Facility Information Summary	
AER Reporting Year	2014
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	chedule of the waste management act. Class 13 of fourth schedule
National Grid Reference (6E, 6 N)	X174886.33, y64574.09
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.	vaste oil to our Portloaise office. Bulk transfer of waste oil has reduced in 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)	31/3/15 Date

AIR-summary template	Lic No:	WO145-02	Year	2014

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	2014
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	2014

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	2014

			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 montoring 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:	W0145-02	Year	2014

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:	W0145-02	Year	2014	

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	In January 2014, all passed the bund test. No new bunds added.
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	SELECT
16	Are channels/transfer systems to remote containment systems tested?		SELECT
17	Are channels/transfer systems compliant in both integrity and available volume?		SELECT

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	2014

			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	N/A		
7	Please specify the proposed time frame for the remediation strategy	N/A		
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	ELRA carried out for the site.	
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 2014

*Please note exceedance 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 interpretation 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 ALDER as a licensee return or as otherwise instructed by the EPA. [illegible]

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 in G31) Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 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:	W0145-02	Year	2014

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:	WO145-02	Year	2014

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	
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	Pending approval.
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	
10	Financial Provision for Closure status	SELECT	
11	Financial Provision for Closure - amount of cover	30,500	
12	Financial Provision for Closure - type	bond	Pending approval.
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 2014

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	40%	Diversion chamber lined, chen	Individual	Increased compliance with licence conditions
SELECT		SELECT		SELECT	SELECT
SELECT		SELECT		SELECT	SELECT

Noise monitoring summary report

Lic No: WO145-02 Year 2014

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)?
12.12.15	10.08-10.38	N1		53	49	56	71	No	SELECT	Road traffic from N28, B	SELECT
12.12.15	12.17-12.47	N1		55	50	58	62	No		Road traffic from N28, Background birdsong	
12.12.15	14.28-14.58	N1		60	54	61	84	No		Road traffic from N28, Background birdsong	
12.12.15	9.36-10.06	N2		63	54	62	89	No		Road traffic from N28, Background birdsong, faint r	
12.12.15	11.44-12.14	N2		61	55	63	74	No		Road traffic from N28, Background birdsong, faint r	
12.12.15	13.55-14.25	N2		63	57	64	89	No		Road traffic from N28, Background birdsong, faint r	
12.12.15	9.05-9.35	N3		61	52	64	80	No		Road traffic from N28, Background birdsong	
12.12.15	11.12-11.42	N3		62	54	65	71	No		Road traffic from N28, Background birdsong	
12.12.15	13.23-13.53	N3		63	57	65	79	No		Road traffic from N28, Background birdsong	
12.12.15	10.40-11.10	N4		66	43	59	56	No		Road traffic from N28, Background birdsong	
12.12.15	12.49-13.19	N4		64	47	59	91	No		Road traffic from N28, Background birdsong	
12.12.15	15.02-15.32	N4		58	47	61	64	No		Road traffic from N28, Background birdsong	
12.12.15	8.00-8.30	N5		81	68	85	93	No		Noise location next to road so traffic is the only sou	
12.12.15	8.31-9.01	N5		80	70	84	87	No		Noise location next to road so traffic is the only sou	
12.12.15	15.36-16.06	N5		81	71	84	89	No		Noise location next to road so traffic is the only sou	

*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 2014

		Additional information
1	When did the site carry out the most recent energy efficiency audit? Please list the recommendations in table 3 below	Apr-08
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 2014

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	2014

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	No	

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:	W0145-02	Year	2014
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	No	
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	No	
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	No	

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?	N/A	
8	Do you maintain a sludge register on site?	N/A	

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	License 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:	W0145-02	Year	2014

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, n	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

