

**Annual Environmental
Report 2011**

**Enva Ireland Ltd.
Raffeen Ind. Est.
Co. Cork**

W0145-02

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Introduction

Enva Ireland Ltd is a wholly owned subsidiary company of DCC's Environmental Division.

The following Annual Environmental Report (AER) is for the period January 2011 to December 2011 for Enva Ireland Ltd, Raffeen Industrial Estate, Ringaskiddy Road, Monkstown, Co. Cork. This is a summary report on all aspects of the site's environmental performance for the given period and has been prepared as per Condition 11.8 outlined in the Waste Licence (Register No. W0145-02) and the EPA document, "IPC Guidance Note For Annual Environmental Report".

Enva Ireland Ltd is fully committed to the continuous improvement requirement of the waste licencing process and is proactive in relation to Environmental Management. Enva is registered to the ISO 14001 Environmental Management System Standard. Enva's environmental management system was certified during 2007 and was re-audited in June 2011.

Site Description

The company is located in Raffeen Industrial Estate, Ringaskiddy Road, Co. Cork, and is currently the sole occupant of the industrial estate. The facility is licensed to operate a waste transfer station as well as acceptance and treatment of healthcare waste. To date no healthcare waste has been accepted and there are no immediate plans to do so. The acceptance of solid oily ceased during 2011, only waste oil and waste batteries were accepted on-site throughout 2011.

The facility also carries on activities that do not require an EPA license, principally the provision of water treatment products and associated services to various industries. These activities include storage and formulation of water treatment products as well as laboratory activities.

The licensed activity is the transfer of waste materials, to date the only waste activities taking place are the transfer of waste oil and batteries to our Enva Portlaoise site. During 2011 there was a load of waste batteries exported directly to Campine in Belgium. All operations are contained inside the main building, tank farm and warehouse which are all bundled.

Waste Management Activities at the Facility.

At present the licensed activities taking place are the transfer of waste oil and batteries to our Enva Portlaoise site. Waste oil and batteries are collected by Enva Portlaoise at local garages etc and delivered to the Cork site. The waste oil is offloaded into tanks and bulked up, the waste batteries are off loaded and placed in a designated bund. The waste oil and batteries are collected and transported to Enva Portlaoise.

Waste Data

Details of waste oil and batteries accepted by Enva Ireland Ltd at the Cork facility during the reporting period including European Waste Catalogue (EWC) Code, Waste Quantities and location of transfer are presented below.

Waste Type	Max. Quantity per annum (Tonnes)	Quantity of Waste Oil in 2011 (Tonnes) EWC 130208	Quantity of Waste Batteries in 2011 (Tonnes) EWC 160601
Hazardous Waste	5,000	1999.48	56.44

MONITORING AND EMISSIONS SUMMARY

PRTR

Enva Ireland Ltd have looked in detail at the new guidelines for PRTR. At present our facility activities do not release any emissions to the air, waters or land. Enva do not have a sewer and do not have any wastewater going to sewer. Enva Ireland Ltd operations act as a transfer station for waste oil and batteries to our Portlaoise site. There is no treatment of any wastes on site. See attached completed PRTR in relation to the transfer of waste oil and batteries to our Portlaoise site. (See attached appendix A)

NOISE

In accordance with license requirements and discussions with the EPA, Enva carried out a baseline noise survey early in 2007 prior to commencement of licensed activities. There were some difficulties in carrying this out as an anticipated calm period between completion of site construction activities and occupation of the offices and building did not arise. Nonetheless, the baseline report gives an indication of general noise levels in the area in the absence of Enva's activities.

Noise monitoring during Enva activities was again carried out in December 2011 and the report draws comparisons with the earlier baseline study. This report is set out in Appendix B.

Enva's activities do not significantly impact on noise levels in the area. Noise at the site and at nearest noise sensitive locations are dominated by the heavy traffic from the nearby N28 road.

STORMWATER

A daily inspection of the stormwater is carried out as per license condition 6.11.1. Stormwater analysis is carried out on a weekly and monthly basis as per licence condition C.2.3. It was agreed after the EPA audit in July 2007 to put a sampling point after the interceptor. The sampling point was put in place and stormwater sampling is carried out at this point. There were no exceedances during the reporting period, results obtained from the analysis were all within licence limits.

Enva Storm water analysis for 2011

Sample Date	Flow	PH	Cond.	SS	Mineral Oil
04.01.11	No Flow	N/A	N/A	N/A	N/A
10.01.11	Flow	6.96	154.1	260	<0.01
17.01.11	No Flow	N/A	N/A	N/A	N/A
24.01.11	No Flow	N/A	N/A	N/A	N/A

Sample Date	Flow	PH	Cond.	SS	Mineral Oil
04.02.11	Flow	7.446	461	285	0.398
07.02.11	No Flow	N/A	N/A	N/A	N/A
18.02.11	Flow	7.98	70.2	54	N/A
21.02.11	Flow	7.253	156.6	165	N/A
28.02.11	No Flow	N/A	N/A	N/A	N/A
07.03.11	No Flow	N/A	N/A	N/A	N/A
14.03.11	No Flow	N/A	N/A	N/A	N/A
21.03.11	No Flow	N/A	N/A	N/A	N/A
28.03.11	No Flow	N/A	N/A	N/A	N/A
04.04.11	Flow	7.722	145.9	256	N/A
11.04.11	Flow	7.452	109.2	152	<0.01
18.04.11	No Flow	N/A	N/A	N/A	N/A
25.04.11	No Flow	N/A	N/A	N/A	N/A
02.05.11	Flow	7.106	84.2	63	<0.01
09.05.11	Flow	7.842	127.6	98	N/A
16.05.11	No Flow	N/A	N/A	N/A	N/A
23.05.11	No Flow	N/A	N/A	N/A	N/A
30.05.11	No Flow	N/A	N/A	N/A	N/A
06.06.11	No Flow	N/A	N/A	N/A	N/A
14.06.11	Flow	6.988	98.3	49	<0.01
20.06.11	Flow	6.734	156.7	67	N/A
26.06.11	No Flow	N/A	N/A	N/A	N/A
04.07.11	Flow	7.148	92.8	35	<0.01
11.07.11	No Flow	N/A	N/A	N/A	N/A
19.07.11	No Flow	N/A	N/A	N/A	N/A

Sample Date	Flow	PH	Cond.	SS	Mineral Oil
26.07.11	No Flow	N/A	N/A	N/A	N/A
02.08.11	Flow	7.286	136.8	48	<0.01
10.08.11	Flow	7.941	92.6	32	N/A
15.08.11	Flow	8.123	78.7	41	N/A
24.08.11	Flow	7.772	92.6	56	N/A
30.08.11	No Flow	N/A	N/A	N/A	N/A
06.09.11	Flow	7.237	132.5	87	<0.01
16.09.11	Flow	7.393	82.6	45	N/A
21.09.11	Flow	7.562	92.8	39	N/A
28.09.11	Flow	6.991	102.9	62	N/A
05.10.11	Flow	7.158	94.3	54	<0.01
14.10.11	Flow	7.356	132.4	68	N/A
22.10.11	Flow	7.983	76.2	78	N/A
29.10.11	Flow	7.426	54.1	16	N/A
03.11.11	Flow	7.691	86.2	47	<0.01
11.11.11	Flow	7.36	114.9	64	N/A
16.11.11	Flow	6.832	72.1	22	N/A
21.11.11	Flow	7.026	145.1	96	N/A
28.11.11	Flow	7.13	99.1	68	N/A
06.12.11	No Flow	N/A	N/A	N/A	N/A
13.12.11	Flow	7.262	76.8	19	<0.01
19.12.11	Flow	6.931	72.1	32	N/A

GROUNDWATER

Ground water monitoring and sampling was carried out by URS on the 22nd of June 2011
The groundwater monitoring report can be seen in Appendix C.

PROCEDURES & MANAGEMENT SYSTEMS

Enva Ireland Ltd is certified to the ISO 14001 environmental management system. During 2007 Enva obtained the certification as part of group harmonisation of health, safety and environmental (HSE) management across the four Enva sites in the Republic. Enva Ireland sites are also certified for safety management standard OHSAS 18001. Enva Ireland Ltd Cork operations are also ISO 9001:2008 accredited. The site CRAMP and ELRA are set out in Appendix E and F respectively.

In September of 2011 Enva Ireland Ltd, were granted INAB accreditation to extend the scope from the existing microlab to include the waste water treatment laboratory.

INCIDENTS & COMPLAINTS

There were no incidents or complaints against Enva in 2011. No license non-compliances were noted by Enva or the EPA during the same period.

EMP / OBJECTIVES & TARGETS

A programme of environmental objectives and targets was agreed with the Agency during 2007 in accordance with license requirements. It addresses a five year period and forms an integral component of Enva's environmental management system.

A report on progress towards achieving the programme's objectives and targets is set out in Appendix D.

SITE DEVELOPMENTS & BUND INTEGRITY

Waste license W0145-02 was awarded to Enva Ireland Ltd in 2006 and the existing site premises was consequently redeveloped in accordance with the license. This involved extension of the existing building, installation of a bunded tank-farm, installation of internal bunded areas, offices, laboratory facilities, hard-standing area for traffic, weighbridge, diversion tank, oil interceptor, drainage and associated services. These works were completed in early 2007 prior to commencement of licensed activities. In 2011 all bunds were retested. One internal bund failed, repair works were carried out and then passed the inspection. The test bund report is set out in Appendix G.

REVIEW OF NUISANCE CONTROLS

Odour and dust are monitored daily as required by the licence. In 2011 there has been no evidence of odour or dust recorded of any significance on the site. Vermin nuisance are controlled by an external contractor and are monitored at regular intervals.

RESOURCE CONSUMPTION

In 2011 the main source of fuel usage is by company vehicles. All electricity and water consumption are being recorded monthly and data will be reviewed against 2010 data at the management review.

APPENDIX A



Environmental Protection Agency

| PRTR# : W0145 | Facility Name : Enva Ireland Ltd | Filename : W0145_2011(1).xls | Return Year : 2011 |

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.13

REFERENCE YEAR	2011
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1. FACILITY IDENTIFICATION

Parent Company Name	Enva Ireland Limited
Facility Name	Enva Ireland Ltd
PRTR Identification Number	W0145
Licence Number	W0145-02

Waste or IPPC Classes of Activity

No.	class name
4.13	Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.
3.11	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.12	Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.
3.13	Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.
3.7	#####

Address 1	Unit 9
Address 2	Raffeen Industrial Estate
Address 3	Raffeen
Address 4	Monkstown, Cork
	Cork
Country	Ireland
Coordinates of Location	-8.36503 51.8335
River Basin District	IESW
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	Jamie Barry
AER Returns Contact Email Address	jbarry@enva.ie
AER Returns Contact Position	Senrio Supervisor of Operations
AER Returns Contact Telephone Number	0214387220
AER Returns Contact Mobile Phone Number	0862607472
AER Returns Contact Fax Number	0214387299
Production Volume	0.0
Production Volume Units	0
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	0
User Feedback/Comments	

Web Address

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
5(a)	Installations for the recovery or disposal of hazardous waste
5(c)	Installations for the disposal of non-hazardous waste

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

Is it applicable?	
Have you been granted an exemption ?	
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4.1 RELEASES TO AIR

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT	M/C/F	Method Code	Method Used	QUANTITY		
				T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex I			Designation of Description	0.0	0.0	0.0
Emission Point 1				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	M/C/F	Method Code	Method Used	QUANTITY		
				T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex I			Designation of Description	0.0	0.0	0.0
Emission Point 1				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	M/C/F	Method Code	Method Used	QUANTITY		
				T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex I			Designation of Description	0.0	0.0	0.0
Emission Point 1				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 (Total) KG/yr for Section A. Sector specific: PRTR pollutants above. Please complete the table below:

Landfill:	M/C/F	Method Code	Method Used	Designation or Description	Facility Total Capacity m3 per hour
Erva Ireland Ltd					
Total estimated methane generation (as per site model)	0.0				N/A
Methane flared	0.0				0.0
Methane utilised in engine/s	0.0				0.0
Net methane emission (as reported in Section A above)	0.0				0.0 (Total Flaring Capacity) 0.0 (Total Utilising Capacity)

4.2. RELEASES TO WATERS [Link to previous years emissions data](#)

| PRTR# : W0145 | Facility Name : Enva Ireland Ltd | Filename : W0145_2011(1).xls | Return Year : 2011 |

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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 o

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO WATERS									
No.	Pollutant Name	M/C/E	Method Code	Method Used	Description of Discharge	Emission Point 1	QUANTITY		
							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

RELEASES TO WATERS									
No.	Pollutant Name	M/C/E	Method Code	Method Used	Description of Discharge	Emission Point 1	QUANTITY		
							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)

RELEASES TO WATERS									
No.	Pollutant Name	M/C/E	Method Code	Method Used	Description of Discharge	Emission Point 1	QUANTITY		
							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

4.3 RELEASES TO WASTEWATER OR SEWER

[Link to previous years emissions data](#)

| PRTR# : W0145 | Facility Name : Enviro Ireland Ltd | Filename : W0145_2011(1).xls | Return Year :

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SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
Pollutant Name	M/C/E	Method Code	Method Used	Description of Description	Emission Point 1	QUANTITY			
						T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	F (Fugitive) KG/Year
						0.0	0.0	0.0	0.0

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

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

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER									
Pollutant Name	M/C/E	Method Code	Method Used	Description of Description	Emission Point 1	QUANTITY			
						T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) 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

[Link to previous years emissions data](#)

