directors: P. J. Dwyer (Chair), J. Paul (Finance Director), J. Richards (Director), J. Roberts (Director), S. Scully (Director)  
Registered in Ireland as SLR Environmental & Consulting (Ireland) Limited. Registration No. 253327. VAT No. 3541422

Roadstone Wood Ltd  
 CRAMP - Passeroe Inert Waste Recovery Facility

501.00180.00028  
 November 2011

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Roadstone Wood Ltd  
CRAMP - Fassaroe Inert Waste Recovery Facility

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501.00180.00028  
November 2011

## 1.0 INTRODUCTION

### 1.1 Waste Licence – Condition 10

This Closure, Restoration and Aftercare Management Plan (CRAMP) is prepared in compliance with Condition 10 of Waste Licence No. W0269-01 issued by the Environmental Protection Agency (EPA) in April 2011 to Roadstone Wood Ltd. in respect of its soil and construction and demolition (C&D) waste recovery facility at Fassaroe, Bray, Co. Wicklow.

The waste licence principally provides for

- (i) backfilling of a worked out quarry void using imported and some existing inert soils and stones stockpiled in-situ and
- (ii) processing (crushing and screening) of waste concrete, concrete products, bricks and other inert construction and demolition waste to produce secondary aggregate for re-use as a low grade general fill in construction.

Condition 10 of the waste licence states that:

10.1 The facility shall be restored in accordance with Figure 2.6 Phasing Plan of the EIS.

#### 10.2 Final Levels/Profile

10.2.1 The final profile of the facility shall tie-in to the surrounding land levels and shall be as shown in Figure B2.5 Restored Cross Sections in the licence application.

10.2.2 Within twelve months of completion of each phase of waste deposition, that phase shall be progressively restored to agricultural grassland.

10.2.3 Developed areas shall be profiled so that no depression exists in which water may accumulate. Any depressions arising after profiling shall be rectified by the emplacement of suitable capping or restoration materials.

10.2.4 Final contours and landscaping should be such that the finished slopes of the facility are structurally stable, resistant to erosion, and protective of pollutant control and monitoring infrastructure.

#### 10.3 Final Capping

10.3.1 Unless otherwise agreed by the Agency, filled areas shall be permanently capped within 6 months of the areas having been filled to the required level.

10.3.2 Unless otherwise agreed by the Agency, the final capping shall consist of the following:

- (i) Top soil (150-300mm); and
- (ii) Subsoils, such that total thickness of top soil and subsoils is at least 1m.

10.4 No material or object that is incompatible with the proposed restoration of the facility shall be present within 1m of the final soil surface levels.

10.5 All waste activities at the facility shall cease upon the installation of the final capping unless otherwise agreed by the Agency.

10.6 Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site in the licensed activity, the licensee shall, to the satisfaction of the Agency, decommission, render safe or remove for disposal/recovery any soil, subsoil, buildings plant or equipment, or any waste.

materials or substances or other matter contained therein or thereon, that may result in environmental pollution.

#### 10.7 Closure, Restoration and Aftercare Management Plan (CRAMP)

10.7.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for the decommissioning or closure of the site or part thereof. This plan shall be submitted to the Agency for agreement within six months of the date of grant of the licence.

10.7.2 The plan shall be reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the agreement of the Agency.

10.7.3 The licensee shall have regard to the Environmental Protection Agency Guidance on Environmental Liability Risk Assessment, Decommissioning Management Plans and Financial Provision when implementing Condition 10.7.1 above.

#### 10.8 The CRAMP shall include, as minimum, the following:

- (i) a scope statement for the plan;
- (ii) the criteria that define the successful decommissioning of the activity or part thereof, which ensures minimum impact on the environment;
- (iii) a programme to achieve the stated criteria;
- (iv) where relevant, a test programme to demonstrate the successful implementation of the decommissioning plan; and
- (v) details of the costing for the plan and the financial provisions to underwrite the cost.

10.9 A final validation report to include a certificate of completion for the CRAMP, for all or part of the site as necessary, shall be submitted to the Agency within three months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment."

#### 1.2 Scope of CRAMP

The objective of this CRAMP is to ensure that on completion / cessation of waste recovery activities at Fassaroe, the waste recovery areas are restored to use as agricultural land, pending prospective long-term re-development for mixed-used development, as envisaged by the Bray Environs Local Area Plan 2009-2015.

The scope of this CRAMP comprises:

- a Site Evaluation, which presents details of its planning history and an inventory of existing mobile plant and fixed infrastructure;
- the Closure Considerations and Criteria for successful closure;
- an outline Closure Plan Costing and measures for the Closure Plan update, review, implementation and validation; and
- the Facility Restoration and Aftercare proposals, including a restoration and aftercare management costing.

## 2.0 SITE EVALUATION

### 2.1 Site Description

The waste facility to which this CRAMP refers is located entirely within the townland of Fassaroe, Co. Wicklow, approximately 1.5km west of Bray town and 2km east of Enniskerry village. The waste licence area and the extent of the lands owned by Roadstone Wood Ltd. are outlined on a 1:50,000 scale map of the area, on Figure 1.

The waste licence area covers an area of approximately 25.6 hectares (61.7 acres). The site is located within a pre-existing construction materials production facility operated by Roadstone Wood Ltd. The quarry void to be backfilled using imported inert soil and stone is located in the eastern part of the waste licence area. The existing site layout is shown on Figure 2.

Ground levels across the site follow that of the surrounding ground, falling south-eastwards from approximately 95mOD to 74mOD (Malin), toward the Cookstown and Dargle Rivers. The existing quarry void covers an area of approximately 4.5 hectares (10.8 acres) and its depth from existing ground level varies from 18m at its northern end to 10m at its southern end.

Aggregate processing and value added production activities are currently undertaken within the waste licence site boundary. The principal aggregate processing activities include the washing and screening of imported sand and gravel, while the principal value added activity is the production of ready-mixed concrete.

### 2.2 Planning History

No planning permission was ever required in respect of historical quarrying activity at the licensed site as it was established and operating prior to the introduction of planning controls under the Local Government (Planning and Development) Act of 1963.

#### 2.2.1 Recovery of Construction and Demolition Waste

Planning permission for the existing construction and demolition waste recovery facility within the licensed site was granted by Bord Pleanála on appeal in July 2004 (Wicklow County Council Planning Ref. No. 03/9501). An application for renewal of planning permission was approved by Wicklow County Council in October 2009.

Roadstone Wood Ltd. has operated the construction and demolition (C&D) waste recovery facility at the licensed site since 2004. Prior to being granted a waste licence by the EPA, the C&D recovery facility was operated in accordance with a waste permit (Reference Number ESS/15/8/12) issued by Wicklow County Council for an initial three year period in 2004. The waste permit was subsequently renewed for a further three year period by Wicklow County Council in July 2008 (Ref. No. ESS/15/8/12-339).

#### 2.2.2 Recovery of Inert Soil and Stone

A planning application to provide for the backfilling and restoration of the former quarry void at Fassaroe was submitted to Wicklow County Council in July 2008 (Planning Register Reference No. 08/1258). Planning permission for this activity was issued by Wicklow County Council in March 2009.

A separate waste permit application was submitted to Wicklow County Council in May 2008 to provide for partial backfilling of the existing quarry. This waste permit was issued, with

conditions, in March 2009. This waste permit was also superseded by the EPA's grant of the waste licence in April 2011.

### 2.3 Site Inventory / Infrastructure

The established site facilities, mobile plant and fixed infrastructure at the licensed site at Fassaroe are listed below. Most of the site facilities and infrastructure are shared with the adjoining / co-located construction material production facility and have been in-situ for many years, pre-dating the establishment of waste recovery facilities at the site in recent years. The principal site facilities are located on Figure 2 of this report. Many of these facilities will continue to remain in place following cessation of waste recovery activities at Fassaroe.

- Buildings: site office / retail shop, plant maintenance shed; waste quarantine shed
- Fixed Infrastructure: paved / unpaved internal road network; paved employee and visitor parking areas, outdoor retail area, paved storage yard, paved block yard, paved concrete yard, hardstanding at C&D waste recovery area, wheelwash; weighbridge, bunded fuel storage tanks
- Services: buried sewerage pipes and septic tanks, overhead / buried electricity cables, local water supply pipes, Dublin City Council watermain
- Plant and Machinery: re-fuelling plant; mobile crushing and screening plant; mechanical excavators, bulldozers; concrete production plant, pumps, flexible / rigid overground pipes (for process wastewater)

### 2.4 Requirement for this Plan

The waste recovery facility at Fassaroe will result in substantial landform changes and, if not properly managed, could introduce some potential risks to the long-term environment.

An initial screening and operational risk assessment was undertaken in respect of the waste recovery facility at Fassaroe in accordance with an assessment methodology prescribed by the EPA in its publication *Guidance on Environmental Liability Risk Assessment, Residuals, Management Plans and Financial Provision (2006)*.

This screening exercise indicated that the waste recovery facility at Fassaroe could be classified as a Category 1 Risk Facility. As such, the principal requirement for management of long-term land use is to prepare a site closure / restoration plan, with such minor provision for site aftercare and management as may be required.

The Category 1 risk classification is such that there is no requirement for a detailed Environmental Liability Risk Assessment (ELRA) to be prepared in respect of the waste recovery facility at Fassaroe.

### 3.0 FACILITY CLOSURE

#### 3.1 Closure Considerations

This closure plan envisages that the licensed waste facility will achieve a clean closure, such that, on cessation of recovery operations and decommissioning / removal of plant and infrastructure from the facility, no remaining environmental liabilities will attach to restored areas of the site and/or areas where the principal waste recovery activities are located.

The operation of the Waste Recovery Facility at Fassaroe provides for phased backfilling and restoration of a large pre-existing void created by previous extraction of sand and gravel at the site. On completion of the final phase of backfilling, much of the work required to achieve final restoration and closure of the waste facility will already have been completed. It is expected that the final restoration of the waste recovery areas to agricultural use will be completed within a relatively short period of time. Details of the final restoration works are outlined in some detail in Section 4 of this CRAMP.

On completion of the fourth (and final) phase of the quarry backfilling works and the subsequent final site restoration works, all mobile plant and equipment associated with the backfilling, placement and compaction of soil and stones will be removed off-site.

If it is decided at that time to also cease the construction and demolition waste recovery activity at this location, no additional materials will be imported to site for recovery purposes and existing stockpiles of processed materials (secondary aggregate) will be sold off over time. All mobile processing plant and equipment will be removed off-site. Dedicated waste recovery infrastructure, principally the hardstanding area, paved surfaces and (concrete) wheelwash facility, will be progressively decommissioned, recovered and where possible, re-used within the facility or for production of engineering fill / concrete. Failing this, the excavated or decommissioned construction materials will be removed off-site.

Any dedicated buried service infrastructure, will be decommissioned and removed. Any existing or shared plant, equipment or infrastructure required for continued operation of the adjoining concrete production facility will however remain in place.

Hard-standing or paved surfaces will be broken up using a hydraulic breaker and subjected to validation testing to confirm the materials are acceptable for re-use within the Applicant's landholding for construction of haul roads and/or other hard standing areas. Any materials which are found to exceed inert waste acceptance criteria will be transferred off-site by licensed waste contractors to a suitably licensed waste disposal or recovery facility.

Provision will be made for short-term (<1year) environmental monitoring of air, surface water and groundwater. Assuming no evidence of contaminated soil or groundwater is encountered, the in-situ groundwater monitoring wells will be decommissioned in accordance with guidance published by the UK Environmental Agency in its publication *Decommissioning Redundant Wells and Boreholes*.

#### 3.2 Criteria for Successful Closure

The principal criteria against which successful closure will be gauged are as follows:

- the principal objective is to achieve clean closure of the site following restoration and aftercare, with no residual liabilities or constraints.
- all mobile plant and equipment associated with the backfilling, placement and compaction of soil and stones and/or recovery of inert construction and demolition waste will have been removed off site;

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- short-term (< 1year) environmental monitoring of air, surface water and groundwater will be carried out and no evidence of air or surface / groundwater contamination identified on site;
- the backfilled / restored areas will be returned to productive agricultural land use;
- there should be no constraints on future land use associated with soil or groundwater contamination or any structures remaining in-situ.
- the process of surrendering the waste licence to the EPA will be progressing in order to remove the legal encumbrance on title deeds to the restored land areas and the adjoining construction materials production facility.

### 3.3 Closure Plan Costing

The expected costs (present-day values), associated with the future closure of the waste recovery facility at Fassaroe, are outlined in Table 1 below.

**Table 1  
Facility Closure Costs**

ITEM	COST €
Removal of all mobile plant off site	1,500.00
Decommissioning of fixed infrastructure (wheelwash) and buried services	2,000.00
Breaking up of pavement and hard-standing surfaces (using hydraulic breaker), validation testing to confirm materials may be re-used on site and transfer across landholding	6,000.00
Transfer off site of any non-inert material (allow, say)	2,500.00
Final site restoration works (site levelling and contouring, re-seeding, spraying etc.) – see Section 4	8,000.00
Short-term (< 1year) environmental monitoring of air, surface water and groundwater	3,000.00
Decommissioning of groundwater monitoring wells	3,000.00
Closure Validation Report	2,000.00
<b>Total Site Closure Cost (excl. VAT)</b>	<b>€28,000.00</b>

### 3.4 Closure Plan Update and Review

As required by the waste licence conditions, this Closure Plan will be reviewed and updated annually as part of the Annual Environmental Report (AER) submission to the EPA. The updated and reviewed Closure Plan will take account of any site or process changes, technology changes and costing changes.

### 3.5 Closure Plan Implementation

Quarry backfilling activity at the Fassaroe waste recovery facility is currently projected to be complete within 6 to 8 years time. This timeline is however very dependent on the availability of rate of inert soil and stone generated by off-site construction activity and is subject to ongoing review and potential change.



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The EPA will be given 2 months notice of any proposed temporary closure and 6 months notice of the intended final closure date. Notice will be provided in accordance with prevailing guidance and it is anticipated that there will also be ongoing discussions with the EPA in respect of required closure procedures.

### 3.6 Closure Plan Validation

As required by Condition 10.9 of the Waste Licence, a final validation report (including a Certificate of Completion for the CRAMP) in respect of the licensed waste facility will be submitted to the Agency within 3 months of completion of the works outlined herein.

The validation audit will be undertaken by an independent, external environmental Consultant. The final validation report will include:

- an assessment of how the objectives of the Closure Plan have been achieved;
- final 'as-restored' drawings and photographs of the site;
- results of short-term environmental monitoring which follow Site Closure and Restoration and
- a Certificate of Completion for the CRAMP.

## 4.0 FACILITY RESTORATION AND AFTERCARE

### 4.1 Facility Restoration

The waste recovery activities at Fassaroe primarily provide for the backfilling of large voids created by previous extraction of sand and gravel at the site using imported inert soil and stone and some in-situ stockpiled soil. Backfilling of these voids will facilitate restoration of the former quarry area to agricultural grassland.

#### 4.1.1 Backfilling / Earthworks / Grass Seeding

The backfilling of the former quarry area will proceed in several phases and, on completion, will merge into the surrounding undulating pastoral landscape. An indication of the proposed phasing of the works and the final ground level contours are provided in Figure 3. In addition to imported materials, soil in existing screening berms and/or stockpiles within the site area will also be used to backfill the former quarry. Cross-sections through the final landform are shown in Figure 4.

It is currently envisaged that backfilling of the existing void will proceed from the northern to the southern end of the quarry. Any temporary additional or replacement infrastructure which may be required to facilitate the proposed works (collector sumps etc.) will be constructed and/or installed at the outset of the first phase of quarry backfilling.

Final formation levels for backfilling across the former quarry and construction and demolition waste recovery area are taken to be equivalent to existing surrounding ground levels, indicated on Figure 2. On completion, final gradients across the restored ground surface will be relatively shallow, generally no greater than 1v:15h.

Following each phase of quarry backfilling, a cover layer of subsoil and topsoil will be placed and graded across the backfilled soil, in accordance with the requirements set out in Condition 10.3.2 of the waste licence (ie. 150-300mm of topsoil over subsoil such that total thickness of topsoil and subsoil is at least 1m). The restoration surface will then be seeded with grass in order to promote stability, minimise soil erosion and dust generation and restore the land to agricultural use.