URS

Enva Ireland Limited

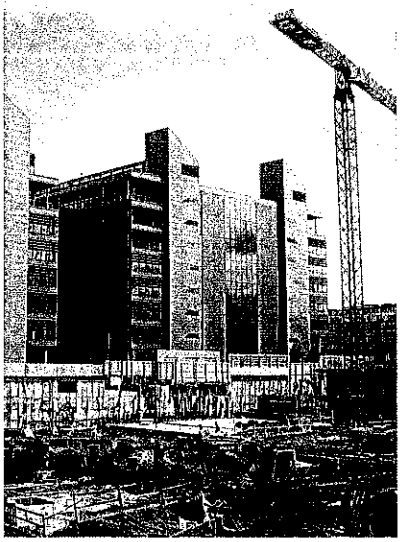
Groundwater Monitoring 2014

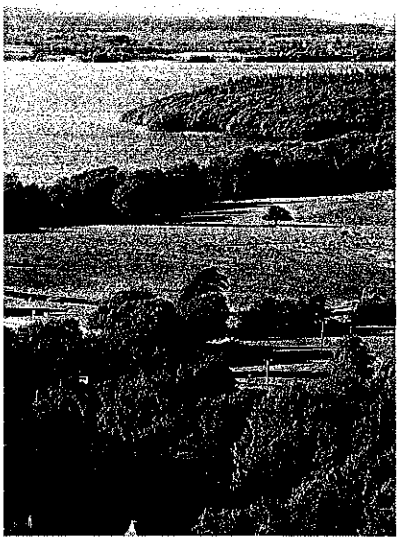
05 February 2015

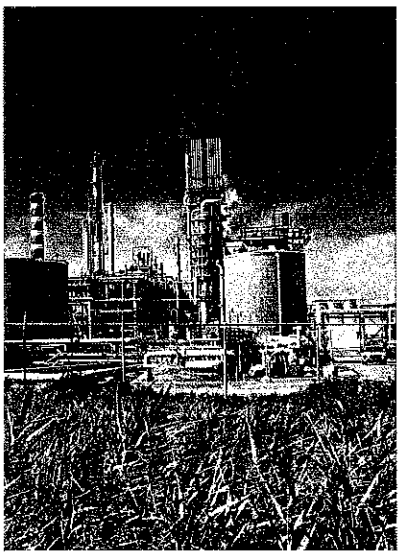
47092714
DURP0001/Final

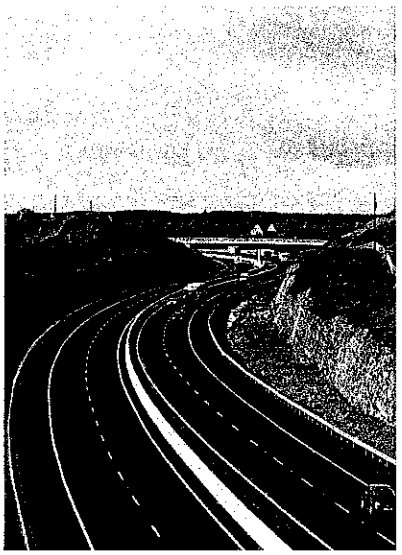
Prepared for:
Enva Ireland Limited

IRELAND









Issue	Date	Details	Prepared by	Checked by	Approved by
1	26 May 2014	Issue 1 Draft for Client Review	John Linehan Senior Environmental Scientist	Kevin Forde Technical Director	Kevin Forde Technical Director
2	05 February 2015	Final Issue	John Linehan Senior Environmental Scientist	Kevin Forde Technical Director	Kevin Forde Technical Director

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Limitations

URS Ireland Limited ("URS") has prepared this Report for the sole use of **Enva Ireland Limited** ("Client") in accordance with the Agreement under which our services were performed (**Proposal no. 3138331.1 dated 11 April 2014**). No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of URS.

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 07 May 2014 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.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS' attention after the date of the Report.

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Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

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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TABLE OF CONTENTS

1. INTRODUCTION

URS Ireland Limited (URS) is pleased to present this report to Enva Ireland Limited (Enva) which, summarises the 2014 groundwater monitoring round conducted at the Enva Facility, Unit 9, Raffeen Industrial Estate, Ringaskiddy, Co.Cork (the site).

The site location is presented in Figure 1 and the site layout showing borehole locations is presented in Figure 2.

Works were completed in accordance with URS Proposal Number 3138331.1 entitled 'Cork Groundwater Monitoring Proposal 2014' and dated 11 April 2014. The groundwater monitoring round was conducted by URS on 07 May 2014.

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 07 May 2014 from monitoring wells BH1, BH2, BH3 and BH4 and analysed for the Waste Licence monitoring parameters, as detailed in Appendix C. 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'
- 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.

[1] www.gsi.ie

Water levels were gauged on 07 May 2014. 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 presented 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 the 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 – Manganese was reported above the IGV of 50 µg/L in sample BH3 (90 µg/L). The reported concentration of manganese in the other three samples ranged from below the laboratory MDL (BH2) to 9 ug/L (BH4).

The reported concentrations of all other metals analysed were below the adopted assessment criteria.

Major Ions

Reported concentrations of nitrate were above the draft IGV of 25 mg/L in samples BH1 (35 mg/L) and BH2 (37 mg/L).

The reported concentrations of all other major ions in each of the samples analysed were below the adopted assessment criteria.

4.4 Trends in Analytical Results

Analytical results for May 2014 were comparable to the previous monitoring round completed in August 2013.

All VOCs were reported below the laboratory MDL in August 2013 and May 2014.

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

Nitrate was reported above the IGV in samples BH1 and BH2 in 2014. Nitrate was not reported above the Draft IGV in August 2013.

