Facility Information Summary	
AER Reporting Year	2013
Licence Register Number	WO145-02
Name of site	Enva Ireland Ltd.
Site Location	Raffeen Industrial Estate, Ringaskiddy Road, Monketown, Co. Cork
NACE Code	
Class/Classes of Activity	
National Grid Reference (6E, 6 N)	
A description of the activities/processes at the site for the reporting year. This should include information such as production increases or decreases on site, any infrastructural changes, environmental performance which was measured during the reporting year **and an overview of compliance with your licence** listing all exceedances of licence limits (where applicable) and what they relate to e.g. air, water, noise.	nd batteries to our Portloaise office. Bulk transfer of waste oil is of similar volume to last year. The battery transfe

Declaration:

All the data and information presented in this report has been checked and certified as being accurate. The quality of the information is assured to meet licence requirements.

Signature Group/Facility manager (or nominated, suitably qualified and experienced deputy)	31/3/14 Date

AIR-summary template

Lic No: WO145-02 Year 2013

Answer all questions and complete all tables where relevant

			Additional information
1	Does your site have licensed air emissions? If yes please complete table A1 and A2 below for the current reporting year and answer further questions. If **you do not have** licenced emissions and **do not complete a solvent management plan** (table A4 and A5) you do not need to complete the tables	SELECT	

Periodic/Non-Continuous Monitoring

2	Are there any results in breach of licence requirements? If yes please provide brief details in the comment section of TableA1 below			SELECT	
3	Was all monitoring carried out in accordance with EPA guidance note AG2 and using the basic air monitoring checklist?	Basic air monitoring checklist	AGN2	SELECT	

Table A1: Licensed Mass Emissions/Ambient data-periodic monitoring (non-continuous)

Emission reference no:	Parameter/ Substance	Frequency of Monitoring	ELV in licence or any revision therof	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence limit	Method of analysis	Annual mass load (kg)	Comments - reason for change in % mass load from previous year if applicable
	SELECT			SELECT		SELECT	SELECT	SELECT		
	SELECT			SELECT		SELECT	SELECT	SELECT		
	SELECT			SELECT		SELECT	SELECT	SELECT		
	SELECT			SELECT		SELECT	SELECT	SELECT		

Note 1: Volumetric flow shall be included as a reportable parameter

AIR-summary template	Lic No:	WO145-02	Year	2013
Continuous Monitoring				

4	Does your site carry out continuous air emissions monitoring?	SELECT	
	If yes please review your continuous monitoring data and report the required fields below in Table A2 and compare it to its relevant Emission Limit Value (ELV)		
5	Did continuous monitoring equipment experience downtime? If yes please record downtime in table A2 below	SELECT	
6	Do you have a proactive service agreement for each piece of continuous monitoring equipment?	SELECT	
7	Did your site experience any abatement system bypasses? If yes please detail them in table A3 below	SELECT	

Table A2: Summary of average emissions -continuous monitoring

Emission reference no:	Parameter/ Substance	ELV in licence or any revision therof	Averaging Period	Compliance Criteria	Units of measurement	Annual Emission	Annual maximum	Monitoring Equipment downtime (hours)	Number of ELV exceedences in current reporting year	Comments
	SELECT			SELECT	SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					

note 1: Volumetric flow shall be included as a reportable parameter.

Table A3: Abatement system bypass reporting table Bypass protocol

Date*	Duration** (hours)	Location	Reason for bypass	Impact magnitude	Corrective action

* this should include all dates that an abatement system bypass occurred

** an accurate record of time bypass beginning and end should be logged on site and maintained for future Agency inspections please refer to bypass protocol link

AIR-summary template	Lic No:	W0145-02	Year	2013

Solvent use and management on site

8 Do you have a total Emission Limit Value of direct and fugitive emissions on site? If yes please fill out tables A4 and A5

SELECT	

Table A4: Solvent Management Plan Summary
Total VOC Emission limit value

Solvent regulations — Please refer to linked solvent regulations to complete table 5 and 6

Reporting year	Total solvent input on site (kg)	Total VOC emissions to Air from entire site (direct and fugitive)	Total VOC emissions as %of solvent input	Total Emission Limit Value (ELV) in licence or any revision therof	Compliance
					SELECT
					SELECT

Table A5: Solvent Mass Balance summary

	(I) Inputs (kg)	(O) Outputs (kg)						
Solvent	(I) Inputs (kg)	Organic solvent emission in waste	Solvents lost in water (kg)	Collected waste solvent (kg)	Fugitive Organic Solvent (kg)	Solvent released in other ways e.g. by-	Solvents destroyed onsite through	Total emission of Solvent to air (kg)
							Total	

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER)	Lic No:	W0145-02	Year	2013

			Additional information
1	Does your site have licensed emissions direct to surface water or direct to sewer? If yes please complete table W2 and W3 below for the current reporting year and answer further questions. If **you do not have** licenced emissions you only need to complete table W1 and or W2 for storm water analysis and visual inspections	SELECT	All stormwater monitoring results are compliant within the trigger levels as agreed with the agency.
2	Was it a requirement of your licence to carry out visual inspections on any surface water discharges or watercourses on or near your site? If yes please complete table W2 below summarising only any evidence of contamination noted during visual inspections	SELECT	

Table W1 Storm water monitoring

Location reference	Location relative to site activities	PRTR Parameter	Licenced Parameter	Monitoring date	ELV or trigger level in licence or any revision thereof*	licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Comments
	SELECT	SELECT	SELECT			SELECT		SELECT	SELECT	
	SELECT	SELECT	SELECT			SELECT		SELECT	SELECT	

*trigger values may be agreed by the Agency outside of licence conditions

Table W2 Visual inspections-Please only enter details where contamination was observed.

Location Reference	Date of inspection	Description of contamination	Source of contamination	Corrective action	Comments
			SELECT		
			SELECT		

Licensed Emissions to water and /or wastewater(sewer)-periodic monitoring (non-continuous)

					Additional information
3	Was there any result in breach of licence requirements? If yes please provide brief details in the comment section of Table W3 below			SELECT	
4	Was all monitoring carried out in accordance with EPA guidance and checklists for Quality of Aqueous Monitoring Data Reported to the EPA? If no please detail what areas require improvement in additional information box	External /Internal Lab Quality checklist	Assessment of results checklist	SELECT	

Table W3: Licensed Emissions to water and /or wastewater (sewer)-periodic monitoring (non-continuous)

Emission reference no:	Emission released to	Parameter/ SubstanceNote 1	Type of sample	Frequency of monitoring	Averaging period	ELV or trigger values in licence or any revision thereof[Note 2]	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Method of analysis	Procedural reference source	Procedural reference standard number	Annual mass load (kg)	Comments
	SELECT	SELECT	SELECT		SELECT		SELECT		SELECT	SELECT	SELECT	SELECT			

Note 1: Volumetric flow shall be included as a reportable parameter

Note 2: Where Emission Limit Values (ELV) do not apply to your licence please compare results against EQS for Surface water or relevant receptor quality standards

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER)	Lic No:	WO145-02	Year	2013

Continuous monitoring

			Additional Information
5	Does your site carry out continuous emissions to water/sewer monitoring?	SELECT	

If yes please summarise your continuous monitoring data below in Table W4 and compare it to its relevant Emission Limit Value (ELV)

6	Did continuous monitoring equipment experience downtime? If yes please record downtime in table W4 below	SELECT	
7	Do you have a proactive service contract for each piece of continuous monitoring equipment on site?	SELECT	
8	Did abatement system bypass occur during the reporting year? If yes please complete table W5 below	SELECT	

Table W4: Summary of average emissions -continuous monitoring

Emission reference no:	Emission released to	Parameter/ Substance	ELV or trigger values in licence or any revision thereof	Averaging Period	Compliance Criteria	Units of measurement	Annual Emission for current reporting year (kg)	% change +/- from previous reporting year	Monitoring Equipment downtime (hours)	Number of ELV exceedences in reporting year	Comments
	SELECT	SELECT		SELECT	SELECT	SELECT					
	SELECT	SELECT		SELECT	SELECT	SELECT					

note 1: Volumetric flow shall be included as a reportable parameter.

Table W5: Abatement system bypass reporting table

Date	Duration (hours)	Location	Resultant emissions	Reason for bypass	Corrective action*	Was a report submitted to the EPA?	When was this report submitted?
						SELECT	

*Measures taken or proposed to reduce or limit bypass frequency

Bund/Pipeline testing template

Lic No: WO145-02 Year: 2013

Bund testing

dropdown menu click to see options

		Additional information
1	Are you required by your licence to undertake integrity testing on bunds and containment structures ? if yes please fill out table B1 below listing all **new bunds and containment structures** on site, in addition to **all bunds which failed** the integrity test-**all bunding structures which failed including mobile bunds must be listed in the table below, please include all bunds outside the licenced testing period** (mobile bunds and chemstore included)	Yes	monitoring in 2014, no new bunds since last AER.
2	Please provide integrity testing frequency period	3 years	
3	Does the site maintain a register of bunds, underground pipelines (including stormwater and foul), Tanks, sumps and containers? (containers refers to "Chemstore" type units and mobile bunds)	Yes	
4	How many bunds are on site?	7	
5	How many of these bunds have been tested within the required test schedule?	7	
6	How many mobile bunds are on site?	0	
7	Are the mobile bunds included in the bund test schedule?	No	
8	How many of these mobile bunds have been tested within the required test schedule?	0	
9	How many sumps on site are included in the integrity test schedule?	0	
10	How many of these sumps are integrity tested within the test schedule?	0	
	Please list any sump integrity failures in table B1		
11	Do all sumps and chambers have high level liquid alarms?	No	
12	If yes to Q11 are these failsafe systems included in a maintenance and testing programme?	SELECT	
13	Is the Fire Water Retention Pond included in your integrity test programme?	No	