On completion of the final phase of quarry backfilling and cessation of C&D waste recovery activity, the ground surface across the backfilled quarry area and C&D recycling area will be raised / lowered locally as required to achieve a uniformly sloping and stable ground surface similar to that indicated on Figure 3. The final restored landform will be inspected and re-graded locally where required (by placement of additional subsoil and topsoil) to ensure that there are no depressions in which surface water may accumulate.

The grass sward which was established on a progressive basis in the course of earlier backfilling operations will be examined and improved by additional grass seeding where bare or poorly thriving areas are identified. It is envisaged that the final restoration works across the waste recovery site will be completed within 6 months of final cessation of recovery activity.

It is envisaged that the restored grassland will be rented to a local farmer as soon as practicable following completion of site restoration works and establishment of the grass sward.

#### 4.1.2 Proposed Hedge Planting

The planning permission in respect of the C&D Waste Recovery Facility requires additional hedge planting along parts of the western site boundary and parallel to the northern boundary of the site, as indicated by Figure 3. This will strengthen the security of these boundaries as well as provide additional screening vegetation for neighbouring properties.

The additional hedge required by the planning permission has been completed. The hedge mix consists of locally sourced native and indigenous species. Establishment maintenance will continue for a period up to 24 months following initial planting and will include

- weed control (weeds within 1m of the base of the hedge will be controlled mechanically and/or chemically)
- formative pruning and/or removal of deadwood
- watering (as and if required)
- adjustment of ties and stakes and
- assessment of rate of plant failures at the end of each growing season (October) and replacement planting where necessary to ensure establishment of a continuous dense hedge.

All hedge maintenance procedures will be in line with established landscaping practice.

#### 4.2 Aftercare Management

##### 4.2.1 Short-Term Aftercare Management

The restoration aftercare management plan for the Fassaroe waste recovery facility will comprise three principal short-term activities:

##### *Environmental Monitoring*

As previously stated, short-term (< 1 year) environmental monitoring of air, surface water and groundwater will be undertaken by the Licensee to ensure that no surface / groundwater contamination is present / emerging following closure of the waste recovery facility and completion of the restoration works.

##### *Maintenance of Hedge Planting*

It is expected that by the time this closure plan is implemented, the 24 month aftercare maintenance period for the proposed hedge planting along the northern and western site boundaries will have long expired. In the unlikely event that some remedial hedge planting or maintenance work is required in this area, additional inspection and maintenance visits by a landscape contractor may be arranged between the months of April and October.

##### *Maintenance of Grass Sward*

The aftercare of the grass sward will be as per grass supplier's instructions, consistent with the intended use of the restored area as agricultural grassland. Initial maintenance following restoration after each phase of backfilling (principally cutting and possibly spraying), will be overseen by the waste facility manager at Fassaroe or by other designated Roadstone Wood Ltd. staff nominated by him.

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After final restoration works have been completed and the aftercare period has elapsed, the land will be let to a local farmer and he/she will then assume responsibility for the general upkeep and environmental management of the land.

#### 4.2.2 Long Term Aftercare Management

Given the inert nature of the soil and stone material used to backfill the quarry area and the proposed return of the backfilled areas to agricultural use and management, it is considered that no long-term aftercare monitoring and maintenance will be required for the waste recovery facility at Fassaroe.

#### 4.3 Final Restoration and Aftercare Management Costs

The expected cost, associated with the site restoration and aftercare management, are outlined in Table 2 below.

**Table 2**  
**Estimated Restoration Cost**  
**(Based on a 2 Year Aftercare Period)**

ITEM	COSTS (€)
Final site contouring (land raising / lowering as required)	5,000.00
Final capping (150-300mm) topsoil and (700-850mm) subsoil	3,000.00
Surface preparation, final grass seeding, ground repair and spraying	2,000.00
Hedge Planting (Ground preparation, supply of plants and planting works)	N/A
24 months establishment maintenance for grassed area and hedge planting	N/A
<b>Total Restoration and Aftercare Cost (excl. VAT)</b>	<b>€10,000.00</b>

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## 5.0 REPORT CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Roadstone Wood Ltd. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

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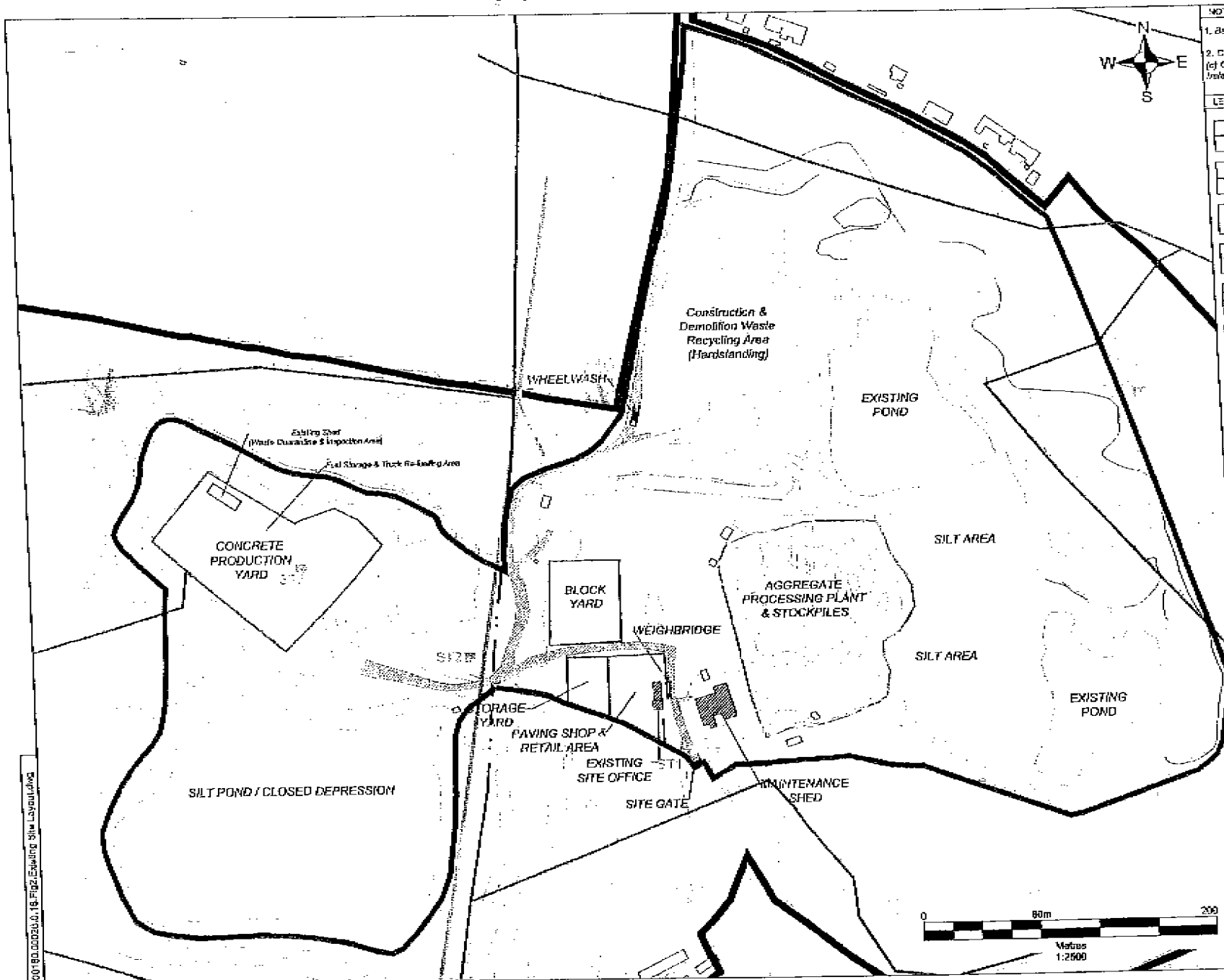
**FIGURES**

**Figure 1  
Site Location Map**

**Figure 2  
Existing Site Layout**

**Figure 3  
Restoration Proposals**

**Figure 4  
Restored Cross Sections**



**NOTES**

- Based on OSI 6 inch sheet no. 21
- Entrance Survey Island Licence no. SU 0060771 (cf Ordnance Survey of Ireland & Government of Ireland)

**LEGEND**

	APPLICANT'S LAND INTEREST (C. 66.1 HA)
	WASTE LICENCE AREA (C. 25.6 HA)
	INTERNAL UNPAVED ROAD
	INTERNAL PAVED ROAD
	BUILDING
	OVERHEAD CABLE
	BURIED CABLE
	DUBLIN CITY COUNCIL WATERMAIN
	WATER SUPPLY PIPELINE
	SEPTIC TANK

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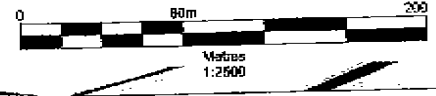
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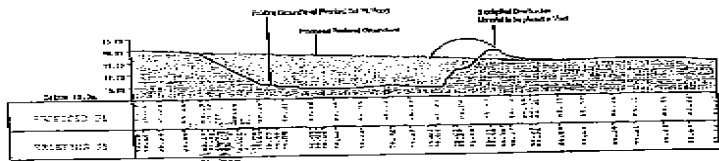
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 EXISTING SITE LAYOUT

**FIGURE 2**

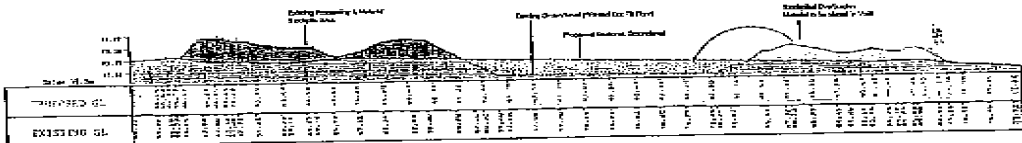
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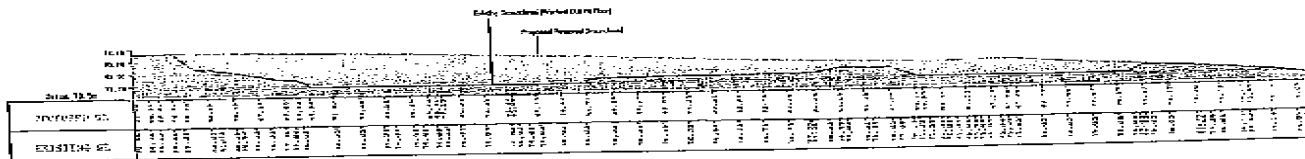
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Section A-A'



Section B-B'



Section C-C'

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**RESTORED CROSS SECTIONS**

**FIGURE 4**

Scale 1:2,000 @ A3 Date NOVEMBER 2011

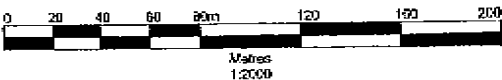
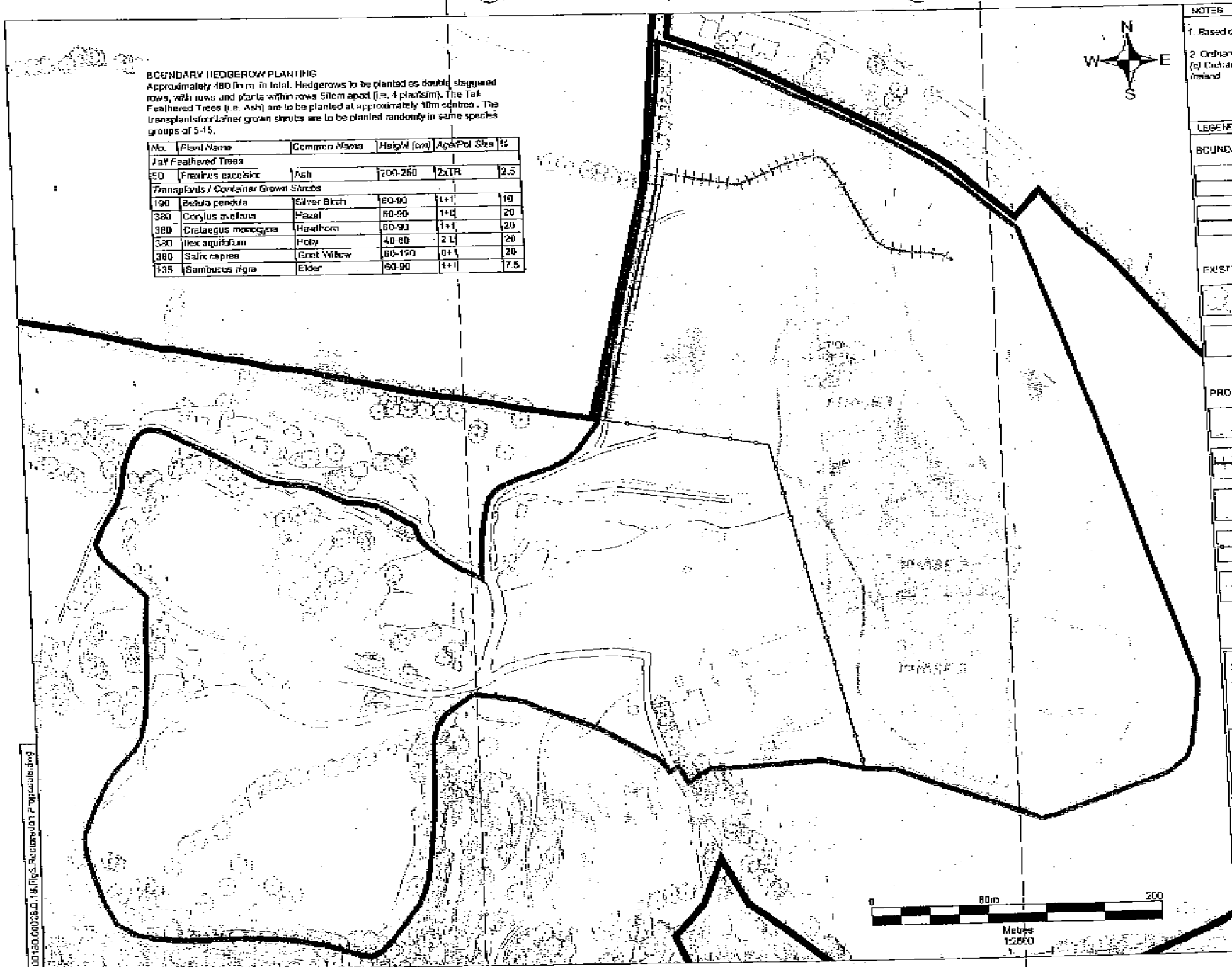


Fig 2-5 Restored Cross Sections.dwg





**BOUNDARY HEDGEROW PLANTING**  
 Approximately 480 lin m. in total. Hedgerows to be planted as double staggered rows, with rows and plants within rows 50cm apart (i.e. 4 plants/m). The Tall Feathered Trees (i.e. Ash) are to be planted at approximately 10m centres. The transplants or later grown shrubs are to be planted randomly in same species groups of 5-15.

