



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

W0145-02

**Annual Environmental
Report 2012**

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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 2012 to December 2012 for Enva Ireland Ltd, Raffeem 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 2012.

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. Only waste oil and waste batteries were accepted on-site throughout 2012.

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. 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 2012 (Tonnes) EWC 130208*	Quantity of Waste Batteries in 2012 (Tonnes) EWC 160601*
Hazardous Waste	5,000	1556.56	5.68

MONITORING AND EMISSIONS SUMMARY

PRTR

Currently Enva 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. Activities on site are limited to the transfer of 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

Enva initially 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 due to be carried out in December 2012, however due to weather conditions on site the survey was postponed to January 2013. 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 2012

Sample Date	Flow	PH	Cond.	SS	Mineral Oil
04.01.12	No Flow	N/A	N/A	N/A	N/A
09.01.12	No Flow	N/A	N/A	N/A	N/A
17.01.12	Flow	7.312	104.6	82	N/A
25.01.12	Flow	7.194	129	10	<0.01

Sample Date	Flow	PH	Cond.	SS	Mineral Oil
30.01.12	Flow	7.126	88.4	75	N/A
08.02.12	Flow	6.876	91.5	<10	<0.01
13.02.12	No Flow	N/A	N/A	N/A	N/A
21.02.12	Flow	6.916	159.5	<10	n/a
27.02.12	No Flow	N/A	N/A	N/A	N/A
06.03.12	Flow	7.391	99.2	20	<0.01
16.03.12	Flow	7.114	113.4	28	N/A
20.03.12	No Flow	N/A	N/A	N/A	N/A
26.03.12	No Flow	N/A	N/A	N/A	N/A
02.04.12	No Flow	N/A	N/A	N/A	N/A
12.04.12	Flow	6.982	143.4	36	<0.01
16.04.12	Flow	7.314	99.1	<10	N/A
23.04.12	Flow	7.118	123	15	N/A
01.05.12	Flow	7.223	88.1	<10	<0.01
10.05.12	Flow	7.559	109.6	<10	N/A
18.05.12	Flow	6.991	94.1	18	N/A
22.05.12	Flow	7.191	103.8	32	N/A
29.05.12	Flow	7.236	113.1	21	N/A
05.06.12	Flow	7.412	109.1	<10	<0.01
11.06.12	Flow	7.622	89.1	<10	N/A
18.06.12	Flow	7.82	76	<10	N/A
25.06.12	No Flow	N/A	N/A	N/A	N/A
03.07.12	Flow	6.961	85	<10	<0.01
10.07.12	Flow	6.92	130	19	N/A
16.07.12	Flow	6.892	112	15	N/A

Sample Date	Flow	PH	Cond.	SS	Mineral Oil
23.07.12	Flow	7.134	82	<10	N/A
31.07.12	Flow	7.274	64	<10	N/A
07.08.12	Flow	7.062	72	<10	<0.01
13.08.12	Flow	6.841	103	<10	N/A
24.08.12	Flow	6.994	97	12	N/A
27.08.12	Flow	6.682	121	17	N/A
03.09.12	No Flow	N/A	N/A	N/A	N/A
10.09.12	Flow	7.314	82	14	<0.01
17.09.12	No Flow	N/A	N/A	N/A	N/A
24.09.12	No Flow	N/A	N/A	N/A	N/A
02.10.12	Flow	7.087	114	18	<0.01
08.10.12	Flow	6.876	92	<10	N/A
16.10.12	Flow	7.415	109	12	N/A
22.10.12	No Flow	N/A	N/A	N/A	N/A
31.10.12	Flow	7.216	129	14	N/A
05.11.12	No Flow	N/A	N/A	N/A	N/A
12.11.12	Flow	6.947	108	<10	<0.01
19.11.12	Flow	7.163	93	16	N/A
26.11.12	No Flow	N/A	N/A	N/A	N/A
04.12.12	Flow	6.849	87	13	<0.01
12.12.12	Flow	7.109	64	<10	N/A
18.12.12	Flow	6.981	91	11	N/A

GROUNDWATER

Ground water monitoring and sampling was carried out by URS on the 22nd of June 2012
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. During 2012 Enva applied to extend the scope to include Conductivity. Conductivity has been approved with the closure of some non-conformances. This will be added to the scope in 2013.

INCIDENTS & COMPLAINTS

There were no incidents or complaints against Enva in 2012. 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. There were no significant developments carried out on site in the reporting period.

REVIEW OF NUISANCE CONTROLS

Odour and dust are monitored daily as required by the licence. In 2012 there has was 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 2012 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 2011 data at the management review.

APPENDIX A



Environmental Protection Agency

| PRTR#: W0145 | Facility Name : Envva Ireland Limited (Cork) | Filename : W0145_2012 PRTR.xls | Return Year : 2012 |

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.16

REFERENCE YEAR	2012
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1. FACILITY IDENTIFICATION

Parent Company Name	Envva Ireland Limited
Facility Name	Envva Ireland Limited (Cork)
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@envva.ie
AER Returns Contact Position	Operations Manager
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	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	18
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?	No
Have you been granted an exemption ?	
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4. WASTE IMPORTED/ACCEPTED ONTO SITE

Guidance on waste imported/accepted onto site

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	No
--	----

4.1 RELEASES TO AIR

[Link to previous years emissions data](#)

| PRTR#: W0145 | Facility Name : Enva Ireland Limited (Cork) | Filename : W0145_2012 PRTR.xls | Return Year : 2012 |

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT		RELEASES TO AIR		METHOD		QUANTITY		
No. Annex	Name	M/C/E	Method Code	Method Used	Description	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					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		RELEASES TO AIR		METHOD		QUANTITY		
No. Annex	Name	M/C/E	Method Code	Method Used	Description	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					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		RELEASES TO AIR		METHOD		QUANTITY		
Pollutant No.	Name	M/C/E	Method Code	Method Used	Description	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					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 T (Total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Enva Ireland Limited (Cork)

Please enter summary data on the quantities of methane flared and / or utilised

	T (Total) kg/Year	Method Used		Facility Total Capacity m3 per hour
		M/C/E	Method Code	
Total estimated methane generation (as per site model)	0.0			N/A
Methane flared	0.0			0.0 (Total Flaring Capacity)
Methane utilised in engine/s	0.0			0.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0			N/A

4.2 RELEASES TO WATERS [Link to previous years emissions data](#) | PRTR# : W0145 | Facility Name : Enva Ireland Limited (Cork) | Filename : W0145_2012 PRTR.xls | Return Year : 2012 | 02/04/2013 11:49

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS **RELEASERS TO WATERS** 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

No. Activity	Pollutant Name	M/C/E	Method Code	Designation or Description	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 **RELEASERS TO WATERS**

No. Activity	Pollutant Name	M/C/E	Method Code	Designation or Description	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) **RELEASERS TO WATERS**

Pollutant No.	Pollutant Name	M/C/E	Method Code	Designation or Description	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: Enva Ireland Limited (Cork) | Filename: W0145_2012 PRTR.xls |

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER

No. Anhyd. H ₂ O	Pollutant Name	M/C/F	Method Code	Designation of Description	Emission Point 1	QUANTITY		
						I (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 POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER

Pollutant No.	Pollutant Name	M/C/F	Method Code	Designation of Description	Emission Point 1	QUANTITY		
						I (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

4.4 RELEASES TO LAND [Link to previous years emissions data](#) | PRTR#: W0145 | Facility Name : Enva Ireland Limited (Cork) | Filename : W0145_2012 PRTR.xls | Return Year : 2012 | 02/04/2013 11:49

SECTION A : PRTR POLLUTANTS

RELEASURES TO LAND				QUANTITY	
POLLUTANT	NAME	METHOD	UNIT	T (Total) KG/Year	A (Accidental) KG/Year
No. Annex II		Yearly Emission		0.0	0.0
		Waste Management		0.0	0.0
		Disposal or Release		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)

RELEASURES TO LAND				QUANTITY	
POLLUTANT	NAME	METHOD	UNIT	T (Total) KG/Year	A (Accidental) KG/Year
Pollutant No.		Yearly Emission		0.0	0.0
		Waste Management		0.0	0.0
		Disposal or Release		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: Enva Ireland Limited (Cork) Filename: W0145_2012 PRTR.xls | Return Year: 2012 |

Please enter all quantities on this sheet in Tonnes

02042013 11:49

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste: Name and Licence/Permit No of Next Destination Facility Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste: Address of Next Destination Facility Next Haz Waste: Address of Recover/Disposer	Name and Licence/Permit No. and Address of Final Recoverer/Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recoverer/Disposer Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	13 02 08	Yes	1556.56	other engine, gear and lubricating oils	R13	M	Weighted	Offsite in Ireland	Enva Ireland Ltd, W0184-01 Cionniam Industrial Estate,Portlaoise, Laois,Ireland	Enva Ireland Ltd, W0184-01 Cionniam Industrial Estate,Portlaoise, Laois,Ireland and Campine Recycling NV,Licence number is 0474955451 Nlverheidsstra at 2 B - 2340 ,,BEERSE,,Belgium	Cionniam Industrial Estate,Portlaoise,,Laois,Irel and	Cionniam Industrial Estate,Portlaoise,,Laois,Irel
Within the Country	16 06 01	Yes	5.68	lead batteries	R13	M	Weighted	Offsite in Ireland	Enva Ireland Ltd, W0184-01	Enva Ireland Ltd, W0184-01	Nlverheidsstraat 2 B - 2340 ,,BEERSE,,Belgium	Nlverheidsstraat 2 B - 2340 ,,BEERSE,,Belgium

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

APPENDIX B



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Enva Ireland
Rafeen Industrial Estate
Monkstown
Co Cork

Assessment of Environmental Noise Emissions at the ENVA
Rafeen Waste Oil Facility, 2013

Report Ref. ENV2061

Author: Stephen Magee M.Sc. M.I.O.A.
22nd January 2013

EXECUTIVE SUMMARY

Shorcontrol Safety Ltd. has been commissioned by Enva Ireland Ltd to conduct a survey of environmental noise emissions at its Rafeen facility, primarily to assess compliance with the noise limits set out in the plant's waste license. This survey was conducted in accordance with the new EPA guidance note for noise in relation to scheduled activities; NG4.

The survey was conducted on the 18th of January 2013. The results of the survey are as follows:

- The plant's waste license criteria for day time noise emissions was exceeded during one of the measurements at position N3, and during all three of the measurements at the noise sensitive location, N5.
- In light of the minimal noise emitted by site activities, it is likely that these exceedences are due to noise from the adjacent road.
- In an attempt to limit the influence of road traffic noise on the measured levels, the parameter used for the purposes of comparison with the site's license criteria was L_{AF90} .
- There were no clearly audible tones or impulses audible at the noise sensitive location.

