

Facility Information Summary	
AER Reporting Year	2016
Licence Register Number	WD041-01
Name of site	Erva Ireland Ltd
Site Location	Smithstown Industrial Estate, Shannon, Co. Clare
NACE Code	E38
Class/Classes of Activity	<p>Class 6: Biological treatment not referred to elsewhere in this Schedule 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.</p> <p>Class 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.</p> <p>Class 11: Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.</p> <p>Class 12: Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.</p> <p>Class 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.</p> <p>Licensed waste recovery activities, in accordance with the Fourth Schedule of the Waste Management Act, 1996</p> <p>Class 2: Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).</p> <p>Class 3: Recycling or reclamation of metals and metal compounds.</p> <p>Class 4: Recycling or reclamation of other inorganic materials.</p> <p>Class 8: Oil re-refining or other re-uses of oil.</p>
National Grid Reference (6E, 6 N)	140778.83E, 263241.64N
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.	<p>Site Performance: The company continues to demonstrate its commitment towards HSE management standards - the site maintains ISO14001 and OHSAS 18001. This ensures a standard approach is taken to managing activities from an environmental and safety aspect. There was one external environmental audit carried out in the reporting period, a minor non conformance was raised with regard bund integrity tests.</p> <p>Infrastructure / EMP progress: In 2016 bund integrity improvement works have continued throughout the year, and focused primarily on the incoming yard area, and bund repairs. All licence required testing continues to be carried out by accredited laboratories. No significant process developments were carried out in 2016.</p> <p>Environmental Performance: Stock levels on site continue to be analysed and monitored closely. Approval is sought for any stock items on site greater than 6 months. Nine items of old legacy waste were disposed of safely during the year, there is one final specialised project scheduled to resume in 2017 to eliminate the remaining legacy wastes which are proving more difficult to deal with. There was one odour complaint received in November 2016. One non conformance was issued for breach of ELV with regards to CDD and BDD in November 16.</p>

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.

Colette Horgan	31/03/2017
Signature	Date
Group/Facility manager	
(or nominated, suitably qualified and experienced deputy)	

Facility Information Summary	
AER Reporting Year	2016
Licence Register Number	W0041-01
Name of site	Enva Ireland Ltd
Site Location	Smithstown Industrial Estate, Shannon, Co. Clare
NACE Code	E38
Class/Classes of Activity	<p>Class 6: Biological treatment not referred to elsewhere in this Schedule 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.</p> <p>Class 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.</p> <p>Class 11: Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.</p> <p>Class 12: Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.</p> <p>Class 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.</p> <p>Licensed waste recovery activities, in accordance with the Fourth Schedule of the Waste Management Act, 1996</p> <p>Class 2: Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).</p> <p>Class 3: Recycling or reclamation of metals and metal compounds.</p> <p>Class 4: Recycling or reclamation of other inorganic materials.</p> <p>Class 8: Oil re-refining or other re-uses of oil.</p>
National Grid Reference (6E, 6 N)	140778.83E, 163241.64N
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.	<p>Site Performance: The company continues to demonstrate its commitment towards HSE management standards - the site maintains ISO14001 and OHSAS 18001. This ensures a standard approach is taking to managing activities from an environmental and safety aspect. There was one external environmental audit carried out in the reporting period, a minor non conformance was raised with regard bund integrity tests.</p> <p>Infrastructure / EMP progress: In 2016 yard integrity improvement works have continued throughout the year, and focused primarily on the incoming yard area, and bund repairs. All licence required testing continues to be carried out by accredited laboratories. No significant process developments were carried out in 2016.</p> <p>Environmental Performance: Stock levels on site continue to be analysed and monitored closely. Approval is sought for any stock items on site greater than 6 months. Nine items of old legacy waste were disposed of safely during the year, there is one final specialised project scheduled to resume in 2017 to eliminate the remaining legacy wastes which are proving more difficult to deal with. There was one odour complaint received in November 2016. One non conformance was issued for breach of ELV with regards to COD and BOD in November 16.</p>

water, noise

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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.