4.4 RELEASES TO LAND

SECTION A : PRTR POLLUTANTS

POLLUTANT		METHOD		QUANTITY	
No. Annex II	Name	W/P	Method Code	T (Total) KG/Year	A (Accidental) KG/Year
			Disposal to Land	0.0	0.0
			Disposal to Land	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)

POLLUTANT		METHOD		QUANTITY	
Pollutant No.	Name	W/P	Method Code	T (Total) KG/Year	A (Accidental) KG/Year
			Disposal to Land	0.0	0.0
			Disposal to Land	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#: W0145 | Facility Name : Envva Ireland Ltd | Filename : W0145_2011(1).xls | Return Year : 2011]
 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	Licence/Name and Destination Facility Licence/Name and Licence/Permit No of Recover/Disposer	Site Waste - Address of Next Destination Facility Non-Haz Waste: Address of Recover/Disposer	Name and License/ Permit No. and Address of Final Receiver / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery/Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	16 05 01	Yes	26.58	lead batteries	R13	M	Weighted	Abroad	Envva Ireland Ltd., W0184-01	Cloominam Industrial Estate, Portlaoise, Laois, Ireland	Envva Ireland Ltd., W0184-01, Cloominam Industrial Estate, Portlaoise, Laois, Ireland	Envva Ireland Ltd., W0184-01, Cloominam Industrial Estate, Portlaoise, Laois, Ireland
To Other Countries	16 05 01	Yes	29.86	lead batteries	R4	M	Weighted	Abroad	Campine Recycling NV, Licence number is 0474955451	Niiverheidsstraat 2 B - 2340, BEERSE, Belgium	Campine Recycling NV, Licence number is 0474955451, Niiverheidsstraat 2 B - 2340, BEERSE, Belgium	Niiverheidsstraat 2 B - 2340, BEERSE, Belgium
Within the Country	13 02 08	Yes	1999.48	other engine, gear and lubricating oils	R9	M	Weighted	Offsite in Ireland	Envva Ireland Ltd., W0184-01	Envva Ireland Ltd., W0184-01, Cloominam Industrial Estate, Portlaoise, Laois, Ireland	Envva Ireland Ltd., W0184-01, Cloominam Industrial Estate, Portlaoise, Laois, Ireland	Envva Ireland Ltd., W0184-01, Cloominam Industrial Estate, Portlaoise, Laois, Ireland

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

APPENDIX B



ANTARIS

GUIDANCE | COMPLIANCE | TRUST

ENVIRONMENTAL NOISE REPORT

Title of Report: Environmental Noise Report
Client: Enva Ringaskiddy
Date: 22nd December 2011
TMS Ref. No: 11176 Rev. 0
Written by: Jonathan Daly **Approved by:** Gerry Higgins



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1.0 INTRODUCTION

Antaris Consulting Ltd. was requested by Enva to measure environmental noise levels at its premises in Ringaskiddy, Co. Cork. These surveys were carried as a requirement of Enva's waste licence W0145-02 and were performed in conformance with with BS 7445/ISO 1996 "Description and Measurement of Environmental Noise" and EPA Guidance notes for "Environmental Noise Survey Guidance".

2.0 PROCEDURE

Daytime noise measurements were made at four locations around the site and one at a neighbouring noise-sensitive location on 22nd December 2011 to assess environmental noise levels. The weather conditions were damp and cold, with light precipitation and a breeze of 0-1 m/s from the southeast.

The instrumentation employed for the noise measurements was a Bruel and Kjaer Modular Precision Sound Analyzer Type 2250 (serial number 2580079) and Type 4950 ½" free-field microphone (serial number 2585842).

The SLM was calibrated using a Bruel and Kjaer Sound Calibrator Type 4231 (serial number 2507025). Measurements were performed at the specified locations over a 30-minute period.

Measurements were taken at the following locations:

- N1 – The northern site boundary, approximately 300m from the N28
- N2 – The western site boundary, approximately 200m from N28
- N3 – The southern site boundary, approximately 100m from N28
- N4 – The eastern site boundary, approximately 200m from N28
- N5 – The nearest occupied residence, adjacent N28 and approximately 300m southeast of the southern site boundary

3.0 RESULTS

Waste licence W0145-02 stipulates the measurement of L_{Aeq} , L_{A10} and L_{A90} over a 30-minute period at 5 locations with a daytime L_{Aeq} limit of 55dB(A).

L_{Aeq} (continuous equivalent A-weighted sound pressure level) the key measurement determining the impact of noise levels on the human ear.

Table 1. Environmental noise measurements at Enva.

Location	L_{eq} dB(A)	L_{10} dB(A)	L_{90} dB(A)	Comments
N1	59.0	61.0	59.0	Traffic on the N28 was the main noise source. Some on site traffic.
N2	63.4	66.2	55.8	Traffic on the N28 was the main noise source. Some site traffic.
N3	63.3	66.0	54.6	Traffic on the N28 was the main noise source. Some truck activity on site.
N4	60.7	61.0	49.6	Traffic on the N28 was the main noise source. Some site traffic.
N5	74.7	79.2	55.4	Traffic on the N28 was the main noise source. No site noise audible.

N1 recorded a L_{Aeq} of 59.0 dB(A), with a L_{A90} of 59.0 dB(A). Road traffic was the main noise source.

N2 recorded a L_{Aeq} of 63.4 dB(A), with a L_{A90} of 55.8 dB(A). Road traffic was the main noise source.

N3 recorded a L_{Aeq} of 63.3 dB(A), with a L_{A90} of 54.6 dB(A). Road traffic was the main noise source.

N4 recorded a L_{Aeq} of 60.7 dB(A), with a L_{A90} of 49.6 dB(A). Road traffic was the main noise source.

N5 recorded a L_{Aeq} of 78.7 dB(A), with a L_{A90} of 55.4 dB(A). Road traffic was the main noise source.

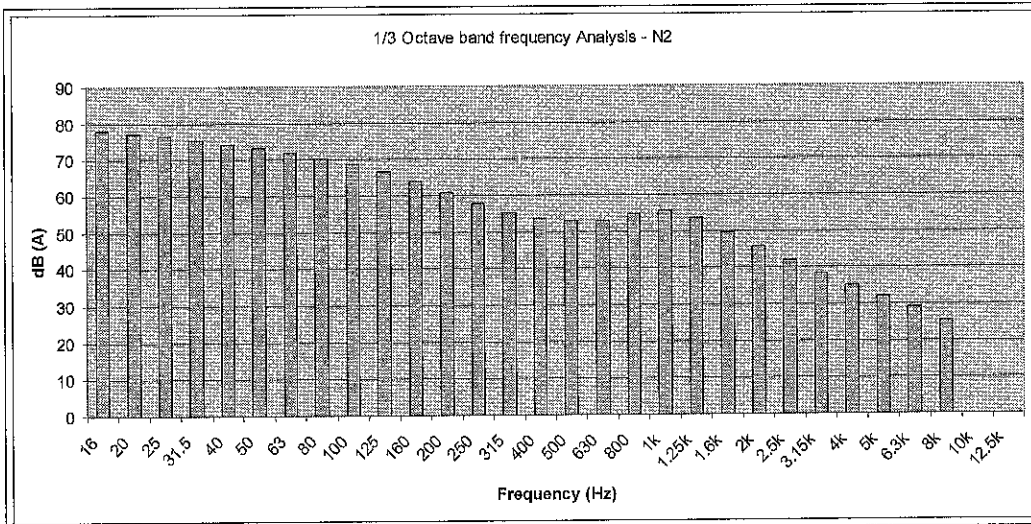
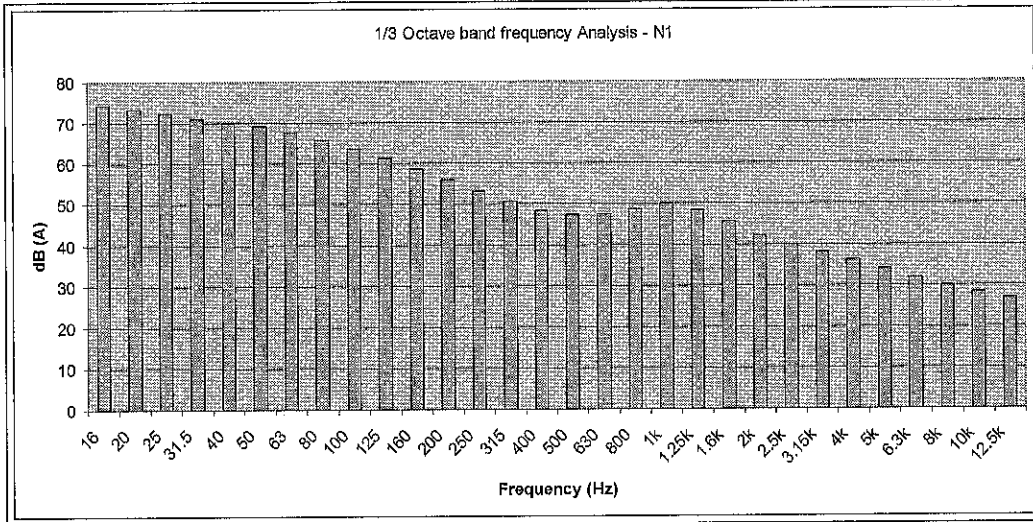
4.0 CONCLUSIONS

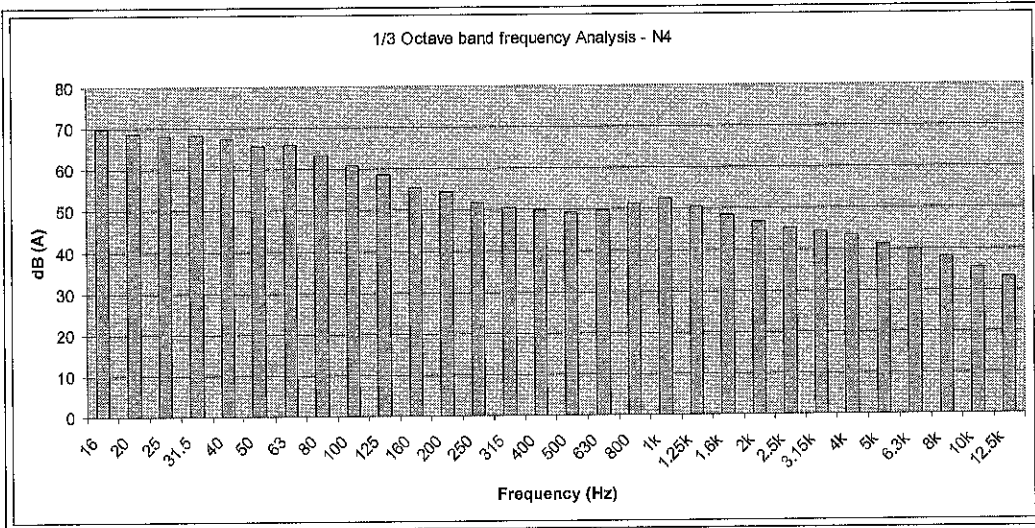
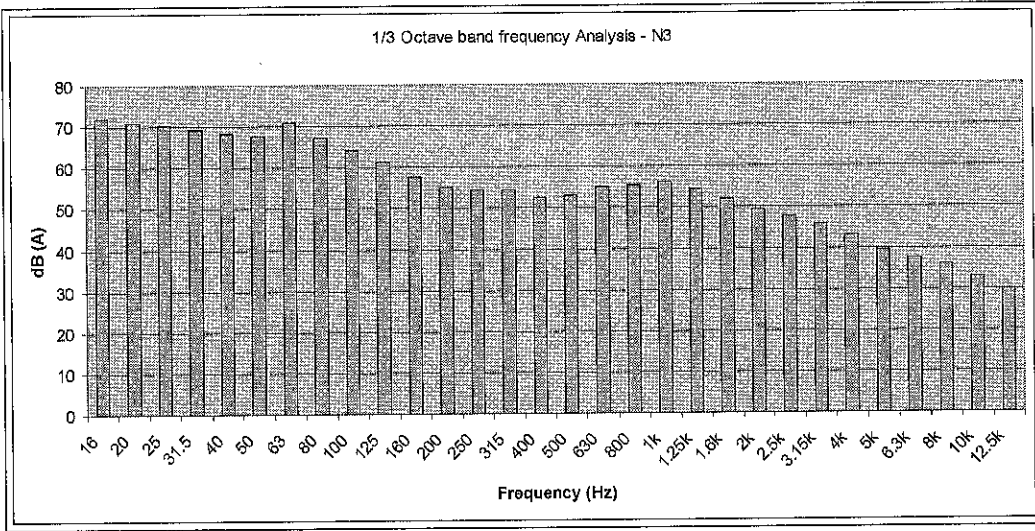
Measurements at all five monitoring locations were in excess of the daytime limit of 55 dB(A). Traffic on the nearby N28 was the main source of noise at all five monitoring locations, with the only observable noise being generated on site coming from occasional vehicular movements. As a consequence, site-generated noise nuisance is not considered to be significant.