No.	Plant Name	Common Name	Height (cm)	Age/Plt Size	%
<b>Tall Feathered Trees</b>					
50	<i>Fraxinus excelsior</i>	Ash	200-250	2xLR	2.5
<b>Transplants / Container Grown Shrubs</b>					
190	<i>Betula pendula</i>	Silver Birch	80-90	1+1	10
380	<i>Corylus avellana</i>	Hazel	80-90	1+0	20
380	<i>Crataegus monogyna</i>	Hawthorn	80-90	1+1	20
330	<i>Ilex aquifolium</i>	Holly	40-60	2 L	20
380	<i>Salix caprea</i>	Goat Willow	80-120	0+1	20
135	<i>Sambucus nigra</i>	Elder	60-90	1+1	7.5



**NOTES**  
 1. Based on OSI 5inch sheet no. 21  
 2. Ordnance Survey Ireland Licence no. SI01000711  
 (c) Ordnance Survey of Ireland & Government of Ireland

**LEGEND**

**BOUNDARIES**

- APPLICANT'S LAID INTEREST (C. 65.1 HA)
- WASTE LICENCE AREA (C. 25.6 HA)

**EXISTING FEATURES TO BE RETAINED**

- HEDGEROWS/TREES (TO BE PROTECTED DURING W/FILL & RESTORATION WORKS)
- CONSTRUCTION MATERIALS PRODUCTION FACILITY

**PROPOSED RESTORATION FEATURES**

- RESTORATION PHASING
- BOUNDARY HEDGE PLANTING (TO BE CARRIED OUT AT THE END OF THE 5 YEAR C&D FACILITY PLANNING PERIOD)
- WASTE LICENCE AREA TO BE RESTORED TO AGRICULTURE
- PROPOSED FENCE
- CROSS SECTION LOCATIONS

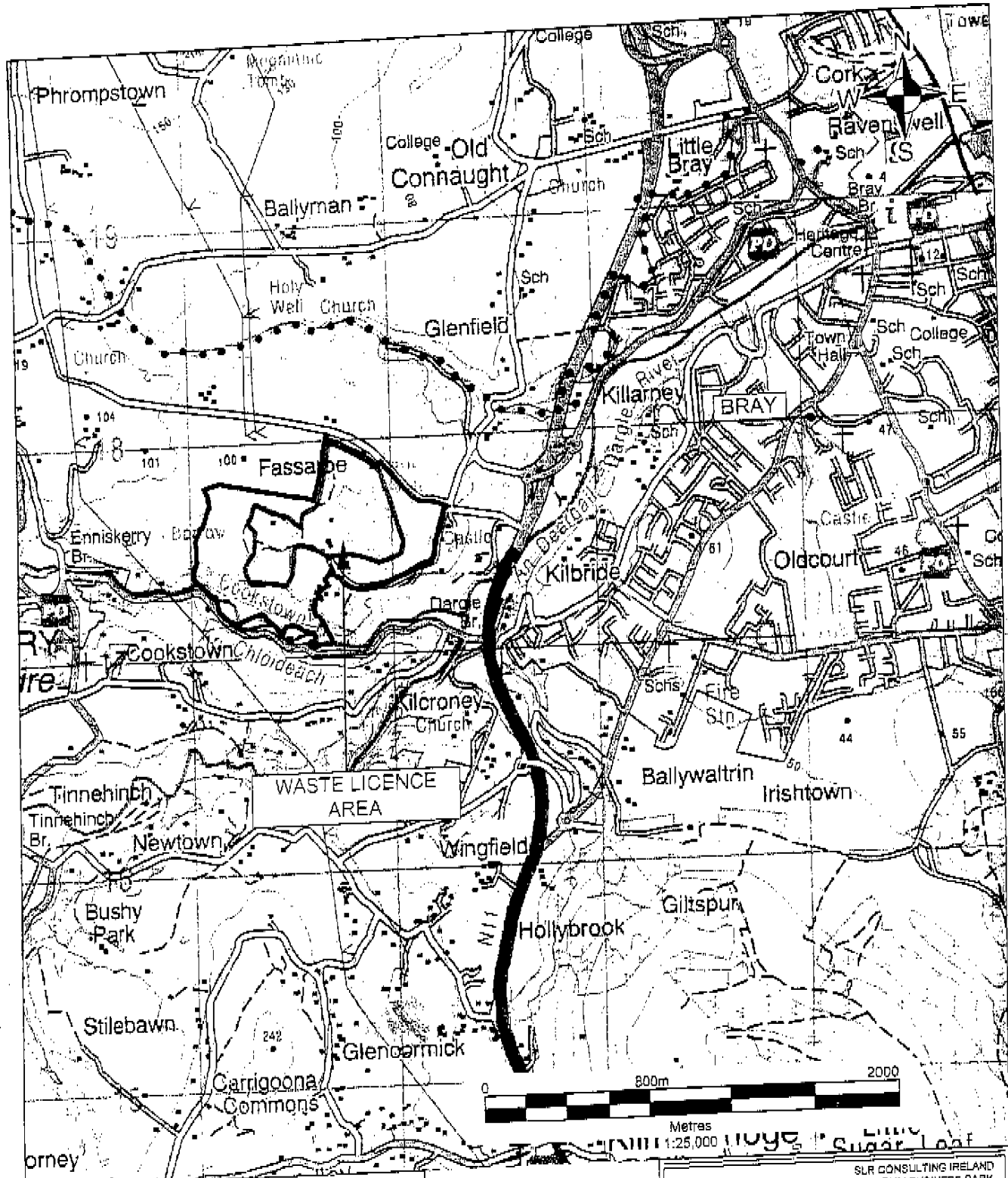
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RESTORATION PROPOSALS  
**FIGURE 3**  
 Scale 1:2,500 @ A3 Date NOVEMBER 2011

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**LEGEND**

- Applicants Land Interest (c. 65.1 ha)
- Waste Licence Area (c. 25.6 ha)

**NOTES**

1. Extract from Ordnance Survey Discovery Map No. 50
2. Ordnance Survey Ireland Licence No. SU 0000711 (c)  
Ordnance Survey Ireland / Government of Ireland

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**SITE LOCATION MAP**

**FIGURE 1**

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## **Section 24 – Outline Env Contingency Plan**

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**ROADSTONE DUBLIN LIMITED**

**INERT WASTE RECOVERY FACILITY  
FASSAROE, BRAY, CO. WICKLOW**

**OUTLINE ENVIRONMENTAL CONTINGENCY PLAN**

**APRIL 2009**



*Prepared by :*  
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Roadstone Dublin Ltd.  
Waste Licence Application : Environmental Impact Statement

Lands at Blackhall, Co. Kildare  
Restoration of Former Gravel Quarry

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## 1 ACCIDENTS AND THEIR CONSEQUENCES

### 1.1 Introduction

This document is the Contingency Plan for the inert waste recovery facility operated by Roadstone Dublin Ltd. at Fassaroo, Bray, Co. Wicklow. The principal waste activities at the site are

- (i) the placement and compaction of inert soils in an existing quarry void and
- (ii) recovery (processing) of inert construction and demolition (C+D) waste.

All inert soils are imported to site from external construction and development sites. C+D waste is imported to the facility from external construction sites and is also sourced from the adjacent concrete production facility and retail shop operated by Roadstone Dublin Ltd.

The purpose of this document is to identify contingency plans and arrangements that will be implemented during the operation of the inert waste recovery facility.

This document considers those aspects of on-site operations that may pose a risk of accidents with environmental consequences.

The resultant accident management plan describes the various techniques that will be implemented at the site to minimise the risks presented by site operations to the environment. It does not include those accidents, which may solely affect the health and safety of operatives, contractors or visitors to the site.

### 1.2 Accident / Hazard Identification

The following categories of potential hazard / accident have been identified and risk management measures are detailed in the following sections, which should be implemented at the site to ensure the environmental risks associated with the hazards are tolerable.

#### *Fire*

The fire management plan, which describes the procedures and precautions that will be implemented at the site, is presented in Section 2 of this plan.

#### *Spillage and Leakage*

Procedures that will be implemented at the site to minimise the risk from spillage and leakage is presented in Section 3 of this plan.

#### *Stability*

The measures to be taken during both the design process and during routine operations to ensure the stability of the site and prevent soil slippage are detailed in Section 4 of this plan.

#### *Security and Vandalism*

Measures that will be adopted to minimise the potential environmental impact associated with deliberate damage to control mechanisms such as fuel storage facilities are detailed in Section 5 of this plan.

## 2. FIRE MANAGEMENT PLAN

### 2.1 Operational Techniques

Waste management sites can represent a potential fire risk for a number of reasons.

- Site buildings contain electrical appliances and other sources of ignition along with materials that would readily burn.
- Litter and waste materials may support combustion.
- Maintenance activities on plant and equipment can represent a potential fire risk if necessary precautions are not taken.

Specific action that will be taken to prevent and minimise the risk of fires from these particular sources, together with general fire prevention precautions are detailed below.

#### *Site Buildings/Electrical Appliances*

All electrical appliances in use at the site will be tested in accordance with the Electrical Testing Regulations.

#### *Housekeeping*

Site buildings will be maintained in a tidy condition, and will be regularly cleaned to avoid the accumulation of paper and debris that may present an increased fire risk.

#### *Litter and Combustible Waste*

No litter or potentially combustible waste will be permitted to accumulate at the site.

#### *Management Responsibility*

The Facility Manager will have responsibility for ensuring that potential fire nuisances and hazards arising from site operations are minimised.

#### *Training*

All employees will undergo training relevant to their role in fire prevention, use of fire extinguishers, and emergency procedures.

#### *Smoking Policy*

Smoking will only be permitted at designated areas and specifically not within site buildings.

#### *Fire Protection Equipment*

Where appropriate, plant will be fitted with automated fire protection equipment.

#### *Hot Work Permitting System*

A formal permit to work system will be in place to ensure appropriate precautions are taken and approval obtained prior to any hot work being carried out on site plant and equipment.

#### *Fire Fighting Equipment*

Fire extinguishers will be provided in the site buildings and will be used if it is appropriate and safe to do so, in the event that fire is discovered in the building.

#### *Smoke and Fire Alarms*

Smoke and fire alarms will be fitted in the site offices.

## 2.2 Monitoring Techniques

All operatives will remain vigilant regarding the breakout of fire at the site, and the emergency procedure and action plan outlined below will be followed if fire is observed.

## 2.3 Fire Action Plan

### *Fire within Site Buildings*

- The person discovering the fire will raise the alarm.
- If the fire cannot be safely tackled using appropriate fire extinguishers, the emergency services and the facility manager will be informed.
- Where applicable, and if it is safe to do so, all electrical supplies will be isolated and made safe in the area of the fire.
- The facility manager (or his deputy) will check for all visitors, contractors and staff to ensure everyone is accounted for.
- The facility manager (or his deputy) will direct the emergency services to any casualties.
- All used fire extinguishers will be returned to the supplier for refilling or replacement.

### *Plant and Equipment Fire*

- The person discovering the fire will raise the alarm.
- If the fire cannot be safely tackled using appropriate fire extinguishers the emergency services and the facility manager will be informed.
- If it is safe to do so, all electrical supplies will be isolated and made safe in the area of the fire.
- The facility manager (or his deputy) will check for all visitors, contractors and staff to ensure everyone is accounted for.
- The facility manager (or his deputy) will direct the emergency services to any casualties.
- All used fire extinguishers will be returned to the supplier for refilling or replacement.

### *Records*

A fire log will be maintained. It will include the following details: -

- records of the maintenance of fire extinguishers;
- a record of all incidents of fire including date, time, nature and cause of the fire; and
- details on the action taken to extinguish the fire, and any subsequent changes to operational and emergency procedures.

The Environment Protection Agency will be advised of any serious fire incidents at the earliest practicable opportunity.



### 3 SPILLAGE AND LEAKAGE MANAGEMENT PLAN

#### 3.1 Operational Techniques

In order to prevent spillages and leaks of potentially polluting materials and minimise the impact of any spillages that do occur, the following measures will be implemented at the site.

##### *Unloading Procedure / Overfilling of Tanks and Bowsers*

All potentially polluting materials delivered to site will be unloaded by suitably qualified employees from the delivery company, and overseen by a designated site operative. This will prevent the overfilling of mobile fuel bowsers in particular.

##### *Storage Vessels/Containers*

Potentially polluting liquids (principally fuel) will be stored in mobile, double skinned bowsers constructed to the appropriate Irish, British or International Standard, meeting the requirements of the Local Government (Water Pollution) Acts 1977 to 1990 and associated regulations.

Other potentially polluting liquids such as lubricating oils, waste oils derived from vehicle maintenance, pesticides etc, will be stored in containers located on sealed (ie. concreted) ground within the existing maintenance sheds.

All solid wastes arising on site and other solid potentially polluting materials will be segregated according to category, stored within containers which are designed to ensure the contents do not spill or escape and covered as necessary.

##### *Inspection and Maintenance*

All containers and bowsers will be inspected on a daily basis by the facility manager (or his designated deputy) to ensure their continued integrity, and identify the requirement for any remedial action.

In the event that remedial action is required, arrangements will be made to transfer any potentially polluting materials to secure alternative storage pending completion of remedial work. Remedial work will be undertaken as soon as possible. Containers and bowsers found to be faulty will not be used for the storage of polluting materials until appropriate remedial action is completed.

##### *Absorbent Materials*

A supply of materials suitable for absorbing and containing any minor spillage will be maintained on site.

#### 3.2 Spill Containment Equipment

Materials suitable for containing spills including sealing devices and substances for damaged containers, drain seals and booms, and overdrums will be maintained at the site.

##### *Plant Maintenance*

All plant and equipment will be subject to maintenance in accordance with the suppliers / manufacturer's recommendations to avoid the failure of items of plant and equipment giving rise to potential emissions to the environment.

##### *Drains*

Surface water channels and drains will be subject to daily visual inspection by the Facility Manager. Action will be taken to remove any obstructions to flow.

#### 3.3 Monitoring Techniques

All site personnel will be tasked with monitoring for evidence of spillage and leakage, during their day-to-day routine. The condition of bowsers and containers will also be inspected on a daily basis.

A daily and weekly inspection checklist will be used to record inspections of infrastructure, operations, pollution control and amenity management and monitoring. The inspection checklist will be used by the facility manager to identify requirements for remedial action.

Any evidence of spillage or leakage will be reported immediately to the Facility Manager (or his deputy) for appropriate remedial action.

### **3.4 Leaks and Spillage Action Plan**

In the event of spillage of polluting materials, immediate action will be taken to contain the spillage.

The spillage will be reported to the Facility Manager, who will assess the situation and decide on the most appropriate course of action.

The action taken will depend upon the size of the spillage, the location of the spillage in relation to sensitive receptors and the chemical and physical nature of the spilled material.

Action taken may include some or all of the following: -

- If possible the leak will be stopped;
- if it safe to do so, the cause of the spill or leak will be isolated;
- if the spillage is small, spill granules will be used immediately if necessary to prevent the spill spreading. The area will be cleared and all contaminated material will be sent to an appropriately licensed site for disposal;
- if the spill is larger, inert materials such as clay or sand will be used to make a containment bund and specialist help will be sought to assist in clean up;
- in the event of a potentially serious spillage that may give rise to pollution of surface water immediate action will be taken if possible to prevent the spread of the spill into surface water channels and drains using suitable covers and barriers. The Environment Protection Agency will be informed immediately, and remedial action will be agreed;
- if the spillage cannot be contained using approved materials, the Environment Protection Agency and senior management will be contacted immediately and specialist help obtained;
- if a vehicle is found to be leaking, it will be moved to a position where the spillage can be contained i.e. quarantine facility, or other hard surfaced area, if it is safe to do so; and
- all personnel will follow instructions provided by managers or other competent persons. Appropriate precautions will be taken depending upon the nature of the spilled material to prevent any harm to human health, and all personnel involved in clean up will wear protective clothing appropriate for the nature of the spilled material.

All spillage incidents, site inspections, and remedial actions will be recorded in the site diary.

#### 4 STABILITY MANAGEMENT PLAN

To ensure the long-term integrity of the slopes at the restoration site, precautions will be incorporated both at the design stage and during backfilling operations as detailed below.

##### 4.1 Design Considerations / Stability Assessment

Stability of slopes prior to, during and following restoration of the former quarry is a key consideration during the design process.

The following factors have been taken into account during the design process: -

- *nature of substrata*, i.e. the presence of any historical mining and quarrying, presence of superficial deposits, variation in the water table, geotechnical and hydraulic properties of any materials to be utilised at the site;
- *stability of inert waste materials*, i.e. stability of temporary slopes during backfilling and
- *stability of capping and restoration layers*, i.e. final surface gradients and effects of soil settlement.

##### 4.2 Operational Techniques

The following operational techniques to ensure stability of the backfilled materials, will be adopted at the site.

- *Waste compaction* : Inert waste will be levelled and compacted as soon as possible after discharge at the working area. This will minimise any future settlement, increase the density and strength of the backfill materials and enhance stability;
- *Large objects* : All large inert C+D waste (concrete, boulders etc.) will be crushed to ensure that voids do not develop in the backfilled soil mass;
- *Height of tipping face* : The maximum height of the tipping face after compaction will be 2.5 metres. The end-tipping of uncompacted soil over high unstable faces will therefore be avoided.
- *Gradient of temporary slopes* : During restoration of the site, the slope adopted for temporary unrestored faces sloping to the floor will depend upon the nature of the soil, its moisture content, the height of the slope, nature of the foundation soil and the consequences of failure.

##### 4.3 Monitoring Techniques

The following action will be taken to monitor the stability and settlement of the soil slopes: -

###### *Visual Inspections*

Visual inspections will be carried out at weekly intervals to identify the following: -

- evidence of tension cracks in temporary slopes caused by movement of the inert waste;
- evidence of instability or movement (back scarps and/or toe bulging)
- evidence of differential settlement causing depressions in the restored landform or damage to the drainage system.