Colette Horgan	31/03/2017
Signature	Date
Group/Facility manager	
(or nominated, suitably qualified and experienced deputy)	

AIR-summary template Lic No: W0041-01 Year 2016

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

Yes	
-----	--

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

No	
----	--

3 Was all monitoring carried out in accordance with EPA guidance [Basic air monitoring checklist](#) note AG2 and using the basic air monitoring checklist? [AGN2](#)

Yes	
-----	--

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 thereof	Licence Compliance criteria	Measured value (max)	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
X2	Hydrogen Chloride	Monthly	10	100 % of values < ELV	0.002	kg/hour	yes	EN 1911-1 to 3:2003	2.9492	
X2	Sulphur oxides (SOx/SO2)	Quarterly	300	100 % of values < ELV	0.00119	kg/hour	yes	TGN 21	1.5768	
X2	Nitrogen oxides (NOx/NO2)	Quarterly	300	100 % of values < ELV	0.00045	kg/hour	yes	EN 14792:2005	0.6643	
X2	Ammonia (NH3)	Monthly	30	100 % of values < ELV	0.004	kg/hour	yes	EN 14791:2005	8.28915	
X2	Volumetric Flow	Monthly	4000	100 % of values < ELV	1609	Nm3/hour	yes	EN 13284 - 1:2002	13,752	
X2	Total Organic Carbon (as C)	Monthly	50	100 % of values < ELV	0.00166	kg/hour	yes	EN 13649:2001	4.3508	

AIR-summary template	Lic No: W0041-01	Year: 2016
Continuous Monitoring		

4	Does your site carry out continuous air emissions monitoring? 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)	No	
5	Did continuous monitoring equipment experience downtime? If yes please record downtime in table A2 below	No	
6	Do you have a proactive service agreement for each piece of continuous monitoring equipment?	No	
7	Did your site experience any abatement system bypasses? If yes please detail them in table A3 below	No	

Table A2: Summary of average emissions -continuous monitoring

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

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

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. 1 If you do not have licensed emissions you <u>only</u> need to complete table W1 and or W2 for storm water analysis and visual inspections		Yes	Additional Information
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 <u>only</u> any evidence of contamination noted during visual inspections 2		No	

Table W1 Storm water monitoring

Location reference	Location relative to site activities	PRTR Parameter	Licensed 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)

Was there any result in breach of licence requirements? If yes please provide brief details in the comment section of Table W3 below 3		No
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 4		Yes

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 (max)	Unit of measurement	Compliant with licence	Method of analysis	Procedural reference source	Procedural reference standard number	Annual mass load (kg)	Comments
x1	Wastewater/Sewer	volumetric flow	composite	Daily		250m3	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	250	m3/day	yes	Flow meter	Other (please specify)			
x1	Wastewater/Sewer	COD	composite	Daily		3000mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	3040	mg/L	yes	Spectrophotometry (Colorimetry)	B.S. (British Standard)	BS ISO 15705:2002	81814.91	This result is within acceptable range ie. <1.2 times ELV
x1	Wastewater/Sewer	BOD	composite	Monthly		2000mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1550	mg/L	yes	Titration	APHA / AWWA "Standard Methods"	AWWA/APHA, 2011	22216.5	
x1	Wastewater/Sewer	Suspended Solids	composite	3/Week		400mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	282	mg/L	yes	Gravimetric analysis	EN ISO	BS EN 872:2005	2913.168	