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1.0 INTRODUCTION

The Survey

This survey is the latest in a series of annual environmental noise surveys at the plant, and the first to be conducted according to the recently released EPA guidance note NG4.

The primary purpose of the survey is to assess compliance with the plant's Waste licensing requirements, which sets limits on noise emissions at noise sensitive locations. The plant's Waste license W0145-02 requires the plant to limit noise at the nominated NSL to 55dBA ($L_{A,T,30min}$) during the day*.

The Plant

The Rafeen plant is designed to treat waste oil, and has not altered significantly in process or plant since last year – it still operates during daytime hours only, and most of the primary noise sources are expected to be unchanged. The plant consists primarily of a series of waste oil and chemical storage tanks and reservoirs, along with various pumps, mixers and fluid handling plant.

*In the EPA guidance note NG4, "Daytime" is defined as 07.00 – 19.00.

2.0 SURVEY DETAILS

2.1 Survey Period & Personnel

Measurements were conducted during the following time period:

1. Between 08.30 and 17.30 on the 18/01/13.

All the measurements were conducted, and this report was written by Stephen Magee of Shorcontrol Safety Ltd. Stephen is a corporate member of the Institute of Acoustics, has a Master's Degree in Acoustics, and has been practising acoustics professionally for ten years.

The weather conditions on site during the measurement periods were as follows:

Dry and mostly clear and cold, with temperatures from about 2 – 7 degrees. The day started with almost no wind whatsoever, but a north - north-westerly breeze began at about 12.30, increasing to a maximum of about 8mph at 14.30, then died off, with no wind noticeable from 16.00 on. There was no rain, though the ground was initially very wet from rain the night before.

2.2 Schedule of Equipment Used

The equipment used in this survey was a Casella 490 Type 1 SLM, Serial no. 104282. This instrument was calibrated before and after the measurement session with a CEL 110 Class 1 Calibrator serial No 104779, and was calibrated to an internationally traceable standard in October 2012. See Appendix C for copies of the calibration certs. The meter was fitted with a B & K UA-0237 windshield.

3.0 ASSESSMENT DETAILS

3.1 Methodology

This environmental noise survey was conducted in accordance with the principles of ISO 1996: 1982 – “Description and Measurement of Environmental Noise”, and the new EPA document NG4 “Guidance Note for Noise in Relation to Scheduled Activities”.

NG4 introduces some changes in the way this survey has been performed, the most significant of which are:

- All locations referred to in the plant’s waste license are now measured three times during the daytime periods. This includes the perimeter locations and the NSL. Evening and night-time measurement periods are not required as the license is not new, and the plant never operates out of daytime hours according to Enva personnel.
- The use of statistical parameters such as L_{AF90} (instead of the usual energy-based parameter L_{Aeq}) which can suppress the influence of background noise such as traffic are permitted for comparison with license criteria if the ambient acoustic conditions allow.
- The criteria for tonality have been altered and more clearly defined.
- Third Octave bandwidth data is both recorded and reported for all NSL and perimeter locations.

3.2 Noise Sources

There have been no new significant sources of noise installed or created on site since last year.

The most significant noise sources affecting the measurement positions within the plant are:

- Various small pumps and liquid handling systems associated with the movement of oil.

- Vehicular traffic in the yard, including trucks unloading/loading and fork trucks at the rear of the facility, and tankers unloading at the front.
- Car and van traffic in and out of the car park.

The principal sources of noise outside the site are:

- Heavy and constant road traffic on the adjacent road (N28 to Ringaskiddy).

3.3 Hours of Operation

The plant opens at 08.00 and finishes at 16.40.

3.4 Site Activity at time of Measurement

According to Jamie Barry, the plant environmental officer, the activity experienced on site during the measurement period was representative of typical current operating conditions.

3.5 Measurement Parameters

The survey results are presented in terms of the following parameters:

L_{Aeq} is the **Equivalent Continuous Sound Level**. It is a type of average, and is used to describe a fluctuating noise over a period of time with a single figure.

$L_{Ar,T}$ is the **Rating level**, i.e the equivalent continuous sound level over the measurement period, with a penalty applied for tonal or impulsive characteristics if necessary. This is usually the figure used to assess compliance with the Plant's IPPC license.

L_{A90} and L_{A10} are the sound levels that are exceeded for 90 percent and 10 per cent respectively of the sample period. L_{A90} is generally used as an indicator of background noise, while L_{A10} is often used as an indicator of traffic noise. This type of statistical noise index is called a **percentile level**.

L_{Amax} is the maximum value of the instantaneous noise level on the fast time-weighting during the measurement period

Tonal Noise is noise that contains a noticeable tonal element in the form of a hum, hiss, screech etc. This can be identified either subjectively by the observer, or objectively, using the third octave bandwidth method described by ISO 1996-2

Impulse Noise is noise that contains a sudden rise in noise level, such as is caused by a bang or thump. This is normally identified subjectively by the observer.

All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pascals.

3.5 Site Layout & Measurement Positions

The diagram below shows the site, its surrounds and all measurement positions. The adjacent road is also visible. Note: the Enva building was being constructed when this image was produced, and is now slightly larger.

Fig 1 - Diagram of Site Layout- measurement positions shown in red.



The **Noise Sensitive Location** is N5:

- **N5** is on the southern grass verge of the N28, directly in line with the adjacent house and the ENVA facility.

The four **Boundary** locations are N1 – N4:

- **N1** is at the rear of the facility, 13m from the rear wall.
- **N2** is at the North western side of the plant, at the edge of the entrance road, approximately 4m from the side wall.
- **N3** is at the front of the building, approximately 23m from the front façade, at the edge of the car park
- **N4** is the south east side of the building, 4m from the building wall.

(See Appendix A for photographs of the monitor position at each of the measurement positions.)

4.0 RESULTS

4.1 Result Summary

The daytime noise limit (55 dBA) was exceeded for one measurement at position N2, and all three measurements at position N5

Location	Day time ($L_{A,30 \text{ min}}$)		
	N1	51	46
N2	53	54	57
N3	50	51	53
N4	44	47	47
N5	57	62	64

Figures in red indicate an exceedance.

Note: L_{AF90} is the parameter used here for comparison with the license requirements, not L_{Aeq} .

4.2 Result Details

Start Time		N1				Comments
		L _{Aeq,30}	L _{AF90}	L _{AF10}	L _{AFMAX}	
Day	08.53	54	51	56	66	Traffic noise dominant. No plant noise at all audible for first two measurements, truck unloading at rear for final measurement. Approx. 4 cars in/out every half an hour.
Day	11.38	51	46	54	62	
Day	14.49	57	49	58	84	
Tones or Impulses present: No						

Start Time		N2				Comments
		L _{Aeq,30}	L _{AF90}	L _{AF10}	L _{AFMAX}	
Day	09.24	57	53	60	72	.Traffic noise louder here as building not blocking road. Faint hiss from lab fume hood extract vent. Cars in and out passing close to meter here. Small amount of wind noise audible during final measurement period.
Day	12.22	60	54	63	74	
Day	15.19	61	57	63	77	
Tones or Impulses present: No						

Start Time		N3				Comments
		L _{Aeq,30}	L _{AF90}	L _{AF10}	L _{AFMAX}	
Day	09.55	58	50	61	73	Traffic noise dominant. Closest part of site to road. Some pump noise audible through open sliding door for several minutes during first measurement period. Truck manoeuvring around front of building during final measurement period. Lot of cars leaving as work day ends.
Day	12.53	61	51	64	70	
Day	15.50	63	53	66	88	
Tones or Impulses present: No						

Start Time		N4				Comments
		L _{Aeq,30}	L _{AF90}	L _{AF10}	L _{AFMAX}	
Day	10.26	54	44	58	64	Traffic noise dominant here but shielded slightly by hedges and topography. Some pumping noise audible from tanks during first measurement.
Day	13.23	55	47	58	65	
Day	16.21	56	47	60	69	
Tones or Impulses present: No						

Start Time		N5				Comments
		L _{Aeq,30}	L _{AF90}	L _{AF10}	L _{AFMAX}	
Day	11.05	77	57	82	93	Approximately 2m from road edge, traffic noise strongly dominant, nothing else audible. Traffic count in am is approximate 63 vehicles in 10 minutes, increasing to 100 by the final measurement period.
Day	14.05	79	62	85	93	
Day	16.52	80	64	85	93	
Tones or Impulses present: No						

5.0 CONCLUSIONS

- The Plant's license criteria are met at all measurement locations except for one measurement at N2 and all three measurements at N5.
- Traffic noise is dominant at all measurement locations, with the exception of short periods when trucks are manoeuvring or being unloaded. Traffic noise is so pervasive and dominant that it is difficult to separate from plant noise, even by examining parameters such as L_{AF90} .
- Most of the differences in noise over the day can be explained by variations in traffic flow and speed; traffic was high for the very first measurement that started before 09.00, then dropped for a short period before steadily increasing for the rest of the day as people in the nearby industrial areas left for home.