##### 4.4 Action Plan

In the event that stability or settlement problems are discovered, appropriate remedial action will be taken as detailed below: -

#### *Instability of Waste Mass*

If there is visual evidence of movement within the inert soil mass, or evidence from the regular topographical surveys, the situation will be reviewed by a competent independent engineer, and appropriate remedial action will be taken in agreement with the Environment Protection Agency.

The action taken will depend upon the severity of the movement, the timescales over which the unstable mass will remain unsupported, and the consequences of failure.

Action taken may include one or more of the following: -

- the situation will continue to be monitored through regular visual inspections and topographical surveys;
- prohibition of operations at the base of the slope, which may place operatives at potential risk;
- adjustment to phasing of restoration operations to provide additional support to the inert soil mass as soon as possible;
- engineering work to reduce the gradient of the slope and reduce the risk of failure; and
- revised design for future phases to reduce slope gradients and/or height of slopes and reduce time period over which temporary slopes remain unprotected.

#### *Records*

Records will be maintained as follows: -

- the results of visual inspections and topographical surveys;
- stability problems including date, nature and suspected cause of the problem; and
- details on the corrective action taken, and any subsequent changes to site design or operational procedures.

## 5 SECURITY MANAGEMENT PLAN

Many potential problems can arise from inadequate control over access to waste management sites. These problems include: -

- non-permitted waste being imported in contravention of the Waste Licence;
- fly-tipping of wastes at the site entrance; and
- damage to plant and equipment.

Such problems not only disrupt safe operation of the waste facility but can also have significant financial implications for the operator who will be required to replace or repair stolen or damaged equipment. Environmental damage can also result if control systems are compromised.

### 5.1 Operational Techniques

In order to minimise the risk of problems arising as a result of inadequate security, the following measures will be implemented at the site.

#### *Building Security*

The permanent site office, at the front of the site, will have the benefit of a security alarm to discourage intruders. Windows will also be fitted with bars and /or shutters to prevent damage by vandals.

#### *Lighting*

The permanent site office and hardstanding area will have security lighting to discourage unauthorised visitors during the hours of darkness.

#### *Fencing*

The site will have the benefit of perimeter fencing which will extend around the perimeter of the site.

#### *Security Gates*

Security gates, which span the full width of the access road will be provided at the entrance to the site. The gates will be locked outside operational hours to deter unauthorised vehicular and pedestrian access. Access to gate keys will be restricted to a small number of Roadstone employees.

#### *Inspection*

Gates and fencing will be inspected weekly by the Facility manager (or his nominated deputy), to identify deterioration and damage, and the need for any repairs.

#### *Maintenance and Repair*

The fencing and gates will be maintained and repaired when required to ensure their continued integrity. In the event that damage is sustained, a temporary repair will be made within 24 hours until permanent repairs can be effected.

#### *Warning Notices*

Notices warning against unauthorised access (and alerting potential trespassers to on-site hazards) will be erected at the site entrance and will be repeated as necessary at locations around the perimeter of the site.

#### *Authorised Access System*

All visitors to the site will be required to register their presence by signing in the visitor's book on entry to the site, and again on exit. This will minimise the risk of unauthorised visitors being present on site.

*Roadstone Dublin Limited  
Waste Licence Application: Environmental Impact Statement*

*Lands at Fassarae, Co. Wicklow  
Inert Waste Recovery Facility*

### *Reporting Systems*

In the event of fly-tipped material being found at the entrance to the site, the fly tipped material will be examined for evidence of ownership. In the event of evidence being found, the Environment Protection Agency and/or Local Authority will be advised so that legal action may be considered.

### **5.2 Monitoring Techniques**

The operational procedures outlined above, including the regular inspections, security and reporting systems will ensure continual monitoring of security provision at the site.

### **5.3 Action Plan**

In the event of a breach of security at the site, the following course of action will be followed;

#### *Unauthorised Access*

The route of access will be determined, and consideration given to the following measures as appropriate: -

- repair of gates or fencing;
- replacement of gates or fencing with more secure design;
- erection of warning signs; and
- installation or implementation of additional security measures for example security cameras, more frequent patrols.

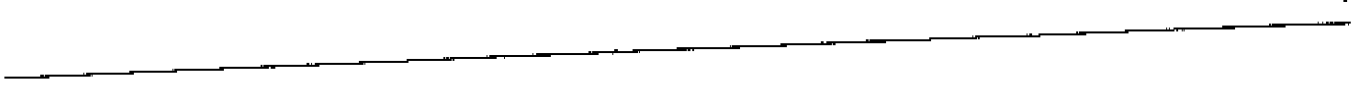
#### *Unauthorised Tipping*

- the material will be examined for evidence of ownership;
- the Environment Protection Agency and Local Authority will be informed;
- with the agreement of the Environment Protection Agency and/or Local Authority, the material will be removed and disposed of correctly;
- if appropriate, additional warning signs will be erected; and
- additional security measures will be considered.

#### *Records*

A record relating to the management and monitoring of security will be maintained. It will include the following details: -

- records of the inspections and maintenance of security fencing and gates;
- a record of all breaches of security and incidents of fly-tipping, and investigations of these breaches of security; and
- details of the action taken to replace or repair security equipment, and investigate fly tipping, including any subsequent changes to operational procedures.



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## **Section 25 – Environmental Liabilities Risk Assessment Review**





global environmental solutions

**Waste Licence Compliance  
(Condition 12.2.2 of W0269-01)**

**Inert Waste Recovery Facility  
Fassaroe  
Bray  
Co. Wicklow**



# Environmental Liabilities Risk Assessment

**Final Report**

**2<sup>nd</sup> February 2012**

**SLR Ref: 120229\_501.00180.00028.Rev3**

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Figure 1  
Site Location

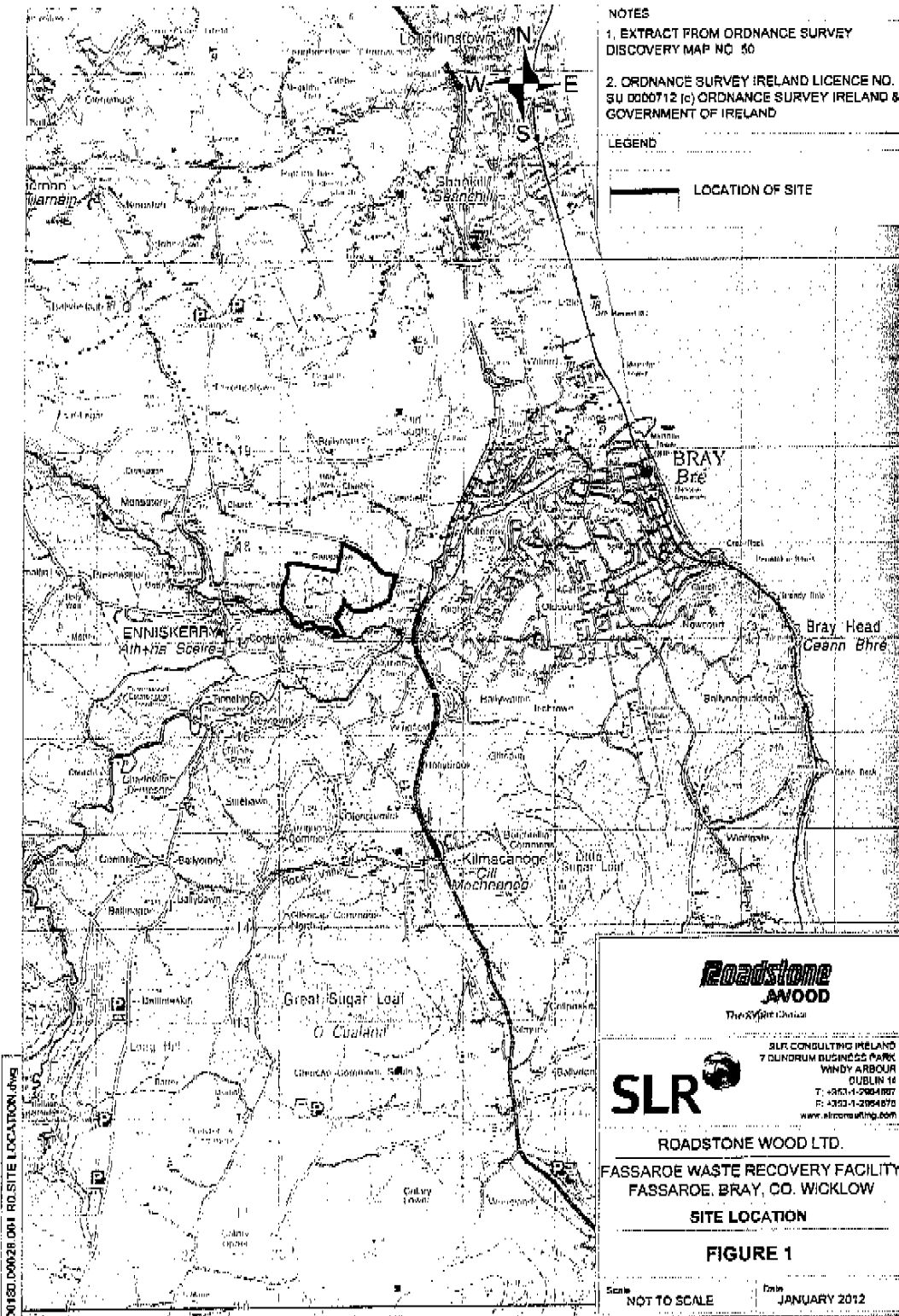
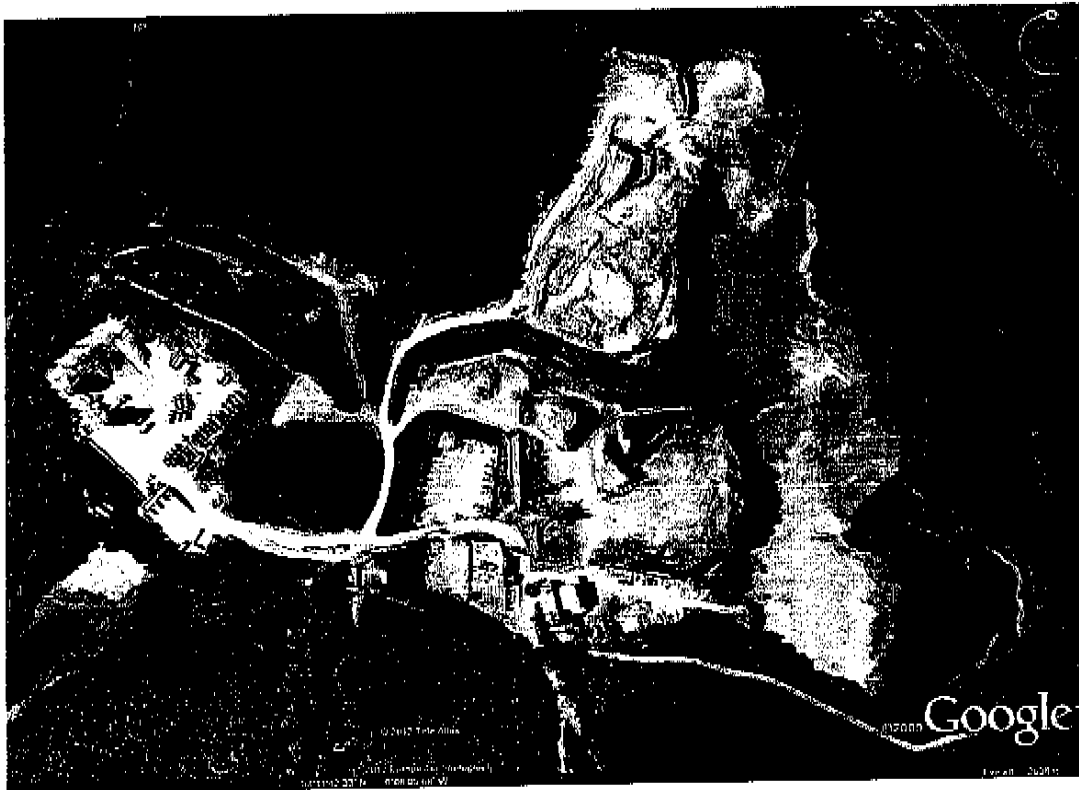


Figure 2 below shows a recent aerial view of the site as seen on Google Earth.

**Figure 2**  
**Aerial View of Site as seen on Google Earth**



#### 1.4 Surrounding Land Uses

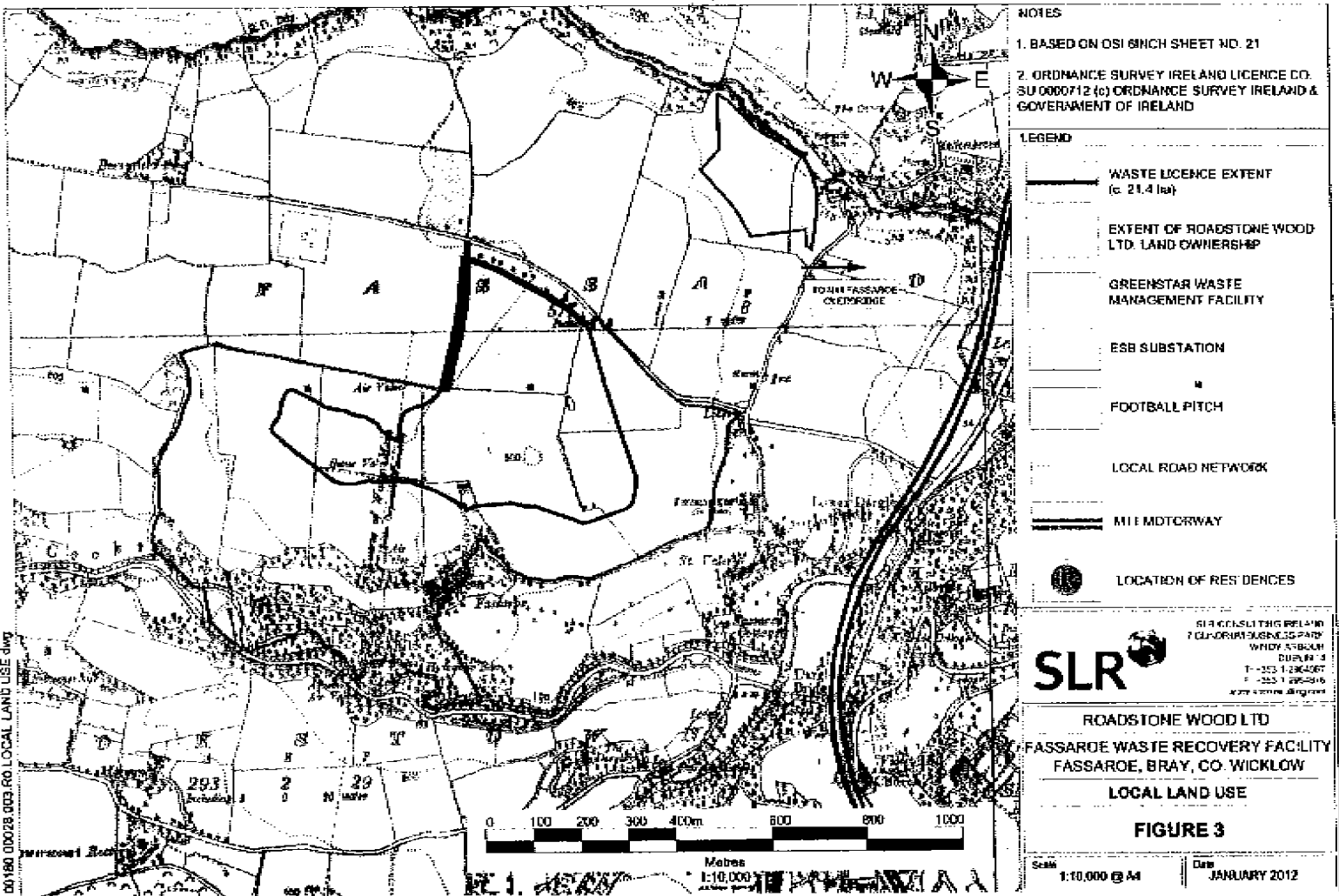
The site, including the existing waste recovery facility, is located within a largely agricultural area.

The lands within Roadstone Wood's landholding, immediately to the north and east of the licensed site are typically used for crop growing while those to the north-west, west and south-east of the licensed site are set as grassland. The Cookstown River and R117 Regional Road between Bray and Enniskerry run some distance beyond and parallel to the southern property boundary. The ground sloping down to the Cookstown River is covered by dense tree growth.