Manganese was reported above the draft IGV in sample BH3 in May 2014. Manganese was not reported above the Draft IGV in any of the wells sampled in August 2013.

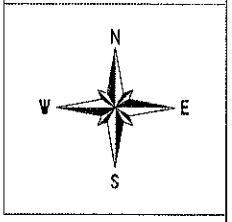
Orthophosphate was not reported above the laboratory MDL in any of the wells sampled in May 2014. Reported concentrations of 0.09 mg/L (BH3) and 0.35 mg/L (BH4) had been reported in August 2013.

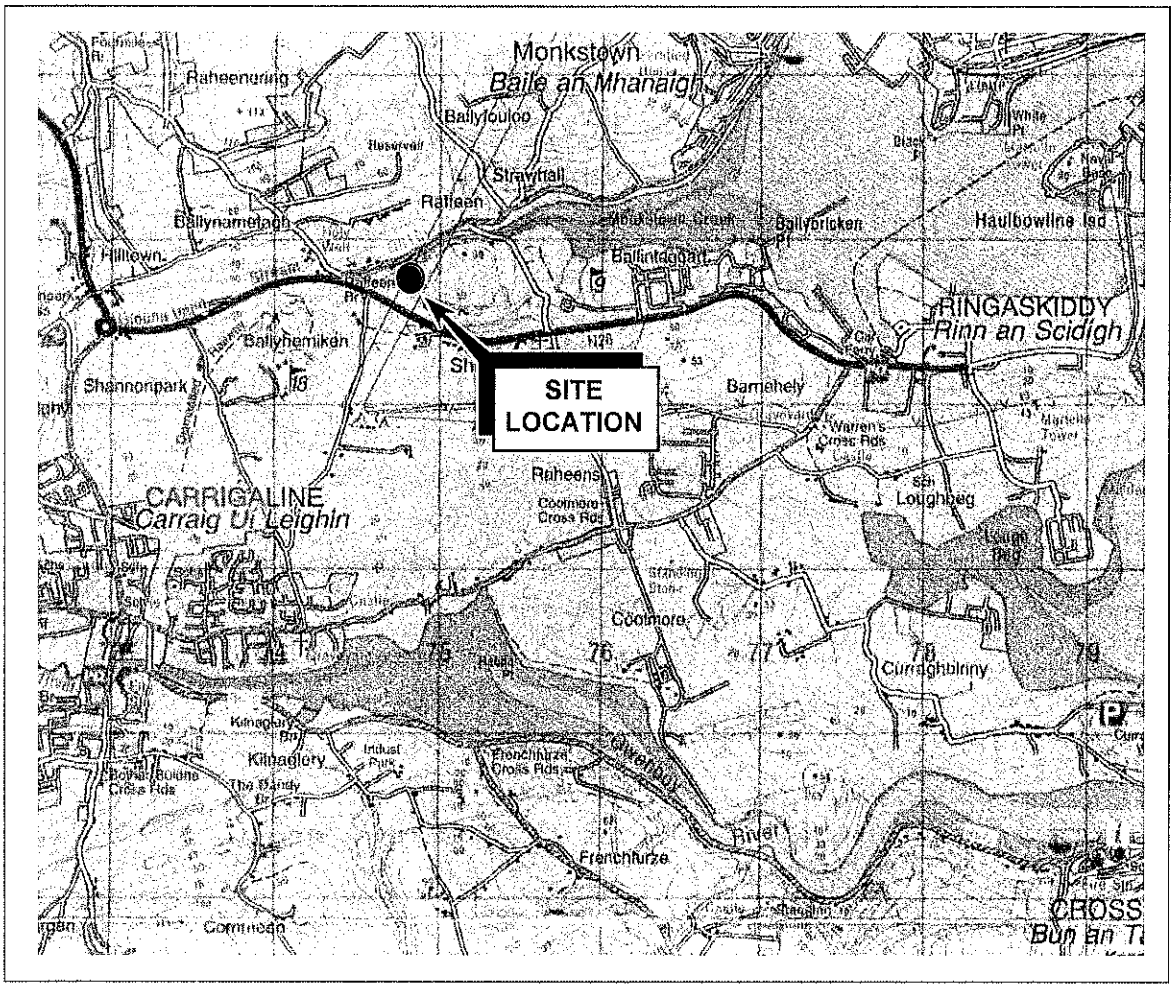
5. SUMMARY

- The inferred groundwater flow is to the north east
- Nitrate was reported above the adopted assessment criteria in wells BH1 and BH2
- Manganese was reported above the adopted assessment criteria in well BH3
- The reported concentrations of all other parameters analysed in each of the four wells (BH1 to BH4) were below the adopted assessment criteria.