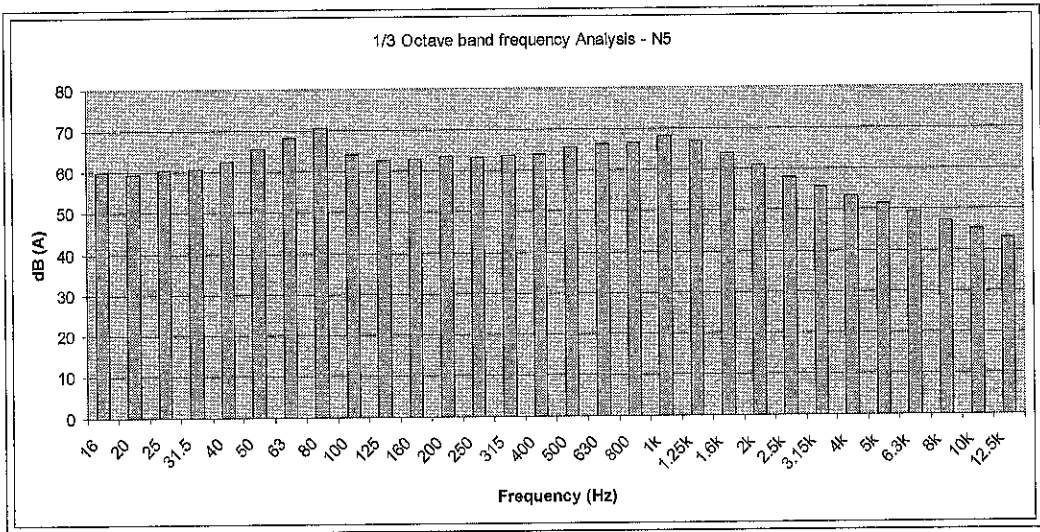
The 1/3 Octave band frequency analysis did not reveal tonal components at any of the monitoring locations (see Appendix 1), nor was any impulsive noise observed during monitoring.

APPENDIX 1

1/3-Octave band frequency Analysis







APPENDIX 2
Instrument Calibration Certificate

CERTIFICATE OF CALIBRATION

No: CH04226

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CALIBRATION OF

Sound Level Meter:	Brüel & Kjær Type 2250 Light	No: 2580079	Id: -
Microphone:	Brüel & Kjær Type 4950	No: 2585842	
Preamplifier:	Brüel & Kjær Type ZC-0032	No: 6126	
Supplied Calibrator:	None		
Software version:	BZ7130 Version 2.6	Pattern Approval:	PENDING
Instruction manual:	BE-1774-11		

CUSTOMER

Byrne Environmental Consulting Ltd
35 Jamestown Park
Ratoath
Co. Meath, Ireland

CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23°C ± 3°C
Environment conditions: *See actual values in Environmental conditions sections.*

SPECIFICATIONS

The Sound Level Meter Brüel & Kjær Type 2250 Light has been calibrated in accordance with the requirements as specified in IEC 61672-3:2006 class 1. Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 4.3 - DB: 4.50) by using procedure 2250-L-4950.

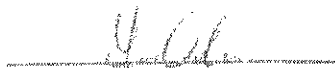
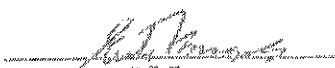
RESULTS

Calibration Mode: **Calibration after repair/adjustment.**

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of calibration: 2011-05-31

Date of issue: 2011-05-31


Steen Vodstrup Andersen
Calibration Technician
Erik Braus
Approved Signatory

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APPENDIX C



**Enva Ireland Ltd., Raffeem
Industrial Estate, Cork**



**Groundwater Monitoring
2011**

19 September 2011
Final

Issue No 2
46402507 / DURP0003

Project Title: Enva Ireland Ltd., Raffeen Industrial Estate, Cork
Report Title: Groundwater Monitoring 2011
Project No: 46402507
Report Ref: DURP0003
Status: Final
Client Contact Name: Colette Horgan
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Document Production / Approval Record

Issue No:	Name	Signature	Date	Position
2				
Prepared by	Ellis Finnegan		19 September 2011	Senior Environmental Scientist
Checked & Approved by	Clare Glanville		19 September 2011	Principal Environmental Engineer

Document Revision Record

Issue No	Date	Details of Revisions
1	26 July 2011	Original issue
2	19 September 2011	Final issue

1. INTRODUCTION

URS Ireland Ltd. (URS) is pleased to present this report to Enva Ireland Ltd (Enva) for the 2011 groundwater monitoring round conducted at the Enva Facility, Unit 9, Raffeon Industrial Estate, Ringaskiddy, Co.Cork (the site). Works were completed in accordance with URS Proposal No. 03089793 entitled 'Groundwater Monitoring 2011' and dated 20 May 2011. A site location plan is presented in Figure 1.

Under the terms of the site's Waste Licence (W0145-02), Enva is required to undertake annual groundwater monitoring of four groundwater wells (BH1, BH2, BH3 and BH4) for a range of organic and Inorganic parameters. A site layout plan showing borehole locations is presented in Figure 2.

Groundwater monitoring was conducted on 22 June 2011.

2. SCOPE OF WORKS

The following scope of work was completed on 22 June 2011:

- Water level measurement at monitoring wells BH1, BH2, BH3 and BH4;
- Well purging and measurement of water quality parameters at each monitoring well; and
- Groundwater sampling and analysis from each monitoring well in accordance with Waste Licence monitoring requirements.

2.1 Water Level Measurement

At each well, an interface probe was used to monitor depth to groundwater and to assess the presence of free phase hydrocarbons.

2.2 Well Purging and Water Quality Measurements

Based on the reduced water levels, the volume of standing water in each well was calculated. A minimum of three times this volume of water was then purged from each well.

Water quality measurements were taken toward the end of purging, using a calibrated field meter contained in a flow-through cell. Purging continued until stable field measurements were recorded. Field measurements included pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh).

The monitoring wells were purged and sampled using dedicated in-situ inertial lift pumping equipment to minimise volatilisation and loss of volatile organic compounds (VOCs).

All measurements and details described above were recorded on site at the time of sampling in a dedicated field records notebook.

2.3 Groundwater Sampling

Groundwater samples were collected on 22 June 2011 from monitoring wells BH1, BH2, BH3 and BH4 and analysed for the Waste Licence monitoring parameters, as detailed in Appendix A and Table 1.

Groundwater samples were collected into laboratory-supplied sample containers. Samples were handled by field staff wearing single use, disposable nitrile gloves, which were changed between sampling locations to avoid cross-contamination.

Samples were labelled in the field and sample details were entered onto a chain of custody form. Whilst on-site and during transit, the samples were stored in chilled cool boxes.

The samples were sent by overnight courier to Jones Environmental Forensics Ltd., a URS approved laboratory, with UKAS accreditation for the analysis performed.

3. RESULTS

3.1 Groundwater Flow Direction

The direction of groundwater flow under natural gradient conditions is expected to follow the local topographic gradient towards the north-east, eventually discharging to Cork Harbour.

Water levels were gauged on 22 June 2011. Well head elevations and standing water level measurements were used to calculate water table elevations and infer groundwater flow pattern which is presented in Figure 3.

The inferred groundwater gradient is relatively flat with a slight gradient to the north east.

3.2 Field Observations

During groundwater sampling the following was noted:

- Groundwater was generally observed to be brown in colour and cloudy; and
- No evidence of contamination (such as sheens or odours) was noted during sampling.
- Field measurements of water quality parameters are tabulated in Table 2.

3.3 Data Assessment

3.3.1 Assessment Criteria

Assessment criteria were selected based on the site setting. The nearest surface water feature is the Glounatouig Stream located approximately 500m north of the site. This stream eventually flows into Cork Harbour at Monkstown Creek which is located approximately 750 m northwest of the site. The bedrock aquifer is classified by the Geological Survey of Ireland (GSI) ¹ as a 'locally important aquifer – bedrock which is generally moderately productive except for local zones - Karstified'. GSI records show that there are nine groundwater monitoring wells located in a 1 km radius of the site. Three of the wells are used for industrial purposes, while two are associated with the Raffeen landfill site. The use of the remaining four wells listed is unknown. Records indicate that there are no drinking water abstraction wells located in the vicinity of the site.

As such, given the above site setting, general groundwater quality was assessed by comparing analytical results to the following guidelines:

- European Communities Environmental Objectives (Groundwater) Regulations, 2010. Statutory Instrument No. 9 of 2010.

¹ www.gsi.ie

- European Communities Environmental Objectives (Surface Waters) Regulations, 2009. Statutory Instrument No. 272 of 2009; and
- Environmental Protection Agency's Draft Interim Guidelines Values (IGVs) for the Protection of Groundwater, 2003.

3.3.2 Analytical Results

Laboratory reports are presented in Appendix B. In addition, groundwater analytical results are presented in Tables 3, 4, 5 and 6. A summary of analytical results is presented below:

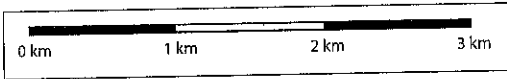
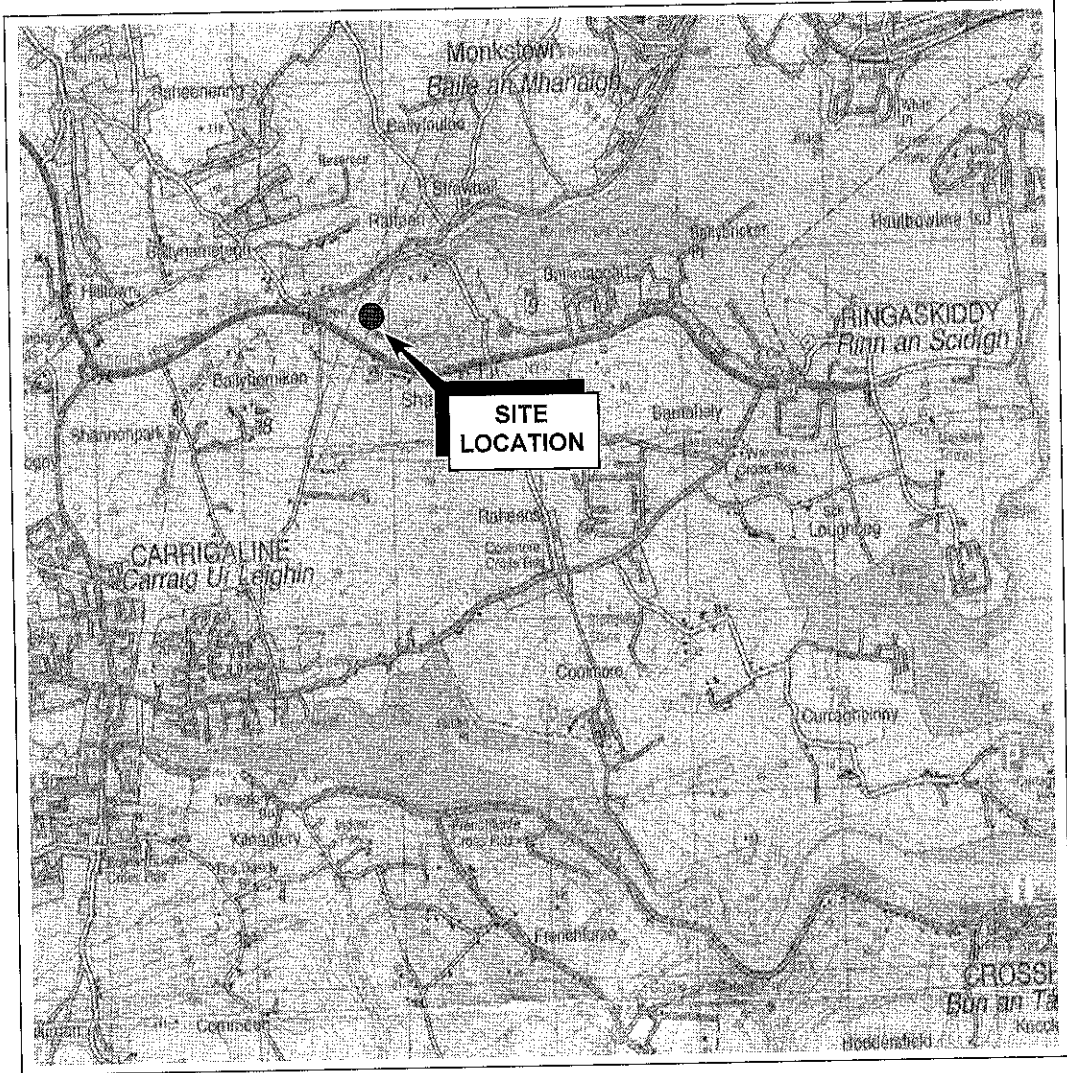
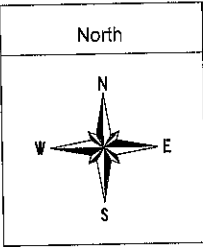
- VOCs were detected at trace concentrations (below assessment criteria) or below method detection limit (MDL) in all four samples collected;
- SVOCs were not detected (above the MDL) in all four samples collected;
- Mineral oil was not detected (above the MDL) in all four samples collected;
- Metals arsenic, boron, cadmium, chromium, copper, mercury, nickel and lead were not detected (above the MDL) in all four samples collected;
- Reported concentrations of selenium (detected at BH1) and iron (detected at BH1 and BH4) did not exceed adopted assessment criteria;
- Reported concentrations of zinc in groundwater samples collected from BH2, BH3 and BH4 exceeded assessment criteria. In addition, while manganese was not detected above MDL in samples collected from BH1, BH2 and BH3, a elevated concentration above assessment criteria was reported in the sample from BH3; and
- Reported concentrations of ammonium in groundwater samples collected from BH3 and BH4 marginally exceeded assessment criteria. All remaining major ion analytical data did not exceed adopted assessment criteria.