Immediately beyond Roadstone Wood's landholding, the lands to the north-west and west are set as grassland, while there are a number of large, isolated residences located along the opposite side of Fassaroe Avenue, to the east and south-east of the landholding. There is also a cluster of residences located immediately north of the landholding, along either side of Berryfield Lane. Enniskerry FC's football pitch is located on the northern side of Berryfield Lane. Although a large tract of land to the north of Berryfield Lane has been zoned for industrial and related uses, no development has yet taken place.

Other land uses in the immediate vicinity include a materials recovery facility for household, commercial and construction and demolition waste operated by Greenstar Ltd.,

Figure 3  
Surrounding Land Uses



## 1.5 Waste Recovery Activities

The inert waste recovery facility at Fassaroe is co-located with an existing concrete production facility on the same landholding. It shares existing site infrastructure with it, including site offices, staff facilities, internal roads, weighbridge, environmental control / monitoring infrastructure and maintenance sheds.

The waste licence allows acceptance of up to 550,000 t/a of soil and stones and dredging spoil plus 20,000 t/a of concrete, bricks, tiles and other inert construction and demolition wastes. The licence requires ongoing characterisation, compliance testing and verification to ensure that all wastes accepted at the facility are inert.

The inert waste recovery facility at Fassaroe, Bray Co. Wicklow provides for:

- Use of approximately 750,000 tonnes of imported and/or site won inert natural materials, principally excess soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of sand and gravel
- Recovery of imported inert construction materials, including stones, granular fill, concrete, blocks, bricks and ceramic tile, using crushing and screening equipment to generate secondary (recycled) aggregate
- Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site prior to removal off-site to appropriately licensed waste disposal or recovery facilities
- Use of secondary aggregate to construct internal haul roads within and across the application site
- Sale and export of secondary aggregate off-site for re-use by others
- Phased restoration of the backfilled void (including placement of cover soils and seeding) and return to use as agricultural grassland
- Temporary stockpiling of topsoil and subsoil pending re-use as cover material for phased restoration of the site
- Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works.

The existing quarry void is only backfilled using inert materials imported from pre-approved external construction sites and secondary aggregate generated on site. No peat, contaminated soils, intermixed construction and demolition waste or non-hazardous waste is accepted at the waste recovery facility. Any non-inert construction and demolition waste will be removed off-site.

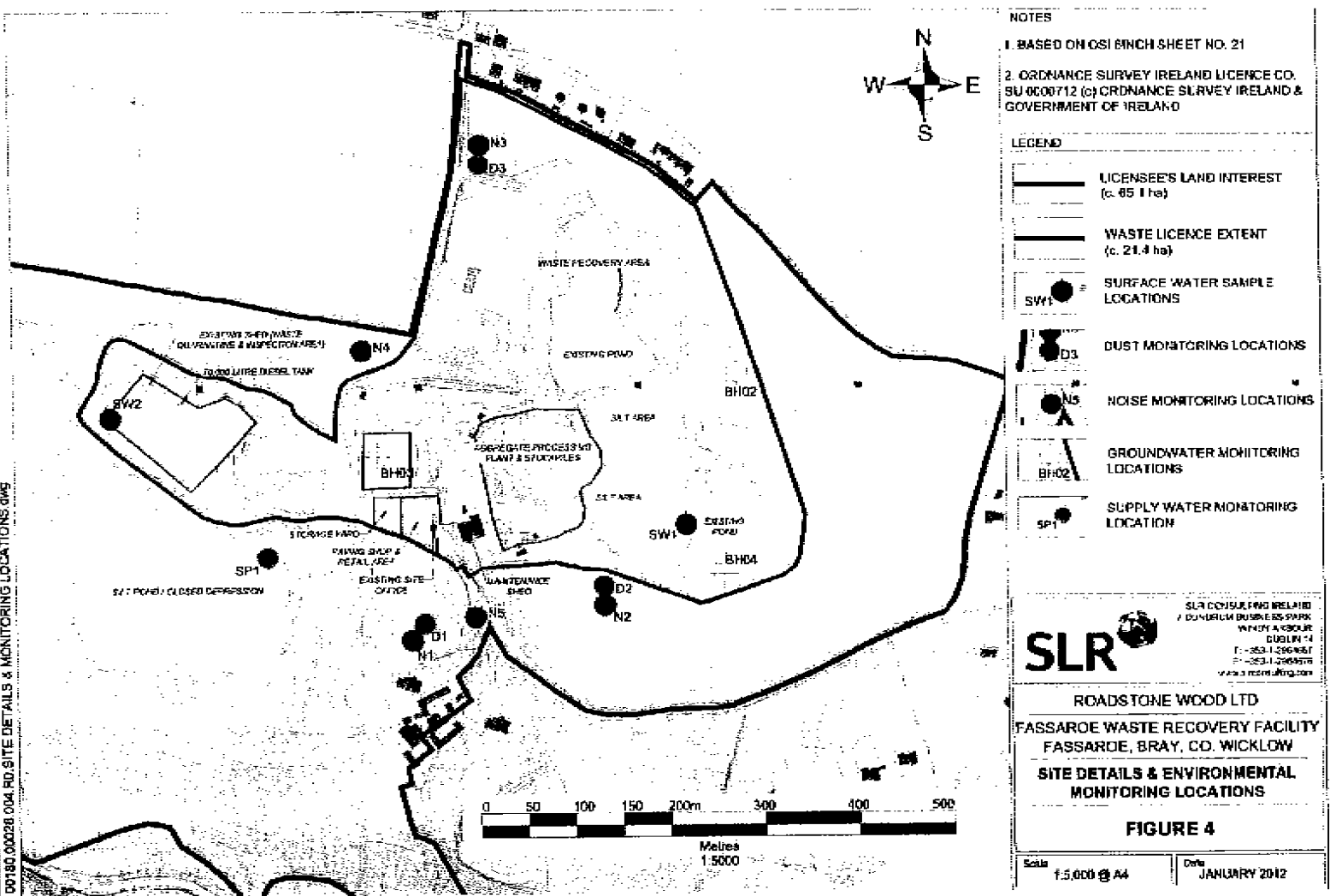
## 1.6 Site Monitoring

The waste licence for the site requires monitoring for dust deposition, noise, surface water and groundwater at designated monitoring points strategically located on and around the site (see Figure 4 below).

SLR has reviewed the 2011 monitoring data and found the site appears to be operating in compliance with the emission limit values set in the waste licence.

To date, the site has not been audited by the EPA.

Figure 4  
Site Detail and Monitoring Locations



## 2.0 INITIAL SCREENING AND OPERATIONAL RISK ASSESSMENT

### 2.1 Introduction

In order to determine the requirements for an Environmental Liability Risk Assessment (ELRA), a relatively simple risk assessment decision matrix is employed to classify the site into one of three risk categories. The specific requirements for an ELRA are dependent on the resultant risk classification.

The decision matrix used to determine the risk classification for the Fassaroo waste recovery facility is that set out in Chapter 2 of EPA publication *Guidelines on Environmental Liability, Risk Assessment, Residuals Management Plans and Financial Provision*.<sup>2</sup> This decision matrix essentially looks at three key factors

- (i) **Complexity** : a factor which takes account of the extent and magnitude of potential hazards due to the operation of the waste facility. A complexity band is assigned to the waste facility on the basis of look-up table in Appendix B of the EPA guidance document. Complexity ratings range from G1 for the least complex site to G5 for the most complex.
- (ii) **Environmental Sensitivity** : a factor which takes account of the receiving environment in the immediate vicinity of the waste facility, with more sensitive locations given a higher score (due to proximity of aquifers, high quality surface water features or human receptors). Environmental sensitivity is assessed on a site specific basis using a matrix presented in Table 2.2 of the EPA guidance document.
- (iii) **Compliance Record** : a factor which takes account of the compliance history of the waste facility and whether activities carried on are in compliance with licence requirements and emission limits.

Each of the three factors assessed above is multiplied to give the total score for the waste facility and this is used to place it into an appropriate risk category (identified as Category 1 to Category 3), as outlined in Table 2.1 below.

**Table 2-1  
Risk Category**

Risk Category	Total Score
Category 1	< 5
Category 2	5 – 23
Category 3	> 23

Having determined the facility category, it is then possible to establish specific requirements for the ELRA and associated financial provisions.

<sup>2</sup> Guidance on Environmental Liability Risk Assessment, Residuals Management Plans and Financial Provision, EPA (OEE), 2006.



**Table 2-2  
Environmental Sensitivity of the Fassaroe Site**

<b>Environmental Attribute</b>	<b>Environmental Attribute Score</b>
<b>Human Occupation<sup>1</sup></b>	<b>5</b>
< 50m	<u>3</u>
<u>50m - 250m</u>	1
250m - 1000m	0
> 1km	
<b>Groundwater Protection<sup>2,3</sup></b>	<b>2</b>
Regionally Important Aquifer	1
<u>Locally Important Aquifer</u>	0
Poor Aquifer	
Vulnerability Rating - Extreme	3
<u>Vulnerability Rating - High</u>	2
Vulnerability Rating - Moderate	1
Vulnerability Rating - Low	0
<b>Sensitivity of Receiving Waters<sup>4</sup></b>	<b>3</b>
<u>Class A</u>	2
Class B	1
Class C	0
Class D	
Designated Coastal & Estuarine Waters <sup>5</sup>	2
Potentially Eutrophic Coastal & Estuarine Waters <sup>6</sup>	1
<b>Air Quality &amp; Topography</b>	<b>2</b>
Complex terrain <sup>7</sup>	1
<u>Intermediate terrain<sup>8</sup></u>	0
Simple terrain <sup>9</sup>	
<b>Protected Ecological Sites and Species<sup>10</sup></b>	<b>2</b>
Within or directly bordering species protected site	1
< 1km to protected site	0
<u>&gt; 1km from protected site</u>	
<b>Sensitive Agricultural Receptors<sup>11</sup></b>	<b>2</b>
Fruit, vegetable or dairy farming < 50m from the activity footprint	1
Fruit, vegetable or dairy farming 50m - 150m from the activity footprint	0
<u>Fruit, vegetable or dairy farming &gt; 150m from the activity footprint</u>	
<b>Total Environmental Sensitivity Score for Fassaroe Site =</b>	<b>10</b>

**Notes \***

1. Measured from activity/footprint to public or private occupied building
2. Groundwater Classifications according to DoELG, EPA, GSI Groundwater Protection Schemes (1999)
3. Aquifer Classification Score to be added to Groundwater Vulnerability Score
4. Site located within catchment of EPA Surface Water Classification (1996) or adjacent to transitional water body
5. Designated as Sensitive Areas UWWT Regulations (2001)
6. EPA (2002) Water Quality in Ireland 1998-2000
7. Generally elevated terrain such as a mountain or the side of a valley, where receptors are at elevations above the stack tip elevation, US EPA (2000) Meteorological Monitoring Guidance for Regulatory Modelling Applications

8. Intermediate terrain where the elevations of receptors lie between the stack tip elevation and the plume rise elevation, US EPA (2000) Meteorological Monitoring Guidance for Regulatory Modelling Applications
9. Relatively flat terrain, where receptor elevations are between stack base and the stack tip elevations, US EPA (2000) Meteorological Monitoring Guidance for Regulatory Modelling Applications
10. Distance from activity/footprint to protected areas designated as pNHA (Irish Wildlife Acts 1976, 2000), cSAC (Habitats Directive 1992) and/or SPA (Birds Directive 1979).
11. Distances derived from UK Department for Environment, Food and Rural Affairs (2003), Local Air Quality Management Technical Guidance LAQM.TG(3)

\* or more recent equivalent reference material

Drawings and information supporting each of these assessments are available within the Environmental Impact Statement previously provided to the Agency in support of the waste licence application.

Adding the attribute scores identified above gives a total environmental attribute score of 10.

Applying the environmental sensitivity classification matrix set out in Table 2.3 of the EPA guidance document for a cumulative attribute score of 10, indicates that the overall environmental sensitivity of the site is 'moderate' (total score between 7 and 12) and that the corresponding environmental sensitivity factor is 2.

**Environmental Sensitivity Factor = 2**

#### 2.4 Compliance Record of the Facility

The EPA guidance document indicates that the compliance factor for a newly licensed facility and those operating without non-compliance of emission limits (such as that at Fassarooe) may be classified as a Compliant / New Facility and have a compliance factor of 1.

**Compliance Factor = 1**

#### 2.5 Risk Category

We multiply the scores for Complexity (2), Environmental Sensitivity (2) and Compliance Record (1) and reach a total score of 4. This falls within Category 1 in the EPA guidance Table 2.1, reproduced on Table 2-3 below:

**Table 2-3  
Risk Category for Fassarooe Site**

Risk Category	Total Score
<b>Category 1</b>	<b>≤ 5</b>
Category 2	5 – 23
Category 3	> 23

**Risk Category = Category 1**

Figure 1.1 of the EPA guidance document indicates that sites categorised under Risk Category 1 do not require site-specific ELRAs to address unknown liabilities. However, Condition 12.2.2 of the waste licence for the Fassaroe facility requires an ELRA to be carried out, so the remainder of this report contains a site-specific ELRA in compliance with the requirements of the waste licence.

### 3.0 SITE SPECIFIC ELRA

#### 3.1 Objectives and Scope

According to the EPA guidance document, the objectives of a site-specific ELRA are as follows:

- To identify and quantify environmental liabilities at the facility focusing on: unplanned, but possible and plausible events occurring during the operational phase.
- To calculate the value of financial provisions required to cover unknown liabilities
- To identify suitable financial instruments to cover each of the financial provisions; and
- To provide a mechanism to encourage continuous environmental improvement through the management of potential environmental risks.

The EPA advise that the ELRA should cover environmental risks leading to a potential or anticipated liability. Environmental risks will be deemed to cover all risks to: surface water, groundwater, atmosphere, land and human health.

#### 3.2 Risk Classification and Identification

The EPA guidance recommends that risks are identified and classified following a '*Risk Management Workshop*' involving the facility management, environmental manager and independent environmental consultant. SLR Consulting visited the site on 7<sup>th</sup> December 2011 and on 20<sup>th</sup> January 2012 and on both occasions met with site staff to review the potential hazards for the ELRA.

SLR is very familiar with site activities and the site layout at Fassaroe, as we have provided consultancy services for the licensee at this site for the last decade or more. These services included preparation of an EIS and a Waste Licence Application in 2009.

##### 3.2.1 Identification of Processes / Hazards

The waste handling processes carried out at the site inevitably generate noise and dust.

Normal site operations should not produce leachate or effluent as all waste materials handled at Fassaroe are inert. The licensee is obliged to regularly characterise and test the incoming wastes to confirm that only inert materials are accepted.

There is potential for discovery of non-inert or potentially hazardous materials, hidden within incoming loads of inert compliant waste.

Storage of hydrocarbons in tanks and drums on site is also identified as a potential hazard.

Each of these potential hazards is addressed individually below.

**Noise**

The waste licence for the site sets an emission limit value of 55dB(A) for daytime levels at five specified monitoring points in the vicinity of the site and a level of 45dB(A) for night-time levels at the same monitoring locations. The licensee is obliged to monitor at these locations periodically, 'as required' by agreement with the Agency.

The licensee is obliged to report noise monitoring results to the EPA on an annual basis in the Annual Environmental Report (AER)\*for the facility. The first AER to be prepared since the licence was granted is due to be submitted before 31<sup>st</sup> March 2012. Whilst this report has not been finalised, we have reviewed the noise reports from surveys conducted in March and September 2011 and find that noise measurements at all locations at the site were compliant with the emission limit values set in the waste licence.

**Dust**

The waste licence for the site sets an emission limit value of 350 mg/m<sup>2</sup>/day (30 day composite sample) for dust deposition levels at three specified monitoring locations on site. The licensee is obliged to monitor dust at these locations on a bi-annual basis, once during the May to September period.

Dust deposition results recorded in 2011 have not yet been submitted to the EPA. SLR has reviewed the dust deposition reports from nine surveys conducted during the period December 2010 to December 2011 and found that dust levels at all locations at the site were compliant with the emission limit values set in the waste licence.

**Leachate**

Inert wastes will not cause contamination, but there remains a risk that not all material received at the site is completely inert. The licensee is obliged to monitor surface water and groundwater at the site for a range of parameters agreed with the EPA.

The 2011 results of surface water monitoring suggest that the ponds on site appear uncontaminated and no contamination incidents were reported to the EPA since the licence was issued in April 2011.

Similarly, the groundwater monitoring results from 2011 suggest that the groundwater beneath the site appears uncontaminated and no contamination incidents were reported to the EPA since the licence was issued in April 2011.