APPENDIX A FIGURES

North





0 km 1 km 2 km 3 km

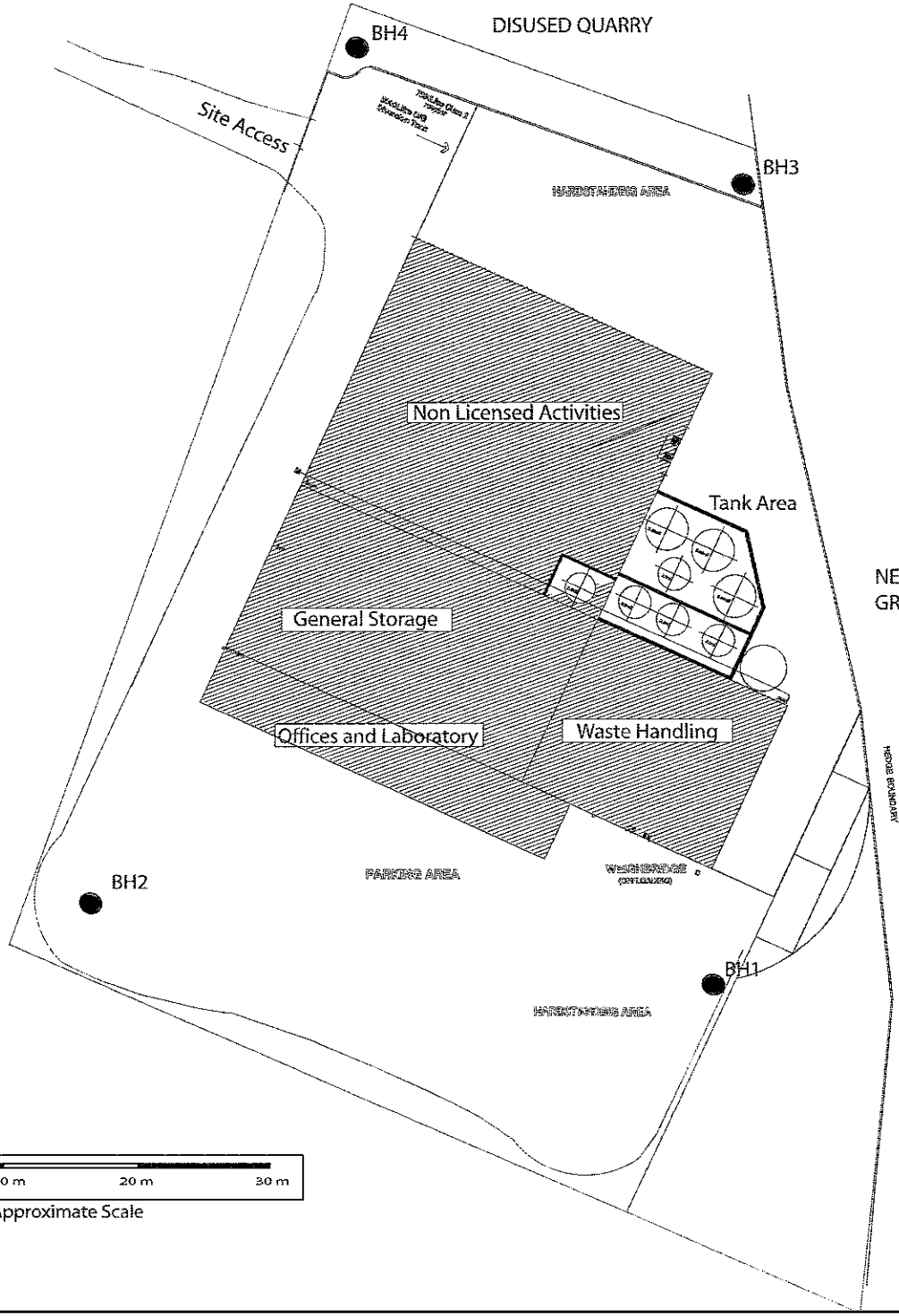
CLIENT
Enva Ireland Limited

PROJECT LOCATION
Enva Raffeen, 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		JL	FOR	23.05.14
SCALE	Job No.			REV.
1 : 50,000	47092714			A