Appendix A – Monitoring Locations

Fig 2 – Monitor Location, N1*

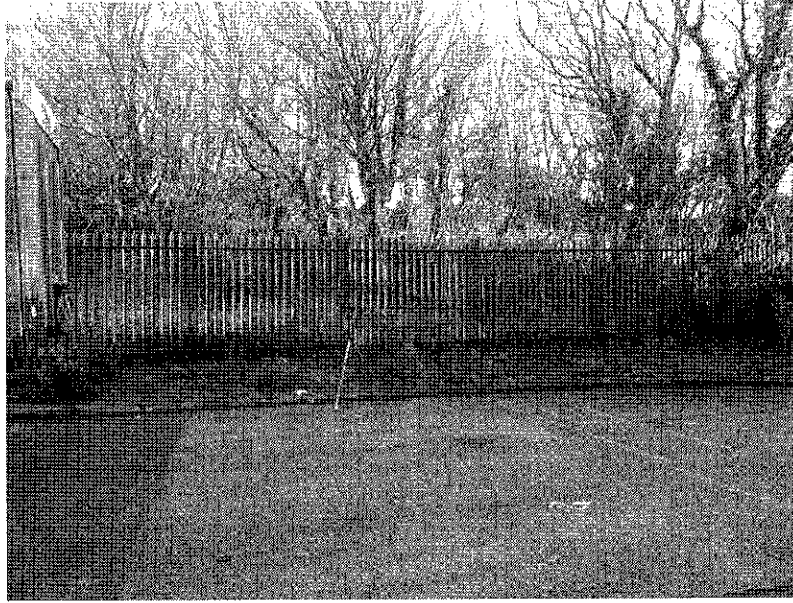


Fig 3 – Monitor Location, N2



Fig 4 – Monitor Location, N3

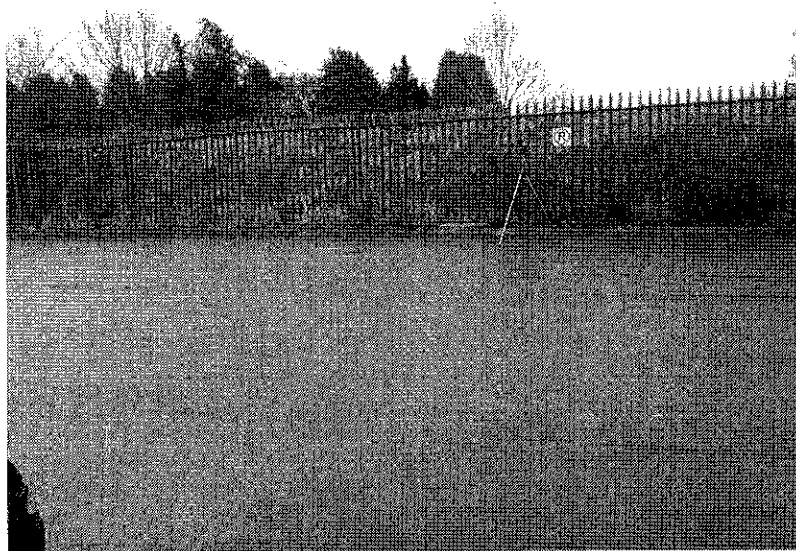


Fig 5 – Monitor Location, N4

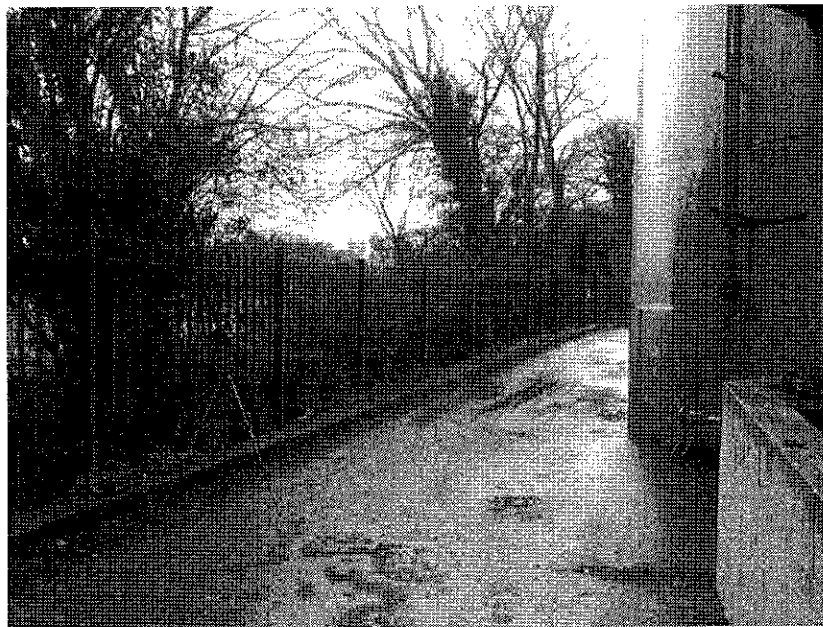
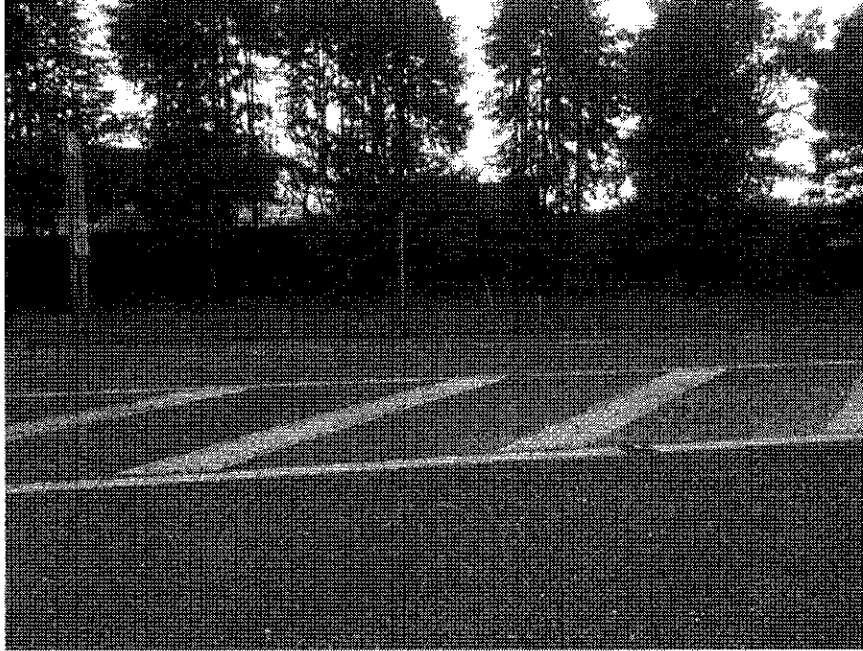


Fig 6 – Monitor Location, N5

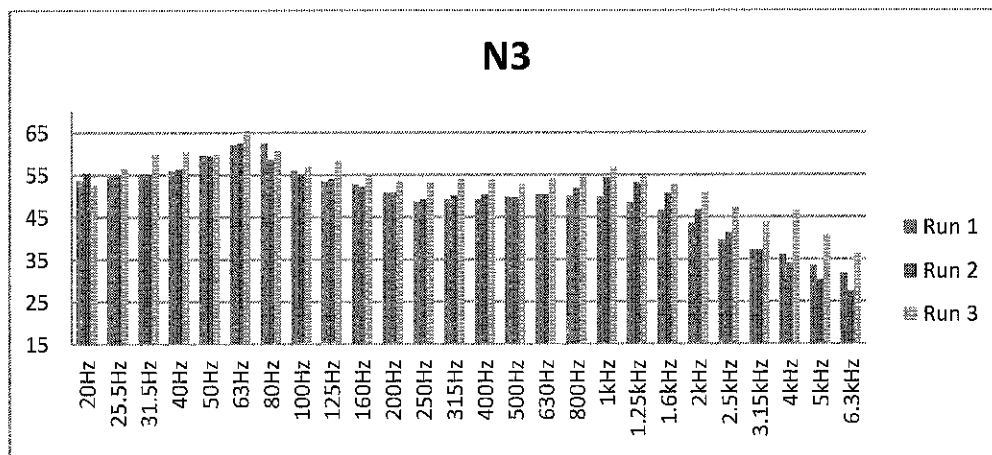
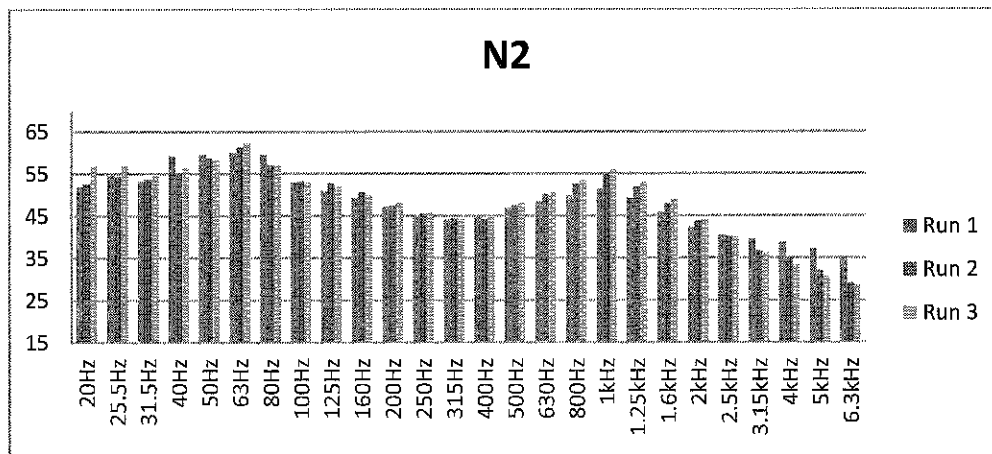
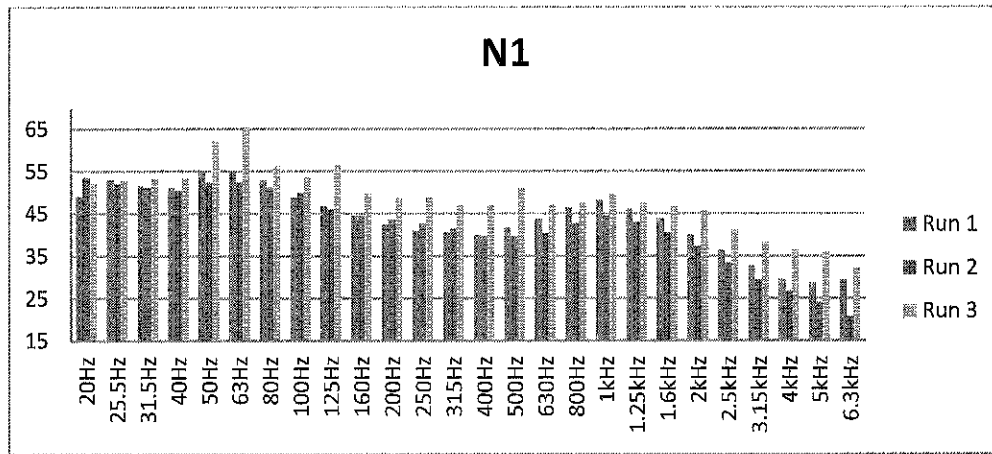