4. CONCLUSIONS

URS concludes the following based on the annual monitoring event conducted in June 2011:

- The inferred groundwater gradient is relatively flat with a slight gradient to the north east;
- VOCs, SVOCs and mineral oil were detected at trace concentrations (below assessment criteria) or below MDL in all four samples collected;
- Reported concentrations of heavy metals were generally low, with many not detected (above the MDL). Slightly elevated concentrations of zinc (at BH2, BH3 and BH4) and manganese (at BH3) exceeded adopted assessment criteria; and
- Reported concentrations of major ions were generally low with the exception of ammonium which was reported marginally above the adopted assessment criteria in groundwater samples collected from BH3 and BH4.

Figures



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CLIENT
Enva Ireland Ltd.

PROJECT LOCATION
Enva Rafeen, Ringaskiddy, Co. Cork

DRAWING TITLE
Figure 1 _ Site Location Map

ENVIRONMENTAL CONSULTANTS



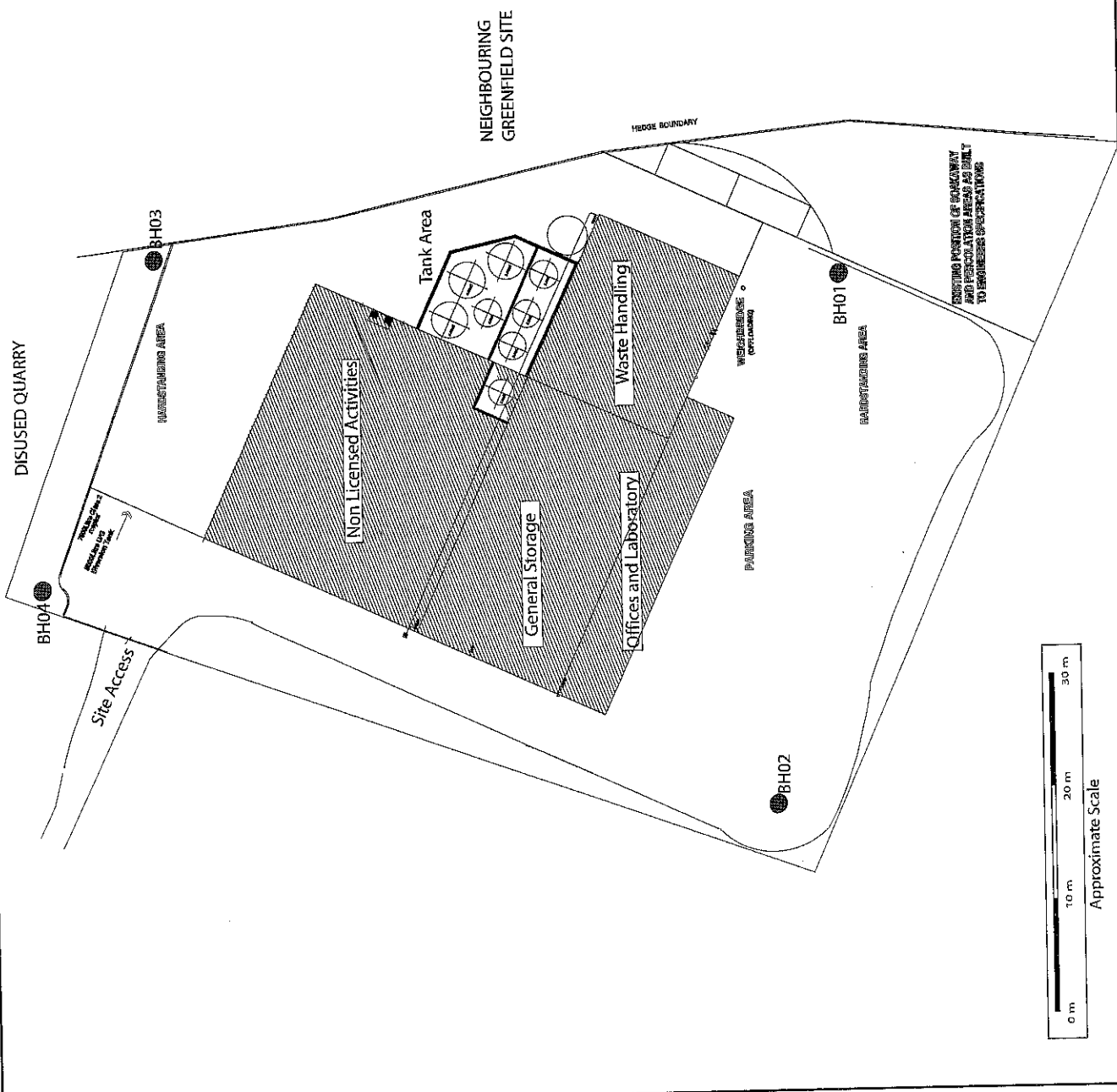
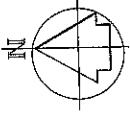
Iveagh Court, 6-8 Harcourt Road, Dublin 2
 TEL +353 1 4155100 FAX +353 1 4155101

DRAWN	TRACED	CHECKED	APPROVED	DATE
SML		EF	EF	19.07.11
SCALE	Job No.			REV.
1: 50,000	46402507			A

NOTES

Key

Monitoring Well Location and ID



STATUS

Final

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CLIENT

Enva Ireland Ltd.

PROJECT

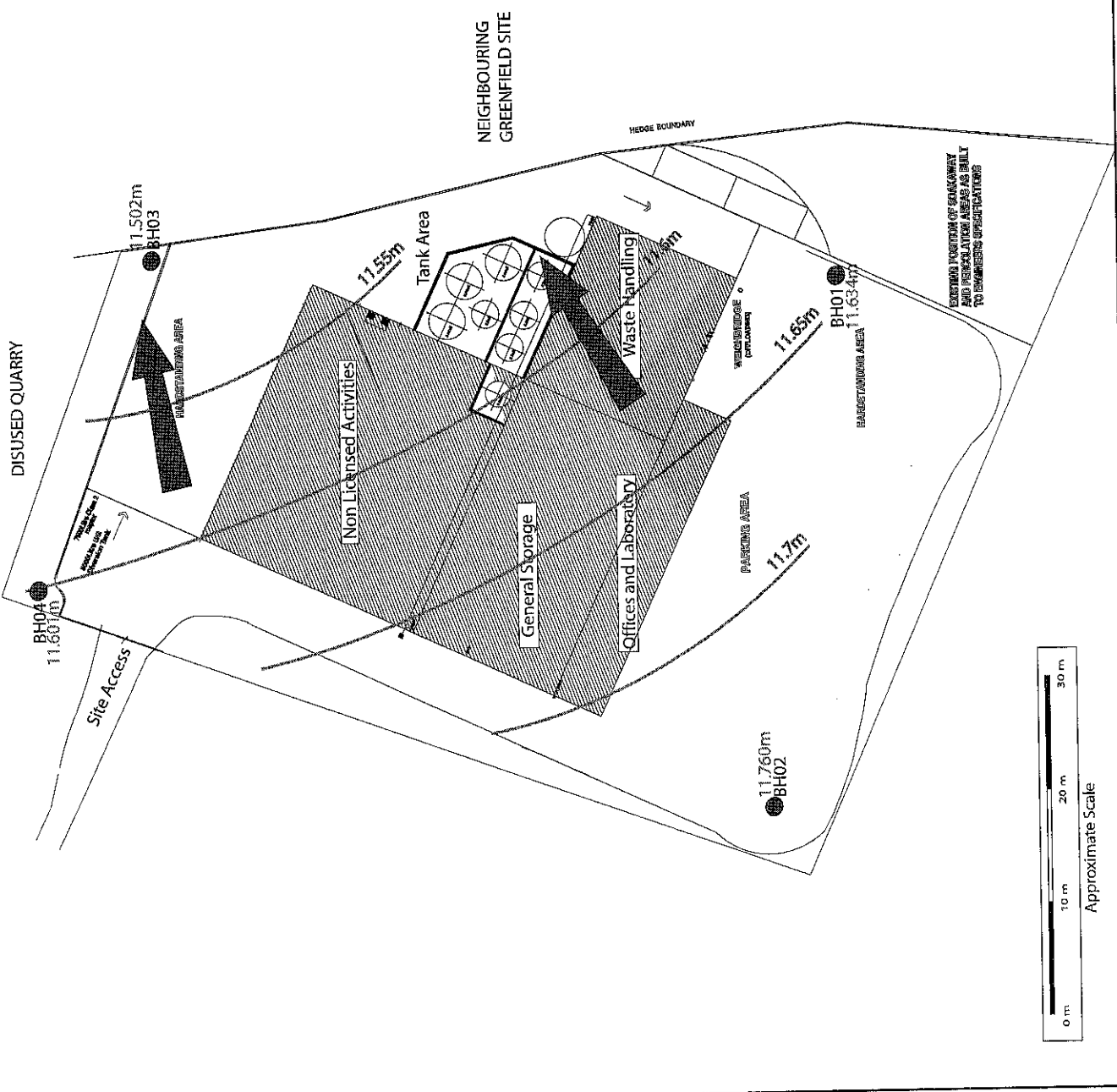
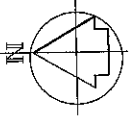
Enva Rafeen, Ringaskiddy, Co. Cork

DRAWING TITLE

Figure 2_ Site Layout Plan Showing Monitoring Well Locations

DRAWN	TRACED	CHECKED	APPROVED	DATE
SML	EF	EF	EF	21.07.11
SCALE	Job No: 46402507		REV	A
AS SHOWN				





NOTES

- Key
- Monitoring Well Location and ID
 - BH02
 - 13.20m
 - Groundwater Elevation Relative to Ordnance Datum
 - Groundwater Contour
 - 5.50m
 - Groundwater Flow Direction

STATUS
Final

ENVIRONMENTAL CONSULTANTS



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CLIENT
Enva Ireland Ltd.

PROJECT
Enva Rafeen, Ringskiddy, Co. Cork

DRAWING TITLE
Figure 3 _ Groundwater Contour Plan
22.05.2011

DRAWN	TRACED	CHECKED	APPROVED	DATE
SML	SML	EF	EF	21.07.11
SCALE	JOB NO: 46402507			REV
AS SHOWN				A

Tables

Table 1: Sample Inventory - Enva Rafeen, June 2011

Sampling Location	Field Parameters					Laboratory Parameters						
	pH	EC	Eh	T	DO	VOC	SVOC	COB	EPH & Mineral Oil	Total Ammonia	Heavy Metals	Major Ions
BH1	X	X	X	X	X	X	X	X	X	X	X	X
BH2	X	X	X	X	X	X	X	X	X	X	X	X
BH3	X	X	X	X	X	X	X	X	X	X	X	X
BH4	X	X	X	X	X	X	X	X	X	X	X	X

Notes:

- EC - Electrical Conductivity
- Eh - Redox Potential
- T - Temperature
- DO - Dissolved Oxygen

VOC - Volatile Organic Compounds

SVOC - Semi-volatile Organic Compounds

Major Ions - to include Calcium, Magnesium, Chloride, Sulphate, Potassium, Sodium, Bicarbonate, Nitrate, Nitrite, Phosphate & Fluoride

Table 2: Water Level and Field Measurements - Enva Rateen, June 2011

Sample Location	Sampling Date	SWL mSLD	Well Elevation mAOD	SWL mSLD	Total Depth m	Well Volume l	Minimum Purge Volume l	Actual Purge Volume l	pH	EC μ S/cm	Eh mV	T $^{\circ}$ C	DO mg/L	Observations
BH1	22-Jun-11	7.219	18.853	11.634	9.22	3.93	12	13	6.90	639	229	13.20	5.29	Cloudy brown water. NEC.
BH2	22-Jun-11	6.857	18.617	11.760	8.53	3.25	10	10	7.25	565	233	12.5	4.61	Slightly cloudy brown water. NEC.
BH3	22-Jun-11	7.340	18.842	11.502	9.90	4.83	14	17	7.85	402	220	12.2	2.31	Slightly cloudy brown water. NEC.
BH4	22-Jun-11	7.023	18.624	11.601	7.97	1.86	6	6	9.13	434	223	11.6	6.16	Cloudy brown water. NEC.