N

NOTES

Key

BH1 Monitoring Well Location and ID

STATUS

Final

ENVIRONMENTAL CONSULTANTS

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CLIENT

Enva Ireland Limited

PROJECT

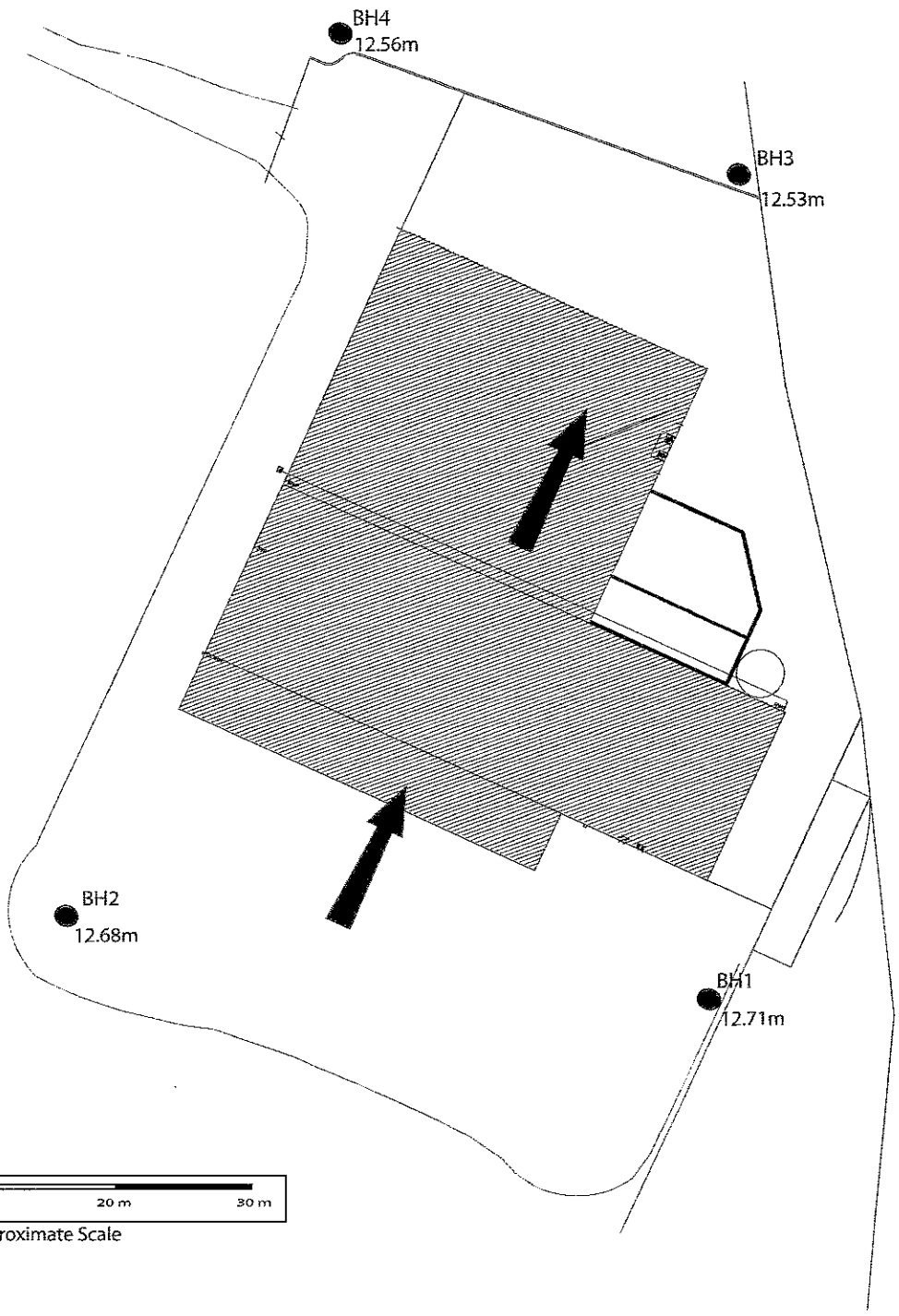
Enva Raffeen, Ringaskiddy, Co. Cork

DRAWING TITLE

Figure 2 _ Site Layout Plan Showing Monitoring Well Locations

DRAWN	TRACED	CHECKED	APPROVED	DATE
FOR		JL	FOR	23.05.14

SCALE	Job No:	REV
AS SHOWN	47092714	A



NOTES

Key

BH02 — Monitoring Well Location and ID

11.20m — Groundwater Elevation Relative to Ordnance Datum

STATUS

Final

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CLIENT

Enva Ireland Limited

PROJECT

Enva Raffeen, Ringaskiddy, Co. Cork

DRAWING TITLE

Figure 3 _ Groundwater Contour Plan
07.05.14

DRAWN	TRACED	CHECKED	APPROVED	DATE
FOR		JL	FOR	23.05.14

SCALE	Job No:	REV
AS SHOWN	47092714	A

APPENDIX B TABLES

Table 1: Sample Inventory - Enva Rafeen, May 2014

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, May 2014

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	07-May-14	6.145	18.85	12.71	9.29	6	19	19	7.04	488	262	10.7	9.47	Very cloudy. brown, NEC.
BH2	07-May-14	5.938	18.62	12.68	8.58	5	16	16	6.57	459	307	11.4	9.58	Very cloudy, brown, NEC.
BH3	07-May-14	6.315	18.84	12.53	9.78	7	20	21	7.34	355	247	11.0	7.07	Very cloudy , brown, NEC.
BH4	07-May-14	6.065	18.62	12.56	7.96	4	11	12	7.07	335	273	10.7	8.89	Very cloudy, brown, 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 C‹ #VALUE!
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, May 2014