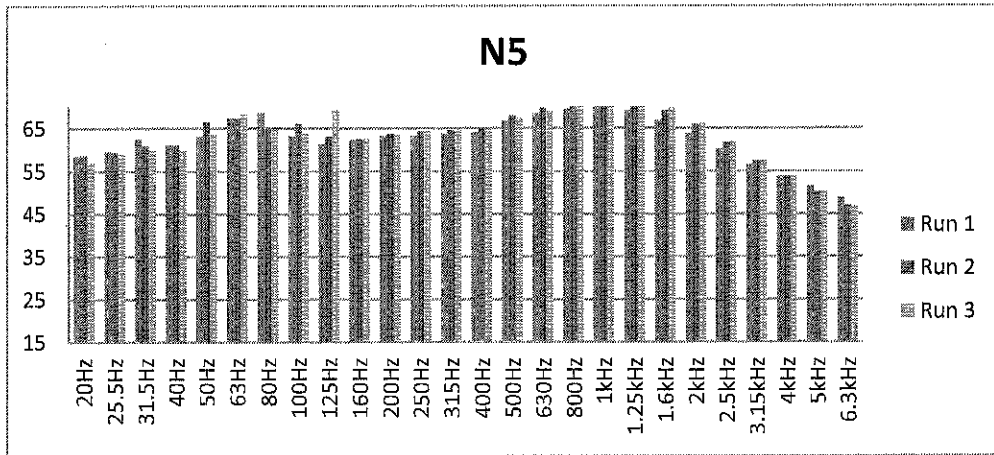
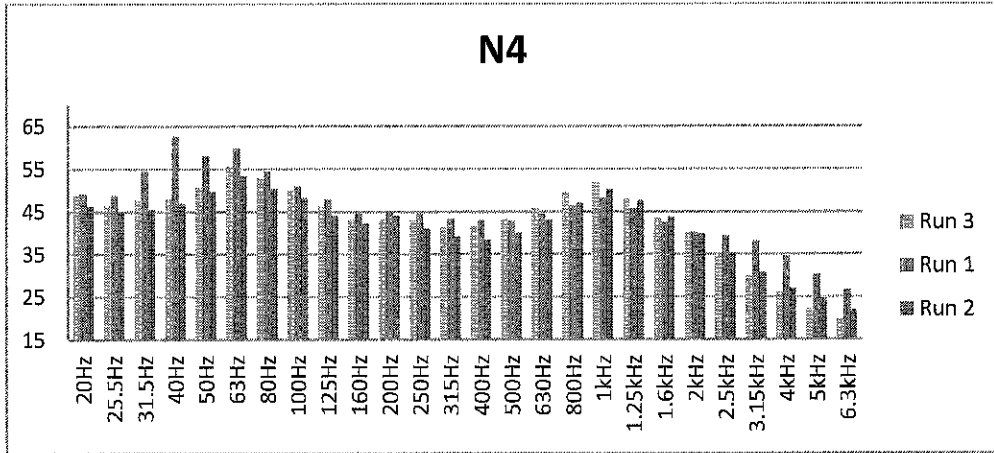
Appendix B – Third Octave Band Data

Location	Period	Third Octave Band Data (Hz)																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	
N1	Run 1	49	53	52	51	55	55	53	49	47	45	42	41	41	40	42	44	46	48	46	44	44	40	36	33	30	29	29
	Run 2	54	52	51	51	52	52	51	50	46	45	44	43	42	40	40	40	43	45	43	41	37	33	30	27	24	21	21
	Run 3	52	53	53	53	62	65	56	54	57	50	49	49	47	47	51	47	48	50	48	47	46	41	38	37	36	32	32
N2	Run 1	52	55	53	59	60	60	60	53	51	49	47	45	44	45	47	48	50	51	49	46	42	40	40	39	37	35	35
	Run 2	53	54	54	55	59	61	57	53	53	51	48	46	45	44	48	50	53	55	52	48	44	40	37	35	32	29	29
	Run 3	57	57	55	56	58	62	57	53	52	50	48	46	44	45	48	50	53	56	53	49	44	40	36	33	31	29	29
N3	Run 1	54	55	55	56	60	62	62	56	54	53	51	49	49	49	50	50	50	50	48	47	44	40	37	36	34	32	32
	Run 2	55	55	55	56	60	63	59	55	54	52	51	49	50	50	50	50	52	54	53	51	47	41	37	34	30	28	28
	Run 3	53	57	60	61	60	66	61	57	58	55	53	53	54	54	53	54	55	57	55	53	51	47	44	46	41	36	36
N4	Run 1	49	49	54	63	58	60	54	51	48	45	45	45	43	43	43	45	46	48	46	42	40	39	38	34	30	27	27
	Run 2	46	45	46	47	50	53	50	48	44	42	44	41	39	38	40	43	47	50	48	44	40	35	31	27	25	22	22
	Run 3	49	46	48	48	51	56	53	50	46	43	43	43	41	42	43	46	50	52	48	44	40	35	30	26	22	20	20

Location	Period	Third Octave Band Data (Hz)																									
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k
N5	Run 1	59	60	62	61	63	68	69	63	61	62	63	63	64	64	67	68	70	71	69	67	64	60	57	54	52	49
	Run 2	59	59	61	61	67	67	65	66	63	62	64	64	65	65	68	70	72	74	72	69	66	62	57	54	50	47
	Run 3	57	59	60	60	64	68	65	64	69	63	63	64	65	65	68	69	72	74	72	70	66	62	58	54	50	47

Graphs of 3rd Octave Spectra for the above data.





Appendix C – Calibration Certificates

Sound Level Meter Calibration Cert



NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to **Shorcontrol Safety Ltd,
Naas Industrial Estate
Naas
Co Kildare**

Attention of **Mr Stephen McGee**

Certificate Number **E124558**
Item Calibrated **Casella CEL-490 Sound Level Meter SNo. 164282
complete with CEL 495 Pre-amplifier, SNo. 000217
and B&K 4189 Microphone, SNo. 2453355**

Order Number
Date Received **26 Oct 2012**
NML Procedure Number **AP-NM-03**


Method **The above sound level meter was allowed to stabilise for a suitable period in laboratory conditions. The verification checks performed are those outlined in BS 7580 : Part 1 (1997), Specification for the verification of sound level meters. This British Standard specifies a procedure for the periodic verification of conformance of a sound level meter or integrating-averaging meter to BS EN 60651 (1994) and I.S. EN 60894 (2003), respectively. Prior to calibration the instrument was tested, and its overall sensitivity adjusted in accordance with Clause 5.4 of BS 7580 : Part 1 (1997) using a reference sound level calibrator.**

Calibration Standards **Norsonic 1504A Calibration System incorporating:
Agilent 34401A Digital Multimeter, No. 0736 [Cal Due Date: 11 Jul 2013]
B & K 4134 Measuring Microphone, No. 0743 [Cal Due Date: 17 Apr 2014]
B & K 4228 Pistonphone, No. 0743 [Cal Due Date: 07 Mar 2013]
B & K 4226 Acoustical Calibrator, No. 0150, [Cal. Due Date: 30 Oct 2013]**

Calibrated by 
Oliver Power

Approved by 
Paul Hetherington

Date of Calibration **31 Oct 2012** Date of Issue **31 Oct 2012**

 **UKAS**
The certificate is consistent with Calibration and Measurement Capabilities (CMCs) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) signed up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognise the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C. For details see www.bipm.org

Calibration Meter Calibration Cert



NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to **Shorcontrol Safety Limited,
Naas Industrial Estate,
Naas,
County Kildare.**

Attention of **Mr. Stephen McGee**

Certificate Number **E12455A**
Item Calibrated **Casella CEL-110/1 Sound Calibrator**
Serial Number **104779**
Client ID Number **-----**
Order Number **-----**
Date Received **26 Oct 2012**
NMI Procedure Number **AP-NM-13, Rev 1**

Method **The above calibrator was allowed to stabilize for a suitable period in laboratory conditions. It was then calibrated by measuring the sound pressure level generated in its measuring cavity (half-inch configuration). The calibrator's operating frequency was also measured.**

Calibration Standards **Norsonic 1504A Calibration System incorporating:
Agilent 34401A Digital Multimeter, File No. 0796 [Cal due: 11 Jul 2013]
B & K 4134 Measuring Microphone, File No. 0743 [Cal due: 17 Apr 2014]
B & K 4228 Pistonphone, File No. 0740 [Cal due: 08 Aug 2014]**

Calibrated by Sam Bofes Approved by Paul Hetherington
Date of Calibration **26 Oct 2012** Date of Issue **26 Oct 2012**



This certificate is consistent with Calibration and Measurement Capabilities (CMCs) that are included in Appendix C of the Mutual Recognition Arrangement (MRA), drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org)

NOTES

APPENDIX C

URS

Enva Ireland
Limited, Raffeen
Cork – Groundwater
Monitoring 2012

Issue 2 Final

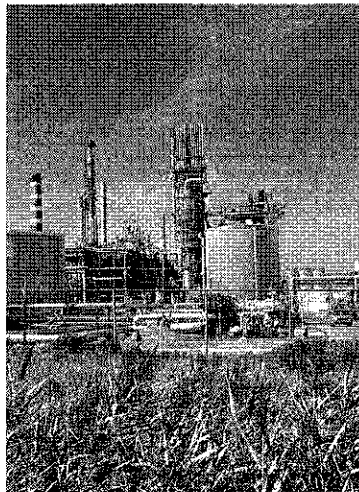
02 April 2013

46402077/CKRP0001

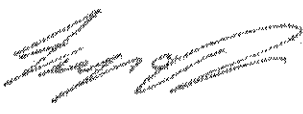

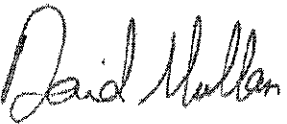
Prepared for:
Enva Ireland Limited



IRELAND



DOCUMENT PRODUCTION / APPROVAL RECORD

Issue No:	Name	Signature	Date	Position
Prepared by	Fergus O'Regan		02 April 2013	Environmental Scientist
Checked by	John Linehan		02 April 2013	Senior Environmental Scientist
Approved by	David Mullan		02 April 2013	Principal Environmental Scientist

REVISION SCHEDULE

Issue No:	Date	Details	Prepared by	Reviewed by	Approved by
1	6 July 2012	Draft for Client Review	Fergus O'Regan Environmental Scientist	John Linehan Senior Environmental Scientist	David Mullan Principal Environmental Scientist
2	02 April 2013	Final Issue	Fergus O'Regan Environmental Scientist	John Linehan Senior Environmental Scientist	David Mullan Principal Environmental Scientist

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The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken on 07 June 2012 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

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1 INTRODUCTION

URS Ireland Limited (URS) is pleased to present this report to Enva Ireland Limited (Enva) which summarises the 2012 groundwater monitoring round conducted at the Enva Facility, Unit 9, Raffeen Industrial Estate, Ringaskiddy, Co.Cork (the site).

A site location plan is presented in Figure 1 and a site layout plan showing borehole locations is presented in Figure 2.

Works were completed in accordance with URS Proposal Number 3105440 entitled 'Groundwater Monitoring 2012' and dated 22 December 2011. The groundwater monitoring round was conducted by URS on 07 June 2012.

It is understood that 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.

The objective of the works presented herein was to fulfil the requirements of the site's waste licence (W0145-02) and to assess groundwater quality by comparison to published guidelines and previous monitoring data.

2 SCOPE OF WORKS

The following scope of work was completed to meet the objectives of this report:

- Water level measurement at monitoring wells BH1, BH2, BH3 and BH4;
- Collection and analysis of one shallow groundwater sample from each of wells BH1, BH2, BH3 and BH4; and
- Data assessment and reporting.

3 METHODOLOGY**3.1 Water Level Measurement**

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

3.2 Well Purging and Water Quality Measurements

Based on the water level measurements, 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 during purging, using a calibrated field water quality meter contained and 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.

3.3 Groundwater Sampling

Groundwater samples were collected by an experienced URS field engineer on 07 June 2012 from monitoring wells BH1, BH2, BH3 and BH4 and analysed for the monitoring parameters specified in the site's Waste Licence, as detailed in Appendix A and Table 1. Groundwater samples were collected as per URS standard procedures to minimise the risk of cross-contamination between samples and sample interference during transit.