SWL - standing water level
 mSLD - meters above site datum
 mSLD - meters below top of casing
 mSLD - Not Measured
 * Well headworks altered, new elevation not known

EC - Electrical Conductivity
 Eh - Redox Potential
 T - Temperature
 DO - Dissolved Oxygen
 NEC - No evidence of contamination

μ S/cm - micro Siemens per centimetre
 mV - millivolts
 $^{\circ}$ C - degrees centigrade
 mg/L - milligrams per litre

Table 3: Volatile Organic Compound Results (µg/L) - Enva Rafeen, June 2011

Volatile Organic Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Surface Water EQS	Monitoring Well			
						BH1	BH2	BH3	BH4
Dichlorodifluoromethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Methyl Tertiary Butyl Ether	µg/l	1	ncr	ncr	ncr	-	-	-	-
Chloromethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
Vinyl Chloride	µg/l	2	ncr	ncr	ncr	-	-	-	-
Bromomethane	µg/l	1	ncr	ncr	ncr	-	-	-	-
Chloroethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
Trichlorofluoromethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,1-Dichloroethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
Dichloromethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
trans-1,2-Dichloroethene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,1-Dichloroethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
cis-1,2-Dichloroethene	µg/l	3	nv	30	nv	10	6	-	-
2,2-Dichloropropane	µg/l	1	ncr	ncr	ncr	-	-	-	-
Bromochloromethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Chloroform	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,1,1-Trichloroethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,1-Dichloropropene	µg/l	3	ncr	ncr	ncr	-	-	-	-
Carbon tetrachloride	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,2-Dichloroethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Benzene	µg/l	1	ncr	ncr	ncr	-	-	-	-
Trichloroethene	µg/l	3	7.5*	10	10*	6	6	3	-
1,2-Dichloropropane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Dibromomethane	µg/l	3	ncr	ncr	ncr	-	-	-	-
Bromochloromethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
cis-1,3-Dichloropropene	µg/l	2	ncr	ncr	ncr	-	-	-	-
Toluene	µg/l	2	ncr	ncr	ncr	-	-	-	-
trans-1,3-Dichloropropene	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,1,2-Trichloroethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Tetrachloroethene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,3-Dichloropropane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Dibromochloromethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,2-Dibromoethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Chlorobenzene	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	2	ncr	ncr	ncr	-	-	-	-
Ethylbenzene	µg/l	2	ncr	ncr	ncr	-	-	-	-
p/m-Xylene	µg/l	3	ncr	ncr	ncr	-	-	-	-
o-Xylene	µg/l	2	ncr	ncr	ncr	-	-	-	-
Styrene	µg/l	2	ncr	ncr	ncr	-	-	-	-
Bromoform	µg/l	2	ncr	ncr	ncr	-	-	-	-
Isopropylbenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	4	ncr	ncr	ncr	-	-	-	-
Bromobenzene	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,2,3-Trichloropropane	µg/l	3	ncr	ncr	ncr	-	-	-	-
Propylbenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
2-Chlorotoluene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
4-Chlorotoluene	µg/l	3	ncr	ncr	ncr	-	-	-	-
tert-Butylbenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	3+	ncr	ncr	ncr	-	-	-	-
sec-Butylbenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
4-Isopropyltoluene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,3-Dichlorobenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,4-Dichlorobenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
n-Butylbenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,2-Dichlorobenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-
Hexachlorocycladiene	µg/l	3	ncr	ncr	ncr	-	-	-	-
Naphthalene	µg/l	2	ncr	ncr	ncr	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	3	ncr	ncr	ncr	-	-	-	-

*X Exceeds Groundwater Regulations 2010
 ** Exceeds IGV (Interim Guideline Value)
 xx Exceeds surface water EQS (Environmental Quality Standard)
 MDL Method Detection Limit
 - Less than the MDL
 NA Not Analysed
 ncr No criteria required

Table 4: Semi-volatile Organic Compound Results (µg/L) - Enva Rafeen, June 2011

Volatile Organic Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Surface Water EQS	Monitoring Well			
						BH1	BH2	BH3	BH4
Phenols									
2-Chlorophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
2-Methylphenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
2-Nitrophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
2,4-Dichlorophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
2,4-Dimethylphenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
2,4,5-Trichlorophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
2,4,6-Trichlorophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Chloro-3-methylphenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Methylphenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Nitrophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
Pentachlorophenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
Phenol	µg/l	10	ncr	ncr	ncr	-	-	-	-
PAHs									
2-Chloronaphthalene	µg/l	10	ncr	ncr	ncr	-	-	-	-
2-Methylnaphthalene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Naphthalene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Acenaphthylene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Acenaphthene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Fluorene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Phenanthrene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Anthracene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Fluoranthene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Pyrene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Benz(a)anthracene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Chrysene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Benzo(b)fluoranthene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Benzo(a)pyrene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Dibenzo(ah)anthracene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Benzo(ghi)perylene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Phthalates									
Bis(2-ethylhexyl) phthalate	µg/l	10	ncr	ncr	ncr	-	-	-	-
Butylbenzyl phthalate	µg/l	10	ncr	ncr	ncr	-	-	-	-
Di-n-butyl phthalate	µg/l	10	ncr	ncr	ncr	-	-	-	-
Di-n-Octyl phthalate	µg/l	10	ncr	ncr	ncr	-	-	-	-
Dibutyl phthalate	µg/l	10	ncr	ncr	ncr	-	-	-	-
Dimethyl phthalate	µg/l	10	ncr	ncr	ncr	-	-	-	-
Other SVOCs									
1,2-Dichlorobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-
1,3-Dichlorobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-
1,4-Dichlorobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-
2-Nitroaniline	µg/l	10	ncr	ncr	ncr	-	-	-	-
2,4-Dinitrotoluene	µg/l	10	ncr	ncr	ncr	-	-	-	-
2,6-Dinitrotoluene	µg/l	10	ncr	ncr	ncr	-	-	-	-
3-Nitroaniline	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Bromophenylphenylether	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Chloroaniline	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Chlorophenylphenylether	µg/l	10	ncr	ncr	ncr	-	-	-	-
4-Nitroaniline	µg/l	10	ncr	ncr	ncr	-	-	-	-
Azobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	10	ncr	ncr	ncr	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	10	ncr	ncr	ncr	-	-	-	-
Carbazole	µg/l	10	ncr	ncr	ncr	-	-	-	-
Dibenzofuran	µg/l	10	ncr	ncr	ncr	-	-	-	-
Hexachlorobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Hexachlorobutadiene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Hexachlorocyclopentadiene	µg/l	10	ncr	ncr	ncr	-	-	-	-
Hexachloroethane	µg/l	10	ncr	ncr	ncr	-	-	-	-
Isophorone	µg/l	10	ncr	ncr	ncr	-	-	-	-
N-nitrosodl-n-propylamine	µg/l	10	ncr	ncr	ncr	-	-	-	-
Nitrobenzene	µg/l	10	ncr	ncr	ncr	-	-	-	-

xx Exceeds Groundwater Regulations 2010
 xx Exceeds IGV (Interim Guideline Value)
 xx Exceeds surface water EQS (Environmental Quality Standard)
 MDL Method Detection Limit
 - Less than the MDL
 ncr No criteria required

Table 5: Hydrocarbons Metals (µg/L) - Enva Rafeen, June 2011

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well				
					Surface Water EQS	BH1	BH2	BH3	BH4
EPH/Mineral Oil	µg/l	10	nv	nv	nv	-	-	-	-
EPH (C8-C40)	µg/l	10	nv	nv	nv	-	-	-	-
Mineral Oil	µg/l								
Metals									
Arsenic	µg/l	<2.5	7.5	10	25	-	-	-	-
Boron	µg/l	<12	750	1,000	nv	-	-	-	-
Cadmium	µg/l	<0.5	3.75	5	0.08	-	-	-	-
Chromium	µg/l	<1.5	37.5	30	3.4	-	-	-	-
Copper	µg/l	<7	1,500	30	5	-	-	-	-
Mercury	µg/l	<1	0.75	1	0.05	-	-	-	-
Nickel	µg/l	<2	15	20	8	-	-	-	-
Lead	µg/l	<5	18.75	10	5	-	-	-	-
Selenium	µg/l	<3	nv	nv	10	8	-	-	-
Zinc	µg/l	<3	nv	100	50	17	76	84	87
Iron	µg/l	<20	nv	200	nv	120	-	-	-
Manganese	µg/l	<2	nv	50	nv	-	-	-	-

xx Exceeds Groundwater Regulations 2010
 xx Exceeds IGV (Interim Guideline Value)
 xx Exceeds surface water EQS (Environmental Quality Standard)
 MDL Method Detection Limit
 - Less than the MDL
 nv no value

Table 6: Miscellaneous Parameters (mg/L) - Enva Rateen, June 2011

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well					
					Surface Water EQS	BH1	BH2	BH3	BH4	
Ammonium	mg/l		0.175	0.150						
Ammon. N2/Tot. Ammonia as NH3	mg/l	0.2	nv	nv					0.48	0.33
COD	mg/l	7	nv	nv						
Chloride	mg/l	0.3	187.5	250	22.2	22.4	31.7	75.9		
Sodium - dissolved	mg/l	0.15	150	150	15.6	17.3	19.2	30.6		
Sulphate	mg/l	0.05	187.5	200	14.59	10.54	10.1	5.82		
Potassium - dissolved	mg/l	0.04	nv	5	0.9	0.9	2.6	2.6		
Calcium - dissolved#	mg/l	0.2	nv	200	112.5	111.3	71.6	66.1		
Magnesium - dissolved#	mg/l	0.1	nv	50	4.9	5.1	2.6	2.4		
Bicarbonate Alkalinity as CaCO3	mg/l	1	nv	No abnormal change	223	250	180	107		
Nitrate as NO3#	mg/l	0.2	37.5	25	9.5	16.6	8.3	3.3		
Nitrite as NO2#	mg/l	0.02	0.375	0.1						
Ortho phosphate as PO4#	mg/l	0.06	nv	0.03						
Fluoride	mg/l	0.3	nv	1						

xx Exceeds Groundwater Regulations 2010
 xx Exceeds IGV (Interim Guideline Value)
 xx Exceeds surface water EQS (Environmental Quality Standard)
 xx Method Detection Limit
 xx Less than the MDL
 nv no value
 . Conversion factor of 1.2657 used to convert ammoniacal nitrogen (as N) to ammonium (NH4)

Appendix A - Schedule of Analysis

Table A1. Cork Facility: The following table sets out the monitoring requirements of Waste Licence W0145-02 as detailed in Schedule C.7.

Parameter	Quarterly	Annually
Volatile Organic Compounds (VOCs), including chlorinated solvents		✓
Semi Volatile Organic Compounds (VOCs) (organohalogens)		✓
Chemical Oxygen demand (COD)		✓
Mineral Oil		✓
Total Ammonia		✓
Heavy Metals (Dutch Target List0		✓
Calcium		✓
Magnesium		✓
Potassium		✓
Sodium		✓
Chloride		✓
Bicarbonate		✓
Sulphate		✓
Nitrate		✓
Nitrite		✓
Phosphate		✓
Fluoride		✓

Appendix B - Laboratory Report



Jones Environmental Laboratory

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

URS/Scott Wilson
Acorn Business Campus
Mahon Industrial Park
Black Rock
Cork
Ireland

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

No.4225

Attention : Ellis Finnegan
Date : 30th June, 2011
Your reference : 46402507
Our reference : Test Report 11/4851 Batch 1
Location : CORK
Date samples received : 23rd June, 2011
Status : Final report
Issue : 1

Four samples were received for analysis on 23rd June, 2011, which was completed on 30th June 2011. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

J W Farrell- Jones CChem FRSC
Chartered Chemist

Jones Environmental Laboratory

SVOC Report : Liquid

Client Name: URS/Scott Wilson

Reference: 46402507

Location: CORK

Contact: Ellis Finnegan

JE Job No.: 11/4851

Please see attached notes for all abbreviations and acronyms

JE Sample No. Sample ID Depth COC No / misc Containers Sample Date Sample Type Batch Number Date of Receipt	1-6 BH1	7-12 BH2	13-18 BH3	19-24 BH4												LOD	Units	Method No.
SVOC MS																		
Other SVOCs																		
1,2-Dichlorobenzene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
1,2,4-Trichlorobenzene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
1,3-Dichlorobenzene	<10	<10	<10	<10												<10	ug/l	TM18/PM30
1,4-Dichlorobenzene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
2-Nitroaniline	<10	<10	<10	<10												<10	ug/l	TM18/PM30
2,4-Dinitrotoluene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
2,6-Dinitrotoluene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
3-Nitroaniline	<10	<10	<10	<10												<10	ug/l	TM16/PM30
4-Bromophenylphenylether	<10	<10	<10	<10												<10	ug/l	TM16/PM30
4-Chloroaniline	<10	<10	<10	<10												<10	ug/l	TM18/PM30
4-Chlorophenylphenylether	<10	<10	<10	<10												<10	ug/l	TM16/PM30
4-Nitroaniline	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Azobenzene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane	<10	<10	<10	<10												<10	ug/l	TM18/PM30
Bis(2-chloroethyl)ether	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Carbazole	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Dibenzofuran	<10	<10	<10	<10												<10	ug/l	TM18/PM30
Hexachlorobenzene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Hexachlorobutadiene	<10	<10	<10	<10												<10	ug/l	TM18/PM30
Hexachlorocyclopentadiene	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Hexachloroethane	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Isophorone	<10	<10	<10	<10												<10	ug/l	TM18/PM30
N-nitrosodl-n-propylamine	<10	<10	<10	<10												<10	ug/l	TM16/PM30
Nitrobenzene	<10	<10	<10	<10												<10	ug/l	TM16/PM30

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C

Asbestos screens where requested will be undertaken by a UKAS accredited laboratory.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples. All samples are treated as groundwaters and analysis performed on settled samples unless we are instructed otherwise.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any analysis that may be compromised highlighted on your schedule/ report by the use of a symbol.

The use of any of the following symbols indicates that the sample was deviating and the test result may be unreliable:

\$	Sample temperature on receipt considered inappropriate for analysis requested.
^	Samples exceeding recommended holding times.
&	Samples received in inappropriate containers (e.g. volatile samples not submitted in VOC jars/vials).
~	No sampling date given, unable to confirm if samples are with acceptable holding times.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130%. Results are not surrogate corrected.

AQCs

Where AQC's fall outside UKAS/MCERTS criteria analysis is repeated if possible.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in its final report if it believes that the validity of the data has not been compromised but will remove the accreditation. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
M	MCERTS accredited.
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
SS	Calibrated against a single substance.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
W	Results expressed on as received basis.
+	Accreditation has been removed from this result see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
DR	Dilution required.