Table B1: Summary details of bund /containment structure integrity test

Bund/Containment structure ID	Type	Specify Other type	Product containment	Actual capacity	Capacity required*	Type of integrity test	Other test type	Test date	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)
	SELECT					SELECT			SELECT	SELECT		SELECT		
	SELECT					SELECT			SELECT	SELECT		SELECT		

* Capacity required should comply with 25% or 110% containment rule as detailed in your licence

		Commentary
15	Has integrity testing been carried out in accordance with licence requirements and are all structures tested in line with BS8007/EPA Guidance? bunding and storage guidelines	Yes	
16	Are channels/transfer systems to remote containment systems tested?	No	Not applicable
17	Are channels/transfer systems compliant in both integrity and available volume?	No	Not applicable

Pipeline/underground structure testing

1	Are you required by your licence to undertake integrity testing* on underground structures e.g. pipelines or sumps etc ? if yes please fill out table 2 below listing all underground structures and pipelines on site **which failed the integrity test and all which have not been tested withing the integrity test period as specified**	No	
2	Please provide integrity testing frequency period	SELECT	

*please note integrity testing means water tightness testing for process and foul pipelines (as required under your licence)

Table B2: Summary details of pipeline/underground structures integrity test

Structure ID	Type system	Material of construction	Does this structure have Secondary containment?	Type of secondary containment	Type Integrity testing	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)
	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT				SELECT

Please use commentary for additional details not answered by tables/ questions above

Groundwater/Soil monitoring template	Lic No:	WO145-02	Year	2013

			Comments	
1	Are you required to carry out groundwater monitoring as part of your licence requirements?	yes		Please provide an interpretation of groundwater monitoring data in the interpretation box below or if you require additional space please include a groundwater/contaminated land monitoring results interpretaion as an additional section in this AER
2	Are you required to carry out soil monitoring as part of your licence requirements?	no		
3	Do you extract groundwater for use on site? If yes please specify use in comment section	no		
4	Do monitoring results show that groundwater generic assessment criteria such as GTVs or IGVs are exceeded or is there an upward trend in results for a substance? If yes, please complete the Groundwater Monitoring Guideline Template Report (link in cell G8) and submit separately through ALDER as a licensee return AND answer questions 5-12 below. Groundwater monitoring template	no	see attached report, uploaded to AER portal.	
5	Is the contamination related to operations at the facility (either current and/or historic)	no		
6	Have actions been taken to address contamination issues?If yes please summarise remediation strategies proposed/undertaken for the site	no		
7	Please specify the proposed time frame for the remediation strategy	no		
8	Is there a licence condition to carry out/update ELRA for the site?	yes		
9	Has any type of risk assesment been carried out for the site?	yes		
10	Has a Conceptual Site Model been developed for the site?	no		
11	Have potential receptors been identified on and off site?	no		
12	Is there evidence that contamination is migrating offsite?	no		Please enter interpretation of data here

Table 1: Upgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration++	Average Concentration+	unit	GTV's*	SELECT**	Upward trend in pollutant concentration over last 5 years of monitoring data
							SELECT			SELECT
							SELECT			SELECT

.+ where average indicates arithmetic mean

.++ maximum concentration indicates the maximum measured concentration from all monitoring results produced during the reporting year

Table 2: Downgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit	GTV's*	SELECT**	Upward trend in yearly average pollutant concentration over last 5 years of monitoring data
							SELECT			SELECT
							SELECT			SELECT

Groundwater/Soil monitoring template	Lic No:	WO145-02	Year	2013

Please note precedence of generic assessment criteria (GAC) such as a Groundwater Threshold Value (GTV) or an Interim Guideline Value (IGV) or an upward trend in results for a substance indicates that further investigation of monitoring results is required. In addition to completing the above table, please complete the Groundwater Monitoring Guideline Template Report at the link provided and submit separately through AER** as a licensee return or as otherwise instructed by the EPA.	Groundwater monitoring template
More information on the use of soil and groundwater standards/ generic assessment criteria (GAC) and risk assessment tools is available in the EPA published guidance (see the link to the right)	Guidance on the Management of Contaminated Land and Groundwater at EPA licensed Sites (GAP 2013)

**Depending on location of the site and proximity to other sensitive receptors alternative Receptor based Water Quality standards should be used in addition to the GTV e.g. if the site is close to surface water compare to Surface Water Environmental Quality Standards (SWEQS). If the site is close to a drinking water supply compare results to the Drinking Water Standards (DWS)	Surface water EQS	Groundwater regulations GTV's	Drinking water (private supply) standards	Drinking water (public supply) standards	Interim Guideline Values (IGV)

Groundwater/Soil monitoring template	Lic No:	WO145-02	Year	2013

Table 3: Soil results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit
							SELECT
							SELECT

Where additional detail is required please enter it here in 200 words or less

Environmental Liabilities template	Lic No:	W0145-02	Year	2013

Click here to access EPA guidance on Environmental Liabilities and Financial provision

			Commentary
1	ELRA initial agreement status	Submitted and agreed by EPA	
2	ELRA review status	Review required and completed	Included in AER returns
3	Amount of Financial Provision cover required as determined by the latest ELRA	161,625	
4	Financial Provision for ELRA status	Submitted and not agreed by EPA;	
5	Financial Provision for ELRA - amount of cover	161,625	
6	Financial Provision for ELRA - type	bond	
7	Financial provision for ELRA expiry date	Enter expiry date	Not determined yet
8	Closure plan initial agreement status	sure plan submitted and not agreed by EPA	
9	Closure plan review status	Review required and completed	Included in AER returns
10	Financial Provision for Closure status	Submitted and not agreed by EPA;	
11	Financial Provision for Closure - amount of cover	30,500	
12	Financial Provision for Closure - type	bond	
13	Financial provision for Closure expiry date	Enter expiry date	Not determined yet

Environmental Management Programme/Continuous Improvement Programme template

Lic No: WO145-02 Year 2013

Highlighted cells contain dropdown menu click to view

			Additional Information
1	Do you maintain an Environmental Mangement System (EMS) for the site. If yes, please detail in additional information	Yes	Enva Irland Ltd are accredited to ISO 14001.
2	Does the EMS reference the most significant environmental aspects and associated impacts on-site	Yes	
3	Does the EMS maintain an Environmental Management Programme (EMP) as required in accordance with the licence requirements	Yes	
4	Do you maintain an environmental documentation/communication system to inform the public on environmental performance of the facility, as required by the licence	Yes	

Environmental Management Programme (EMP) report

Objective Category	Target	Status (% completed)	How target was progressed	Responsibility	Intermediate outcomes
Additional improvements	Review intregrity of yard and	0	0	Individual	Increased compliance with licence conditions
SELECT		SELECT		SELECT	SELECT
SELECT		SELECT		SELECT	SELECT

Noise monitoring summary report

Lic No: WO145-02 Year 2013

1	Was noise monitoring a licence requirement for the AER period? If yes please fill in table N1 noise summary below	Yes
2	Was noise monitoring carried out using the EPA Guidance note, including completion of the "Checklist for noise measurement report" included in the guidance note as table 6? (Noise Guidance note NG4)	Yes
3	Does your site have a noise reduction plan	No
4	When was the noise reduction plan last updated?	Enter date
5	Have there been changes relevant to site noise emissions (e.g. plant or operational changes) since the last noise survey?	No

Table N1: Noise monitoring summary

Date of monitoring	Time period	Noise location (on site)	Noise sensitive location -NSL (if applicable)	LA_{eq}	LA_{90}	LA_{10}	LA_{max}	Tonal or Impulsive noise* (Y/N)	If tonal /impulsive noise was identified was 5dB penalty applied?	Comments (ex. main noise sources on site, & extraneous noise ex. road traffic)	Is site compliant with noise limits (day/evening/night)?
06.12.13	11.25 - 11.54	N1		51	46	53	65	No	SELECT	Road traffic, birdsongc,	SELECT
06.12.13	10.52 - 11.22	N2		58	50	61	76	No		road traffic, birdsong	
06.12.13	10.20 - 12.57	N3		63	49	65	90	No		road traffic, birdsong	
06.12.13	11.55 - 12.25	N4		67	52	60	82	No		Road traffic, birdsongc, facility	
06.12.13	13.34 - 14.04	N5		80	61	85	95	No		Road traffic	
06.12.13	14.09 - 14.39	N1		57	49	58	77			Road traffic, birdsongc, facility	
06.12.13	12.59 - 13.29	N2		62	56	64	71			road traffic, birdsong	
06.12.13	12.27 - 12.57	N3		63	52	65	86			road traffic, birdsong	
06.12.13	14.41 - 15.11	N4		60	52	60	82			Road traffic, birdsongc, facility	
06.12.13	16.15 - 16.45	N5		78	61	82	94			Road traffic	
09.12.13	14.18 - 14.48	N1		56	48	59	69			Road traffic, birdsongc, facility	
09.12.13	13.45 - 14.15	N2		57	48	61	72			road traffic, birdsong	
09.12.13	15.13 - 15.43	N3		61	55	63	69			road traffic, birdsong	
09.12.13	14.50 - 15.20	N4		61	45	63	81			Road traffic, birdsongc, facility	
09.12.13	17.23 - 17.53	N5		79	62	82	94			Road traffic	

*Please ensure that a tonal analysis has been carried out as per guidance note NG4. These records must be maintained onsite for future inspection

If noise limits exceeded as a result of noise attributed to site activities, please choose the corrective action from the following options? SELECT

** please explain the reason for not taking action/resolution of noise issues?

Any additional comments? (less than 200 words)