**Road Diesel Tank**

The 70,000 litre road diesel tank, located in the Concrete Production Yard, is a potential source of contamination that must be considered in this risk assessment.

Minor spillages of diesel can usually be addressed by treatment with absorbent material contained in spill-kits that must be available on site as a licence condition.

Larger spills of diesel will enter the yard run-off drainage system and if unimpeded will be discharged to ground.

Condition 3.11 of the waste licence requires the licensee to install a hydrocarbon interceptor in the concrete production yard. The interceptor is currently on site and is due to be installed in the coming weeks.

The interceptor will contain some hydrocarbons, but discharge of a full 70,000 litre diesel tank will generate too great a volume for the interceptor to contain. In this scenario, the operator may be able to halt the discharge until such time as the diesel is collected. Failure to contain the diesel would result in contamination of the groundwater beneath the site and the licensee would be expected to be liable for the clean-up costs in this scenario.

Later in this report, we assess the risk of an occurrence of this nature.

### ***Tank and Drum Storage***

There is a requirement for storage of tanks and drums of various hydrocarbons on site. This includes gas oil, engine oil, transmission oil and hydraulic oil for maintenance and operation of machinery and mobile plant in addition to waste oil and oil filters.

These materials are stored within bunds in the maintenance shed in compliance with Condition 3.9 of the waste licence.

Minor spills of these materials can be contained locally and cleaned using spill-kits, located at a visible location in the maintenance shed. Major spills are unlikely as the volumes are relatively small (200 litre drums to 2,500 litre tank). However, if a volume is spilled and cannot be contained within the maintenance shed, the material will drain to a yard area where it is expected to percolate to ground rather than drain to the pond at the base of the quarry, approximately 200 metres downgradient. In either case, it could potentially contaminate the groundwater beneath the site.

### ***3.2.2 Identification of Environmental Receptors***

The processes and hazards described above have the potential to impact on environmental receptors such as those described below.

#### ***Employees or Other Site Users***

Waste management facilities pose hazards to site operatives such as the risk of hearing injury from noise sources, respiratory issues associated with dust inhalation, exposure to hazardous chemicals or injuries from contact with vehicles, plant or machinery.

#### ***Occupied Houses***

The nearest houses to site are located close to the northern site boundary on Berryfield Lane as shown on Figure 4 above. The licensee has maintained a 50 metre buffer zone between the footprint of the licensed area and the back gardens of these houses.

Emissions of dust and noise from site processes have the potential to impact on the occupants of these houses.

#### ***Local Businesses***

The closest businesses to the site comprise of Cahill's Mowers and Hannon Crash Repairs located within the group of houses at Berryfield Lane to the north of the site boundary. The Greenstar licensed<sup>4</sup> waste management facility is located approximately 400 metres northeast of the site.

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<sup>4</sup> EPA Ref: W0053

### **Groundwater**

The Fassaroe site is located on a locally important sand/gravel aquifer (Lg) that extends 4 to 5 km southwest to the Wicklow Mountains. The lack of surface water features across the area, indicates that the sand and gravel aquifer has a high level of recharge and a high permeability. Groundwater is classified as highly vulnerable because permeable strata are located close to the ground surface and there is potential for rapid movement of water through the ground.

The deep level groundwater aquifer in the sand and gravel has not been intercepted by the former quarry workings. There are a number of surface water ponds on the floor of the former quarry. These are formed by ponding of rainfall and surface run-off (drainage) above a layer of impermeable silt on the quarry floor. The silt is essentially an unwanted by-product of sand processing and washing elsewhere on the Roadstone Wood's lands. Available groundwater well information indicates that the ponds in the quarry floor are perched approximately 5m – 7m above the groundwater table in the sand and gravel aquifer.

The bedrock underlying the site is comprised of Ordovician Metasediments. The northern part of the site is comprised of the Maulin Formation, which is categorised as a locally important aquifer, productive only in local zones (LI), whereas the southern portion of the site is comprised of the Glencullen River Formation, which is categorised as a poor aquifer, bedrock which is generally unproductive except for local zones (PI).

Recent ground investigations indicate that groundwater quality at the site is generally very good, with established site operations shown to have no significant impact on existing groundwater quality.

### **Surface Water**

The nearest watercourse to the site is the Cookstown River, which is named as the Glencullen River upstream of Enniskerry (2km west of the site). This watercourse is a tributary of the Dargle River, and is located within the Eastern River Basin District. The Cookstown River lies 200m to the south of the site access road. Ordnance Survey mapping indicates that this watercourse is fed by waters from the Glencullen area.

In 2003 biotic sampling from the Glencullen River, 2km upstream of Enniskerry and 4km upstream of the site was reported to be of a good status (Q value of 4). Biotic sampling undertaken approximately 1km downstream of the site in the Cookstown River, just before it's confluence with the River Dargle also recorded good status (Q value of 4).

### **Ecological Designations**

There are no designated or proposed Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or proposed Natural Heritage Areas (NHA's) within or contiguous to the site or Roadstone Wood's wider landholding. The nearest SACs to the site are the woodland at Ballyman Glen, approximately 600m north of the site (at its nearest point) and Knocksink Wood, approximately 2km west of the application site. The Dargle River Valley, approximately 1km south-east and south of the site and Powerscourt Woodland, approximately 1.5km south-west of the application site (at its nearest point) are both designated as proposed NHAs.

Ballyman Glen SAC is an east-west oriented valley which is bounded by steeply sloping pasture with gorse and areas of wood and scrub. The site is designated an SAC for its alkaline fen and petrifying spring, both habitats listed on Annex 1 of the EU Habitats

Directive (92/43/EEC dated 21 May 1992 on *the Conservation of Natural Habitats and of Wild Fauna and Flora*).

Knocksink Wood SAC is situated in the valley of the Glencullen River. A number of scarce or rare plants occur within the site and it has one of the most diverse woodland invertebrate faunas in Ireland. The woodland incorporates wet woodland organisms threatened elsewhere within the EU. A notable feature of the site is the frequent and extensive springs and seepage areas within the wooded slopes. These petrifying springs are listed as a priority habitat on Annex I of the EU Habitats Directive.

The Dargle River Valley pNHA is located along a section of the River Dargle with steep wooded banks. The site is designated a pNHA as it is a fine example of a long established wooded valley, a habitat that is becoming rare in north County Wicklow. The site is also of considerable geological importance. At one point a well exposed series of Ordovician volcanic rocks are faulted against well-exposed Bray group Cambrian strata.

Powerscourt Woodland pNHA is located south-west of Enniskerry village and is largely contained within the Powerscourt and Charleville demesnes. The site includes a 4km stretch of the Dargle River. Mixed woodland covers most of the site and includes native and introduced species. The site includes many exotic plant species and habitats which support an interesting flora. The mix of semi-natural habitats and estate woodland is particularly conducive to macro-fungi.

### **Amenity Areas**

The nearest outdoor amenity area to the site is comprised of a football pitch located just north of the site boundary on the opposite side of Berryfield Lane. This lies approximately 150 metres from the footprint of site activities.

### **3.3 Assessment of Risks**

All potential environmental risks associated with the facility, as identified by SLR, are listed in the Project Risk Register presented on Table 3-1 below.

**Table 3-1  
Project Risk Register**

<b>Risk Ref. No.</b>	<b>Potential Failure Mode/Risk</b>
1	Excessive dust emissions from site processes
2	Excessive noise emissions from site processes
3	Contamination from non-inert non-compliant waste
4	Road diesel tank leak or spillage
5	Other hydrocarbon spill (gas-oil, hydraulic oil, engine oil, transmission oil, waste oil, etc.)
6	Employee or visitor struck by vehicles or plant
7	Employee contact with hazardous materials

Table 3-2 below provides a classification of risks in terms of likely occurrence and estimated severity, as detailed in the EPA Guidance manual.

**Table 3-2  
Risk Classification Table**

Rating	Occurrence		Severity
	Description	Probability (%) (in a 30 year period)	Financial Cost
1	Very Low	0-5	0 - €1,000
2	Low	5-10	€1,000 - €10,000
3	Medium	10-20	€10,000 - €50,000
4	High	20-50	€50,000 - €100,000
5	Very High	>50	>€100,000

The Risk Assessment Table provided in Table 3-3 below assigns a 'Risk Score' to the risks identified in the Project Risk Register based on the likely occurrence and severity of the event. The Risks are then ranked on that basis of the most serious to the least serious.

At this point of the report, mitigation measures such as personnel protection equipment (ppe), staff training, spill kits, bunding, etc, are not considered when assessing the risks. These are addressed in the next section of this report, where use of such mitigation reduces the likely occurrence or severity of the risks.

**Table 3-3  
Risk Assessment Table for Unmitigated Risks**

Risk Ref. No.	Potential Failure Mode/Risk	Occurrence Rating	Severity Rating	Risk Score
1	Excessive dust emissions from site processes	3	3	9
2	Excessive noise emissions from site processes	3	4	12
3	Contamination from non-inert non-compliant waste	3	3	9
4	Diesel tank leak or spillage	3	5	15
5	Other hydrocarbon spill (gas-oil, hydraulic oil, engine oil, transmission oil, waste oil, etc.)	4	3	12
6	Employee or visitor struck by vehicles or plant	3	5	15
7	Employee contact with hazardous materials	2	2	4

The rationale behind the risk scores assigned above is as follows:

**1. Excessive dust emissions from site processes:**

The site does not appear to have a history of dust deposition problems and the nine sets of dust results from 2011 show compliance with the waste licence. However, a prolonged dry spell could cause dust nuisance, particularly for site employees. The likely future occurrence, without mitigation, is therefore considered 'medium'.

High levels of dust can impact on the health of employees, visitors and neighbours, depending on individual sensitivities. We consider that the severity of such a potential impact is 'medium'.



## **2. Excessive noise emissions from site processes:**

The site appears to have a good compliance record in relation to the noise levels set in the waste licence. However, the data is limited, as the licence is new. It is possible that during a very busy period noise levels could be higher. The noise sources from waste management operations on site potentially include a crusher working alongside a bulldozer and HGV vehicles. The occurrence rating, without consideration of mitigation measures, is therefore considered 'medium'.

High levels of noise emissions can be a nuisance to neighbours, but more importantly can impair the hearing of site workers. Without mitigation, the severity of such an occurrence is considered 'high'.

## **3. Contamination from non-inert non-compliant waste**

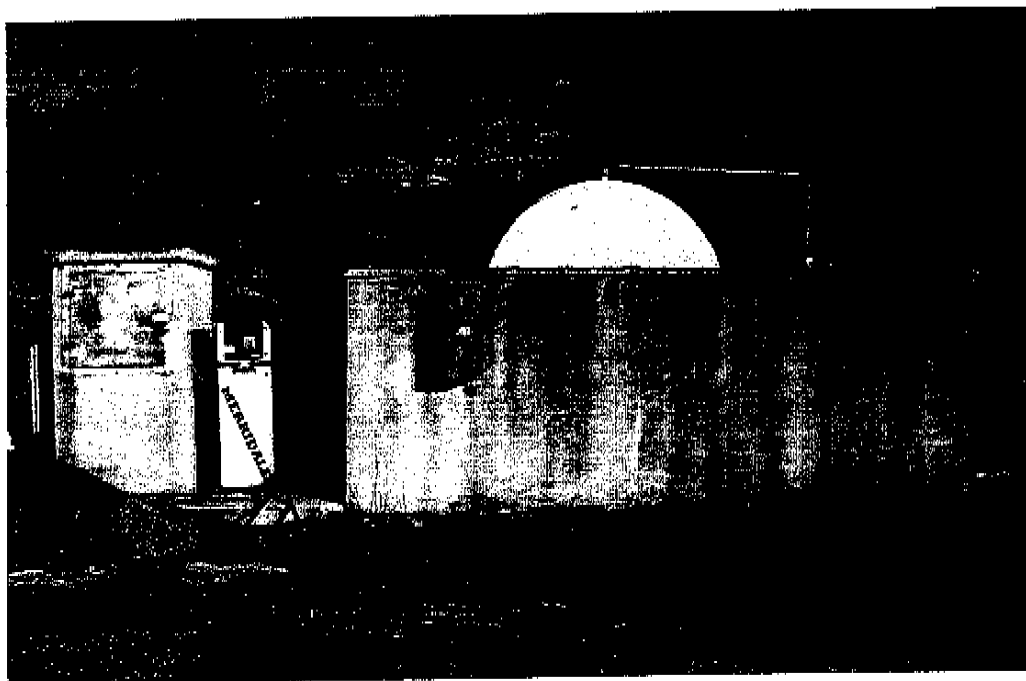
The Fassaroe facility can only accept inert wastes and the licensee is obliged to regularly characterise and test the integrity of incoming wastes. To date, this testing has found the incoming waste to be compliant. However, there remains potential for receipt of non-conforming wastes hidden within compliant wastes. The probability of contamination occurring from non-compliant material is therefore considered to be 'medium'.

Non-compliant waste could include hazardous substances, but only in small volumes, so the severity of contamination from such a source is considered 'medium'.

## **4. Diesel Tank Leak or Spill**

The site contains a 70,000 litre road diesel tank that is used to fuel company vehicles. The tank is protected against damage and leaks by a mass concrete bund, so the likely occurrence of a major rupture to the tank is considered low. However, without mitigation, there is a 'medium' risk of spillage of diesel during re-fuelling operations. The volume and location of such spillage may depend on mitigation measures employed at the site.

**Photo 1 - Bunded 70,000 litre Diesel Tank**

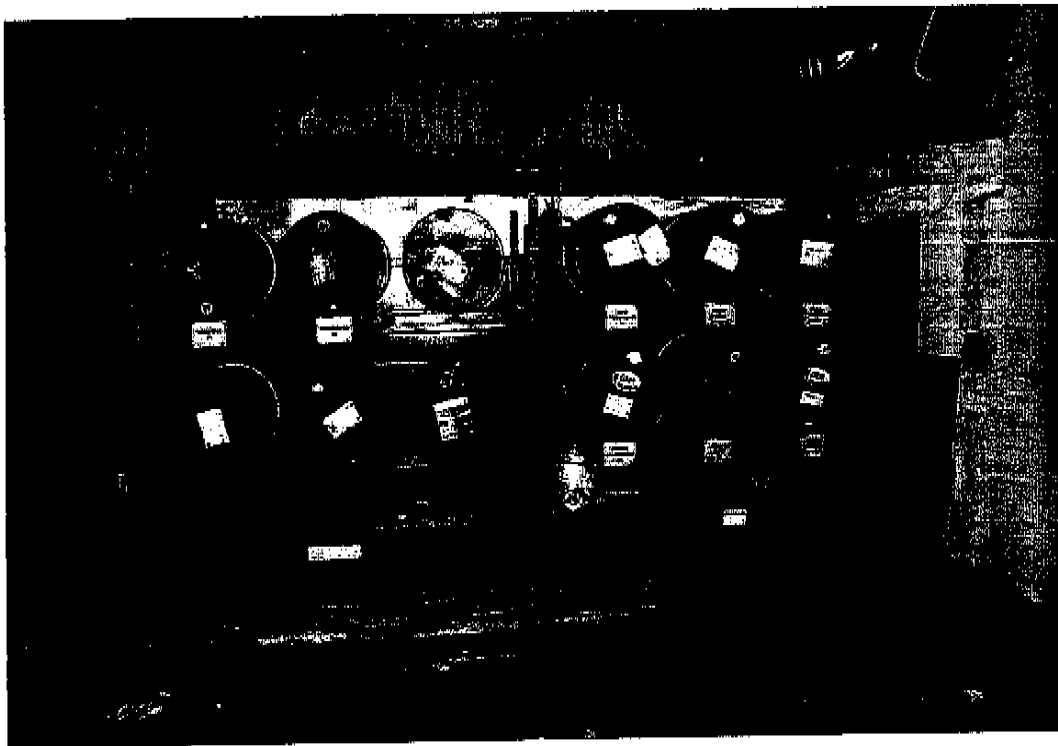


The severity of a 70,000 litre diesel spill to the gravel aquifer at the site is considered 'very high' as the clean-up costs could run to more than €100,000.