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 Limited, a URS approved laboratory, with UKAS accreditation for the analysis performed.

3.4 Data Assessment

Assessment criteria were selected based on the site setting as follows:

- The nearest surface water feature is the Glounatouig Stream located approximately 500 m 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; and
- Environmental Protection Agency's Draft Interim Guidelines Values (IGVs) for the Protection of Groundwater, 2003.

¹ www.gsi.ie

4 RESULTS

4.1 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 07 June 2012. 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 and east. This is consistent with the interpolated groundwater flow direction from previous monitoring rounds completed at the site.

4.2 Field Observations

During groundwater sampling the following was noted:

- Groundwater was generally observed to be brown in colour and cloudy;
- No evidence of contamination (such as sheens or odours) was noted during sampling;
- No separate floating/light or sinking/dense non aqueous phase liquids (NAPLs) were detected in any of the four on site monitoring wells; and
- Field measurements of water quality parameters are tabulated in Table 2.

4.3 Analytical Results

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

- VOCs were not detected above the laboratory method detection limits (MDLs) in the four samples analysed;
- Semi-volatile organic compounds (SVOCs) were not detected above the laboratory MDLs in the four samples analysed;
- Mineral oil was not detected above the laboratory MDL in the four samples analysed;
- Metals arsenic, cadmium, chromium, copper, mercury, nickel and lead were not detected above the laboratory MDLs in the four samples analysed;
- Reported concentrations of boron (detected at BH1, BH2 and BH3) were below the adopted assessment criteria;
- Reported concentrations of zinc in each of the four groundwater samples were below the adopted assessment criteria;
- Selenium was reported above the laboratory MDL in sample BH1. There are no assessment criteria for this metal. Selenium was not reported in samples BH2, BH3 or BH4; and
- Reported concentrations of manganese (detected at BH1 and BH4) were below the adopted assessment criteria.
- Reported concentrations of ortho phosphate in groundwater samples collected from BH1 and BH4 were above the adopted assessment criteria of 0.03 mg/L. Concentrations ranged from 0.1 mg/L (BH4) to 0.23 mg/L (BH1); and

- Total ammonia was reported above the laboratory MDL in sample BH4 (0.07 mg/L). There are no assessment criteria for this parameter. Total ammonia was not reported above the laboratory MDL in samples BH1, BH2 and BH3.
- All remaining major ion analytical data were below the adopted assessment criteria.

4.4 Trends in Analytical Results June 2011 to June 2012

Analytical results for June 2012 were generally comparable to the previous monitoring round completed in June 2011.

Trace concentrations (≤ 10 g/L) of the VOCs trichloroethene (BH1, BH2 and BH3) and cis-1,2-dichloroethene (BH1 and BH2) were reported in the June 2011 groundwater monitoring round. All VOCs were reported below the laboratory MDL in June 2012.

SVOCs and mineral oil were below laboratory MDLs in both monitoring rounds.

Reported concentrations of dissolved heavy metals were below the adopted assessment criteria in both monitoring rounds.

Ammonium concentrations decreased between June 2011 and June 2012 in groundwater from wells BH3 and BH4. Ammonium concentrations in June 2012 were below the adopted assessment criteria.

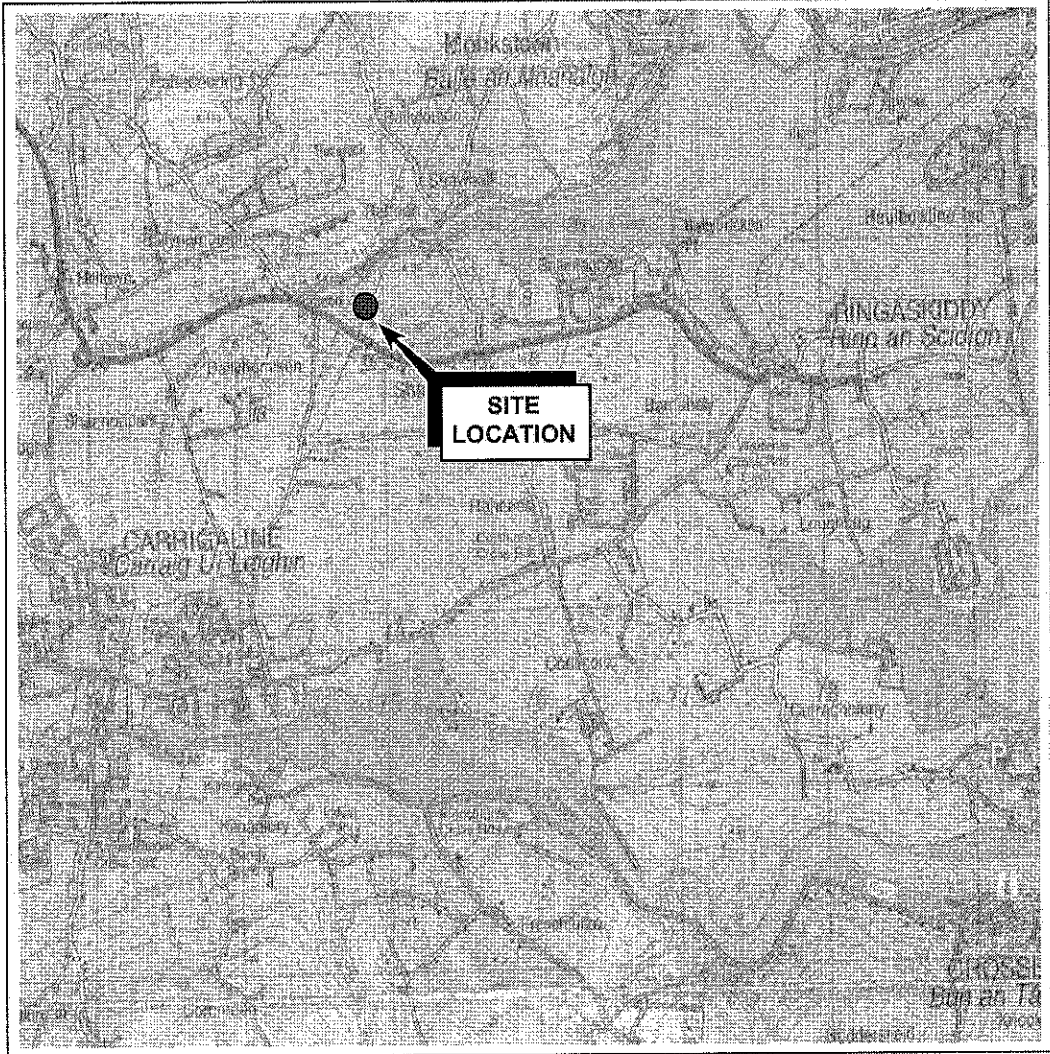
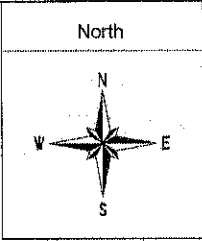
In June 2012 monitoring round, ortho phosphate was reported above the adopted assessment criteria in wells BH1 and BH4. Ortho phosphate was not reported above the laboratory MDL in any of the four groundwater wells during the June 2011 monitoring round.

5 CONCLUSIONS

URS concludes the following based on the annual monitoring event conducted in June 2012:

- The inferred groundwater gradient is relatively flat with a slight gradient to the north and east;
- Ortho phosphate in groundwater from wells BH1 and BH4 was reported above adopted assessment criteria.
- The reported concentrations of all other parameters were below the adopted assessment criteria.

FIGURES



Ordnance Survey Ireland Licence No. EN 0001912
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CLIENT
Enva Ireland Ltd.

PROJECT LOCATION
Enva Rafeen, Ringasskiddy, Co. Cork

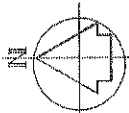
DRAWING TITLE
Figure 1 _ Site Location Map

ENVIRONMENTAL CONSULTANTS



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

DRAWN SML	TRACED	CHECKED FOR	APPROVED JL	DATE 02.07.12
SCALE 1 : 50,000	Job No. 46402077		REV. A	



DISUSED QUARRY

BH04

Site Access

BH03

Non Licensed Activities

Tank Area

NEIGHBOURING GREENFIELD SITE

General Storage

Offices and Laboratory

Waste Handling

BH02

BH01

EXISTING SYSTEM OF QUARRY AND NEIGHBOURING AREA AS BUILT TO ENVIRONMENTAL AGENCIES



Approximate Scale

NOTES

Key

BH02



Monitoring Well Location and ID

STATUS

Final

ENVIRONMENTAL CONSULTANTS



Iveagh Court, 6-8 Harcourt Road, Dublin 2
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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	SMIL	CHECKED	FOR	APPROVED	DATE
			JL	JL	02.07.12
SCALE	JOB NO: 46402077				REV
AS SHOWN					A

NOTES

Key

- BH02 ● Monitoring Well Location and ID
- 11.00 m Groundwater Elevation Relative to Ordnance Datum
- 12.0 m Groundwater Contour
- Groundwater Flow Direction