Resource Usage/Energy efficiency summary

Lic No: WO145-02 Year 2013

		Additional information
1 When did the site carry out the most recent energy efficiency audit? Please list the recommendations in table 3 below	Enter date of audit	
2 Is the site a member of any accredited programmes for reducing energy usage/water conservation such as the SEAI programme linked to the right? If yes please list them in additional information	SEAI - Large Industry Energy Network (LIEN) SELECT	
3 Where Fuel Oil is used in boilers on site is the sulphur content compliant with licence conditions? Please state percentage in additional information	SELECT	

Table R1 Energy usage on site

Energy Use	Previous year	Current year	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*
Total Energy Used (MWHrs)				
Total Energy Generated (MWHrs)				
Total Renewable Energy Generated (MWHrs)				
Electricity Consumption (MWHrs)				
Fossil Fuels Consumption:				
Heavy Fuel Oil (m3)				
Light Fuel Oil (m3)				
Natural gas (m3)				
Coal/Solid fuel (metric tonnes)				
Peat (metric tonnes)				
Renewable Biomass				
Renewable energy generated on site				

* where consumption of energy can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.
** where site production information is available please enter percentage increase or decrease compared to previous year

Table R2 Water usage on site

					Water Emissions	Water Consumption	
Water use	Water extracted Previous year m3/yr.	Water extracted Current year m3/yr.	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*	Volume Discharged back to environment(m^3/yr):	Volume used i.e not discharged to environment e.g. released as steam m3/yr	Unaccounted for Water:
Groundwater							
Surface water							
Public supply							
Recycled water							
Total							

* where consumption of water can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.
** where site production information is available please enter percentage increase or decrease compared to previous year

Table R3 Waste Stream Summary

	Total	Landfill	Incineration	Recycled	Other
Hazardous (Tonnes)					
Non-Hazardous (Tonnes)					

Resource Usage/Energy efficiency summary Lic No: WO145-02 Year 2013

Table R4: Energy Audit finding recommendations

Date of audit	Recommendations	Description of Measures proposed	Origin of measures	Predicted energy savings %	Implementation date	Responsibility	Completion date	Status and comments
			SELECT					
			SELECT					
			SELECT					

Table R5: Power Generation: Where power is generated onsite (e.g. power generation facilities/food and drink industry)please complete the following information

	Unit ID	Unit ID	Unit ID	Unit ID	Station Total
Technology					
Primary Fuel					
Thermal Efficiency					
Unit Date of Commission					
Total Starts for year					
Total Running Time					
Total Electricity Generated (GWH)					
House Load (GWH)					
KWH per Litre of Process Water					
KWH per Litre of Total Water used on Site					

Complaints and Incidents summary template	Lic No:	WO145-02	Year	2013

Complaints		
		Additional information
Have you received any environmental complaints in the current reporting year? If yes please complete summary details of complaints received on site in table 1 below	SELECT	

Table 1 Complaints summary

Date	Category	Other type (please specify)	Brief description of complaint (Free txt <20 words)	Corrective action< 20 words	Resolution status	Resolution date	Further information
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		

Total complaints open at start of reporting year	
Total new complaints received during reporting year	
Total complaints closed during reporting year	
Balance of complaints end of reporting year	

Incidents		
		Additional information
Have any incidents occurred on site in the current reporting year? Please list all incidents for current reporting year in Table 2 below	SELECT	

*For information on how to report and what constitutes an incident	What is an incident

Table 2 Incidents summary

Date of occurrence	Incident nature	Location of occurrence	Incident category*please refer to guidance	Receptor	Cause of incident	Other cause(please specify)	Activity in progress at time of incident	Communication	Occurrence	Corrective action<20 words	Preventative action <20 words	Resolution status	Resolution date	Likelihood of reoccurence
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT

Total number of incidents current year	
Total number of incidents previous year	
% reduction/ increase	

WASTE SUMMARY	Lic No:	WO145-02	Year	2013
SECTION A-PRTR ON SITE WASTE TREATMENT AND WASTE TRANSFERS TAB- TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES	PRTR facility logon		dropdown list click to see options	

SECTION B- WASTE ACCEPTED ONTO SITE-TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES

			Additional Information
1	Were any wastes accepted onto your site for recovery or disposal or treatment prior to recovery or disposal within the boundaries of your facility ?; (waste generated within your boundaries is to be captured through PRTR reporting) If yes please enter details in table 1 below	SELECT	
2	Did your site have any rejected consignments of waste in the current reporting year? If yes please give a brief explanation in the additional information	SELECT	
3	Was waste accepted onto your site that was generated outside the Republic of Ireland? If yes please state the quantity in tonnes in additional information	SELECT	

Table 1 Details of waste accepted onto your site for recovery, disposal or treatment (do not include wastes generated at your site, as these will have been reported in your PRTR workbook)

Licenced annual tonnage limit for your site (total tonnes/annum)	EWC code European Waste Catalogue EWC codes	Source of waste accepted	Description of waste accepted Please enter an accurate and detailed description - which applies to relevant EWC code European Waste Catalogue EWC codes	Quantity of waste accepted in current reporting year (tonnes)	Quantity of waste accepted in previous reporting year (tonnes)	Reduction/ Increase over previous year +/- %	Reason for reduction/ increase from previous reporting year	Packaging Content (%)- only applies if the waste has a packaging component	Disposal/Recovery or treatment operation carried out at your site and the description of this operation	Quantity of waste remaining on site at the end of reporting year (tonnes)	Comments -

SECTION C-TO BE COMPLETED BY ALL WASTE FACILITIES (waste transfer stations, Composters, Material recovery facilities etc) EXCEPT LANDFILL SITES

4	Is all waste processing infrastructure as required by your licence and approved by the Agency in place? If no please list waste processing infrastructure required onsite	Yes	
5	Is all waste storage infrastructure as required by your licence and approved by the Agency in place? If no please list waste storage infrastructure required on site	Yes	
6	Does your facility have relevant nuisance controls in place?	Yes	
7	Do you have an odour management system in place for your facility? If no why?	No	No odour issues on site
8	Do you maintain a sludge register on site?	No	

SECTION D-TO BE COMPLETED BY LANDFILL SITES ONLY

Table 2 Waste type and tonnage-landfill only

Waste types permitted for disposal	Authorised/licenced annual intake for disposal (tpa)	Actual intake for disposal in reporting year (tpa)	Remaining licensed capacity at end of reporting year (m3)	Comments

Table 3 General information-Landfill only

Area ID	Date landfilling commenced	Date landfilling ceased	Currently landfilling	Private or Public Operated	Inert or non-hazardous	Predicted date to cease landfilling	Licence permits asbestos	Is there a separate cell for asbestos?	Accepted asbestos in reporting year	Total disposal area occupied by waste	Lined disposal area occupied by waste	Unlined area
										SELECT UNIT	SELECT UNIT	SELECT UNIT
Cell 8												

WASTE SUMMARY Lic No: WO145-02 Year 2013

Table 4 Environmental monitoring-landfill only

Landfill Manual-Monitoring Standards

Was meterological monitoring in compliance with Landfill Directive (LD) standard in reporting year +	Was leachate monitored in compliance with LD standard in reporting year	Was Landfill Gas monitored in compliance with LD standard in reporting year	Was SW monitored in compliance with LD standard in reporting year	Have GW trigger levels been established	Were emission limit values agreed with the Agency (ELVs)	Was topography of the site surveyed in reporting year	Has the statement under S53(A)(5) of WMA been submitted in reporting year	Comments

.+ please refer to Landfill Manual linked above for relevant Landfill Directive monitoring standards

Table 5 Capping-Landfill only

Area uncapped*	Area with temporary cap	Area with final cap to LD Standard m2 ha, a	Area capped other	Area with waste that should be permanently capped to date under licence	What materials are used in the cap	Comments
SELECT UNIT	SELECT UNIT					

*please note this includes daily cover area

Table 6 Leachate-Landfill only

9 Is leachate from your site treated in a Waste Water Treatment Plant? SELECT

10 Is leachate released to surface water? If yes please complete leachate mass load information below SELECT

Volume of leachate in reporting year(m3)	Leachate (BOD) mass load (kg/annum)	Leachate (COD) mass load (kg/annum)	Leachate (NH4) mass load (kg/annum)	Leachate (Chloride) mass load kg/annum	Leachate treatment on-site	Specify type of leachate treatment	Comments

Please ensure that all information reported in the landfill gas section is consistent with the Landfill Gas Survey submitted in conjunction with PRTR returns

Table 7 Landfill Gas-Landfill only

Gas Captured&Treated by LFG System m3	Power generated (MW / KWh)	Used on-site or to national grid	Was surface emissions monitoring performed during the reporting year?	Comments
			SELECT	

Comments on liner type

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.18

REFERENCE YEAR	2013

1. FACILITY IDENTIFICATION

Parent Company Name	Enva Ireland Limited
Facility Name	Enva 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	Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule.
Address 1	Unit 9
Address 2	Raffeen Industrial Estate
Address 3	Raffeen
Address 4	Monkstown, Cork
	Cork
Country	Ireland
Coordinates of Location	-8.36503 51.8335
River Basin District	IESW
NACE Code	3832
Main Economic Activity	Recovery of sorted materials
AER Returns Contact Name	Jamie Barry
AER Returns Contact Email Address	jbarry@enva.ie
AER Returns Contact Position	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?	
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) ?	