Compiled by: JL
Checked by: CF

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	0.1	nv	30	-	-	-	-
Chloromethane	µg/l	3	nv	nv	-	-	-	-
Vinyl Chloride	µg/l	0.1	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	0.5	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	0.5	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	0.5	nv	10	-	-	-	-
p/m-Xylene	µg/l	1	nv	10****	-	-	-	-
o-Xylene	µg/l	0.5	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, May 2014

Compiled by: JL
Checked by: CF

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	1	nv	200	-	-	-	-
2-Methylphenol	µg/l	0.5	nv	0.5 [1]	-	-	-	-
2-Nitrophenol	µg/l	0.5	nv	0.5 [1]	-	-	-	-
2,4-Dichlorophenol	µg/l	0.5	nv	0.5 [1]	-	-	-	-
2,4-Dimethylphenol	µg/l	1	nv	0.5 [1]	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.5	nv	0.5 [1]	-	-	-	-
2,4,6-Trichlorophenol	µg/l	1	nv	200	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.5	nv	0.5 [1]	-	-	-	-
4-Methylphenol	µg/l	1	nv	0.5 [1]	-	-	-	-
4-Nitrophenol	µg/l	10	nv	0.5 [1]	-	-	-	-
Pentachlorophenol	µg/l	1	nv	2	-	-	-	-
Phenol	µg/l	1	nv	0.5 [1]	-	-	-	-
PAHs								
2-Chloronaphthalene	µg/l	1	nv	nv	-	-	-	-
2-Methylnaphthalene	µg/l	1	nv	nv	-	-	-	-
Naphthalene	µg/l	1	nv	1	-	-	-	-
Acenaphthylene	µg/l	0.5	nv	nv	-	-	-	-
Acenaphthene	µg/l	1	nv	nv	-	-	-	-
Fluorene	µg/l	0.5	nv	nv	-	-	-	-
Phenanthrene	µg/l	0.5	nv	nv	-	-	-	-
Anthracene	µg/l	0.5	nv	10000	-	-	-	-
Fluoranthene	µg/l	0.5	nv	1	-	-	-	-
Pyrene	µg/l	0.5	nv	nv	-	-	-	-
Benz(a)anthracene	µg/l	0.5	nv	nv	-	-	-	-
Chrysene	µg/l	0.5	nv	nv	-	-	-	-
Benzo(bk)fluoranthene	µg/l	1	0.075 [A]	0.5, 0.05****	-	-	-	-
Benzo(a)pyrene	µg/l	1	0.0075	0.01	-	-	-	-
Indeno(123cd)pyrene	µg/l	1	0.075 [A]	0.05	-	-	-	-
Dibenzo(ah)anthracene	µg/l	0.5	nv	nv	-	-	-	-
Benzo(ghi)perylene	µg/l	0.5	0.075 [A]	0.05	-	-	-	-
Phthalates								
Bis(2-ethylhexyl) phthalate	µg/l	5	nv	8	-	-	-	-
Butylbenzyl phthalate	µg/l	1	nv	5 [2]	-	-	-	-
Di-n-butyl phthalate	µg/l	1.5	nv	2	-	-	-	-
Di-n-Octyl phthalate	µg/l	1	nv	5 [2]	-	-	-	-
Diethyl phthalate	µg/l	1	nv	5 [2]	-	-	-	-
Dimethyl phthalate	µg/l	1	nv	5 [2]	-	-	-	-
Other SVOCs								
1,2-Dichlorobenzene	µg/l	1	nv	10	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	nv	0.4	-	-	-	-
1,3-Dichlorobenzene	µg/l	1	nv	nv	-	-	-	-
1,4-Dichlorobenzene	µg/l	1	nv	nv	-	-	-	-
2-Nitroaniline	µg/l	1	nv	nv	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.5	nv	nv	-	-	-	-
2,6-Dinitrotoluene	µg/l	1	nv	nv	-	-	-	-
3-Nitroaniline	µg/l	1	nv	nv	-	-	-	-
4-Bromophenylphenylether	µg/l	1	nv	nv	-	-	-	-
4-Chloroaniline	µg/l	1	nv	nv	-	-	-	-
4-Chlorophenylphenylether	µg/l	1	nv	nv	-	-	-	-
4-Nitroaniline	µg/l	0.5	nv	nv	-	-	-	-
Azobenzene	µg/l	0.5	nv	nv	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.5	nv	nv	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	1	nv	nv	-	-	-	-
Carbazole	µg/l	0.5	nv	nv	-	-	-	-
Dibenzofuran	µg/l	0.5	nv	nv	-	-	-	-
Hexachlorobenzene	µg/l	1	nv	0.03	-	-	-	-
Hexachlorobutadiene	µg/l	1	nv	0.1	-	-	-	-
Hexachlorocyclopentadiene	µg/l	1	nv	nv	-	-	-	-
Hexachloroethane	µg/l	1	nv	nv	-	-	-	-
Isophorone	µg/l	0.5	nv	nv	-	-	-	-
N-nitrosodi-n-propylamine	µg/l	0.5	nv	nv	-	-	-	-
Nitrobenzene	µg/l	1	nv	10	-	-	-	-