APPENDIX D



Schedule of Objectives & Targets -- March 2009 to March 2013

Objective	Target	Timeline
EPA Objective No. 1 Complete all training requirements specified in the Waste License.	1.1 Facility manager or deputy to complete waste management training programme.	COMPLETE See AER 2008
EPA Objective No. 2 To maximise efficiency of energy and resources use at the site.	2.1 Carry out an energy audit of the site and set future targets for energy reduction where feasible.	CLOSED See AER 2007
	2.2 Identify opportunities for reducing water consumption on site.	CLOSED See AER 2007
	2.3 Assess efficiency of use of raw materials with a view to waste reduction.	COMPLETE See AER 2008
	2.4 Implement measures with a view to achieving a 17% reduction in annual electrical energy consumption by end 2009.	CLOSED See AER 2009
	2.5 Implement measures with a view to achieving a 50% reduction in use of mains water supply for production activities by end 2009.	December 2009 - to be revised in 2010
EPA Objective No. 3 To review all operations and processes vis-à-vis energy and resource efficiency, cleaner technology, cleaner production, and prevention, reduction and minimisation of waste with a view to setting improvement targets.	3.1 To review all on-site & off-site operations and processes as per objective number 3.	June 2012
	3.2 Implement measures to achieve a reduction in annual waste wash-water arisings by 20% where feasible by March 2013.	March 2013
EPA Objective No. 4 Provide catchment systems where necessary to collect any leaks from flanges and valves of all over ground pipes used to transport material other than water.	4.1 To identify all relevant pipelines for risk of chemical leaks from flanges and valves.	CLOSED See AER 2007
EPA Objective No. 5 Carry out fugitive emissions reduction programme.	5.1 To identify potential sources of fugitive emissions and establish a programme for their reduction where relevant.	CLOSED See AER 2007
	EPA Objective No. 6 Evaluate contribution of Enva (Cork) to achievement of recovery targets stated in national and EU waste policies.	6.1 Prepare and submit a report on the impact of Enva (Cork) on achieving national and EU waste recovery targets.



Environmental Management Programme – March 2009 to March 2013

Objective	Target	Programme for achieving the target	Responsibility	Timeframe for target completion	Rationale for target
EPA Objective No. 4 Provide catchment systems where necessary to collect any leaks from flanges and valves of all over ground pipes used to transport material other than water.	4.1 To identify all relevant pipelines for risk of chemical leaks from flanges and valves.			CLOSED See AER 2007	License condition 3.20 Aspects no 7 & 15 identified as significant.
EPA Objective No. 5 Carry out fugitive emissions reduction programme. [NB This objective to be quantified in subsequent years.]	5.1 To identify potential sources of fugitive emissions and establish a programme for their reduction where relevant.			CLOSED See AER 2007	License condition 6.8.
EPA Objective No. 6 Evaluate contribution of Enva (Cork) to achievement of recovery targets stated in national and EU waste policies.	6.1 Prepare and submit a report on the impact of Enva (Cork) on achieving national and EU waste recovery targets.	Review/revise all relevant policies and targets and prepare a report for submission to the Agency. (Dec 2009)	HSE Manager & Business Unit Manager	COMPLETE See AER 2009	License condition 11.11.

APPENDIX E



**ENVIRONMENTAL LIABILITIES RISK
ASSESSMENT REVIEW :**

UNKNOWN LIABILITIES

Enva Ireland Ltd,
Rafeen Industrial Estate,
Ringaskiddy,
Co. Cork.

License no: W0145-02

**March 2012
Code : RA 002 D**



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0041-01

1. INTRODUCTION & SCOPE STATEMENT

An ELRA study was carried out initially by URS Consulting in 2007. This document is a revision of the existing ELRA in accordance with the EPA guidance document on ELRA published in 2006. It should be read in conjunction with the original report prepared by URS.

Part of the site is devoted to Wastewater Treatment Chemical business, which involves warehousing of chemicals and associated blending and storage activities. These activities have not been considered as part of this ELRA since the EPA's Report of the Technical Committee on Objections to Licence Conditions on 16th May 2006 stated that *'the storage of chemicals prior to sale are product-related activities and therefore fall outside the scope of Part I and condition 1.1 of the licence'*.

The site was originally granted a Waste Licence (Register Number 145-1) in February 2002. Included in this licence was the provision to treat healthcare waste in a Heat Disinfection Unit. However healthcare waste was never treated on-site and the Healthcare Disinfection Unit was decommissioned and removed from site prior to Enva's involvement with the site. Therefore this ELRA does not consider the Healthcare Disinfection Unit.

Enva operates a waste acceptance and transfer station, operating on an eight hour day, 5 days per week basis. There are currently 19 full-time, of which 13 operate on site and 6 operate off site (sales representatives and technical services).

Acceptance of the following waste streams is currently in operation at the facility:

- Waste oils in bulk tankers
- Packaged waste (e.g. batteries, filters etc).

The facility also has analytical capability provided by in-house laboratories (chemical and microbiological), which includes effluent analysis.

2.0 PREVIOUSLY IDENTIFIED ENVIRONMENTAL HAZARDS AND CONTROL MEASURES

The hazards and controls listed below were identified by URS Ireland Ltd. in 2007 based on the circumstances of the time. Significant changes at the site since the initial report are discussed under each heading.

2.1 General Controls

The site is equipped with a high level of environmental protection systems. Ongoing care for the environment is demonstrated by the efficient operation and maintenance of environmental protection systems/practices, and their upgrade where necessary.

The company's Health, Safety and Environmental Policy aims to instil high environmental values in all employees, utilising the best environmental practices in processing and contributing to global sustainable developments.

Infrastructure at the Cork facility is designed to assure a high level of environmental compliance and protection. Examples of this include the following:

- A fully bunded warehouse,
- One large bunded tank farm with covered roof,
- A 7.5m³ oil interceptor for surface/storm water (which may be diverted to 2 x 2.5m³ diversion tanks followed by 190m³ firewater retention tank if contamination is detected),
- An on-site domestic wastewater treatment system.
- Environmental protection and compliance is integrated into the site decision-making process through the management of change mechanisms defined in the site's certified ISO14001 and OHSAS 18001 Environmental Management System (EMS).

2.2 Releases to Air

With regard to sudden and accidental releases to air, there is no history of: major fires or explosions, or of any significant discharge to atmosphere. There is 1 licensed main emission point with specified emission limit values, listed in the current Waste Licence (Reg No. W0145-02), this emission point is related to the operation of the healthcare unit and remains outside the scope of the ELRA.

A review of the historical documentation relating to air emissions was undertaken as part of the original ELRA carried out by URS Ireland Ltd. Based on this review there was no evidence to suggest that site operations have resulted in the development of any off-site environmental liability with respect to air emissions.

Minor emissions may result from laboratory fume hoods or from machinery/plant (e.g. vehicles). Pipeline inspection as required by the license and preventive maintenance procedures minimise potential for fugitive loss

Since there are no on-going concerns in relation to air emissions under normal circumstances this hazard category is no longer considered applicable.



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0041-01

2.3 Process Water and Surface Water Discharges

Currently, there is no process wastewater discharged from this site, so there is no requirement for such monitoring. In addition any wastewater generated from drainage sumps, house-keeping and/or spill cleaning is routinely taken off-site for safe disposal.

Domestic wastewater is generated on site from toilet/shower facilities and the canteen. The wastewater is treated on site through a biocycle wastewater treatment unit. The final effluent from the wastewater treatment system is discharged through a percolation area on site.

There is no direct discharge to surface water. Surface water run-off from the external yard pavement, landscaped areas and roof run-off is collected in the surface water drainage system passed through a three-stage oil interceptor and discharged to a percolation area to the south of the site. The system is also fitted with a diversion tank, which can be used in the event of spillage/contaminated firewater etc. The contents of the diversion tank can be pumped to a contaminated firewater retention tank with spare capacity of approx. 190m³.

Storm drains are inspected daily and monitored on a weekly basis as per license requirements.

There is no history of sudden and accidental discharges and there remains no evidence to suggest that surface water or process wastewater releases have had any significant impact or resulted in an environmental liability.

2.4 Releases to Ground/Groundwater

There are no county council sewers serving this facility, storm drains and foul sewer ultimately discharge to soak-ways on site. All process operations and storage of chemicals are within bunded areas. Stormwater drains are provided with an oil interceptor and diversion chamber. Foul wastewater goes through a wastewater treatment system and no chemicals etc. may be discharged to sinks. A baseline groundwater monitoring survey was carried out in January 2007 and reported to the EPA in May 2007. Groundwater has been monitored annually since 2007. Reports have concluded no significant changes from the baseline survey carried out in 2007.

2.5 Emergency Planning/Preparedness

The site has a detailed and documented Emergency Response Plan (ERP) which contains specific action plans in the event of particular incidents such as fire/explosions, chemical spillage, medical emergency, inundation/flooding of site, etc.

The first priority any emergency situation is to ensure the safety of all people potentially affected, followed by prevention damage to property and the environment.

2.6. Prevention of Fire

- (a) **Procedures:** The plant ERP specifies the actions taken on discovering a fire or other emergency. Fire prevention is emphasised by engineering design, work permit restrictions, work practices, and ongoing audits and safety awareness. Operation instructions and Material Safety Data/Information Sheets specify emergency response requirements for various materials being used.
- (b) **Training:** All employees receive induction training which includes emergency response system and HSE awareness. Site evacuation drills are held twice yearly so that employees are familiarised with evacuation requirements. Fire extinguisher training is also provided to employees. All contractors receive induction training prior to being allowed work onsite.
- (c) **Equipment:** A fire protection system is installed in appropriate areas around the site which includes smoke detector fire alarms. There is a fire hydrant inside the site boundary near the entrance of the site and a number of fire extinguishers available on site. Enva have a Top Security monitoring system in place that operates after hours on site.
- (d) **Storage and handling of flammable materials:** There is a small quantity (<4,000L) of flammable solvent stored in a designated bunded area. Waste oil is stored in 50m³ storage tanks in an external bund, separated from the main building by means of fire rated cladding. Tanks have high level alarms and are controlled by a computer system. Oil is transferred through direct pumping to and from tankers on site in the warehouse section of the main building.
- (e) **Firewater Retention:** All stormwater runs to the site drainage system and is discharged to a soakway having first passed through a three-stage oil interceptor. The system is also fitted with a 5m³ diversion tank, which can be used in the event of spillage/contaminated firewater etc. The contents of the diversion tank can be pumped to a dedicated firewater retention tank with capacity of approximately 190m³.

2.7. Hazard Studies

A register of risk assessments is maintained for the site, including this ELRA and environmental aspects. Significant environmental aspects are communicated annually to employees.

3.0 RISK CLASSIFICATION & INTERPRETATION

As per the EPA guidance document each identified hazard is assigned a numerical rating based on its severity and likelihood of occurrence. An overall risk rating is then calculated by multiplying the severity rating by occurrence rating. The tables below set out the criterion for the occurrence and severity ratings.

Table 1: Risk Classification Table – Occurrence

Rating	Category	Description	Likelihood of Occurrence (%)
1	Very Low	Very low chance of hazard occurring in 30 year period.	0 – 5
2	Low	Low chance of hazard occurring in 30 year period.	5 – 10
3	Medium	Medium chance of hazard occurring in 30 year period.	10 – 20
4	High	High chance of hazard occurring in 30 year period.	20 – 50
5	Very High	Greater than 50% chance of hazard occurring in 30 year period.	> 50

Table 2: Risk Classification Table – Severity

Rating	Category	Description	Cost of Remediation (€)
1	Trivial	No damage or negligible change to the environment.	< 10,000
2	Minor	Minor impact / localised or nuisance	10,000 – 100,000
3	Moderate	Moderate damage to the environment	100,000 – 500,000
4	Major	Severe damage to local environment	500,000 – 1,000,000
5	Massive	Massive damage to a large area, irreversible in medium term	1,000,000 – 5,000,000

The table below illustrates the significance of the overall risk ratings obtained from the product of Severity X Occurrence.

Table 3: Risk Evaluation Matrix.

OCCURRENCE RATING	Very High	5					
	High	4					
	Medium	3					
	Low	2					
	Very Low	1					
			1	2	3	4	5
			Trivial	Minor	Moderate	Major	Massive

SEVERITY RATING

The area of red represents highest level of risk requiring priority attention for risk reduction as soon as possible. The area of yellow is a medium level of risk which requires action but is not as critical as the red area. The light and dark green areas are the lowest levels of risk which should be monitored continually with a view to continuing control and mitigation where possible.

3.1 Register of Risks

Risk ID	Potential Failure Mode
1	A spill occurring during the loading/unloading of waste on-site
2	A failure of one of the bulk storage tanks resulting in a spill of waste oil.
3	Loss of integrity within bunded areas.
4	Improper disposal of hazardous waste
5	Failure of on-site environmental control and monitoring systems.
6	Failure of underground drainage network or wastewater treatment system resulting in significant release to ground and groundwater.
7	An on-site fire/explosion.



**ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0145-02**

3.2 Assessment of Risks

Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
1	Loading/ Unloading	Spill of waste oil, healthcare waste or packaged waste, which could migrate to surface water or ground.	Surface Water Groundwater or Soil Contamination	1	<p>Waste oils are delivered to site on a daily basis. Documented procedures available.</p> <p>Loading and unloading of waste oil takes place in designated bunded areas.</p> <p>It is anticipated that packaged and healthcare waste will be delivered to site in suitable receptacles following documented procedures and stored in designated bunded areas.</p> <p>Site stormwater passes through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is also fitted with a 5m³ diversion tank, which can be used in the event of spillage/contaminated firewater etc. The contents of the diversion tanks can be pumped to a dedicated firewater retention tank with capacity of approximately 190m³.</p> <p>Potential impacts are for spillage of wastes within Enva or in transit or fires involving oil. Uncontained spillage could result in entry to storm drains and consequent damage to soils/groundwater.</p>	3	<p>Potential costs associated with remediation.</p> <p>Any impact on soil, groundwater or surface water would be localised.</p>	3



**ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0145-02**

Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
2	Storage of waste oil in bulk storage tanks.	Bulk storage tank failure.	Surface Water Groundwater or Soil Contamination	1	<p>All bulk storage tanks are located within local bunded areas; retention capacity is at least 110% of the largest tanks.</p> <p>Tanks have been integrity tested. Bund is fitted with a bund alarm which operates 24/7 alerting staff by mobile SMS if bund capacity is reduced due to spillage /ingress of rainwater</p> <p>Site stormwater passes through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is fitted with a 5m³ diversion tank in the event of spillage/contaminated firewater etc. The contents of the diversion tanks can be pumped to a dedicated firewater retention tank with capacity of approximately 190m³.</p>	3	<p>Large volume bulk storage tanks on-site. Materials therein have the capacity to cause environmental damage if failure was to occur resulting in ground and/or surface water contamination. Any impact on soil, groundwater or surface water would be localised.</p>	3
3	Storage of waste oil in bulk storage tanks and packaged waste and healthcare waste in bunded areas of the warehouse.	Loss of integrity of bunded areas	Surface Water Groundwater or Soil Contamination	1	<p>Bunds are inspected regularly at the site. Any spillage observed within the bunds would be promptly detected and cleaned up.</p> <p>Site stormwater passes through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is fitted with a 5m³ diversion tank, which can be used in the event of spillage/contaminated firewater etc. The contents of the diversion tanks can be pumped to a dedicated firewater retention tank with capacity of approximately 190m³.</p> <p>Tanks that are bunded, have passed bund integrity testing. The warehouse on-site is a purpose built bunded building with the capacity for segregation of waste types.</p>	3	<p>Large volume bulk storage tanks on-site. Different categories of hazardous waste storage on-site. Certain materials therein have the capacity to cause significant environmental damage if failure was to occur resulting in ground and/or surface water contamination. Any impact on soil, groundwater or surface water would be localised.</p>	3



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0145-02

Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
4	Disposal of Hazardous Waste	Improper classification/ disposal of waste.	Surface Water Groundwater or Soil Contamination Public Health Risk if hazardous waste is disposed of in non-hazardous manner.	1	Waste oils are collected from the vicinity of the Cork region, and bulked up on site. Full tanker loads of oil are then filled on site and transported to Enva's Portlaoise facility for recovery. Waste batteries are accepted on site and sent to Enva's Portlaoise facility. Export direct from Enva Cork to Belgium has been approved, but has not yet commenced Healthcare wastes are not expected to be accepted on site in the near future. Due to procedures used on site and the considerable experience Enva have in managing hazardous waste, very unlikely that hazardous waste would be incorrectly managed.	4	If a large quantity of waste was incorrectly managed, it could potentially result in major financial implications.	4
5	Monitoring and Control Systems	Failure of on-site environmental control procedures	Release of hazardous material to atmosphere, surface water, groundwater	2	The site has developed procedures for environmental monitoring and control such as loading and unloading of waste oil tankers, bund inspections and drainage system inspections.	2	Minor impact/localised or nuisance	4



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0145-02

Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
6	Disposal of waste-water	Failure of drainage network or wastewater treatment system resulting in significant release to ground and groundwater	Surface Water Groundwater or Soil Contamination	2	<p>Domestic wastewater from the toilet/shower facilities and canteen are released to a biotreatment unit on site and from there, released to underground soak-way.</p> <p>Stormwater from the site drains through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is also fitted with a 5m³ diversion tank, which can be used in the event of spillage/contaminated firewater etc. The contents of the diversion tanks can be pumped to a dedicated firewater retention tank with capacity of approximately 190m³. The integrity of underground pipes and tanks must be tested every five years.</p> <p>There are no process effluent emissions to sewer. Liquid wastes from the laboratory are collected in containers and treated/disposed of through approved waste treatment/recovery outlets.</p> <p>The underground drainage networks may develop faults over a 30-year period however as underground drainage networks should be tested every three years and repaired, as necessary only minor defects should occur.</p>	3	<p>Severity is based mainly on potential costs associated with repair of underground drains and possible soil remediation if major discharge were to occur. Domestic effluents are not considered significant environmental streams. Any impact from domestic effluent on soil or groundwater would be highly localised.</p> <p>Failure of the interceptor or pipework associated with it could cause significant environmental damage if failure was to occur resulting in ground and/or surface water contamination.</p>	6



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW
UNKNOWN LIABILITIES
Waste License W0145-02

Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
7	Any	Major on-site fire or explosion.	Release of toxic and hazardous material to atmosphere, surface water, groundwater.	2	Comprehensive control systems and maintenance programme in place to minimise the risk of fire. Comprehensive Emergency Response Plan in place at the site. An internal Emergency Response Core Team in place if fire does occur.	4	Minimal quantities of flammable materials stored at the site. Mitigated by dilution in air. Firewater retention tank is available. If contaminated firewater entered local surface water, may be high cost associated with remediation.	8

3.3 Interpretation of risks at Enva

Using the risk evaluation matrix from section 3.0 the following results are obtained.

OCCURRENCE RATING	Very High	5					
	High	4					
	Medium	3					
	Low	2		ID 5	ID 6	ID 7	
	Very Low	1			ID 1,2,3	ID 4	
			1	2	3	4	
			Trivial	Minor	Moderate	Major	
					5	Massive	
			SEVERITY RATING				

4.0 RISK PREVENTION, MITIGATION AND MANAGEMENT

The risk assessment and categorisation phase identified no red or yellow zone risks, which require priority attention. All risks were classified in the dark and light green zone areas and require continual awareness and on-going monitoring.

However, the green zone risks may theoretically have the potential to increase to yellow or red zone risks and where additional risk management measures are available to manage them at their current levels or reduce them further these may be implemented if considered cost-effective.

The tables on the following two pages illustrate the risk mitigation measures which have been identified or are currently in use at the site. Risks are provided in descending order of risk score with the proposed mitigation measure.

Risk Mitigation Forum

Risk ID	Process	Potential Hazard	Risk Score before Mitigation	Existing/Possible Mitigation measures	Risk Manager	Time to Complete	Revised Risk Score
7	Any	Major Fire/Explosion.	8	Maintain on-site fire detection and control systems including trained emergency core team. Update Emergency Response Plan as required taking account of changes to site. Provision of training to employees. Provision of firewater retention facilities.	HSE & Compliance Manager Environmental Co-ordinator	Ongoing / Existing Practice	8
6	Disposal of wastewater	Failure of underground drainage network	6	Testing of underground pipes and tanks as required under condition of Waste Licence and repair any defects detected.	Environmental Co-ordinator	Ongoing / Existing Practice	6
5	Monitoring and Control Systems	Failure of on-site environmental control procedures.	4	Continue control procedures and inspection programme.	Environmental Co-ordinator	Ongoing / Existing Practice	4
4	Disposal of Hazardous Waste	Improper disposal of hazardous waste.	4	Dedicated procedures for disposal of hazardous waste. Analysis of hazardous waste loads leaving site.	Environmental Co-ordinator	Ongoing / Existing Practice	4
3	Storage of Materials	Bund Integrity Failure.	3	Testing of bunds as per Waste Licence and repair any defects detected.	Environmental Co-ordinator	Ongoing / Existing Practice	3
2	Storage of liquid materials in bulk storage tanks.	Bulk Storage tank failure.	3	Ensure all tanks are located in properly bunded areas capable of containing 110% of volume of largest tank. Maintain existing bund integrity testing programme.	Environmental Co-ordinator	Ongoing / Existing Practice	3
1	Loading/ Unloading	Spill from loading/unloading operations.	3	Designated waste oil loading/unloading in a bunded area and yard stormwater that drains through oil interceptors, which can be diverted, to diversion tanks if required. Dedicated procedures for acceptance of packaged and healthcare waste and segregated bunded storage areas available for these wastes in the warehouse.	Environmental Co-ordinator	Ongoing / Existing Practice / Regular reviews	3

6.0 QUANTIFICATION OF UNKNOWN LIABILITIES

In accordance with the procedure laid down in the EPA guidance document the table below shows the calculated most likely scenario costs associated with the identified risks.

Risk ID	Occurrence Rating	Occurrence Likelihood Range	Severity Rating	Severity Cost Range	Median Probability	Median Severity	Most Likely Scenario Cost
1	1	0 – 5 %	3	€100,000 - €500,000	2.5%	€300,000	€7,500
2	1	0 – 5 %	3	€100,000 - €500,000	2.5%	€300,000	€7,500
3	1	0 – 5 %	3	€100,000 - €500,000	2.5%	€300,000	€7,500
4	1	0 – 5 %	4	€500,000 – €1,000,000	2.5%	€750,000	€ 56,250
5	2	5 – 10 %	2	€10,000 - €100,000	7.5%	€55,000	€ 4,125
6	2	5 – 10 %	3	€100,000 - €500,000	7.5%	€300,000	€ 22,500
7	2	5 – 10 %	4	€500,000 – €1,000,000	7.5%	€750,000	€ 56,250
TOTAL							€161,625

7.0 FINANCIAL PROVISIONS FOR UNKNOWN LIABILITIES

A total most likely scenario cost of €161,625 is calculated by this model.

As stated in the earlier report by URS in 2007 Enva has already extensive insurance cover in place in respect of the following:

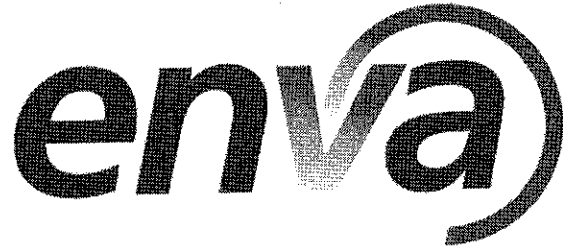
- Public/Products Liability: Limit of Indemnity €13,000,000.
- Employers Liability: Limit of Indemnity €13,000,000.
- Motor Insurance: Limit of Indemnity to Third Party Property Damage €26,000,000.

Thus existing financial provision, in the form of insurance cover, already far exceeds the most likely scenario cost of €161,625, and even that of the calculated worst case scenario (i.e.: €285,000) for all of the identified risks.

An excess of €15,000 is payable by Enva in respect of each claim against Public/Products Liabilities. Furthermore an excess of €100,000 is payable by Enva in respect of claims relating to damage to buildings. This excess would normally be paid from Enva's own operating funds.

Based on a review of the current level of insurance maintained by the site, it would appear that environmental liabilities resulting from Risk IDs 1,2,5 and 6 would be covered under the existing insurance policies. Indemnity in respect of Risk IDs 3 and 4 would depend on the circumstances, which lead to any potential liability. Liabilities associated with Risk ID 7 would appear to be excluded from the existing cover and therefore any financial liabilities associated with this would need to be financed by Enva.

APPENDIX F



CLOSURE, RESTORATION, AFTERCARE MANAGEMENT PLAN

**Enva Ireland Ltd,
Raffeen Industrial Estate,
Ringaskiddy,
Co. Cork.**

License no: W0145-02

March 2012
Code: RA002C

1.0 INTRODUCTION & SCOPE STATEMENT

This Closure, Restoration, Aftercare Management Plan (CRAMP) has been prepared by Enva Ireland Ltd in respect of its facility in Ringaskiddy, Co. Cork in fulfilment of Condition 10 of Waste License number W0145-02.

An Initial Screening & Operational Risk Assessment has been carried out in accordance with the EPA guidance document on "Environmental Liability Risk Assessment, Residuals Management Plans and Financial Provision (2006)". On the basis of the initial screening and operational risk assessment the Enva facility is classified as a Category 3 facility. As such this indicates that the full requirements for a Closure, Restoration and Aftercare Management Plan must be considered.

The scope of this risk assessment is the licensed activities covered under W0145-02 excluding those activities associated with operation of the heat sterilisation unit. This plan shall be reviewed annually and any necessary inclusions to the scope will be accommodated accordingly.

1.1 Closure Scenarios

The facility commenced operations in 2007, and whilst companies in Ireland have had to deal with both commercial and economic challenges due to the downturn in the economy, no site closure is envisioned in the near future. In the event of ceasing waste license activities (due to site closure or otherwise) it is envisioned that this would involve clean closure of all site infrastructure associated with the waste activities.

2.0 SITE EVALUATION

A detailed description of site activities, site location etc is set out in the Waste License Application submitted by Enva Ireland Ltd in 2005/6 as part of the review of the waste license W0145.

2.1 Facility Description & History

The facility comprises a single building, part of which is given over to waste acceptance and transfer activities requiring a license from the EPA. The production and storage areas within the building are comprised of bunded flooring with some additional local bunding for packaged waste storage. The facility also includes a tank farm, which includes three waste oil tanks separately bunded from several chemical storage tanks, which are also bunded. To date only the acceptance of waste oil for storage in the bulk waste oil tanks and the acceptance of lead-acid batteries for storage in a dedicated bund within the warehouse area have commenced. These wastes are transferred to Enva's Portlaoise facility for disposal / recovery. Acceptance of other packaged waste for transfer to other disposal / recovery outlets is currently not envisioned.

The facility's license also provides for activities related to acceptance and heat sterilisation of healthcare waste. This activity has not commenced and is not envisioned to do so in the foreseeable future.

Prior to acquisition of the site by Enva Ireland Ltd the facility was licensed for heat sterilisation activities but these never commenced. The building, then comprising only a smaller fraction of its current size, was used for light engineering activities only.