This question is only applicable if you are an IPPC or Quarry site

4.1 RELEASES TO AIR Link to previous years emissions data [PRTR# : W0145 | Facility Name : Enva Ireland Limited (Cork) | Filename : W0145_2013(1) PRTR.xls | Return Year : 2013 | 31/03/2014 20:08

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

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

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Enva Ireland Limited (Cork)

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

4.1 RELEASES TO AIR Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

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

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Enva Ireland Limited (Cork)

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

4.2 RELEASES TO WATERS Link to previous years emissions data | PRTR# : W0145 | Facility Name : Enva Ireland Limited (Cork) | Filename : W0145_2013(1) PRTR.xls | Return Year : 2013 | 31/03/2014 20:09

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this only concerns Releases from your f

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

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

SECTION B : REMAINING PRTR POLLUTANTS

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

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

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

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

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

acility

4.3 RELEASES TO WASTEWATER OR SEWER

Link to previous years emissions data

[PRTR# : W0115] Facility Name : Enva Ireland Limited (Cork)] Filename : W0115_2013(1).PRTR] 31/03/2014 20:01

SECTION A : PRTR POLLUTANTS

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

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

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

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

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

4.2 RELEASES TO WATERS Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

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

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT		Method Used			QUANTITY			
No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT		Method Used			QUANTITY			
No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

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

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT		Method Used			QUANTITY			
No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

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

4.4 RELEASES TO LAND Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT			METHOD			QUANTITY	
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

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

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

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT			METHOD			QUANTITY	
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	13 02 08	Yes	962.3	other engine, gear and lubricating oils	R13	M	Weighed	Offsite in Ireland	Enva Ireland Ltd.,W0184-01	Clonminam Industrial Estate,Portlaoise,Portlaoise, Laois,Ireland	Enva Ireland Ltd.,W0184-01,Clonminam Industrial Estate,Portlaoise,.,Laois,Ireland and Campine Recycling NV,Licence number is O474955451,Nilverheldsstraat 2 B - 2340 ,.,BEERSE,.,Belgium	Clonminam Industrial Estate,Portlaoise,.,Laois,Ireland
	16 06 01	Yes	2.96	lead batteries	R13	M	Weighed	Abroad	Enva Ireland Ltd.,W0184-01	Clonminam Industrial Estate,Portlaoise,Portlaoise, Laois,Ireland	Enva Ireland Ltd.,W0184-01,Clonminam Industrial Estate,Portlaoise,.,Laois,Ireland	Nilverheldsstraat 2 B - 2340 ,.,BEERSE,.,Belgium
Within the Country	13 04 03	Yes	417.5	bilge oils from other navigation	R13	M	Weighed	Offsite in Ireland	Enva Ireland Ltd.,W0184-01	Clonminam Industrial Estate,Portlaoise,Portlaoise, Laois,Ireland	Enva Ireland Ltd.,W0184-01,Clonminam Industrial Estate,Portlaoise,.,Laois,Ireland	Clonminam Industrial Estate,Portlaoise,.,Laois,Ireland
Within the Country												

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

ENVIRONMENTAL LIABILITIES RISK ASSESSMENT REVIEW :

UNKNOWN LIABILITIES

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

License no: W0145-02

March 2014
Code : RA 002 D

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 activites 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 18 full-time, of which 15 operate on site and 3 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. 190m^3.

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 $50m^3$ 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 $5m^3$ diversion tank, which can be used in the event of spillage/contaminated firewater etc. The contents of the diversion tank can be pumped to a dedicated firewater retention tank with capacity of approximately 190m3.

2.7. Hazard Studies

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

3.0 RISK CLASSIFICATION & INTERPRETATION

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

Table 1: Risk Classification Table – Occurrence

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

Table 2: Risk Classification Table – Severity

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

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

Table 3: Risk Evaluation Matrix.

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

SEVERITY RATING

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

3.1 Register of Risks

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

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	Waste oils are delivered to site on a daily basis. Documented procedures available. Loading and unloading of waste oil takes place in designated bunded areas. Packaged is delivered to site in suitable receptacles following documented procedures and stored in designated bunded areas. Site stormwater passes through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is also fitted with a $5m^3$ 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 $190m^3$. 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.	3	Potential costs associated with remediation. Any impact on soil, groundwater or surface water would be localised.	3

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

Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
2	Storage of waste oil in bulk storage tanks.	Bulk storage tank failure.	Surface Water Groundwater or Soil Contamination	1	All bulk storage tanks are located within local bunded areas; retention capacity is at least 110% of the largest tanks. 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 Site stormwater passes through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is fitted with a $5m^3$ 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 $190m^3$.	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	Tank bunds are inspected regularly at the site. Any spillage observed within the bunds would be promptly detected and cleaned up. Site stormwater passes through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is fitted with a $5m^3$ 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 $190m^3$. 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.	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

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

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

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

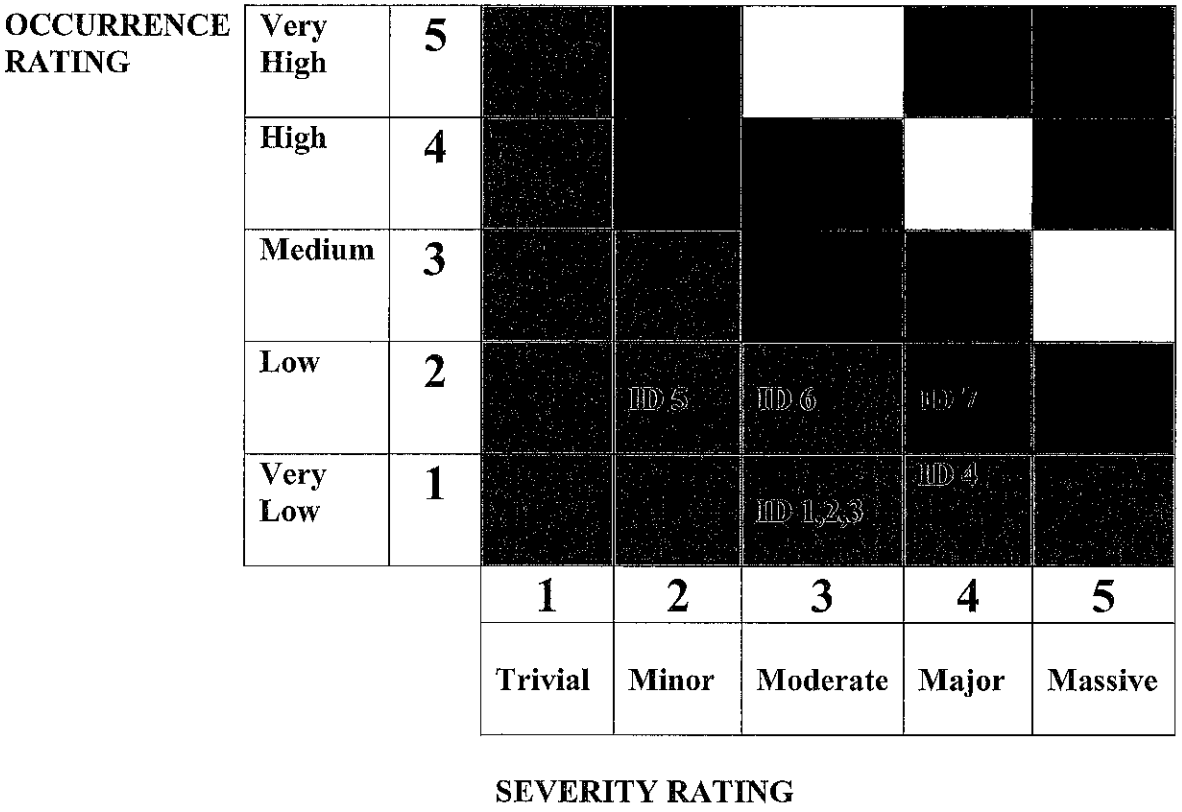
Risk ID	Process	Potential Hazard	Environmental Effect	Occurrence Rating	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score (Severity x Occurrence)
6	Disposal of waste-water	Failure of drainage network or wastewater treatment system resulting in significant release to ground and groundwater .	Surface Water Groundwater or Soil Contamination .	2	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. Stormwater from the site drains through a three-stage oil interceptor prior to discharge to soakaway. The interceptor system is also fitted with a $5m^3$ 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 $190m^3$. The integrity of underground pipes and tanks must be tested every five years. 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. 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. Bicycle unit inspected regularly and maintained annually.	3	Severity is based mainly on potential costs associated with repair of undergrounds 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. 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.	6

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

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

3.3 Interpretation of risks at Enva

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



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.	Operations Manager	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.	Operations Manager	Ongoing / Existing Practice	6
5	Monitoring and Control Systems	Failure of on-site environmental control procedures.	4	Continue control procedures and inspection programme.	Operations Manager	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.	Operations Manager	Ongoing / Existing Practice	4
3	Storage of Materials	Bund Integrity Failure.	3	Testing of bunds as per Waste Licence and repair any defects detected.	Operations Manager	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.	Operations Manager	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 waste and segregated bunded storage areas available in the warehouse.	Operations Manager	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,

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.

CLOSURE, RESTORATION, AFTERCARE MANAGEMENT PLAN

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

License no: W0145-02

March 2014
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 in the last reporting period 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 $50m^3$ 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 stromwater 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.