xx	Exceeds Groundwater Regulations 2010	Draft IGV - EPA Draft Interim Guideline Value
xx	Exceeds IGV (Interim Guideline Value)	**Bold** Indicates result above IGV
MDL	Method Detection Limit	1 - Draft IGV is for the sum of phenols
-	Less than the MDL	2 - Draft IGV is for the sum of phthalates
nv	DIV/IGV/GTV not defined	
	* DIV is for the sum of dichlorobenzenes	GTV: Groundwater threshold value, SI No. 9 of 2010, Schedule 5
	** DIV is for the sum of all trichlorophenols	*Italics* indicates result above GTV
	*** DIV is for the sum of all phthalates	A - PAH compounds specified in GTV

Table 5: Hydrocarbon and Metal Results (µg/L) - Enva Rafeen, May 2014

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	-	16	-	-
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	5	-	7	-
Iron	µg/l	20	nv	200	-	-	-	-
Manganese	µg/l	2	nv	50	2	-	90	9

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, May 2014

Compound	Units	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well			
					BH1	BH2	BH3	BH4
Ammonium (Ammoniacal nitrogen as NH4)	mg/l	0.03	0.175	0.150	-	-	-	-
Total Ammonia as N	mg/l	0.03	nv	nv	-	-	-	-
COD	mg/l	7	nv	nv	-	21	-	-
Chloride	mg/l	0.3	187.5	250	39	22	25	18
Sodium	mg/l	0.1	150	150	21	12	15	11
Sulphate	mg/l	0.05	187.5	200	12	12	10	10
Potassium	mg/l	0.1	nv	5	0.8	0.6	1.4	1.5
Calcium	mg/l	0.2	nv	200	106	105	82	78
Magnesium	mg/l	0.1	nv	50	5	4	3	3
Bicarbonate Alkalinity as $CaCO_3$	mg/l	1	nv	No abnormal change	227	279	195	206
Nitrate as NO_3	mg/l	0.2	37.5	25	35	37	25	19
Nitrite as NO_2	mg/l	0.02	0.375	0.1	-	-	-	-
Ortho phosphate as PO_4	mg/l	0.06	nv	0.03	<0.06	<0.06	<0.06	<0.06
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)

Table 7: Trend Results (mg/L) - Enva Rafeen, May 2014

Compound	Ortho phosphate as PO_4	Ortho phosphate as PO_4	Ortho phosphate as PO_4	Ortho phosphate as PO_4	Ortho phosphate as PO_4	Ortho phosphate as PO_4
Date	**2007**	**2010**	**2011**	**2012**	**2013**	**2014**
BH1	0.03	0.11	-	0.23	-	-
BH2	0.09	0.10	-	-	-	-
BH3	0.05	0.15	-	-	0	-
BH4	-	0.12	-	0.10	0.35	-

APPENDIX C 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 D 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

Attention :	Fergus ORegan
Date :	14th May, 2014
Your reference :	47092714
Our reference :	Test Report 14/5556 Batch 1
Location :	Rafeen
Date samples received :	8th May, 2014
Status :	Final report
Issue :	1

Four samples were received for analysis on 8th May, 2014. 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:

Kim Mills
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: URS
Reference: 47092714
Location: Rafeen
Contact: Fergus ORegan
JE Job No.: 14/5556