STATUS: Final

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URS

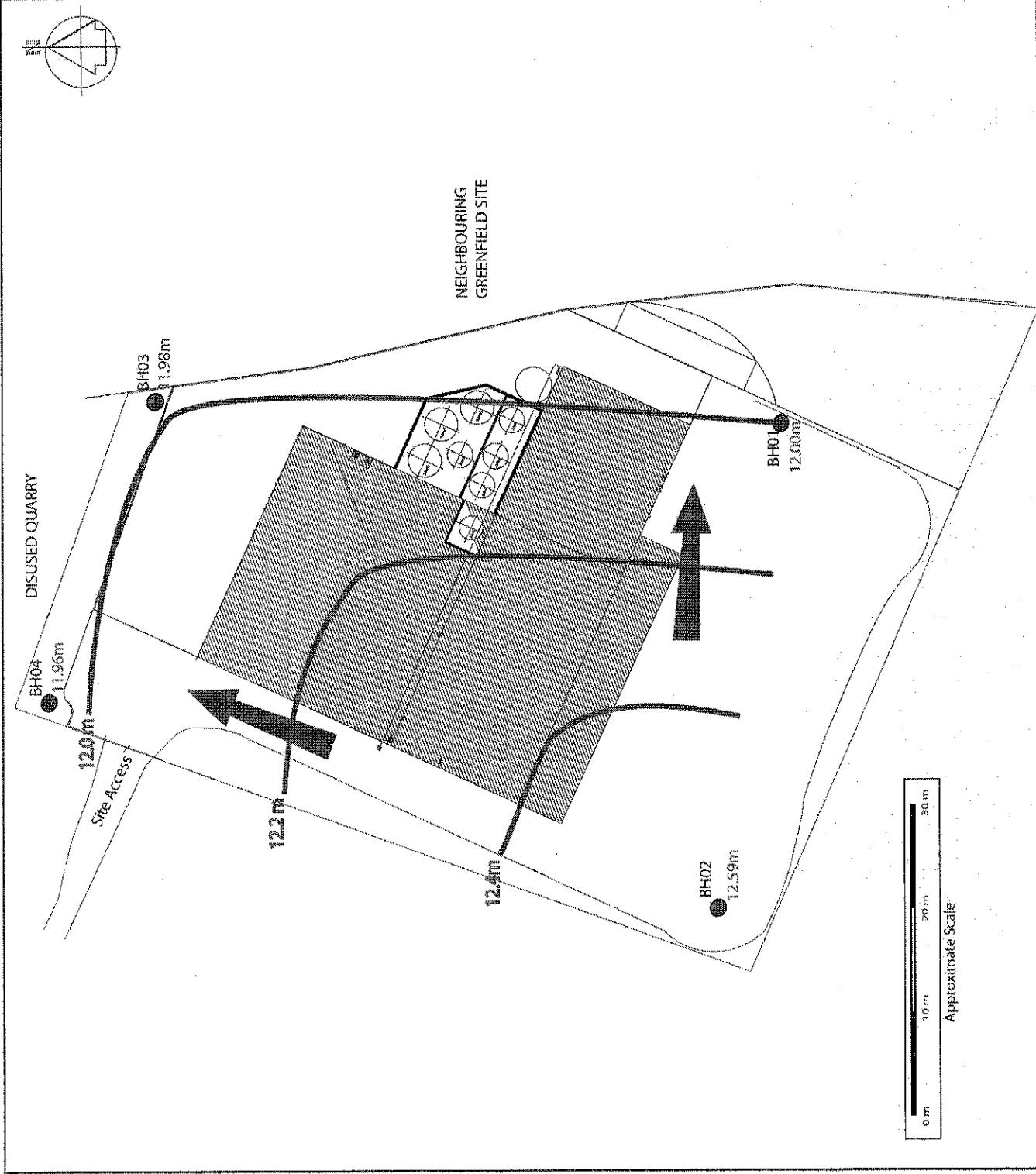
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CLIENT: Enva Ireland Ltd.

PROJECT: Enva Rafeen, Ringaskiddy, Co. Cork

DRAWING TITLE: Figure 3 - Groundwater Contour Plan
 07.06.2012

DRAWN: FOR	CHECKED: EF	APPROVED: JL	DATE: 02.07.12
SCALE: AS SHOWN	JOB No: 46402077	REV: A	



TABLES

Table 1: Sample Inventory - Enva Rafteren, June 2012

Sampling Location	Field Parameters				Laboratory Parameters							
	pH	EC	EH	T	DO	VOCs	SVOCs	COD	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
- COD - Chemical Oxygen Demand
- EPH - Extractable Petroleum Hydrocarbons
- Major Ions - to include Calcium, Magnesium, Chloride, Sulphate, Potassium, Sodium, Bicarbonate, Nitrate, Nitrite, Phosphate & Fluoride

Table 2: Water Level and Field Measurements - Enva Raheen, June 2012

Sample Location	Sampling Date	SWL (mbfoc)	Well Elevation (mAOD)	SWL (mAOD)	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	07-Jun-12	6.855	18.85	12.00	9.26	4.7	14	15	8.40	580	143	12.3	6.90	Cloudy brown water. NEC.
BH2	07-Jun-12	6.028	18.62	12.59	8.58	5.0	15	15	8.05	765	128	11.9	6.33	Slightly cloudy brown water. NEC.
BH3	07-Jun-12	6.865	18.54	11.98	9.60	5.8	17	20	8.06	612	170	11.5	6.40	Cloudy brown water. NEC.
BH4	07-Jun-12	6.667	18.62	11.96	7.95	2.5	8	15	8.60	230	205	12.7	7.70	Cloudy brown water. NEC.

SWL - standing water level
 mAOD - meters above Ordnance Datum
 mbfoc - meters below top of casing
 -- Not Measured
 NEC - No evidence of contamination
 *Redox potential readings compensated by adding 215 mV to field readings as recommended by instrument manufacturer

EC - Electrical Conductivity μ S/cm - micro Siemens per centimetre
 Eh - Redox Potential mV - millivolts
 T - Temperature $^{\circ}$ C - degrees centigrade
 DO - Dissolved Oxygen mg/L - milligrams per litre

Table 3: Volatile Organic Compound Results (µg/L) - Enva Rafeen, June 2012

Volatile Organic Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well			
					BH1	BH2	BH3	BH4
Dichlorodifluoromethane	µg/l	2	ncr	ncr	-	-	-	-
Methyl Tertiary Butyl Ether	µg/l	1	ncr	ncr	-	-	-	-
Chloromethane	µg/l	3	ncr	ncr	-	-	-	-
Vinyl Chloride	µg/l	2	ncr	ncr	-	-	-	-
Bromomethane	µg/l	1	ncr	ncr	-	-	-	-
Chloroethane	µg/l	3	ncr	ncr	-	-	-	-
Trichlorofluoromethane	µg/l	3	ncr	ncr	-	-	-	-
1,1-Dichloroethene	µg/l	3	ncr	ncr	-	-	-	-
Dichloromethane	µg/l	3	ncr	ncr	-	-	-	-
trans-1-2-Dichloroethene	µg/l	3	ncr	ncr	-	-	-	-
1,1-Dichloroethane	µg/l	3	ncr	ncr	-	-	-	-
cis-1-2-Dichloroethene	µg/l	3	ncr	ncr	-	-	-	-
2,2-Dichloropropane	µg/l	1	ncr	ncr	-	-	-	-
Bromochloromethane	µg/l	2	ncr	ncr	-	-	-	-
Chloroform	µg/l	2	ncr	ncr	-	-	-	-
1,1,1-Trichloroethane	µg/l	2	ncr	ncr	-	-	-	-
1,1-Dichloropropene	µg/l	3	ncr	ncr	-	-	-	-
Carbon tetrachloride	µg/l	2	ncr	ncr	-	-	-	-
1,2-Dichloroethane	µg/l	2	ncr	ncr	-	-	-	-
Benzene	µg/l	1	ncr	ncr	-	-	-	-
Trichloroethene	µg/l	3	ncr	ncr	-	-	-	-
1,2-Dichloropropane	µg/l	2	ncr	ncr	-	-	-	-
Dibromomethane	µg/l	3	ncr	ncr	-	-	-	-
Bromodichloromethane	µg/l	2	ncr	ncr	-	-	-	-
cis-1-3-Dichloropropene	µg/l	2	ncr	ncr	-	-	-	-
Toluene	µg/l	2	ncr	ncr	-	-	-	-
trans-1-3-Dichloropropene	µg/l	2	ncr	ncr	-	-	-	-
1,1,2-Trichloroethane	µg/l	2	ncr	ncr	-	-	-	-
Tetrachloroethene	µg/l	3	ncr	ncr	-	-	-	-
1,3-Dichloropropane	µg/l	2	ncr	ncr	-	-	-	-
Dibromochloromethane	µg/l	2	ncr	ncr	-	-	-	-
1,2-Dibromoethane	µg/l	2	ncr	ncr	-	-	-	-
Chlorobenzene	µg/l	2	ncr	ncr	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	2	ncr	ncr	-	-	-	-
Ethylbenzene	µg/l	2	ncr	ncr	-	-	-	-
p/m-Xylene	µg/l	3	ncr	ncr	-	-	-	-
o-Xylene	µg/l	2	ncr	ncr	-	-	-	-
Styrene	µg/l	2	ncr	ncr	-	-	-	-
Bromoform	µg/l	2	ncr	ncr	-	-	-	-
Isopropylbenzene	µg/l	3	ncr	ncr	-	-	-	-
1,1,1,2,2-Tetrachloroethane	µg/l	4	ncr	ncr	-	-	-	-
Bromobenzene	µg/l	2	ncr	ncr	-	-	-	-
1,2,3-Trichloropropane	µg/l	3	ncr	ncr	-	-	-	-
Propylbenzene	µg/l	3	ncr	ncr	-	-	-	-
2-Chlorotoluene	µg/l	3	ncr	ncr	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	3	ncr	ncr	-	-	-	-
4-Chlorotoluene	µg/l	3	ncr	ncr	-	-	-	-
tert-Butylbenzene	µg/l	3	ncr	ncr	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	3	ncr	ncr	-	-	-	-
sec-Butylbenzene	µg/l	3	ncr	ncr	-	-	-	-
4-Isopropyltoluene	µg/l	3	ncr	ncr	-	-	-	-
1,3-Dichlorobenzene	µg/l	3	ncr	ncr	-	-	-	-
1,4-Dichlorobenzene	µg/l	3	ncr	ncr	-	-	-	-
n-Butylbenzene	µg/l	3	ncr	ncr	-	-	-	-
1,2-Dichlorobenzene	µg/l	3	ncr	ncr	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	2	ncr	ncr	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	3	ncr	ncr	-	-	-	-
Hexachlorobutadiene	µg/l	3	ncr	ncr	-	-	-	-
Naphthalene	µg/l	2	ncr	ncr	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	3	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
NA	Not Analysed
ncr	No criteria required