URS

Enva Cork

Groundwater Monitoring 2013

10 March 2014

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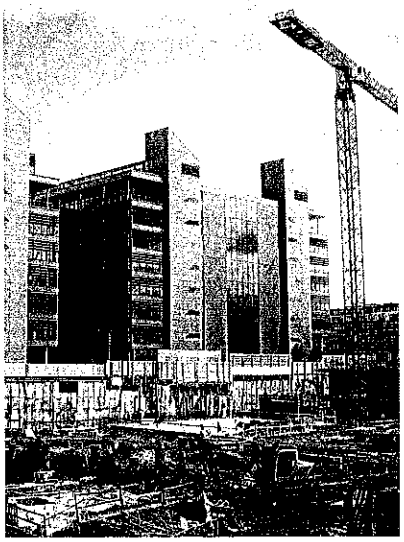
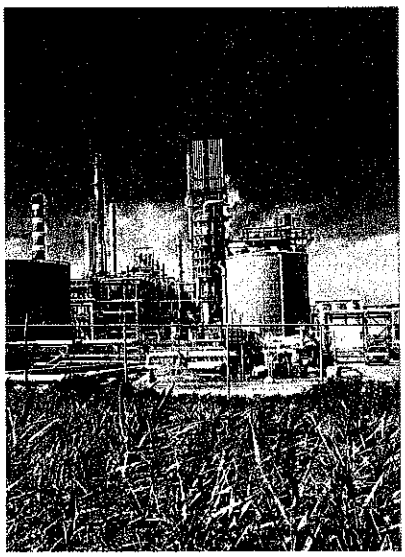
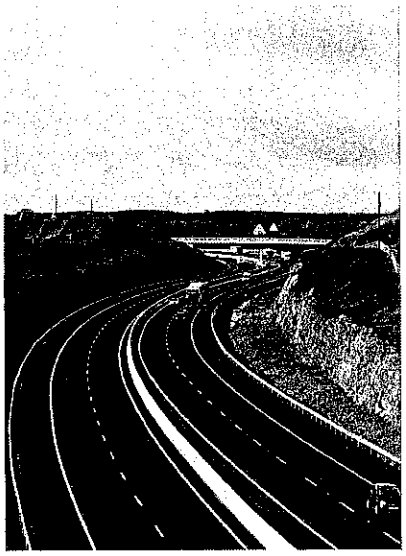
CKRP0003

Prepared for:
Enva Ireland Limited

IRELAND







Issue	Date	Details	Prepared by	Checked by	Approved by
1	27 September 2013	Draft Issue for Client Review	Fergus O'Regan Environmental Scientist	David Mullan Principal Environmental Scientist	David Mullan Principal Environmental Scientist
2	10 March 2014	Final Issue	Fergus O'Regan Environmental Scientist	David Mullan Principal Environmental Scientist	David Mullan Principal Environmental Scientist

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The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

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 27 August 2013 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) for the 2013 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 P844367 entitled 'Cork Groundwater Monitoring Proposal 2013' and dated 07 June 2013. The groundwater monitoring round was conducted by URS on 27 August 2013.

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
- Data assessment and reporting

3. METHODOLOGY

3.1 Water Level Measurement

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

3.2 Well Purging and Water Quality Measurements

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

Water quality measurements were taken during purging, using a calibrated field water quality meter 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 27 August 2013 from monitoring wells BH1, BH2, BH3 and BH4 and analysed for the Waste Licence monitoring parameters, as detailed in Appendix A and Table 1. Groundwater samples were collected 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.

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 500m north of the site. This stream eventually flows into Cork Harbour at Monkstown Creek which is located approximately 750m 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'

[1] www.gsi.ie

- GSI records show that there are nine groundwater monitoring wells located in a 1km 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
- Environmental Protection Agency's Draft Interim Guidelines Values (IGVs) for the Protection of Groundwater, 2003

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 27 August 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 gradient to the north east.

4.2 Field Observations

Field measurements of water quality parameters are tabulated in Table 2.

During the groundwater sampling event the following was noted:

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

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
- Diesel range organics (DRO) and mineral oil were not detected above the laboratory MDL in the four samples analysed
- Metals arsenic, cadmium, chromium, copper, iron, lead, mercury and selenium were not detected above the laboratory MDLs in the four samples analysed
- Boron, zinc and manganese were detected in one or more of the groundwater samples above method detection limits but below relevant assessment screening criteria
- Major Ions results were all below the adopted assessment criteria with the exception of ortho phosphate
- Reported concentrations of ortho phosphate in groundwater samples collected from BH3 and BH4 were above the Draft IGV of 0.03 mg/L. Concentrations ranged from 0.09 mg/L (BH3) to 0.35 mg/L (BH4

- Total ammonia was reported above the laboratory MDL in sample BH1 (0.03 mg/L). There are no assessment criteria for this parameter

4.4 Trends in Analytical Results

Analytical results for August 2013 were comparable to the previous monitoring round completed in June 2012.

All VOCs were reported below the laboratory MDL in June 2012 and August 2013.

SVOCs, DRO 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 in groundwater from well BH4 from 0.09 mg/L to less than the MDL and increased in BH1 from below the MDL to 0.04 mg/L between June 2012 and August 2013.

In August 2013 monitoring round, ortho phosphate was reported above the adopted assessment criteria in wells BH3 and BH4. Where detected, ortho phosphate concentrations increased marginally between June 2012 and August 2013. The greatest increase was noted at BH4 from 0.10 mg/L) in June 2012 to 0.35 mg/L in August 2013.

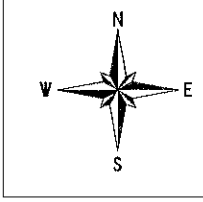
5. CONCLUSIONS

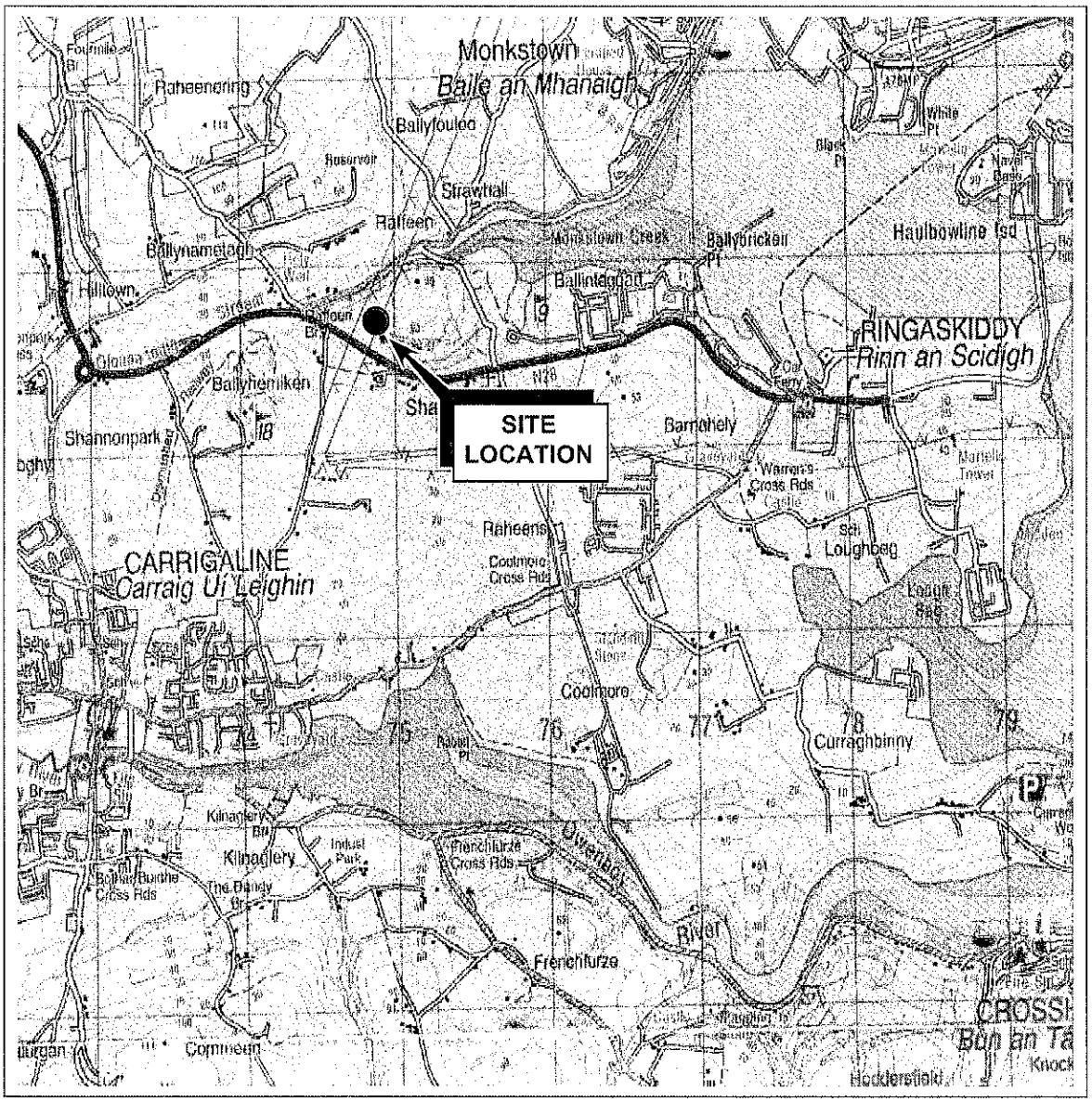
URS concludes the following based on the annual monitoring event conducted in August 2013:

- The inferred groundwater flow is to the north east
- Ortho phosphate in groundwater from wells BH3 and BH4 was reported above adopted assessment criteria
- The reported concentrations of all other parameters were below the adopted assessment criteria