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER)															
		Lic No:		W0041-01		Year		2016							
x1	Wastewater/Sewer	Sulphate	composite	Monthly		1500mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	637	mg/L	yes	Spectrophotometry (Colorimetry)	US EPA	EPA Method 325.1	14314.88	
x1	Wastewater/Sewer	Sulphides	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.897	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	12.38782	
x1	Wastewater/Sewer	Detergents (as MBAS)	composite	Monthly		80mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.831	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	23.8972	
x1	Wastewater/Sewer	Phenols (as total C)	composite	Monthly		3mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.21	mg/L	yes	HPLC	Other (please specify)	By HPLC	2.852494	
x1	Wastewater/Sewer	Phosphorous	composite	3/Week		50mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	19.5	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	108.6362	
x1	Wastewater/Sewer	Ammonia (as N)	composite	3/Week		250mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	245.8	mg/L	yes	Spectrophotometry (Colorimetry)	B.S. (British Standard)	BS 2690: Part 7:196	4863.315	
x1	Wastewater/Sewer	Nitrate (as N)	composite	Monthly		100mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1	mg/L	yes	Spectrophotometry (Colorimetry)	Manufacturer method	HACH Lange Meth	59.64847	
x1	Wastewater/Sewer	Silver	composite	Monthly		2mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.097	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	1.335216	
x1	Wastewater/Sewer	Aluminium	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.195	mg/L	yes	ICP / ICPMS (Inductively Coupled Plasma - Mass Spectrometry)	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	4.639085	
x1	Wastewater/Sewer	Cobalt	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.064	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	1.147157	
x1	Wastewater/Sewer	Cadmium and compounds (as Cd)	composite	Monthly		0.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.01	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	0.22401	
x1	Wastewater/Sewer	Chromium and compounds (as Cr)	composite	Monthly		1mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.165	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	3.494986	
x1	Wastewater/Sewer	Copper and compounds (as Cu)	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	8.87	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	105.2549	
x1	Wastewater/Sewer	Iron	composite	Monthly		20mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	6.25	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	130.7447	
x1	Wastewater/Sewer	Mercury and compounds (as Hg)	composite	Monthly		.05mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.000109	mg/L	yes	AFS	B.S. (British Standard)	BS EN 23506:2002	0.002388	
x1	Wastewater/Sewer	Nickel and compounds (as Ni)	composite	Monthly		20mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.266	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	7.975639	
x1	Wastewater/Sewer	Lead and compounds (as Pb)	composite	Monthly		.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.21	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	2.663166	
x1	Wastewater/Sewer	Tin	composite	Monthly		2mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.00516	mg/L	yes	ICP / ICPMS (Inductively Coupled Plasma - Mass Spectrometry)	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	0.169475	
x1	Wastewater/Sewer	Zinc and compounds (as Zn)	composite	Monthly		20mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1.4	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	22.5131	
x1	Wastewater/Sewer	Arsenic and compounds (as As)	composite	Monthly		1mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.109	mg/L	yes	ICP / ICPMS (Inductively Coupled Plasma - Mass Spectrometry)	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	1.014202	
x1	Wastewater/Sewer	Cyanides (as total CN)	composite	Monthly		0.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.5	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	5.672574	
x1	Wastewater/Sewer	Chlorides (as Cl)	composite	Monthly		3000mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1530	mg/L	yes	Spectrophotometry (Colorimetry)	US EPA	EPA Method 325.1	29231.05	
x1	Wastewater/Sewer	Fluorides (as total F)	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	9.87	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	124.8993	
x1	Wastewater/Sewer	Halogenated organic compounds (as AOX)	composite	Weekly		.15mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.0716	mg/L	yes	GCMS (Gas Chromatography Mass Spectroscopy)	US EPA	Modified : US EPA	2.343733	
x1	Wastewater/Sewer	Fats, Oils and Greases	composite	Monthly		50mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	38.3	mg/L	yes	IR	APHA / AWWA "Standard Methods"	AWWA 21st Editor	8.53975	
x1	Wastewater/Sewer	Chromium III	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.165	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	3.494986	
x1	Wastewater/Sewer	Chromium VI	composite	Monthly		0.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.1	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Editor	1.109393	

			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	yes	For use in treatment process and flushing	
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 Groundwater monitoring template Report (link in cell G8) and submit separately through ALDER as a licensee return AND answer questions 5-12 below.	yes	See quarterly reports already submitted as part of licensee returns	
5 Is the contamination related to operations at the facility (either current and/or historic)	no	offsite source	
6 Have actions been taken to address contamination issues?If yes please summarise remediation strategies proposed/undertaken for the site	yes	Ongoing monitoring.	
7 Please specify the proposed time frame for the remediation strategy	N/A	Not applicable	
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?	yes		
11 Have potential receptors been identified on and off site?	yes		
12 Is there evidence that contamination is migrating offsite?	no		

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
06/12/2016	MW3	VOCs	TM15/PM10	Quarterly	247	138	ug/l			no

.+ 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
06/12/2016	MW4S	VOC's	T15/PM10	Quarterly	1701	1050	ug/l			no

*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. [Groundwater monitoring template](#)

Groundwater/Soil monitoring template Lic No: W0041-01 Year 2016

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)

[Groundwater regulations](#) [Drinking water \(private supply\) standards](#) [Drinking water \(public supply\) standards](#) [Interim Guideline Values \(IGV\)](#)
[Surface water EQS](#) [GTV's](#)