Table 4: Semi-volatile Organic Compound Results (µg/L) - Enva Rafeen, June 2012

Volatile Organic Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well			
					BH1	BH2	BH3	BH4
Phenols								
2-Chlorophenol	µg/l	10	ncr	ncr	-	-	-	-
2-Methylphenol	µg/l	10	ncr	ncr	-	-	-	-
2-Nitrophenol	µg/l	10	ncr	ncr	-	-	-	-
2,4-Dichlorophenol	µg/l	10	ncr	ncr	-	-	-	-
2,4-Dimethylphenol	µg/l	10	ncr	ncr	-	-	-	-
2,4,5-Trichlorophenol	µg/l	10	ncr	ncr	-	-	-	-
2,4,6-Trichlorophenol	µg/l	10	ncr	ncr	-	-	-	-
4-Chloro-3-methylphenol	µg/l	10	ncr	ncr	-	-	-	-
4-Methylphenol	µg/l	10	ncr	ncr	-	-	-	-
4-Nitrophenol	µg/l	10	ncr	ncr	-	-	-	-
Pentachlorophenol	µg/l	10	ncr	ncr	-	-	-	-
Phenol	µg/l	10	ncr	ncr	-	-	-	-
PAHs								
2-Chloronaphthalene	µg/l	10	ncr	ncr	-	-	-	-
2-Methylnaphthalene	µg/l	10	ncr	ncr	-	-	-	-
Naphthalene	µg/l	10	ncr	ncr	-	-	-	-
Acenaphthylene	µg/l	10	ncr	ncr	-	-	-	-
Acenaphthene	µg/l	10	ncr	ncr	-	-	-	-
Fluorene	µg/l	10	ncr	ncr	-	-	-	-
Phenanthrene	µg/l	10	ncr	ncr	-	-	-	-
Anthracene	µg/l	10	ncr	ncr	-	-	-	-
Fluoranthene	µg/l	10	ncr	ncr	-	-	-	-
Pyrene	µg/l	10	ncr	ncr	-	-	-	-
Benz(a)anthracene	µg/l	10	ncr	ncr	-	-	-	-
Chrysene	µg/l	10	ncr	ncr	-	-	-	-
Benzo(bk)fluoranthene	µg/l	10	ncr	ncr	-	-	-	-
Benzo(a)pyrene	µg/l	10	ncr	ncr	-	-	-	-
Indeno(123cd)pyrene	µg/l	10	ncr	ncr	-	-	-	-
Dibenzo(ah)anthracene	µg/l	10	ncr	ncr	-	-	-	-
Benzo(ghi)perylene	µg/l	10	ncr	ncr	-	-	-	-
Phthalates								
Bis(2-ethylhexyl) phthalate	µg/l	10	ncr	ncr	-	-	-	-
Butylbenzyl phthalate	µg/l	10	ncr	ncr	-	-	-	-
Di-n-butyl phthalate	µg/l	10	ncr	ncr	-	-	-	-
Di-n-Octyl phthalate	µg/l	10	ncr	ncr	-	-	-	-
Diethyl phthalate	µg/l	10	ncr	ncr	-	-	-	-
Dimethyl phthalate	µg/l	10	ncr	ncr	-	-	-	-
Other SVOCs								
1,2-Dichlorobenzene	µg/l	10	ncr	ncr	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	10	ncr	ncr	-	-	-	-
1,3-Dichlorobenzene	µg/l	10	ncr	ncr	-	-	-	-
1,4-Dichlorobenzene	µg/l	10	ncr	ncr	-	-	-	-
2-Nitroaniline	µg/l	10	ncr	ncr	-	-	-	-
2,4-Dinitrotoluene	µg/l	10	ncr	ncr	-	-	-	-
2,6-Dinitrotoluene	µg/l	10	ncr	ncr	-	-	-	-
3-Nitroaniline	µg/l	10	ncr	ncr	-	-	-	-
4-Bromophenylphenylether	µg/l	10	ncr	ncr	-	-	-	-
4-Chloroaniline	µg/l	10	ncr	ncr	-	-	-	-
4-Chlorophenylphenylether	µg/l	10	ncr	ncr	-	-	-	-
4-Nitroaniline	µg/l	10	ncr	ncr	-	-	-	-
Azobenzene	µg/l	10	ncr	ncr	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	10	ncr	ncr	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	10	ncr	ncr	-	-	-	-
Carbazole	µg/l	10	ncr	ncr	-	-	-	-
Dibenzofuran	µg/l	10	ncr	ncr	-	-	-	-
Hexachlorobenzene	µg/l	10	ncr	ncr	-	-	-	-
Hexachlorobutadiene	µg/l	10	ncr	ncr	-	-	-	-
Hexachlorocyclopentadiene	µg/l	10	ncr	ncr	-	-	-	-
Hexachloroethane	µg/l	10	ncr	ncr	-	-	-	-
Isophorone	µg/l	10	ncr	ncr	-	-	-	-
N-nitrosodi-n-propylamine	µg/l	10	ncr	ncr	-	-	-	-
Nitrobenzene	µg/l	10	ncr	ncr	-	-	-	-

** Exceeds Groundwater Regulations 2010
 ** Exceeds IGV (Interim Guideline Value)
 MDL Method Detection Limit
 - Less than the MDL
 ncr No criteria required

Table 5: Hydrocarbons Metals (µg/L) - Enva Rafeen, June 2012

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (GV)	Monitoring Well			
					BH1	BH2	BH3	BH4
EPH/Mineral Oil								
EPH (C8-C40)	µg/l	10	nv	nv	-	-	-	-
Mineral Oil	µg/l	10	nv	nv	-	-	-	-
Metals								
Arsenic	µg/l	<2.5	7.5	10	-	-	-	-
Boron	µg/l	<12	750	1,000	17	17	15	-
Cadmium	µg/l	<0.5	3.75	5	-	-	-	-
Chromium	µg/l	<1.5	37.5	30	-	-	-	-
Copper	µg/l	<7	1,500	30	-	-	-	-
Mercury	µg/l	<1	0.75	1	-	-	-	-
Nickel	µg/l	<2	15	20	-	-	-	-
Lead	µg/l	<5	18.75	10	-	-	-	-
Selenium	µg/l	<3	nv	nv	4	-	-	-
Zinc	µg/l	<3	nv	100	5	6	4	4
Iron	µg/l	<20	nv	200	22	-	-	-
Manganese	µg/l	<2	nv	50	6	-	-	33

Exceeds Groundwater Regulations 2010

Exceeds GV (Interim Guideline Value)

Method Detection Limit

Less than the MDL

no value

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Table 6: Miscellaneous Parameters (mg/L) - Enva Rafeen, June 2012

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (µV)	Monitoring Well			
					BH1	BH2	BH3	BH4
Ammonium	mg/l		0.175	0.150	-	-	-	0.09
Total Ammonia as N	mg/l	0.2	nv	nv	-	-	-	0.07
COD	mg/l	7	nv	nv	-	-	-	-
Chloride	mg/l	0.3	187.5	250	11	28	34	3
Sodium - dissolved	mg/l	0.15	150	150	10	18	24	5
Sulphate	mg/l	0.05	187.5	200	12	17	13	3
Potassium - dissolved	mg/l	0.04	nv	5	1	1	2	2
Calcium - dissolved	mg/l	0.2	nv	200	80	103	75	16
Magnesium - dissolved	mg/l	0.1	nv	50	4	4	4	1
Bicarbonate Alkalinity as CaCO3	mg/l	1	nv	No abnormal change	189	238	181	114
Nitrate as NO ₃	mg/l	0.2	37.5	25	10	15	11	4
Nitrite as NO ₂	mg/l	0.02	0.375	0.1	-	-	-	0.04
Ortho phosphata as PO ₄	mg/l	0.06	nv	0.03	0.23	-	-	-
Fluoride	mg/l	0.3	nv	1	-	-	-	0.10

xx Exceeds Groundwater Regulations 2010
 xx Exceeds ISV (Interim Guideline Value)
 Method Detection Limit
 Less than the MDL
 nv no value
 * Conversion factor of 1.2857 used to convert total ammonia (as N) to ammonium (NH₄)

APPENDIX A – SCHEDULE OF ANALYSIS

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

<u>Parameter</u>	<u>Quarterly</u>	<u>Annually</u>
Volatile Organic Compounds (VOCs) including chlorinated solvents		X
Semi Volatile Organic Compounds (VOCs) (organohalogenes)		X
Chemical Oxygen demand (COD)		X
Mineral Oil		X
Total Ammonia		X
Heavy Metals (Dutch Target List)		X
Calcium		X
Magnesium		X
Potassium		X
Sodium		X
Chloride		X
Bicarbonate		X
Sulphate		X
Nitrate		X
Nitrite		X
Phosphate		X
Fluoride		X

APPENDIX B – LABORATORY REPORT



Jones Environmental Laboratory

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Zone 3
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Deeside
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URS/Scott Wilson
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No.4225

Attention : Ellis Finnegan
Date : 15th June, 2012
Your reference : 46402077
Our reference : Test Report 12/4581 Batch 1
Location : CORK
Date samples received : 8th June, 2012
Status : Final report
Issue : 1

Four samples were received for analysis on 8th June, 2012. 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.

Compiled By:

Jane Seymour B.Sc
Technical Support Manager

Bob Millward B.Sc
Principal Chemist

Jones Environmental Laboratory

Client Name: URS/Scott Wilson
Reference: 46402077
Location: CORK
Contact: Ellis Finnegan
JE Job No.: 12/4581

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

J E Sample No.	1-5	6-10	11-15	16-20														
Sample ID	BH01	BH02	BH03	BH04														
Depth																		
COC No / misc																		
Containers	VHN P G	VHN P G	VHN P G	VHN P G														
Sample Date	07/06/2012	07/06/2012	07/06/2012	07/06/2012														
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water														
Batch Number	1	1	1	1														
Date of Receipt	06/06/2012	08/06/2012	08/06/2012	08/06/2012														
											LOD	Units	Method No.					
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5										<2.5	ug/l	TM30/PM14		
Dissolved Boron	17	17	15	<12										<12	ug/l	TM30/PM14		
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.6										<0.5	ug/l	TM30/PM14		
Dissolved Calcium #	79.5	102.6	75.0	15.8										<0.2	mg/l	TM30/PM14		
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5										<1.5	ug/l	TM30/PM14		
Dissolved Copper #	<7	<7	<7	<7										<7	ug/l	TM30/PM14		
Total Dissolved Iron #	22	<20	<20	<20										<20	ug/l	TM30/PM14		
Dissolved Lead #	<5	<5	<5	<5										<5	ug/l	TM30/PM14		
Dissolved Magnesium #	3.6	4.4	3.5	1.0										<0.1	mg/l	TM30/PM14		
Dissolved Manganese #	6	<2	33	<2										<2	ug/l	TM30/PM14		
Dissolved Mercury #	<1	<1	<1	<1										<1	ug/l	TM30/PM14		
Dissolved Nickel #	<2	<2	<2	<2										<2	ug/l	TM30/PM14		
Dissolved Potassium #	0.9	1.0	2.2	1.7										<0.1	mg/l	TM30/PM14		
Dissolved Selenium #	4	<3	<3	<3										<3	ug/l	TM30/PM14		
Dissolved Sodium #	10.1	18.0	24.3	4.6										<0.1	mg/l	TM30/PM14		
Dissolved Zinc #	5	6	4	4										<3	ug/l	TM30/PM14		
EPH (C8-C40) #	<10	<10	<10	<10										<10	ug/l	TM5/PM30		
Mineral Oil (Calculation)	<10	<10	<10	<10										<10	ug/l	TM5/PM30		
Fluoride	<0.3	<0.3	<0.3	<0.3										<0.3	mg/l	TM27/PM0		
Sulphate #	12.38	17.11	12.57	2.98										<0.06	mg/l	TM38/PM0		
Chloride #	10.9	28.2	34.3	2.6										<0.3	mg/l	TM38/PM0		
Nitrate as NO ₃ #	10.4	14.8	10.5	4.0										<0.2	mg/l	TM38/PM0		
Nitrite as NO ₂ #	<0.02	<0.02	<0.02	0.04										<0.02	mg/l	TM38/PM0		
Ortho Phosphate as PO ₄ #	0.23	<0.06	<0.06	0.10										<0.06	mg/l	TM38/PM0		
Total Ammonia as N #	<0.03	<0.03	<0.03	0.07										<0.03	mg/l	TM38/PM0		
Bicarbonate Alkalinity as CaCO ₃	189	238	181	114										<1	mg/l	TM75/PM0		
COD (Settled)	<7	<7	<7	<7										<7	mg/l	TM57/PM0		