Report : Liquid

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

J E Sample No.	1-6	7-12	13-18	19-24							LOD/LOR	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	07/05/2014	07/05/2014	07/05/2014	07/05/2014									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	08/05/2014	08/05/2014	08/05/2014	08/05/2014									
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Boron	<12	16	<12	<12							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Calcium #	106.1	105.1	82.3	77.6							<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 #	4.5	3.8	2.9	2.5							<0.1	mg/l	TM30/PM14
Dissolved Manganese #	2	<2	90	9							<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	0.6	1.4	1.5							<0.1	mg/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Sodium #	21.0	11.9	14.9	10.9							<0.1	mg/l	TM30/PM14
Dissolved Zinc #	5	<3	7	<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 #	12.14	11.57	10.13	10.24							<0.06	mg/l	TM38/PM0
Chloride #	38.5	22.2	24.5	18.2							<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	35.3	36.7	24.8	19.0							<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	<0.06	<0.06							<0.06	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH4 #	<0.03	<0.03	<0.03	<0.03							<0.03	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	227	279	195	206							<1	mg/l	TM75/PM0
COD (Settled) #	<7	21	<7	<7							<7	mg/l	TM57/PM0

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: URS
Reference: 47092714
Location: Rafeen
Contact: Fergus ORegan
JE Job No.: 14/5556

SVOC Report : **Liquid**

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	07/05/2014	07/05/2014	07/05/2014	07/05/2014								
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water								
Batch Number	1	1	1	1								
Date of Receipt	08/05/2014	08/05/2014	08/05/2014	08/05/2014								

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
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	<1	<1	<1	<1							<1	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	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10							<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1							<1	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	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1	<1							<1	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	<5	<5	<5	<5							<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1							<1	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	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: URS
Reference: 47092714
Location: Rafeen
Contact: Fergus ORegan
JE Job No.: 14/5556

SVOC Report : Liquid

J E Sample No.	1-6	7-12	13-18	19-24							LOD/LOR	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	07/05/2014	07/05/2014	07/05/2014	07/05/2014									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	08/05/2014	08/05/2014	08/05/2014	08/05/2014									
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	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1							<1	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	<1	<1	<1	<1							<1	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

Please see attached notes for all abbreviations and acronyms

Client Name: URS **VOC Report :** **Liquid**
Reference: 47092714
Location: Rafeen
Contact: Fergus ORegan
JE Job No.: 14/5556

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	07/05/2014	07/05/2014	07/05/2014	07/05/2014									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	08/05/2014	08/05/2014	08/05/2014	08/05/2014							LOD/LOR	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	107	103	103	104							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	109	111	110	110							<0	%	TM15/PM10

Client Name: URS
Reference: 47092714
Location: Rafeen
Contact: Fergus ORegan

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/5556						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/5556

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 reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised 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
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range

JE Job No: 14/5556

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	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM5	In-House method based on USEPA 8015B. Determination of Extractable Petroleum Hydrocarbons (EPH) in the carbon chain length range of C8-40 by GC-FID. Accredited to ISO 17025 on soil and water samples and MCERTS (carbon banding only) on soils. All accreditation is matrix specific.	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM15	In-House method based on USEPA 8260. Determination of Volatile Organic compounds (VOCs) by Headspace GC-MS. Accredited to ISO 17025 for soils and waters and MCERTS for Soils. All accreditation is matrix specific. Quantification by Internal Standard method.	PM10	In-house method based on USEPA 5021. Preparation of solid and liquid samples for headspace analysis. Samples are spiked with surrogates to facilitate quantification. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM16	In-House method based on USEPA 8270. Determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. Accredited to ISO 17025 for waters. All accreditation is matrix specific. Quantification by Internal Standard method.	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM16	In-House method based on USEPA 8270. Determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. Accredited to ISO 17025 for waters. All accreditation is matrix specific. Quantification by Internal Standard method.	PM30	In-house method based on USEPA 3510. Liquid samples are mixed with solvent and agitated with an automatic magnetic stirrer with a stir bar for 15 minutes to extract organic molecules. ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM27	In-House method based on USEPA 9056. Analysis of samples using a Dionex Ion-Chromatograph instrument.	PM0	No preparation is required.				
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific				
TM30	Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry) using Thermo iCAP 6000 series instrument. Accredited to ISO 17025 for soils and waters and MCERTS accredited for Soils. All accreditation is matrix specific.	PM14	In-house method based on USEPA 3005A. Acid digestion of water samples and analsyis by ICP-OES as per method TM030W.ISO 17025 accredited extraction method. All accreditation is matrix specific	Yes			
TM38	Ionic analysis using the Thermo Aquakem Photometric Automatic Analyser. Accredited to ISO17025 and MCERTS for most analytes. All accreditation is matrix specific.	PM0	No preparation is required.	Yes			

JE Job No: 14/5556

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
TM57	COD by Colourimetric measurement	PM0	No preparation is required.	Yes			
TM75	Alkalinity by Metrohm	PM0	No preparation is required.				