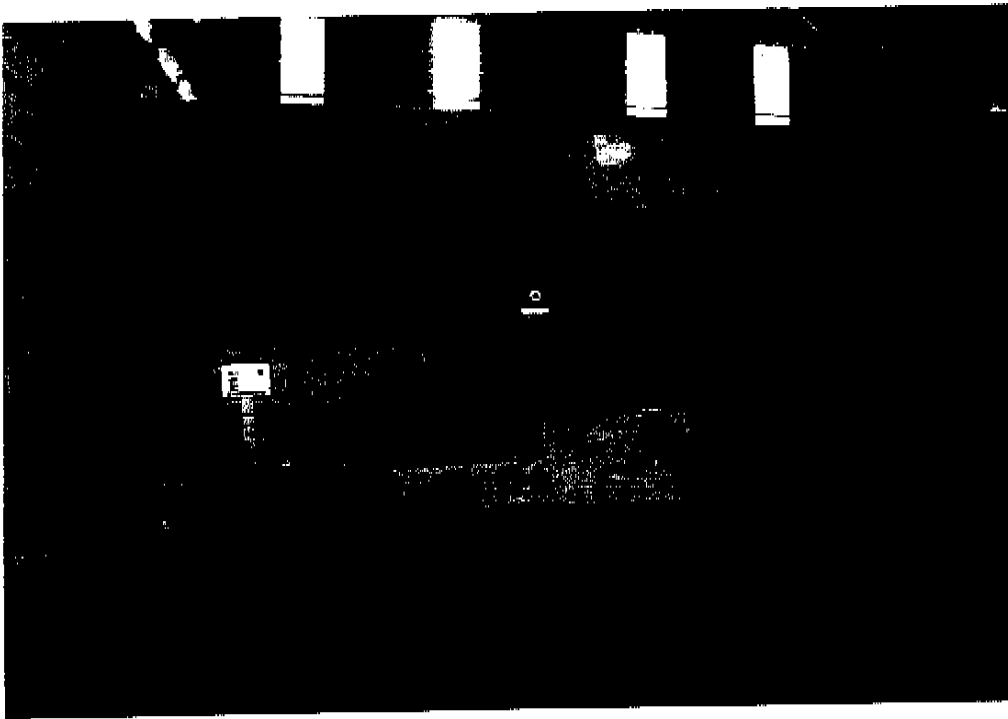
### **5. Other hydrocarbon spill**

There are a number of substances used on site that have the potential to cause environmental pollution if spilled. These include a 2,500 litre double-skinned tank for gas-oil (machine diesel) for fuelling mobile plant, a smaller waste oil tank and 200 litre drums filled with hydraulic oils, engine oils and transmission oils. These are all stored in the Maintenance Shed close to the site offices and are protected against leaks by bunding.

**Photo 2 – Bunded Oil Drums in Maintenance Shed**



The 2,500 litre gas-oil tank consists of a self-bunded tank that is supported by the walls of a block-work bund (See Photo 3 below). There is a risk that a vehicle colliding with the bund wall would cause the tank to topple outside the bund and spill on the floor of the maintenance shed. The risk of such an occurrence is considered 'high'.

**Photo 3 – Bunded Gas Oil (Diesel) Tank in Maintenance Shed**

A spill of up to 2,500 litres of gas oil (diesel) in the maintenance shed would be directed to the adjacent yard area. This is an unpaved yard, so we expect a spill of this size to percolate to ground rather than drain to the downgradient site pond, located approximately 200 metres away. The severity of such an event is considered 'medium' with clean-up costs between €10,000 and €50,000.

**6. Employee or Visitor Struck by Vehicles or Plant**

Site activity is not intensive and there is little or no need for pedestrians in the active restoration areas. However, without proper management and mitigation measures, the likely occurrence is considered 'medium'.

The severity of an employee or visitor being struck by site plant or machinery, is considered to be 'very high' as such impacts can be fatal.

**7. Employee Contact with Hazardous Materials**

The site is a non-hazardous facility, so hazardous materials are limited to some substances used for maintenance purposes or non-compliant wastes found within reportedly inert deliveries. The likely occurrence of employee contact with such hazardous materials is therefore considered 'low'.

Unmitigated infrequent employee contact with small volumes of paints, solvents, oils, etc is likely to be restricted to skin irritation, so the severity of this risk is considered 'low'.

**3.4 Risk Matrix**

The ranking of the unmitigated risks identified above can be visualised on a 'Risk Matrix' diagram, as presented on Table 3-4 below.

In line with the EPA Guidance, the risks have been colour coded in the matrix to provide a broad indication of the critical nature of each risk. The colour code is as follows:

- Red –** These are considered to be high-level risks requiring priority attention. These risks have the potential to be catastrophic and as such should be addressed quickly.
- Amber –** These are medium-level risks requiring action, but are not as critical as a red coded risk.
- Green -** These are lowest-level risks and indicate a need for continuing awareness and monitoring on a regular basis. Whilst they are currently low or minor risks, some have the potential to increase to medium or even high-level risks and must therefore be regularly monitored and if cost effective mitigation can be carried out to reduce the risk even further this should be pursued.

**Table 3-4**  
**Risk Matrix of Unmitigated Risks**

30 year Probability %		Ranking of Unmitigated Risks				
Occurrence	>50%	Very High 5				
	20%-50%	High 4				
	10%-20%	Medium 3				4, 6
	5%-10%	Low 2		7		
	<5%	Very Low 1				
	<b>Impact</b>	Very Low 1	Low 2	Medium 3	High 4	Very High 5
	<b>Estimated Cost</b>	<€1k	€1-10k	€10-50k	€50-100k	>€100k
		<b>Severity</b>				

The Risk Matrix shows that Risk No. 4 (Diesel Spill) and Risk No. 6 (vehicle or plant impact) require priority attention as they have the potential for a catastrophic outcome. The other risks are lower priority, but all can be improved by mitigation as described in the next section of this report. Much of this mitigation is required by the waste licence and EPA enforcement action can be expected in the event of failure to implement many of these mitigation measures.

### 3.5 Identification and Assessment of Mitigation Measures

The risk levels identified above can be mitigated in a number of ways as discussed below.

#### **1. Excessive dust emissions from site processes:**

Site employees that work in the vicinity of sources of dust at the site should be issued with dust masks to avoid the inhalation of dust.

Where dust deposition at the site boundaries exceeds the emission limit values set by the EPA in the waste licence, the site operator should employ mitigation in the form of sprinklers and otherwise damping down of surfaces. We understand that there are sprinklers on site that are used when necessary.

A wheelwash and vehicle wash is employed at the exit of the waste recovery area and these lead to a road with a tarmac surface. This appears effective in minimising dust emissions from vehicles exiting the site.

These mitigation measures reduce the risk of occurrence of this event from 'medium' to 'low'.

#### **2. Excessive noise emissions from site processes:**

Site employees that work in the vicinity of noise sources on site should be issued with ear protectors.

Where noise emissions from the site exceed the emission limit values set by the EPA in the waste licence, the site operator should employ further mitigation in the form of improved working practices and/or better performing plant and machinery.

These mitigation measures reduce the risk of occurrence of this event from 'medium' to 'low'.

#### **3. Contamination from non-inert non-compliant waste**

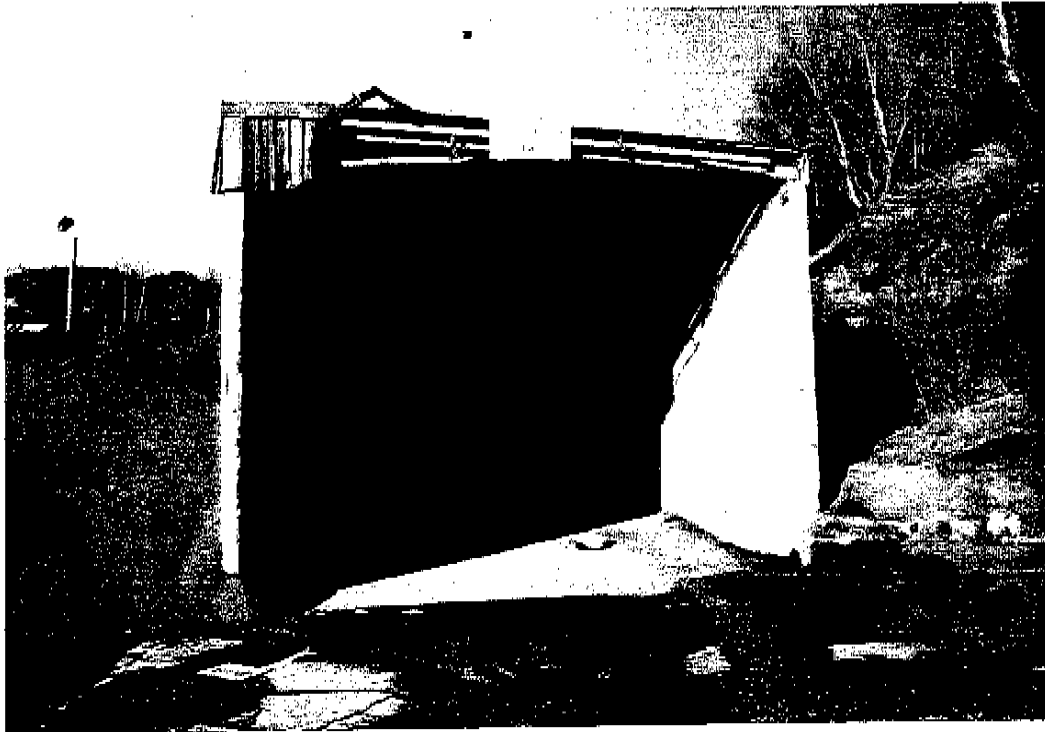
The licensee regularly tests the integrity of the incoming wastes as required by a licence condition. SLR has reviewed this data and has concluded that the incoming wastes were compliant in 2011.

The licensee must continue to ensure that all wastes accepted at the site are inert and compliant with the requirements of the waste acceptance procedures.

The licensee must continue to be aware of the activities of the companies that deliver inert wastes to the site and maintain a high level of confidence about the source of the incoming wastes. Even non-hazardous wastes can cause groundwater contamination, so the licensee must ensure that only inert wastes are accepted at the site.

The licensee has provided a waste quarantine and contamination bay that consists of a building with mass concrete floor and walls (see Photo 4 below). Non compliant wastes can be safely stored at this location prior to removal off-site for appropriate treatment or disposal to a licensed landfill.

These mitigation measures reduce the risk of occurrence of this event from 'medium' to 'low'.

**Photo 4 – Quarantine and Contamination Bay****4. Diesel Tank Leak or Spillage**

The 70,000 litre diesel tank is stored within a large concrete bund that is designed to contain more than the full volume of the tank. This provides mitigation against a major diesel spill at the site. An integrity test carried out in August 2011 showed that the bund is in very good condition and has capacity greater than 110% the capacity of the diesel tank.

The fuel pump located adjacent to the road diesel tank is designed to cut-out when the diesel tank of the vehicle is full, so avoiding over-spill.

Yard drainage passes through a pipe that runs beneath a concrete platform located adjacent to the concrete production plant. In the event of a major diesel spill in the yard, the licensee should have a mechanism in place to block that pipe and contain the diesel in the yard before it reaches the sump in the corner of the yard, from where surface water percolates to ground or is pumped to the water supply pond.

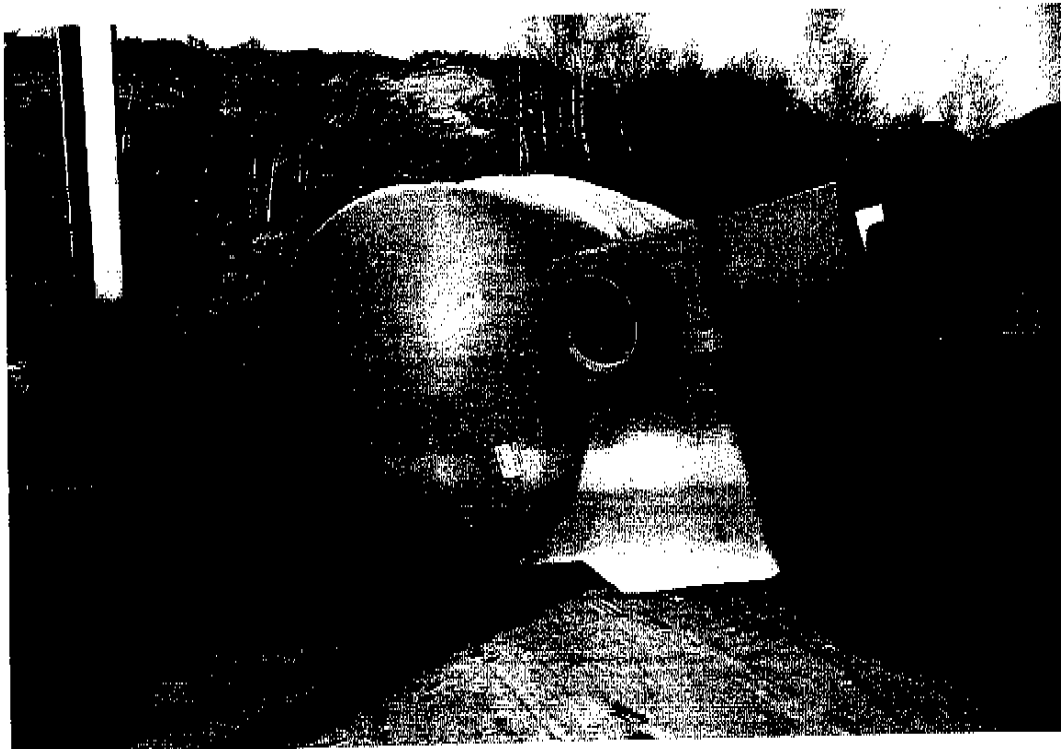
The licensee is currently in the process of installing a Class II By-Pass Separator that will contain minor hydrocarbon spills or leaks emanating from the concrete production yard. The interceptor must be regularly inspected and adequately maintained.

These mitigation measures, when fully installed and properly maintained reduce the risk of occurrence of this event from 'Medium' to 'Low'.

**Photo 5 – Yard Drainage Impeded by Concrete Platform**



**Photo 6 – Hydrocarbon Interceptor Awaiting Installation**



### **5. Other hydrocarbon spill**

The gas-oil, hydraulic oils, engine oils, transmission oils, waste oils, etc. are currently stored within bunded areas in the maintenance shed. The operator must maintain adequate capacity in these bunds for them to be effective.

Spill kits comprising containment booms and absorbent materials are stored in the maintenance shed and are easily accessible in the event of a hydrocarbon spill or leak in the shed or from plant or machinery operating on the site.

The operator should improve the bunding of the 2,500 litre double-skinned gas-oil tank to reduce the risk of a spill caused by a minor vehicle collision. The frame that holds the tank in place should be supported from the ground rather than supported by the bund wall. In addition, the block-work bund should be replaced by a mass-concrete bund.

These measures would reduce the risk of occurrence from 'high' to 'low'.

### **6. Employee or Visitor Struck by Vehicles or Plant**

No employees or visitors should be allowed in yard or outdoor working areas without wearing highly visible (hi-vis) jackets.

A low speed limit should be set and enforced on site.

Plant and machine operators must be made aware of personnel in the vicinity of the plant or machinery that they operate. They must also be fully trained in the operation of the plant and/or machinery that they are responsible for operating. We are informed by Roadstone Wood that all employees have up to date QSCS tickets for the machines they drive.

All employees should be adequately trained in Health and Safety and acquire H&S certificates, where relevant. We are informed by Roadstone Wood that their H&S Officer carries out safety audits and training for site employees, as well as safety inductions for contractors working on the site.

Mobile plant, such as front loading shovels, should be fitted with reversing alarms that give a clearly audible signal.

Adequate lighting should be employed on-site during hours of darkness.

These mitigation measures, when fully maintained, reduce the risk of occurrence of this event from 'Medium' to 'Low'.

### **7. Employee Contact with Hazardous Materials**

Employees that are at risk of coming into contact with hazardous materials on site should be issued with PPE including gloves and where appropriate, safety glasses. These employees should also be adequately trained in handling hazardous materials.

A waste quarantine area is provided in the concrete production yard and this should be used for storage of any non-compliant or hazardous wastes prior to removal off-site for safe disposal.

These mitigation measures, when fully maintained, reduce the risk of occurrence of this event from 'Low' to 'Very Low'.



### 3.6 Risk Reduction

By introducing the existing and recommended mitigation measures described above, the risks posed by the site activities are reduced. This risk reduction is detailed on Table 3-5 below where the resulting mitigated risks are assessed and ranked.

It is important that the site operator introduces all recommended mitigation measures to achieve the full risk reduction outlined in Table 3-5. Failure to do so will result in a risk that falls between the unmitigated and the mitigated positions.