FIGURES

North





0 km 1 km 2 km 3 km

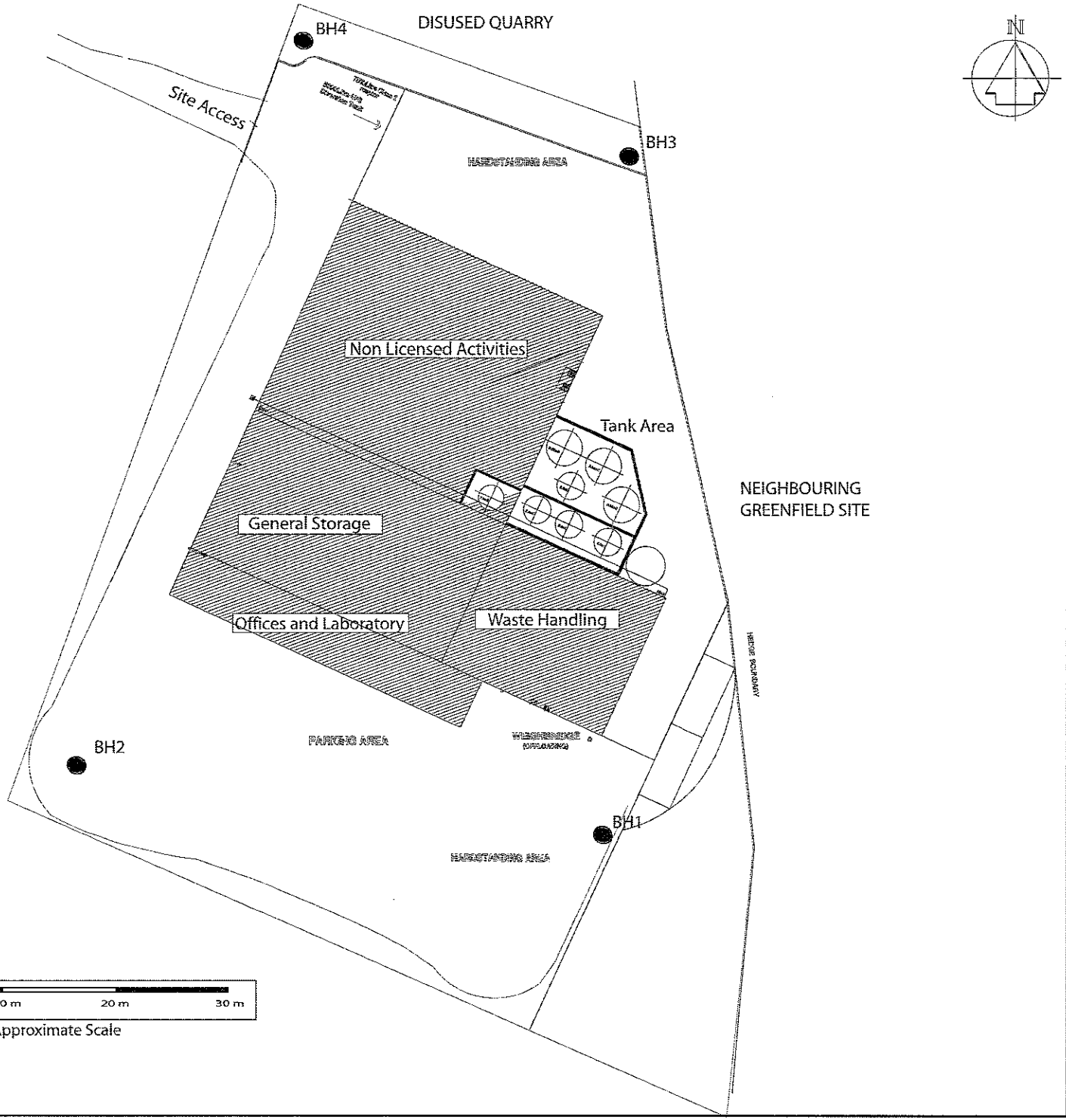
CLIENT
Enva Ireland Limited

PROJECT LOCATION
Enva Rafeen, Ringaskiddy, Co. Cork

DRAWING TITLE
Figure 1 _ Site Location Map

ENVIRONMENTAL CONSULTANTS
URS
ACORN BUSINESS CAMPUS, MAHON IND PK, CORK
TEL. +353 21 4536 136/7 FAX +353 21 4530 666

DRAWN	TRACED	CHECKED	APPROVED	DATE
FOR		FOR	DM	19.09.13
SCALE 1 : 50,000	Job No. 47092526			REV. A



NOTES

Key

BH1 — Monitoring Well Location and ID

STATUS

Final

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CLIENT

Enva Ireland Limited

PROJECT

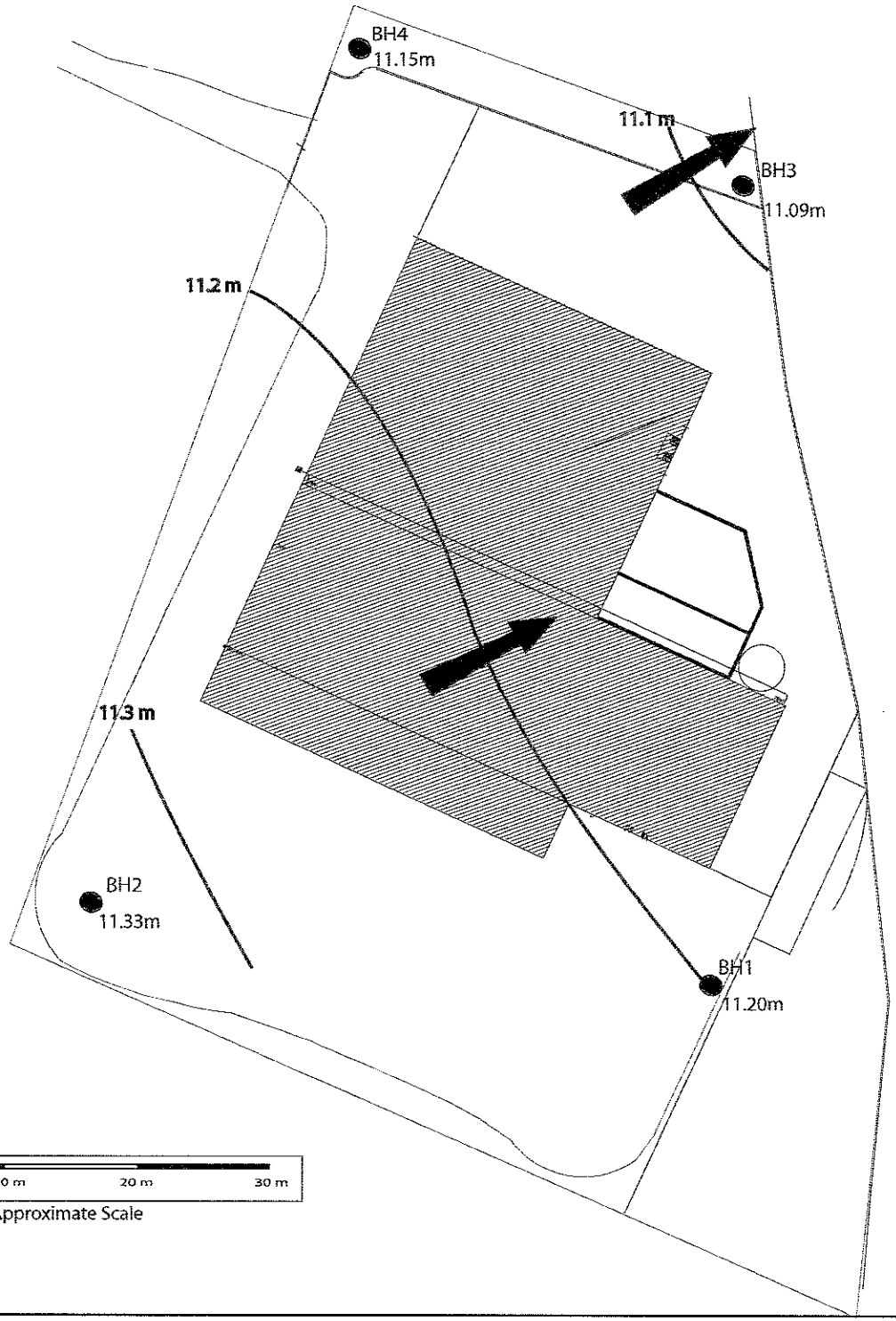
Enva Rafeen, Ringaskiddy, Co. Cork

DRAWING TITLE

Figure 2 _ Site Layout Plan Showing Monitoring Well Locations

DRAWN	TRACED	CHECKED	APPROVED	DATE
FOR		FOR	DM	19.09.13

SCALE	Job No:	REV
AS SHOWN	47092526	A



NOTES

Key

BH02	Monitoring Well Location and ID
11.20m	Groundwater Elevation Relative to Ordnance Datum
11.30m	Groundwater Contour
	Groundwater Flow Direction

STATUS: Final

ENVIRONMENTAL CONSULTANTS

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CLIENT: **Enva Ireland Limited**

PROJECT: **Enva Rafeen, Ringaskiddy, Co. Cork**

DRAWING TITLE: **Figure 3 _ Groundwater Contour Plan 27.08.2013**

DRAWN	TRACED	CHECKED	APPROVED	DATE
FOR		FOR	DM	19.09.13

SCALE	Job No:	REV
AS SHOWN	47092526	A

TABLES

Table 1: Sample Inventory - Enva Rafeen, August 2013

Compiled by: FOR
Checked by: DM

Sampling Location	Field Parameters					Laboratory Parameters						
	pH	EC	Eh	T	DO	VOCs	SVOCs	COD	DRO & 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
DRO - Diesel Range Organics
Major Ions - to include Calcium, Magnesium, Chloride, Sulphate, Potassium, Sodium, Bicarbonate, Nitrate, Nitrite, Phosphate and Fluoride

Table 2: Water Level and Field Measurements - Enva Rafeen, August 2013

Sample Location	Sampling Date	SWL (mbtoc)	Well Elevation (mAOD)	SWL (mAOD)	Total Depth (m)	Well Volume (L)	Minimum Purge Volume (L)	Actual Purge Volume (L)	pH	EC µS/cm	Eh mV	T °C	DO mg/L	Observations
BH1	27-Aug-13	7.655	18.85	11.20	9.31	3	10	15	7.61	577	103	12.0	8.60	Cloudy brown water. NEC.
BH2	27-Aug-13	7.287	18.62	11.33	8.58	3	8	15	7.18	570	103	12.1	8.13	Cloudy brown water. NEC.
BH3	27-Aug-13	7.757	18.84	11.09	9.82	4	12	20	7.72	430	87	12.3	2.82	Cloudy brown water. NEC.
BH4	27-Aug-13	7.470	18.62	11.15	9.97	5	15	15	7.66	330	95	13.0	7.82	Cloudy brown water. NEC.