Groundwater/Soil monitoring template

Lic No:

W0041-01

Year

2016

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

Groundwater Monitoring Round 4 (December) 2015

60465245/CKRP0004

Issue No. 2 Final

Prepared for: Enva Ireland Limited

01 February 2017

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	01 February 2017	Final		Fergus O'Regan	Senior Environmental Scientist

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Table of Contents

Table of Contents

1.	Introduction.....	4
2.	Scope of Works.....	5
2.1	Water Level Measurement.....	5
2.2	Well Purging.....	5
2.3	Groundwater Sampling and Water Quality Measurements.....	5
3.	Results.....	6
3.1	Field Observations.....	6
3.2	Groundwater Flow Direction.....	6
3.3	Data Assessment.....	6
3.3.1	Assessment Criteria.....	6
3.3.2	Analytical Results.....	6
3.3.3	Temporal Trends 2016.....	8
4.	Conclusions.....	11
5.	Recommendations.....	12

Figures

Tables

Appendix A - Schedule of Analysis

Appendix B - Validated Laboratory Results

Appendix C – 2016 Temporal Trends

Appendix D - Historical VOC Trend Graphs

1. Introduction

AECOM Ireland Limited (AECOM) is pleased to present this report to Enva Ireland Limited (Enva) for the Quarter 4 (Q4 - December) 2016 groundwater monitoring round conducted at the Enva Shannon Facility, Smithstown, Shannon, Co. Clare (the site). A site location plan is presented as Figure 1.

Works were completed in accordance with AECOM Proposal Number 3153102, '*Enva Shannon Groundwater Monitoring 2016*', dated 03 March 2016.

Enva has a network of nine on-site groundwater monitoring wells and five off-site groundwater monitoring wells. Three off-site wells are located to the southeast in a parking area and two off-site groundwater monitoring wells located on an adjacent site (Chemifloc) to the west. A site layout plan showing groundwater monitoring well locations is presented in Figure 2.

Under the terms of the site's Waste Licence (W0041-01), Enva are required to monitor the quality of groundwater in on-site monitoring wells MW3, MW4S and MW5 at quarterly intervals for a range of organic and inorganic parameters.

The Q4 2016 groundwater monitoring was conducted by AECOM on 06 December 2016.

2. Scope of Works

The following scope of work was completed by an experienced AECOM scientist on 06 December 2016:

- Water level measurement at all accessible monitoring wells, both on and off-site
- Well purging at monitoring wells MW3, MW4S and MW5
- Groundwater sampling and analysis from monitoring wells MW3, MW4S and MW5 in accordance with Waste Licence monitoring requirements

2.1 Water Level Measurement

Measurement of water levels was completed in all accessible on site monitoring wells (MW3, MW4S, MW4D, MW5, MW6, MW7, MW8, MW9 and MW10), in monitoring wells located on the Chemifloc site (MW1 and MW2) and in wells located to the southeast in a parking area outside of the site boundary (MW11, MW12 and MW13).

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

2.2 Well Purging

The volume of standing water in each of the three groundwater monitoring wells to be sampled was calculated based on measured water levels. Between two and three times this volume was then purged from the wells. Where a well purged dry before three well volumes were removed, the well was allowed to recover and then sampled.

Monitoring wells MW3, MW4S and MW5 were purged and sampled using dedicated, in-situ, inertial lift pumping equipment to minimise volatilisation and loss of volatile organic compounds (VOCs).

2.3 Groundwater Sampling and Water Quality Measurements

Groundwater samples were collected from monitoring wells MW3, MW4S and MW5 and analysed for the Waste Licence monitoring parameters, as detailed in Appendix A and Table 1.

Groundwater samples were collected into clean, laboratory-supplied sample containers. Samples were handled by field staff wearing single use, disposable nitrile gloves, which were changed between sampling locations to minimise 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 groundwater samples were stored in a chilled cool box.

The samples were sent by overnight courier to Exova Jones Environmental Laboratories U.K., an AECOM-approved laboratory.

Water quality measurements were not recorded in the field due to a fault with the water quality field meter. Measurements of pH and electrical conductivity (EC) were scheduled for analysis at the laboratory.