**Table 3-5  
Risk Reduction due to Existing and Proposed Mitigation Measures**

RISK IDENTIFICATION			RISK ASSESSMENT						
No.	Risk	Impact	BEFORE CONTROL			Mitigation Measures	AFTER CONTROL		
			Occurrence	Severity	Risk Level		Occurrence	Severity	Risk Level
1	Excessive dust emissions from site processes	Potential impact on the health of employees, visitors and neighbours.	3	3	9	Site operatives should be issued with dust masks. Surfaces should be damped down during prolonged dry spells to keep yards and roads dust free. A wheelwash and vehicle wash is employed at the exit of the waste recovery area and these lead to a road with a tarmac surface.	2	3	6
2	Excessive noise emissions from site processes	Potential impact on the health of employees, visitors and neighbours.	3	4	12	Site operatives should be issued with ear protectors. Where noise emissions from the site are excessive, the site operator should employ further mitigation in the form of improved working practices and/or better performing plant and machinery.	2	4	8
3	Contamination from non-inert non-compliant waste	Potential contamination of locally important gravel aquifer.	3	3	9	The licensee must continue to ensure that all wastes accepted at the site are inert. The licensee must continue to be aware of the activities of the companies that deliver inert wastes to the site and maintain a high level of confidence about the source of the incoming wastes.	2	3	6
4	Diesel tank leak or spillage	Potential contamination of locally important gravel aquifer.	3	5	15	The 70,000 litre diesel tank is stored within a large concrete bund, which must be maintained. Spill kits comprising containment booms and absorbent materials should be stored on site and be easily accessible. The hydrocarbon interceptor currently awaiting installation should be installed and properly maintained. The licensee should have a mechanism in place to block the pipe under the concrete plinth to contain diesel spills in the concrete production yard	2	5	10

RISK IDENTIFICATION			RISK ASSESSMENT						
No.	Risk	Impact	BEFORE CONTROL			Mitigation Measures	AFTER CONTROL		
			Occurrence	Severity	Risk Level		Occurrence	Severity	Risk Level
5	Other hydrocarbon spill (hydraulic oil, engine oil, transmission oil, waste oil, etc.)	Potential contamination of locally important gravel aquifer.	4	3		The operator must maintain adequate capacity in the bunds beneath the oil drums, by regular servicing. Spill kits comprising containment booms and absorbent materials are stored in the maintenance shed and are easily accessible. The operator should improve the bunding of the 2,500 litre gas-oil tank to reduce the risk of a spill caused by a minor vehicle collision. The frame that holds the tank in place should be supported from the ground rather than supported by the bund wall. In addition, the block-work bund should be replaced by a mass-concrete bund.	2	3	6
6	Employee or visitor struck by vehicles or plant	Potential injury or fatality to employee or visitor.	3	5	15	Compulsory use of hi-vis jackets. A low speed limit should be set and enforced. Plant and machine operators must be made aware of other personnel on site and must be fully trained. All employees and contractors working on the site should be adequately trained in H&S. Mobile plant should be fitted with clearly audible reversing alarms. Adequate lighting should be employed, as required.	2	5	
7	Employee contact with hazardous materials	Potential impact on health of employee.	2	2	4	Employees and contractors that are at risk of coming into contact with hazardous materials should be issued with appropriate PPE and should be adequately trained in handling hazardous materials. The waste quarantine area should be used to isolate hazardous materials found in the incoming wastes.	1	2	2

The identified risks all fall within the green zone after mitigation. The two highest risks remain as No. 4 (Diesel Tank Spill) and No.6 (Impact from vehicles or plant).

### 3.7 Mitigated Risks

Table 3-6 below shows the Risk Matrix for the facility after full mitigation is considered.

**Table 3-6**  
**Risk Matrix of Mitigated Risks**

30 year Probability %		Ranking of Mitigated Risks				
<b>Occurrence</b>	>50%	Very High 5				
	20%-50%	High 4				
	10%-20%	Medium 3				
	5%-10%	Low 2			1, 3, 5	
	<5%	Very Low 1		7		
	<b>Impact</b>	Very Low 1	Low 2	Medium 3	High 4	Very High 5
	<b>Estimated Cost</b>	<€1k	€1-10k	€10-50k	€50-100k	>€100k
			<b>Severity</b>			

Each of the identified risks has a reduced likelihood of occurrence in the mitigated scenario. Compliance with the waste licence and health and safety legislation should ensure that the identified risks stay within the Green Zone (Low Risk) in the Risk Matrix.

## 4.0 RISK MANAGEMENT

### 4.1 General

The risks identified in the previous section must be managed to ensure that they remain in the Green Zone (low risk) category. The mitigation identified in this report requires ongoing inspection and management. The site requires a Risk Management Programme, whereby risks are allocated to 'Risk Owners', who have responsibility for maintaining or improving mitigation measures that are needed to minimise the risks.

### 4.2 Risk Management Programme

Table 4-1 below allocates the identified mitigation measures to 'Risk Owners'. The operator of the site should maintain and update a version of this Table to inform the Risk Management Programme at the facility. The job titles may differ from those suggested below, depending on the staffing structure at the facility, but the Programme should include the names and position of the 'Risk Owners'.

**Table 4-1  
Proposed Risk Mitigation Management Measures**

Risk Owner	Mitigation Measure	Relevant Risk id	Mitigation Measure Completion Date
H&S Officer	Site operatives to be issued with dust masks.	1	
H&S Officer	Site operatives to be issued with ear protectors.	2	
H&S Officer	Compulsory use of hi-vis jackets.	6	
H&S Officer	All employees to be adequately trained in H&S.	1,2,6,7	
H&S Officer	Employees that are at risk of coming into contact with hazardous materials to be issued with appropriate PPE and to be adequately trained in handling hazardous materials.	7	
Waste Facility Manager	Surfaces should be damped down during prolonged dry spells to keep yards and roads dust free.	1	
Waste Facility Manager	Wheelwash and vehicle wash facilities should be maintained in working order	1	
Waste Facility Manager	Where noise emissions from the site are excessive, the site operator should employ further mitigation in the form of improved working practices and/or better performing plant and machinery.	2	
Waste Facility Manager	Continue to ensure that all wastes accepted at the site are inert.	3	
Waste Facility Manager	Continue to be aware of the activities of the companies that deliver inert wastes to the site and maintain a high level of confidence about the source of the incoming wastes.	3	
Waste Facility Manager	The concrete bund containing the road diesel tank must be properly maintained and periodically tested (every 3 yrs).	4	
Waste Facility Manager	Spill kits comprising containment booms and absorbent materials should be maintained in good order and be	4, 5	

Roadstone Wood  
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2<sup>nd</sup> February 2012

Risk Owner	Mitigation Measure	Relevant Risk id	Mitigation Measure Completion Date
	easily accessible.		
Waste Facility Manager	The hydrocarbon interceptor currently awaiting installation should be installed and properly maintained.	4	
Waste Facility Manager	The operator should have a mechanism in place to block the pipe under the concrete plinth to contain diesel spills in the concrete production yard	4	
Waste Facility Manager	The operator must maintain adequate capacity in the bunds beneath the oil drums, by regular servicing.	5	
Waste Facility Manager	The operator should improve the bunding of the 2,500 litre gas-oil tank to reduce the risk of a spill caused by a minor vehicle collision. The frame that holds the tank in place should be supported from the ground rather than supported by the bund wall. In addition, the block-work bund should be replaced by a mass-concrete bund.	5	
Waste Facility Manager	Low speed limit to be set and enforced on site.	6	
Waste Facility Manager	Plant and machine operators to be made aware of other personnel on site and to be fully trained.	6	
Waste Facility Manager	Ensure that mobile plant is fitted with clearly audible reversing alarms.	6	
Waste Facility Manager	Adequate lighting to be employed, as required.	6	
Waste Facility Manager	Ensure that Waste Quarantine Area is used correctly	7	

#### 4.3 Risk Management Review

The Risk Management Programme is a dynamic process that must be updated to reflect changes that occur on site. New risks may emerge with new processes or new methods of working. Additional hazards can arise from the use of new materials for maintenance or fuelling at the site. Additional mitigation measures can become available or better techniques developed. The staff structure can change and new responsibilities allocated to the site management team.

## 5.0 ASSESSMENT OF POTENTIAL ENVIRONMENTAL LIABILITIES

### 5.1 Best Case Scenario

In the best case scenario, the mitigation measures will succeed in preventing any environmental liability, so the cost to the operator will be zero.

### 5.2 Worst Case Scenario

In the worst case scenario, a fatality could occur on site, most likely due to impact with a vehicle or an item of mobile plant. This is expected to incur a cost of up to €1,000,000.

depending on the estimated loss associated with the potential future earnings of the individual. With full mitigation in place, the likelihood of occurrence of such a tragic event is considered low (<10% in 30 year period).

The possibility that 2 people could be struck and killed by an item of mobile plant, such as a reversing front loading shovel cannot be ruled out. The likelihood of occurrence of this event is considered to be less than 1% in a 30 year period and would be expected to incur costs of up to €2 million. The operator must have sufficient insurance to cover this eventuality, as a minimum.

The other risk with a very high severity relates to a spill of 70,000 litres of diesel reaching the gravel aquifer and requiring a major clean-up. We estimate that such an event could cost €100,000 or more to resolve. The probability of such an event is low as the diesel tank is contained in a mass concrete bund and the site operator, if vigilant, will have the opportunity to hold the diesel within the yard, even if the wall of the bund is breached.

There is currently a high risk of a spill of the 2,500 litre gas-oil tank located in the Maintenance Shed and such an event is likely to cost in excess of €10,000 to resolve. We include recommended mitigation measures in this report, that would reduce the probability of occurrence of this event from high to low.

### 5.3 Most Likely Scenario

The most likely scenario is based on the median probability and severity for each risk after implementation of the Risk Management Programme as shown in Table 5-1 below.

**Table 5-1  
Most Likely Scenario**

	Risk Identification	Occurrence Rating	Probability	Severity Rating	Cost Range	Median Probability	Median Severity	Most Likely Scenario Cost
1	Excessive dust emissions	2	5-10%	3	€10,000 - 50,000	7.5%	€30,000	€2,250
2	Excessive noise emissions	2	5-10%	4	€50,000 - 100,000	7.5%	€75,000	€5,625
3	Contamination from non-inert non-compliant waste	2	5-10%	3	€10,000 - 50,000	7.5%	€30,000	€2,250
4	Diesel tank leak or spillage	2	5-10%	5	€100,000 - 150,000	7.5%	€125,000	€9,375
5	Other hydrocarbon spill (maintenance shed)	2	5-10%	3	€10,000 - 50,000	7.5%	€30,000	€2,250
6	Employee or visitor struck by vehicles or plant	2	5-10%	5	€100,000 - €1m	7.5%	€550,000	€41,250
7	Employee contact with hazardous materials	1	0-5%	2	€1,000 - €10,000	2.5%	€5,000	€138

	<b>Total</b>	<b>€63,138</b>
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## 6.0 CONCLUSIONS

In consideration of the worst case scenario, we recommend that the site operator should have the following insurances in place as a minimum:

- Employers Liability – indemnified for at least €2 million (preferably higher).
- Public Liability – indemnified for at least €2 million (preferably higher).

In addition, the worst case scenario could incur environmental clean-up costs of c.€100,000, relating to a major uncontrolled diesel spill that reaches the gravel aquifer. However, the probability of such an occurrence is considered low (5% to 10% in a 30 year period).

The 'Most Likely Scenario', as detailed in Table 5-1 above, incurs an estimated cost of €63,138. The calculations used for this estimate, assume that all mitigation measures are in place and are maintained. The company must install the hydrocarbon interceptor in the concrete production yard, must improve the bunding and protection of the gas-oil tank in the Maintenance Shed and must properly maintain all mitigation infrastructure for this scenario to be realised. Otherwise the probability of occurrence of the identified risks are increased and the potential financial liability also increased.

Items No.6 and No.7 on Table 5-1 above should be covered by Employee Liability and Public Liability insurance.

Provision should be made by Roadstone Wood to cover the other items (No.1 to No.5 incl.) on Table 5-1 and these would incur an estimated cost of €21,750. In addition, the company should provide for any excess included in the insurance policies.

Roadstone Wood is part of the CRH Group of companies and is clearly in a strong position to offer a 'Parent Company Guarantee' to cover the risks identified above.



[Guidance to completing the PRTR workbook](#)

# AER Returns Workbook

Version 1.1.13

<b>REFERENCE YEAR</b>	2011
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## 1. FACILITY IDENTIFICATION

Parent Company Name	Roadstone Wood Limited
Facility Name	Fassaroe Waste Recovery Facility
PRTR Identification Number	W0269
Licence Number	W0269-01

Waste or IPPC Classes of Activity

No.	class_name
4.4	Recycling or reclamation of other inorganic materials.

Address 1	Fassaroe Avenue
Address 2	Fassaroe
Address 3	Bray
Address 4	
	Wicklow
Country	Ireland
Coordinates of Location	-6.14849423945 53.204259
River Basin District	IEEA
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
<b>AER Returns Contact Name</b>	Colin Doyle
<b>AER Returns Contact Email Address</b>	cdoyle@roadstonewood.ie
<b>AER Returns Contact Position</b>	Environmental Liason Officer
<b>AER Returns Contact Telephone Number</b>	01-4041394
<b>AER Returns Contact Mobile Phone Number</b>	087-2924666
<b>AER Returns Contact Fax Number</b>	01-4036422
<b>Production Volume</b>	0.0
<b>Production Volume Units</b>	
<b>Number of Installations</b>	0
<b>Number of Operating Hours in Year</b>	0
<b>Number of Employees</b>	0
<b>User Feedback/Comments</b>	
<b>Web Address</b>	

## 2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General

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

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

4.1 RELEASES TO AIR

[Link to previous years emissions data](#)

**SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS**

POLLUTANT		METHOD			QUANTITY			
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

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

**SECTION B : REMAINING PRTR POLLUTANTS**

POLLUTANT		METHOD			QUANTITY			
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

\* 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)**

POLLUTANT		METHOD			QUANTITY			
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

\* 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:

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

4.2 RELEASES TO WATERS

[Link to previous years emissions data](#)

| PRTR# : W0269 | Facility Name : Fassaroe Waste Recovery Facility | Filename : W0269-01 PRTR Fassaroe 2011 (3).xls | Return Year : 2011 |

21/06/2012 14:18

**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 only concerns Releases from your facility

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT		Method Used			QUANTITY			
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		Method Used			QUANTITY			
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		Method Used			QUANTITY			
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# : W0269 | Facility Name : Fassaroe Waste Recovery Facility | Filename : W0269-01 PRTR

21/06/2012 14:18

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

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

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

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

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

4.4 RELEASES TO LAND

[Link to previous years emissions data](#)

| PRTR# : W0269 | Facility Name : Fassaroe Waste Recovery Facility | Filename : W0269-01 PRTR Fassaroe 2011 (3).xls | Return Year : 2011 |

21/06/2012 14:18

**SECTION A : PRTR POLLUTANTS**

RELEASES TO LAND			Please enter all quantities in this section in KGs					
POLLUTANT		METHOD		QUANTITY				
No. Annex II	Name	M/C/E	Method Code	Method Used	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				
Pollutant No.	Name	M/C/E	Method Code	Method Used	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#: W0269 | Facility Name : Fassaroe Waste Recovery Facility | Filename : W0269-01 PRTR Fassaroe 2011 (3).xls | Return Year : 2011 |

21/06/2012 14:18

Please enter all quantities on this sheet in Tonnes

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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	Haz Waste: Address of Next Destination Facility	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		Non	Non Haz Waste: Address of Recover/Disposer		
Within the Country	13 02 08	Yes	0.984	other engine, gear and lubricating oils	R9	C	Volume Calculation	Offsite in Ireland	ENVA,184-1	Clonminam Industrial Estate,Portlaoise,,County Laoise,Ireland	ENVA,184-1,Clonminam Industrial Estate,Portlaoise,,County Laoise,Ireland	Clonminam Industrial Estate,Portlaoise,,County Laoise,Ireland
Within the Country	20 03 01	No	5.84	mixed municipal waste	D13	M	Weighed	Offsite in Ireland	Greyhound Recycling & Recovery,W0205-01	Crag Avenue,Clondalkin Industrial Estate,Clondalkin ,Dublin 22,Ireland		

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

[Link to previous years waste data](#)

[Link to previous years waste summary data & percentage change](#)