SWL - standing water level
mAOD - meters above Ordnance Datum
mbtoc - meters below top of casing
– Not Measured
NEC - No evidence of contamination

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

µS/cm - micro Siemens per centimetre
mV - millivolts
°C - degrees centigrade
mg/L - milligrams per litre

*Redox potential readings compensated by adding 200 mV to field readings as recommended by instrument manufacturer

Table 3: Volatile Organic Compound Results (µg/L) - Enva Rafeen, August 2013

Compiled by: FOR
Checked by: DM

Volatile Organic Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well			
					BH1	BH2	BH3	BH4
Dichlorodifluoromethane	µg/l	2	nv	nv	-	-	-	-
Methyl Tertiary Butyl Ether	µg/l	1	nv	30	-	-	-	-
Chloromethane	µg/l	3	nv	nv	-	-	-	-
Vinyl Chloride	µg/l	2	0.375	nv	-	-	-	-
Bromomethane	µg/l	1	nv	nv	-	-	-	-
Chloroethane	µg/l	3	nv	nv	-	-	-	-
Trichlorofluoromethane	µg/l	3	nv	nv	-	-	-	-
1,1-Dichloroethene	µg/l	3	nv	30*	-	-	-	-
Dichloromethane	µg/l	3	nv	10	-	-	-	-
trans-1-2-Dichloroethene	µg/l	3	nv	30*	-	-	-	-
1,1-Dichloroethane	µg/l	3	nv	nv	-	-	-	-
cis-1-2-Dichloroethene	µg/l	3	nv	30*	-	-	-	-
2,2-Dichloropropane	µg/l	1	nv	nv	-	-	-	-
Bromochloromethane	µg/l	2	nv	nv	-	-	-	-
Chloroform	µg/l	2	75 [1]	12	-	-	-	-
1,1,1-Trichloroethane	µg/l	2	nv	500	-	-	-	-
1,1-Dichloropropene	µg/l	3	nv	nv	-	-	-	-
Carbon tetrachloride	µg/l	2	nv	2	-	-	-	-
1,2-Dichloroethane	µg/l	2	2	3	-	-	-	-
Benzene	µg/l	1	0.75	1.0	-	-	-	-
Trichloroethene	µg/l	3	7.5 [2]	70, 10**	-	-	-	-
1,2-Dichloropropane	µg/l	2	nv	nv	-	-	-	-
Dibromomethane	µg/l	3	nv	nv	-	-	-	-
Bromodichloromethane	µg/l	2	75 [1]	nv	-	-	-	-
cis-1-3-Dichloropropene	µg/l	2	nv	nv	-	-	-	-
Toluene	µg/l	2	nv	10	-	-	-	-
trans-1-3-Dichloropropene	µg/l	2	nv	nv	-	-	-	-
1,1,2-Trichloroethane	µg/l	2	nv	nv	-	-	-	-
Tetrachloroethene	µg/l	3	7.5 [2]	10, 40***	-	-	-	-
1,3-Dichloropropane	µg/l	2	nv	nv	-	-	-	-
Dibromochloromethane	µg/l	2	75 [1]	nv	-	-	-	-
1,2-Dibromoethane	µg/l	2	nv	nv	-	-	-	-
Chlorobenzene	µg/l	2	nv	1	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	2	nv	nv	-	-	-	-
Ethylbenzene	µg/l	2	nv	10	-	-	-	-
p/m-Xylene	µg/l	3	nv	10****	-	-	-	-
o-Xylene	µg/l	2	nv	10****	-	-	-	-
Styrene	µg/l	2	nv	nv	-	-	-	-
Bromoform	µg/l	2	75 [1]	nv	-	-	-	-
Isopropylbenzene	µg/l	3	nv	nv	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	4	nv	nv	-	-	-	-
Bromobenzene	µg/l	2	nv	nv	-	-	-	-
1,2,3-Trichloropropane	µg/l	3	nv	nv	-	-	-	-
Propylbenzene	µg/l	3	nv	nv	-	-	-	-
2-Chlorotoluene	µg/l	3	nv	nv	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	3	nv	nv	-	-	-	-
4-Chlorotoluene	µg/l	3	nv	nv	-	-	-	-
tert-Butylbenzene	µg/l	3	nv	nv	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	3	nv	nv	-	-	-	-
sec-Butylbenzene	µg/l	3	nv	nv	-	-	-	-
4-Isopropyltoluene	µg/l	3	nv	nv	-	-	-	-
1,3-Dichlorobenzene	µg/l	3	nv	nv	-	-	-	-
1,4-Dichlorobenzene	µg/l	3	nv	nv	-	-	-	-
n-Butylbenzene	µg/l	3	nv	nv	-	-	-	-
1,2-Dichlorobenzene	µg/l	3	nv	10	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	2	nv	nv	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	3	nv	0.4*****	-	-	-	-
Hexachlorobutadiene	µg/l	3	nv	0.1	-	-	-	-
Naphthalene	µg/l	2	nv	1	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	3	nv	0.4*****	-	-	-	-

xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)
xx	Exceeds surface water EQS (Environmental Quality Standard)
MDL	Method Detection Limit
-	Less than the MDL
nv	DIV/IGV/GTV not defined

*Draft IGV is for the sum of dichloroethenes
**Two Draft IGVs are given for trichloroethene
***Two Draft IGVs are given for tetrachloroethene
****Draft IGV is for the sum of xylenes
*****Draft IGV is for the sum of trichlorobenzenes

[1]GTV is for the sum of trihalomethanes.
[2]GTV is for the sum of tetrachloroethene and trichloroethene.

Table 4: Semi-volatile Organic Compound Results (µg/L) - Enva Rafeen, August 2013

Compiled by: FOR
Checked by: DM

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	nv	200	-	-	-	-
2-Methylphenol	µg/l	10	nv	0.5 [1]	-	-	-	-
2-Nitrophenol	µg/l	10	nv	0.5 [1]	-	-	-	-
2,4-Dichlorophenol	µg/l	10	nv	0.5 [1]	-	-	-	-
2,4-Dimethylphenol	µg/l	10	nv	0.5 [1]	-	-	-	-
2,4,5-Trichlorophenol	µg/l	10	nv	0.5 [1]	-	-	-	-
2,4,6-Trichlorophenol	µg/l	10	nv	200	-	-	-	-
4-Chloro-3-methylphenol	µg/l	10	nv	0.5 [1]	-	-	-	-
4-Methylphenol	µg/l	10	nv	0.5 [1]	-	-	-	-
4-Nitrophenol	µg/l	10	nv	0.5 [1]	-	-	-	-
Pentachlorophenol	µg/l	10	nv	2	-	-	-	-
Phenol	µg/l	10	nv	0.5 [1]	-	-	-	-
PAHs								
2-Chloronaphthalene	µg/l	10	nv	nv	-	-	-	-
2-Methylnaphthalene	µg/l	10	nv	nv	-	-	-	-
Naphthalene	µg/l	10	nv	1	-	-	-	-
Acenaphthylene	µg/l	10	nv	nv	-	-	-	-
Acenaphthene	µg/l	10	nv	nv	-	-	-	-
Fluorene	µg/l	10	nv	nv	-	-	-	-
Phenanthrene	µg/l	10	nv	nv	-	-	-	-
Anthracene	µg/l	10	nv	10000	-	-	-	-
Fluoranthene	µg/l	10	nv	1	-	-	-	-
Pyrene	µg/l	10	nv	nv	-	-	-	-
Benz(a)anthracene	µg/l	10	nv	nv	-	-	-	-
Chrysene	µg/l	10	nv	nv	-	-	-	-
Benzo(bk)fluoranthene	µg/l	10	0.075 [A]	0.5, 0.05****	-	-	-	-
Benzo(a)pyrene	µg/l	10	0.0075	0.01	-	-	-	-
Indeno(123cd)pyrene	µg/l	10	0.075 [A]	0.05	-	-	-	-
Dibenzo(ah)anthracene	µg/l	10	nv	nv	-	-	-	-
Benzo(ghi)perylene	µg/l	10	0.075 [A]	0.05	-	-	-	-
Phthalates								
Bis(2-ethylhexyl) phthalate	µg/l	10	nv	8	-	-	-	-
Butylbenzyl phthalate	µg/l	10	nv	5 [2]	-	-	-	-
Di-n-butyl phthalate	µg/l	10	nv	2	-	-	-	-
Di-n-Octyl phthalate	µg/l	10	nv	5 [2]	-	-	-	-
Diethyl phthalate	µg/l	10	nv	5 [2]	-	-	-	-
Dimethyl phthalate	µg/l	10	nv	5 [2]	-	-	-	-
Other SVOCs								
1,2-Dichlorobenzene	µg/l	10	nv	10	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	10	nv	0.4	-	-	-	-
1,3-Dichlorobenzene	µg/l	10	nv	nv	-	-	-	-
1,4-Dichlorobenzene	µg/l	10	nv	nv	-	-	-	-
2-Nitroaniline	µg/l	10	nv	nv	-	-	-	-
2,4-Dinitrotoluene	µg/l	10	nv	nv	-	-	-	-
2,6-Dinitrotoluene	µg/l	10	nv	nv	-	-	-	-
3-Nitroaniline	µg/l	10	nv	nv	-	-	-	-
4-Bromophenylphenylether	µg/l	10	nv	nv	-	-	-	-
4-Chloroaniline	µg/l	10	nv	nv	-	-	-	-
4-Chlorophenylphenylether	µg/l	10	nv	nv	-	-	-	-
4-Nitroaniline	µg/l	10	nv	nv	-	-	-	-
Azobenzene	µg/l	10	nv	nv	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	10	nv	nv	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	10	nv	nv	-	-	-	-
Carbazole	µg/l	10	nv	nv	-	-	-	-
Dibenzofuran	µg/l	10	nv	nv	-	-	-	-
Hexachlorobenzene	µg/l	10	nv	0.03	-	-	-	-
Hexachlorobutadiene	µg/l	10	nv	0.1	-	-	-	-
Hexachlorocyclopentadiene	µg/l	10	nv	nv	-	-	-	-
Hexachloroethane	µg/l	10	nv	nv	-	-	-	-
Isophorone	µg/l	10	nv	nv	-	-	-	-
N-nitrosodi-n-propylamine	µg/l	10	nv	nv	-	-	-	-
Nitrobenzene	µg/l	10	nv	10	-	-	-	-

xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guidelline Value)
MDL	Method Detection Limit
-	Less than the MDL
nv	DIV/IGV/GTV not defined