3. Results

3.1 Field Observations

The following observations were recorded during purging and sampling on 06 December 2016:

- No floating or sinking free phase product was detected in any of the groundwater monitoring wells dipped or sampled
- No evidence of contamination in the form of odours, sheens or separate phase liquids was reported in the groundwater sample collected from well MW3
- Purged water was slightly foamy at well MW4S
- A hydrocarbon sheen on the purged water and a hydrogen sulphide odour was reported from sample MW5

3.2 Groundwater Flow Direction

The direction of groundwater flow under natural gradient conditions is expected to follow the local topographic gradient towards the south and southeast, eventually discharging to the Shannon Estuary. However, abstraction from Enva's Production Well prevents groundwater from following the natural gradient, especially in the central part of the site.

It is not possible to measure the depth to water in the Enva Production Well located in the centre of the site, as there is no access to the well.

Wellhead elevations and standing water level measurements in all other accessible wells were used to calculate water table elevations and infer a groundwater flow pattern, which is presented as Figure 3.

In December 2016, the general groundwater flow direction is inferred to be to the south and south-east. Groundwater flow in the central part of the site is inferred to be towards the Enva Production Well (see Figure 3).

3.3 Data Assessment

3.3.1 Assessment Criteria

The required groundwater analysis is listed in Schedule F.3 of the Waste Licence and is presented in Appendix A. No Emission Limit Values are specified in the Licence for groundwater; therefore, assessment criteria were sourced from published guidance selected based on the site setting.

The nearest surface water feature to the site is an unnamed stream located approximately 100 m east of the site. This stream eventually flows into the Shannon Estuary, which is located approximately 2 km south of the site.

The bedrock aquifer is classified by the Geological Survey of Ireland (GSI) as a '*poor aquifer – bedrock which is generally unproductive except for local zones*'. GSI records show that there are nine groundwater monitoring wells located on or in the vicinity of the site. GSI records indicate that there are no drinking water abstraction wells located in the vicinity of the site.

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

- European Communities Environmental Objectives (Groundwater) Regulations, 2016. Statutory Instrument No. 366 of 2016 (GTVs)

Environmental Protection Agency's Draft Interim Guidelines Value for the Protection of Groundwater, 2003 (IGVs)

3.3.2 Analytical Results

The validated laboratory report is presented in Appendix B. Laboratory measurements of pH and EC are presented in Table 2. Groundwater analytical results are presented in Tables 3 to 6. A summary of analytical results is presented below.

- pH values were close to neutral and ranged from 7.20 (well MW5) to 7.33 (well MW4S). All three pH values were within the normal range for groundwater at the site

- EC values in groundwater from monitoring wells MW3 (1,158 $\mu\text{S}/\text{cm}$) and MW5 (957 $\mu\text{S}/\text{cm}$) were within the normal range for groundwater in Ireland (EPA Draft Interim Guideline Value = 1,000 $\mu\text{S}/\text{cm}$ and Upper Groundwater Threshold Value = 1,875 $\mu\text{S}/\text{cm}$). A slightly more elevated EC reading was recorded in groundwater at well MW4S (2,121 $\mu\text{S}/\text{cm}$)

Volatile Organic Contaminants (VOCs)

VOC results are presented in Table 3.

No VOCs were detected above laboratory method detection limits (MDLs) in groundwater from well MW5 in December 2016.

In Q4 2016, methyl tert butyl ether (MTBE) was detected above the MDL (0.1 $\mu\text{g}/\text{L}$) at wells MW3 (0.2 $\mu\text{g}/\text{L}$) and MW4S (2.6 $\mu\text{g}/\text{L}$). Both MTBE results were below the relevant assessment criteria.

1,1-Dichloroethane was detected at concentrations of 18 $\mu\text{g}/\text{L}$ and 121 $\mu\text{g}/\text{L}$ in groundwater from wells MW3 and MW4S respectively in Q4 2016. There is no relevant assessment criteria for 1,1-dichloroethane.

Chloroform (8 $\mu\text{g}/\text{L}$), 1,1,1-trichloroethane (330 $\mu\text{g}/\text{L}$), ethylbenzene (2 $\mu\text{g}/\text{L}$) and o-xylene (3 $\mu\text{g}/\text{L}$) were detected above their respective MDLs but at concentrations that did not exceed the relevant assessment criteria.