Please see attached notes for all abbreviations and acronyms

Jones Environmental Laboratory

Client Name: URS/Scott Wilson

SVOC Report : Liquid

Reference: 46402077

Location: CORK

Contact: Ellis Finnegan

JE Job No.: 12/4581

J E Sample No.	1-5	6-10	11-15	16-20													
Sample ID	BH01	BH02	BH03	BH04													
Depth																	
COC No / misc																	
Containers	VHN P G	VHN P G	VHN P G	VHN P G													
Sample Date	07/06/2012	07/06/2012	07/06/2012	07/06/2012													
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water													
Batch Number	1	1	1	1													
Date of Receipt	08/08/2012	08/08/2012	08/08/2012	08/08/2012													
Please see attached notes for all abbreviations and acronyms																	
SVOC MS																	
Phenols																	
2-Chlorophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2-Methylphenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2-Nitrophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2,4-Dichlorophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2,4-Dimethylphenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2,4,5-Trichlorophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2,4,6-Trichlorophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
4-Chloro-3-methylphenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
4-Methylphenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
4-Nitrophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Pentachlorophenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Phenol	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
PAHs																	
2-Chloronaphthalene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
2-Methylnaphthalene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Naphthalene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Acenaphthylene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Acenaphthene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Fluorene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Phenanthrene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Anthracene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Fluoranthene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Pyrene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Benzo(a)anthracene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Chrysene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Benzo(b)fluoranthene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Benzo(a)pyrene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Indeno(123cd)pyrene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Dibenzo(ah)anthracene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Benzo(ghi)perylene	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Phthalates																	
Bis(2-ethylhexyl) phthalate	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Butylbenzyl phthalate	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Di-n-butyl phthalate	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Di-n-Octyl phthalate	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Diethyl phthalate	<10	<10	<10	<10										<10	ug/l	TM16/PM30	
Dimethyl phthalate	<10	<10	<10	<10										<10	ug/l	TM16/PM30	

Jones Environmental Laboratory

Client Name: URS/Scott Wilson

SVOC Report : Liquid

Reference: 46402077

Location: CORK

Contact: Ellis Finnegan

JE Job No.: 12/4581

J E Sample No. Sample ID Depth COC No / mic Containers Sample Date Sample Type Batch Number Date of Receipt	1-5	6-10	11-15	16-20							Please see attached notes for all abbreviations and acronyms			
	BH01	BH02	BH03	BH04							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	TM16/PM30	
1,4-Dichlorobenzene	<10	<10	<10	<10							<10	ug/l	TM16/PM30	
2-Nitroaniline	<10	<10	<10	<10							<10	ug/l	TM16/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	TM16/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	TM16/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	TM16/PM30	
Hexachlorobenzene	<10	<10	<10	<10							<10	ug/l	TM16/PM30	
Hexachlorobutadiene	<10	<10	<10	<10							<10	ug/l	TM16/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	TM16/PM30	
N-nitrosodi-n-propylamine	<10	<10	<10	<10							<10	ug/l	TM16/PM30	
Nitrobenzene	<10	<10	<10	<10							<10	ug/l	TM16/PM30	

Jones Environmental Laboratory

Client Name: URS/Scott Wilson

VOC Report : Liquid

Reference: 46402077

Location: CORK

Contact: Ellis Finnegan

JE Job No.: 12/4581

J E Sample No.	1-5	6-10	11-15	16-20					Please see attached notes for all abbreviations and acronyms			
Sample ID	BH01	BH02	BH03	BH04								
Depth												
COC No / misc												
Containers	VHN P G	VHN P G	VHN P G	VHN P G								
Sample Date	07/06/2012	07/06/2012	07/06/2012	07/06/2012								
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water								
Batch Number	1	1	1	1								
Date of Receipt	08/06/2012	08/06/2012	08/06/2012	08/06/2012					LOD	Units	Method No.	
VOC MS												
Dichlorodifluoromethane	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Dichloromethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
trans-1-2-Dichloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
cis-1-2-Dichloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Benzene #	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Trichloroethene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Toluene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Tetrachloroethene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Ethylbenzene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
p/m-Xylene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
o-Xylene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Styrene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4						<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	96	97	96	93						<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	111	112	111	110						<0	%	TM15/PM10

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 12/4581

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

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.

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).
1	The pH was not tested within 6 hours of sampling and therefore the sample is considered deviating.
~	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 in soils 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% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

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 an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. 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.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
NFD	No Fibres Detected

APPENDIX D



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. 1 Complete all training requirements specified in the Waste License.	1.1 Facility manager or deputy to complete waste management training programme.			COMPLETE	License condition 2.1.2
EPA Objective No. 2 To maximise efficiency of energy and resources use at the site. [NB This objective to be quantified in subsequent years.]	2.1 Carry out an energy audit of the site and set future targets for energy reduction where feasible.	[See Target 2.4]		CLOSED See AER 2007	License conditions 7.1 & 7.2. & Environmental Aspect no. 8 identified as significant.
	2.2 Identify opportunities for reducing water consumption on site.	[See Target 2.5]		CLOSED See AER 2007	License conditions 7.3. Environmental Aspect no. 13 identified as significant.
	2.3 Assess efficiency of use of raw materials with a view to waste reduction.			COMPLETE	License conditions 7.4.
	2.4 Implement measures with a view to achieving a 17% reduction in annual electrical energy consumption by end 2009.	If feasible and cost effective, implement measures to reduce need for 24/7 running of large air compressor. (Jul 2009).	Operations Manager	CLOSED	License conditions 7.1 & 7.2. & Environmental Aspect no. 8 identified as significant.
	2.5 Implement measures with a view to achieving a 50% reduction in use of mains water supply for production activities by end 2009.	Installation and use of rain-water containment if feasible and cost effective (Dec 2009).	Operations Manager	March 2012 (reviewed March 2011)	License conditions 7.3. Environmental Aspect no. 13 identified as significant.



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. 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.	Review on-site operations and consider newest technologies and methods, BAT etc and incorporate projects into this EMP. (March 2009) Commence implementation of the selected projects. (Dec 2010) Completion of selected projects. (June 2012)	HSE Manager & Operations Manager Operations Manager Operations Manager	Closed	License condition 2.2.2.2.
	3.2 Implement measures to achieve a reduction in annual waste wash-water arisings by 20% where feasible by March 2013.	Examine options for reuse of wash-water for heavily soiled drums and design of system. (Dec 2010) Implement the above system and monitor its effectiveness. (March 2013).	HSE Manager & Operations Manager HSE Manager & Operations Manager	March 2013	License condition 2.2.2.2.



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.



Schedule of Objectives & Targets – March 2009 to March 2013

Objective	Target	Programme for achieving the target.	Responsibility	Timeframe for target completion	Rationale for target
EPA Objective No 7 Improve Emergency Preparedness	Provide bund alarms on all bunds exceeding 50,000 litres		Operations Manager	Complete	
	Carry out drill on each site to test containment of spillages/firewater	Review on site emergency response and carry out emergency drill.	Operations Manager	June 2013	



Schedule of Objectives & Targets – March 2009 to March 2013

Objective	Target	Timeframe
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. 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.	CLOSED See AER 2007
	2.4 Implement measures with a view to achieving a 17% reduction in annual electrical energy consumption by end 2009.	COMPLETE See AER 2008
	2.5 Implement measures with a view to achieving a 50% reduction in use of mains water supply for production activities by end 2009.	CLOSED See AER 2009
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. 3.2 Implement measures to achieve a reduction in annual waste wash-water arisings by 20% where feasible by March 2013.	December 2009 – to be revised in 2010 Closed March 2013



Schedule of Objectives & Targets – March 2009 to March 2013

<p>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.</p>	<p>4.1 To identify all relevant pipelines for risk of chemical leaks from flanges and valves.</p>	<p>CLOSED See AER 2007</p>
<p>EPA Objective No. 5 Carry out fugitive emissions reduction programme.</p>	<p>5.1 To identify potential sources of fugitive emissions and establish a programme for their reduction where relevant.</p>	<p>CLOSED See AER 2007</p>
<p>EPA Objective No. 6 Evaluate contribution of Enva (Cork) to achievement of recovery targets stated in national and EU waste policies.</p>	<p>6.1 Prepare and submit a report on the impact of Enva (Cork) on achieving national and EU waste recovery targets.</p>	<p>COMPLETE See AER 2009</p>
<p>EPA Objective No 7 Improve Emergency Preparedness on site.</p>	<p>7.1 Install bund alarms on all bunds exceeding 50000litres.</p>	<p>Complete</p>
	<p>7.2 Carry out drill on each site to test containment of spillages/firewater</p>	<p>June 2013</p>

APPENDIX E



CLOSURE, RESTORATION, AFTERCARE MANAGEMENT PLAN

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

License no: W0145-02

March 2013
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 F



**ENVIRONMENTAL LIABILITIES RISK
ASSESSMENT REVIEW :**

UNKNOWN LIABILITIES

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

License no: W0145-02

**March 2013
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.



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. Additional sealing was carried out on Bund 1 to ensure its integrity. 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 (<1,000L) of flammable solvent stored in a designated bunded area. Waste oil is stored in 50m³ storage tanks in a designated 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



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UNKNOWN LIABILITIES
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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
			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.



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 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 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 banded areas.</p> <p>Packaged is delivered to site in suitable receptacles following documented procedures and stored in designated banded 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



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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	There are 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.	3
3	Storage of waste oil in bulk storage tanks and packaged waste in bunded areas of the warehouse.	Loss of integrity of bunded areas	Surface Water Groundwater or Soil Contamination	1	<p>Tank 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	There are 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.	3



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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	<p>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.</p> <p>Waste batteries are accepted on site and sent to Enva's Portlaoise facility. Currently there is a very low volume of batteries handled on site.</p> <p>Healthcare wastes are not expected to be accepted on site in the near future.</p> <p>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.</p>	4	<p>If a large quantity of waste was incorrectly managed, it could potentially result in major financial implications.</p>	4
5	Monitoring and Control Systems	Failure of on-site environmental control procedures	Release of hazardous material to atmosphere, surface water, groundwater	2	<p>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.</p> <p>Training is also carried out regularly to ensure familiarity with controls required.</p>	2	<p>Minor impact/localised or nuisance</p>	4



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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> <p>Bicycle unit inspected regularly and maintained annually.</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	<p>Comprehensive control systems and maintenance programme in place to minimise the risk of fire. Comprehensive Emergency Response Plan in place at the site.</p> <p>An internal Emergency Response Core Team in place if fire does occur.</p>	4	<p>Minimal quantities of flammable materials stored at the site.</p> <p>Mitigated by dilution in air.</p> <p>Firewater retention tank is available. If contaminated firewater entered local surface water, may be high cost associated with remediation.</p>	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 Form

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.