* DIV is for the sum of dichlorobenzenes
** DIV is for the sum of all trichlorophenols
*** DIV is for the sum of all phthalates

Draft IGV - EPA Draft Interim Guidelline Value
Bold Indicates result above IGV
1 - Draft IGV is for the sum of phenols
2 - Draft IGV is for the sum of phthalates

GTV: Groundwater threshold value, SI No. 9 of 2010, Schedule 5
Italics Indicates result above GTV
A - PAH compounds specified in GTV

Table 5: Hydrocarbon and Metal Results (µg/L) - Enva Rafeen, August 2013

Compiled by: FOR
Checked by: DM

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well			
					BH1	BH2	BH3	BH4
DRO/Mineral Oil								
EPH (C_8-C_{40})	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	13	14	13	-
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	-	-	-	-
Zinc	µg/l	3	nv	100	4	-	3	-
Iron	µg/l	20	nv	200	-	-	-	-
Manganese	µg/l	2	nv	50	8	-	27	-

xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)
MDL	Method Detection Limit
-	Less than the MDL
nv	DIV/IGV/GTV not defined

Table 6: Miscellaneous Parameters Results (mg/L) - Enva Rafeen, August 2013

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well			
					BH1	BH2	BH3	BH4
Ammonium	mg/l		0.175	0.150	0.04	-	-	-
Total Ammonia as N	mg/l	0.2	nv	nv	0.03	-	-	-
COD	mg/l	7	nv	nv	-	-	-	-
Chloride	mg/l	0.3	187.5	250	24	23	20	27
Sodium	mg/l	0.15	150	150	15	14	13	17
Sulphate	mg/l	0.05	187.5	200	11	11	8	6
Potassium	mg/l	0.04	nv	5	0.8	0.9	2.1	2.0
Calcium	mg/l	0.2	nv	200	111	107	85	57
Magnesium	mg/l	0.1	nv	50	5	5	3	2
Bicarbonate Alkalinity as $CaCO_3$	mg/l	1	nv	No abnormal change	279	233	236	161
Nitrate as NO_3	mg/l	0.2	37.5	25	29	31	15	4
Nitrite as NO_2	mg/l	0.02	0.375	0.1	-	-	-	-
Ortho phosphate as PO_4	mg/l	0.06	nv	0.03	-	-	0.09	0.35
Fluoride	mg/l	0.3	nv	1	-	-	-	-

xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)
MDL	Method Detection Limit
-	Less than the MDL
nv	DIV/IGV/GTV not defined
*	Conversion factor of 1.2857 used to convert total ammonia (as N) to ammonium (NH_4)

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.

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

APPENDIX B LABORATORY REPORT

Jones Environmental Laboratory

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

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

URS
Acorn Business Campus
Mahon Industrial Park
Black Rock
Cork
Ireland

No.4225

Attention :	Fergus ORegan
Date :	4th September, 2013
Your reference :	47092526
Our reference :	Test Report 13/7848 Batch 1
Location :	ENVA CORK
Date samples received :	28th August, 2013
Status :	Final report
Issue :	1

Four samples were received for analysis on 28th August, 2013. 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:

Bruce Leslie
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Jones Environmental Laboratory

Client Name: URS

Reference: 47092526

Location: ENVA CORK

Contact: Fergus ORegan

JE Job No.: 13/7848

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, HN=HNO_3

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-6	7-12	13-18	19-24							LOD	Units	Method No.
Sample ID	BH1	BH2	BH3	BH4									
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	V H HN P G									
Sample Date	27/08/2013	27/08/2013	27/08/2013	27/08/2013									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	28/08/2013	28/08/2013	28/08/2013	28/08/2013									
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Boron	13	14	13	<12							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Calcium #	110.5	107.1	84.5	56.5							<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 #	<20	<20	<20	<20							<20	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Magnesium #	4.9	4.5	2.9	1.6							<0.1	mg/l	TM30/PM14
Dissolved Manganese #	8	<2	27	<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 #	0.8	0.9	2.1	2.0							<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Sodium #	14.6	14.0	13.4	16.6							<0.1	mg/l	TM30/PM14
Dissolved Zinc #	4	<3	3	<3							<3	ug/l	TM30/PM14
EPH (C8-C40) #	<10	<10	<10	<10							<10	ug/l	TM5/PM30
C8-C40 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 #	11.37	10.68	7.91	5.86							<0.05	mg/l	TM38/PM0
Chloride #	23.7	22.9	19.6	27.4							<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	28.7	30.6	14.7	4.3							<0.2	mg/l	TM38/PM0
Nitrite as NO2 #	<0.02	<0.02	<0.02	<0.02							<0.02	mg/l	TM38/PM0
Ortho Phosphate as PO4 #	<0.06	<0.06	0.09	0.35							<0.06	mg/l	TM38/PM0
Total Ammonia as N #	0.03	<0.03	<0.03	<0.03							<0.03	mg/l	TM38/PM0
Bicarbonate Alkalinity as CaCO3	279	233	236	161							<1	mg/l	TM75/PM0
COD (Settled) #	<7	<7	<7	<7							<7	mg/l	TM57/PM0

Jones Environmental Laboratory

Client Name: URS

Reference: 47092526

Location: ENVA CORK

Contact: Fergus ORegan

JE Job No.: 13/7848

SVOC Report : Liquid

J E Sample No.	1-6	7-12	13-18	19-24							LOD	Units	Method No.
Sample ID	BH1	BH2	BH3	BH4									
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	V H HN P G									
Sample Date	27/08/2013	27/08/2013	27/08/2013	27/08/2013									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	28/08/2013	28/08/2013	28/08/2013	28/08/2013									
SVOC MS													
Phenols													
2-Chlorophenol #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2-Nitrophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<10	<10	<10	<10							<10	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<10	<10	<10	<10							<10	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	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 #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Naphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Fluorene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<1	<1	<1							<1	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 #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<0.5	<0.5	<0.5							<0.5	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 #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<10	<10	<10	<10							<10	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<10	<10	<10	<10							<10	ug/l	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Jones Environmental Laboratory

Client Name: URS

Reference: 47092526

Location: ENVA CORK

Contact: Fergus ORegan

JE Job No.: 13/7848

SVOC Report : Liquid

J E Sample No.	1-6	7-12	13-18	19-24									
Sample ID	BH1	BH2	BH3	BH4									
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	V H HN P G									
Sample Date	27/08/2013	27/08/2013	27/08/2013	27/08/2013									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1							LOD	Units	Method No.
Date of Receipt	28/08/2013	28/08/2013	28/08/2013	28/08/2013									
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Nitroaniline	<10	<10	<10	<10							<10	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5							<0.5	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 #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<10	<10	<10	<10							<10	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitroaniline #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<10	<10	<10	<10							<10	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30

Jones Environmental Laboratory

Client Name: URS **VOC Report :** Liquid

Reference: 47092526

Location: ENVA CORK

Contact: Fergus ORegan

JE Job No.: 13/7848

J E Sample No.	1-6	7-12	13-18	19-24									
Sample ID	BH1	BH2	BH3	BH4									
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	V H HN P G									
Sample Date	27/08/2013	27/08/2013	27/08/2013	27/08/2013									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	28/08/2013	28/08/2013	28/08/2013	28/08/2013									

Please see attached notes for all abbreviations and acronyms

											LOD	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2							<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1							<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3							<3	ug/l	TM15/PM10
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1							<0.1	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-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3							<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3							<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3							<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3							<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<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 #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<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 #	<0.5	<0.5	<0.5	<0.5							<0.5	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 (PCE) #	<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 #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1	<1	<1							<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5	<0.5	<0.5							<0.5	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	91	90	88	87							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	98	96	96							<0	%	TM15/PM10

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/7848

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 ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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 test results that may be compromised highlighted on your deviating samples report.

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.
CO	Suspected carry over
OC	Outside Calibration Range
NFD	No Fibres Detected

JE Job No 13/7848

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Reported on dry weight basis
TM5	EPH by GC-FID, modified USEPA 8015	PM30	Magnetic stirrer extraction			AR	
TM5	EPH by GC-FID, modified USEPA 8015	PM30	Magnetic stirrer extraction	Yes		AR	
TM15	VOC - Target by GC-MS, modified USEPA 8260	PM10	VOC GC-MS				
TM15	VOC - Target by GC-MS, modified USEPA 8260	PM10	VOC GC-MS	Yes			
TM16	SVOC - Target by GC-MS, modified USEPA 8270	PM30	Magnetic stirrer extraction				
TM16	SVOC - Target by GC-MS, modified USEPA 8270	PM30	Magnetic stirrer extraction	Yes			
TM27	SO4,Cl,NO3,NO2,F,PO4 by Dionex	PM0	No Preparation				
TM30	Metals by ICP-OES	PM14	Metals by ICP (Waters)				
TM30	Metals by ICP-OES	PM14	Metals by ICP (Waters)	Yes			
TM38	SO4,Cl,NO3,NO2,F,PO4, Amm N2,ThioCN, Hex Cr by Aquakem	PM0	No Preparation	Yes			
TM57	COD by Colourimetric measurement	PM0	No Preparation	Yes			
TM75	Alkalinity by Metrohm	PM0	No Preparation				