Concentrations of vinyl chloride (VC) above the adopted assessment criteria were recorded in groundwater samples MW3 and MW4S in Q4 2016. Concentrations of VC above the GTV (0.375 $\mu\text{g}/\text{L}$) ranged between 4 $\mu\text{g}/\text{L}$ (MW3) and 311 $\mu\text{g}/\text{L}$ (well MW4S). There is no IGV defined for VC.

In December 2016, cis-1-2-dichloroethene (cDCE) was detected above the IGV (30 $\mu\text{g}/\text{L}$) and the GTV (0.375 $\mu\text{g}/\text{l}$) at monitoring well MW4S (899 $\mu\text{g}/\text{L}$).

Benzene was reported above both the GTV (0.75 $\mu\text{g}/\text{L}$) and IGV (1 $\mu\text{g}/\text{L}$) at well MW4S (4.1 $\mu\text{g}/\text{L}$) in December 2016.

Trichloroethene (TCE) was reported above below the GTV (7.5 $\mu\text{g}/\text{L}$) but below IGV limits (10 $\mu\text{g}/\text{L}$) at well MW4S (8 $\mu\text{g}/\text{L}$).

Semi-Volatile Organic Contaminants (SVOCs)

SVOC results are presented in Table 4.

In December 2016, no SVOCs were detected above MDLs in groundwater from any of the three wells sampled.

Hydrocarbons

Hydrocarbon results are presented in Table 5.

Diesel range organics (DRO) ($\text{C}_8\text{-C}_{40}$) were detected above the laboratory MDL in groundwater from well MW4S (190 $\mu\text{g}/\text{L}$) and MW5 (1,720 $\mu\text{g}/\text{L}$) in December 2016.

Concentrations of GRO ($\text{C}_4\text{-C}_{12}$) were reported in groundwater samples MW4S (519 $\mu\text{g}/\text{L}$) and MW5 (651 $\mu\text{g}/\text{L}$).

Total petroleum hydrocarbon (TPH) concentrations in groundwater from monitoring wells MW4S (709 $\mu\text{g}/\text{L}$) and MW5 (2,371 $\mu\text{g}/\text{L}$) exceeded the assessment criteria (IGV of 10 $\mu\text{g}/\text{L}$ and GTV of 7.5 $\mu\text{g}/\text{L}$) in December 2016.

The TPH concentration at well MW5 decreased from 9,266 $\mu\text{g}/\text{L}$ in September 2016 to 2,371 $\mu\text{g}/\text{L}$ in December 2016.

At well MW5, the TPH composition is different to that at well MW4S, being predominantly in the $\text{C}_8\text{-C}_{40}$ carbon chain length range. This detection may be related to anecdotally-reported historical issues with a former diesel fuel storage tank on a third party site adjacent to MW5.

Ammonium as NH_4

In water, ammonia (NH_3) typically dissociates to form the ammonium ion (NH_4), particularly at pH values of less than 7. Reported concentrations of ammoniacal nitrogen (as NH_4) in groundwater samples MW3 (0.56 mg/L), MW4S (11.14 mg/L) and MW5 (0.19 mg/L) exceeded the adopted assessment criteria. The Upper GTV for ammonium is 0.175 mg/L and the IGV is 0.15 mg/L.

The presence of ammonia in groundwater at MW3 is considered to reflect the reducing groundwater conditions beneath the site generally, whereas the more elevated ammonia concentration at MW4S reflects historical groundwater issues in this area of the site.

Chloride

Reported concentrations of chloride ranged between 87 mg/L (well MW5) and 352 mg/L (well MW3). The concentrations of chloride reported for all three groundwater samples collected in December 2016 exceeded the Lower GTV (24 mg/L) and IGV (30 mg/L). The chloride concentration at well MW4S (352 mg/L) was also above the Upper GTV of 187.5 mg/L.

Sulphate

Reported concentrations of sulphate ranged between 37 mg/L (well MW5) and 314 mg/L (well MW4S). The reported concentration of sulphate at well MW4S (314 mg/L) in December 2016 exceeded the IGV (200 mg/L).

Sodium

Reported concentrations of sodium ranged between 52 mg/L (well MW5) and 352 mg/L (well MW4S). The reported sodium concentration at well MW4S exceeded the IGV (150 mg/L) in December 2016; there is no GTV defined for sodium.