A baseline groundwater investigation was carried out in 2007 in accordance with Condition 6.12 of the license and has determined that the site does not have any pre-existing contamination issues. Annual groundwater monitoring is carried out in compliance with the licence requirements, monitoring has concluded that activities being carried out on site are not adversely affecting groundwater quality.

Stormwater drainage on site leads to a soakaway via an oil interceptor. Foul sewer (toilets, wash-hand basins, shower) runs to a bio-treatment unit and then to a soakaway/percolation area. No trade effluent is generated and all wastes arising on site from either licensed/non-licensable activities are disposed of off-site.

2.2 Facility Compliance Status

To date there have been no non-compliances with any emission limits and no notifications of non-compliance by the Agency in respect of the Enva facility in Ringaskiddy.

2.3 Facility Processes and Activities

Acceptance of waste oils in bulk tankers involves collection of waste oils from customers in a tanker and delivery to the facility. The tanker is then reversed into the waste handling area of the building passing over a weighbridge on the way. Once inside, the tanker is connected to bulk storage tank inlets and the waste oil is transferred. All operations thus take place within a bunded area. Tanks are controlled by a SCADA system and fitted with high-level alarms. All relevant records are retained as required by legislation and by the license. When required, the bulk tanks are unloaded to road tankers in the same manner as above and the waste oil is dispatched to an approved waste oil recovery facility.

Acceptance of waste batteries involves collection of from customer sites, delivery to Enva in battery boxes or shrink-wrapped on a pallet, weigh-in at weighbridge and unloading within the waste handling area of the building. Each box or pallet is given a tracking code and entered into a database / recording system and stored in a dedicated localised bund within the waste handling area of the building. Segregation on site is in accordance with procedures based on UK HSE Guidelines for storage and warehousing of packaged dangerous goods, HSG 71. Similarly, when dispatching to approved recovery / disposal outlets (currently only Enva's Portlaoise facility is used, although direct export to a facility in Belgium has also been approved) vehicles are loaded within the waste handling area of the building.

Acceptance of other packaged waste (e.g. filters, and fluorescent light bulbs, etc) has not yet commenced and is currently not envisioned, but should it commenced it will be handled in the same way as waste batteries.

The license allows for acceptance of healthcare waste and associated on-site treatment of this by means of heat sterilisation. This activity is currently not envisioned and therefore is outside the scope of this CRAMP.

Other activities at the site include production of water treatment products and associated services. These activities are outside the scope of the license as stated in the EPA Report of the Technical Committee on Objections to License Conditions for Waste Reg 145-2, 16th May 2006.

2.4 Inventory of Site Buildings, Plant, Raw Materials and Wastes

In the event of closure the following inventory would have to be considered:

- Waste handling area of the building.
- Three 50m³ waste oil storage tanks and associated pipework.
- Bund for oil tanks.
- Oil transfer pumps, valves and spill tray.
- Waste storage bunds for packaged waste.
- Oil interceptor, stormwater drains and diversion tank.
- Absorbent material for spillage control.
- Waste oil in the oil storage tanks.
- Batteries stored within the dedicated storage bund.
- Lab equipment & lab wastes associated with site environmental analysis
- General refuse
- Biotreatment unit.

3.0 CLOSURE CONSIDERATIONS

3.1 Clean or Non Clean Closure Declaration

In the event of permanently ceasing all waste activities at the site or in the event of full site closure, Enva would envision a clean closure. No wastes are buried on site and there is no existing contamination on the site currently. Therefore it is expected that there would be no remaining environmental liabilities following full or part closure.

3.2 Plant or Equipment Decontamination Requirements

Following removal of remaining waste (liquid and packaged waste) all waste oil tanks, bunds, associated pipelines, pumps, spill trays and the oil interceptor would be decontaminated.

Oil tanks and associated pipelines, pumps, valves, spill trays would be rinsed out using hot water and detergent. The rinse water from this would be collected in IBCs or other suitable containers for disposal through an approved waste disposal contractor.

All bunded areas and the floor of the waste handling area would be inspected for any signs of surface contamination and if necessary this would be washed from the surfaces as above.

A CCTV inspection of stormwater drains and gullies would be carried out and any residues washed to the oil interceptor or diversion tank as appropriate. Following this the oil interceptor would be desludged and washed out to remove any residual traces of oil. The diversion tank would also be inspected for signs of contamination or presence of residue and cleaned out as above.

Lab equipment used for on-site environmental analysis would be cleaned / wiped down if necessary.

All drains associated with the foul sewer system would be flushed with clean water. The bio-treatment unit would be inspected for functionality also.

3.3 Plant Disposal or Recovery

All plant items have inherent value for reuse within Enva Ireland Ltd or for sale to a third party as appropriate. Infrastructure such as the building, bunds, diversion tank, stormwater drains, groundwater monitoring wells, weighbridge, foul sewer network and bio-treatment unit would remain in situ as they form part of the inherent capital value of the site and do not of themselves present potential for environmental pollution.

Tanks, pumps, spill trays, laboratory equipment etc may either be removed for use on another Enva Ireland Ltd site or sale to third party or they may remain in place for use on-site (i.e. for non-waste activities).

3.4 Waste Disposal or Recovery

All wastes including those listed below will be dispatched to approved third party waste contractors. Recovery/reuse options for wastes will be sought in preference to treatment/disposal where this is possible and appropriate.

- Packaged wastes.
- Waste oil from bulk oil tanks.
- Sludge / residue from the interceptor.
- Washings from tanks, bunds, floors, equipment, and diversion tank.
- General refuse.
- Lab wastes.

Unused absorbent material for spillage control may be reused within Enva Ireland Ltd or sold to a third party.

3.5 Soil or Spoil Removal

There is no on-site landfilling at the Enva facility and no existing soil contamination. Removal of soils is therefore not envisioned.

4.0 CRITERIA FOR SUCCESSFUL CLOSURE

4.1 Addressing of Site Environmental Liabilities at Closure

Successful clean closure will be expected to be achieved when it can be demonstrated that there are no remaining environmental liabilities at the site. In practice this will require demonstration that the following criteria have been met:

- There are no residues which could pose an environmental hazard remaining on or within plant and equipment associated with waste activities.
- All wastes associated with licensed waste activities and with the cleaning and decontamination of plant and equipment as part of the closure have been removed off site to appropriately licensed facilities and carried by hauliers who have appropriate waste collection permits.
- Groundwater monitoring carried out following plant decontamination and waste removal indicates that no residual contamination exists within the soils or groundwater as a result of site activities.
- All relevant records relating to the closure have been retained on file.

5.0 CLOSURE PLAN COSTING

5.1 Decontamination Costs

Costs associated with decontamination of tanks, bunds, floors, drains, interceptor and diversion tank would include the following

Detergent/caustic wash	approx €5,000
Labour	Supplied from existing Enva resources
Power washer	Supplied from existing Enva resources
Disab / Vacuum tanker	approx. €1,500
Tanker / IBCs to contain washings,	Supplied from existing Enva resources
Water and energy	Supplied from site, not expected to cost over and above normal operating costs.

5.2 Plant & Waste Disposal Costs

As indicated earlier plant and equipment would have inherent value and in many cases would infact add to the capital value of the site following closure. There are therefore no net costs associated with plant and equipment.

Waste oil and packaged wastes from customers are accepted to the facility on behalf of Enva for interim storage only, wastes are then transferred to one of Enva's other facilities for treatment or disposal. The value is not realised until the waste has been fully treated or disposed of. Costs of treatment or disposal are directly charged to the customer, transfer and storage costs are built into the pricing structure thus there would be no net cost associated with the transfer of these wastes.

The principal wastes for disposal would therefore be the waste washings from the decontamination activities. It is anticipated that there could be up to 50 tonnes of washings for disposal at a cost of €300 per tonne. Other wastes may include a small quantity of lab waste as well as general refuse.

Costs associated with waste disposal costs are as follows:

50 tonnes of washings	ca. €15,000
Laboratory waste and general refuse	< €1,000

5.3 On-going monitoring

Prior to closure external competent specialists would carry out an independent audit in order to validate the implementation of the CRAMP and a final round of monitoring of stormwater drains and groundwater would be completed. It is not envisioned that any on-going monitoring would be required at the site. In summary the following monitoring and reports would be required to finalise the closure:

CCTV of stormwater drains	approx €3,000
One round of groundwater monitoring	approx €2,000
Independent validation audit	approx €3,000

5.4 Facility Security and Staffing

During closure facility security would be provided in the normal way and would not be expected to constitute additional costs. The site is surrounded with an 8 foot high palisade fence with one entrance gate which is operated by a fob system. The gate can additionally be padlocked if required.

Staffing would be provided from within Enva's own resources for the purposes of decontamination and cleanup. No additional costs are envisioned in respect of this.

5.5 Summary of Costs

The total costs associated with this CRAMP are estimated as follows;

DESCRIPTION	COST
Cost of detergent / caustic wash	€5,000
Desludging of oil interceptor	€1,500
Disposal of washings	€15,000
Disposal of other wastes	€1,000
CCTV of stormwater drains	€3,000
One round of groundwater monitoring	€2,000
Validation audit and report	€3,000
TOTAL	€30,500

6.0 CLOSURE PLAN UPDATE AND REVIEW

6.1 Proposed Frequency of Review

As per the waste license condition 10.2.2 it is proposed to review this CRAMP annually and to revise it whenever this is warranted due to significant changes to costs, site conditions, plant, infrastructure or waste activities.

6.2 Proposed Scope of Review

The annual review of the CRAMP referred to above will include the entire document.

7.0 CLOSURE PLAN IMPLEMENTATION

7.1 EPA Notification

In the event that closure is planned. Enva will notify the Agency in writing as soon as is feasible in advance of the closure. Enva would aim to ensure that this notification takes place at least one week in advance of implementing the CRAMP.

7.2 Local or other Statutory Authority notifications

The closure of waste activities at Enva Ireland Ltd in Cork would not be likely to concern any other agencies or authorities. It is therefore not envisioned that any notification other than that mentioned in Section 7.1 above would be required.

7.3 Test Programme

There are no test programmes relevant to the closure.

7.4 Full or Partial Closure considerations

It is conceivable that a part of Enva's waste activities could be closed while others continue. In this event the plant, equipment, raw materials and wastes relating only to the part of the waste activities which are closed will be closed in accordance with this plan. For partial closure the specific components which are within the scope of the closure will be listed within the notification referred to in Section 7.1 above and validation against successful closure criteria will be carried out in respect of the listed items only.

8.0 CLOSURE PLAN VALIDATION

8.1 Closure Validation Audit

As part of the closure, Enva would employ an independent environmental specialist with experience and recognised qualifications as an environmental auditor (e.g. membership of IEMA or similar) to conduct a validation audit against the requirements of this CRAMP particularly the criteria set out in Section 4.1. The scope of the audit shall be the same as the scope of the closure.

8.2 Closure Validation Audit Report

An audit report would be prepared by the independent auditor clearly setting out the overall conclusions of the audit and specifying whether the audit criteria had been achieved.

8.3 Closure Validation Certificate

The closure will be deemed to be complete if all criteria set out in Section 4.1 have been deemed to be achieved in the auditor's report. This shall be regarded as certification of completion of the closure in accordance with this plan. The auditor's report will then be submitted to the Agency.

9.0 RESTORATION AND AFTERCARE MANAGEMENT PLAN (RAMP)

As indicated in Section 1, Enva is classified as a Category 3 risk site by default and therefore must consider the need for a Restoration and Aftercare Management Plan (RAMP). The EPA guidance document recognises that the majority, but not all, Category 3 facilities will require a restoration and aftercare management plan. In particular, the guidance document states that RAMP is needed for non-clean closure.

Enva Ireland Ltd would envision a clean closure for its Cork waste activities and therefore would not envision the need for restoration or any aftercare. Part of the site closure plan includes verification that no residual contaminants remain with soils/groundwater following closure. In the event that there are any remaining residues which could pose a hazard to the environment or that soil / groundwater contamination is discovered this situation will be reviewed.

9.1 Site Restoration and Aftercare Management Costs

In view of the above there are no anticipated costs associated with site restoration and aftercare management post closure.

APPENDIX G

BUND ASSESSMENT

JOB NO. ENVA 111101

BY: Jacqueline Manley

DATE: 18/11/2011

Company:
ENVA IRELAND LTD.

Reference No.:
W0145-02

Site: RAFEEN, INDUSTRIAL ESTATE,
RINGASKIDDY, CO. CORK

Category: Waste treatment

Bund Ref. No.:
01

Bund Type – Local, Remote, Combined:
Local

Bund location:
Internal bund in production area.

Bund Risk Classification 1, 2 or 3.
2

Bund Dimensions(internal):
5.0x3.7x1.5m

Primary Vessels – Materials of Construction:
316l Stainless Steel

Bund Materials of Construction: Concrete

Primary Vessels – Total Storage Volume:
25,000l

Bund Lining Material: Epoxy Resin

Primary vessels – 110% of volume of largest vessel:

Bund Retention Volume (Local/Remote):
27,750l

Vessels – 25% of Total Storage Volume:
N/A single vessel

Deemed practicable/safe to conduct hydrostatic test? Yes/No: Yes

Date of Hydrostatic test:
15th November 2011 & 18th November 2011

If No, give reasons:
N/A

Description and results of Hydrostatic Test:

- Bund was filled to 1.4m deep and checked in accordance with BS 8007 1987 modified. No drop in level was noted.

Description and Results of Visual Inspection:

- Tank has been recently relined with epoxy coating.
- See photo attached.

Recommendations:

- Nothing further as of the date of the inspection.

Jacqueline Manley

Date:
18/11/2011