Potassium

Reported concentrations of potassium ranged between 3 mg/L (well MW5) and 10 mg/L (well MW4S). The reported concentrations of potassium in samples MW3 (6 mg/L) and MW4S (10 mg/L) exceeded the IGV (5 mg/L). There is no GTV defined for potassium.

Total Oxidised Nitrogen (TON)

TON was below the laboratory MDL (0.2 mg/L) in all three groundwater samples analysed in December 2016. There are no applicable assessment criteria available for TON.

Total Organic Carbon (TOC)

TOC was detected above the laboratory MDL (2 mg/L) in groundwater from all three samples in December 2016. Reported concentrations of TOC ranged between 4 mg/L (MW3) and 29 mg/L (MW5). There are no relevant assessment criteria available for TOC.

Cyclohexane Extractable Matter (CEM)

Concentrations of CEM ranged from 817 mg/L (well MW3) to 1,562 mg/L (well MW4S). There are no relevant assessment criteria available for CEM.

3.3.3 Temporal Trends 2016

Groundwater analytical results collected for monitoring wells MW3, MW4S and MW5 on a quarterly basis throughout 2016 are presented in Appendix C. Historical VOC trend graphs are presented in Appendix D.

Temporal trends inferred from the 2016 data are summarised below:

Monitoring Well	Contaminant	Apparent Trend
MW3	VOCs	<p>Concentrations of VOCs decreased throughout 2016 at well MW3 from 247 µg/L in Q1 2016 to 28 µg/L in Q4 2016.</p> <p>At well MW3, VC exceeded the GTV in each monitoring round in 2016. Concentrations of VC decreased from 11 µg/L in Q1 2016 to 4 µg/L in Q4 2016.</p> <p>Concentrations of VOCs were higher in the first two quarters of 2016 (247 µg/L and 223 µg/L) than in each of the monitoring rounds in 2015, before decreasing in Q3 and Q4 2016 (56 µg/L and 28 µg/L).</p>

The lower concentrations reported in Q3 and Q4 2016 are more consistent with concentrations recorded in 2015.

	Hydrocarbons	In 2016, DRO and PRO were detected at low concentrations (maximum concentration of 133 µg/L in Q2 2016) in the first three monitoring rounds before decreasing to below laboratory MDLs in Q4 2016.
	Miscellaneous Parameters	Concentrations of ammoniacal nitrogen (as NH ₄) consistently exceeded the relevant assessment criteria in 2016 at well MW3. Chloride exceeded the IGTV in each quarter but remains below the Upper GTV. Potassium exceeded the relevant assessment criteria in Q1, Q3 and Q4 2016. All other additional parameters remained below the relevant assessment criteria throughout 2016. Reported concentrations of major ions in 2016 are similar to those concentrations reported in 2015.
	VOCs	Total VOC concentrations increased between Q1 2016 (399 mg/L) and Q4 2016 (1,695 mg/L) at well MW4S. During 2016, VC exceeded the GTV in each of the four monitoring rounds and ranged between 78 mg/L (Q1) and 311 mg/L (Q4). cDCE also exceeded the IGTV and GTV in each monitoring round in 2016, with a maximum reported concentration of 899 mg/L being recorded in Q4 2016. tDCE exceeded the IGTV and GTV in Q2 and Q3 2016. tDCE was not detected above the MDL in Q4 2016. Benzene concentrations exceeded the relevant assessment criteria in each of the four monitoring rounds and concentrations ranged between 1.5 µg/L (Q1 2016) and 5 µg/L (Q2 2016).
MW4S	Hydrocarbons	At well MW4S, TPH concentrations increased through the first three quarters of 2016 (156 µg/L in Q1 2016 to 714 µg/L in Q3 2016) and remained stable in Q4 2016. Overall, TPH concentrations in 2016 were lower to those in 2015 at well MW4S.
	Miscellaneous Parameters	Concentrations of ammoniacal nitrogen (as NH ₄) consistently exceeded the relevant assessment criteria in 2016 at well MW4S. Potassium concentrations remained above relevant assessment criteria in 2016 ranging from 10 mg/L in Q4 to 20 mg/L in Q1. Chloride concentrations were above IGTV throughout 2016 and above Upper GTV in each quarter excluding Q2. The maximum chloride concentration was recorded in Q3 2016 (498 mg/L). Sulphate was reported above the relevant assessment criteria in Q3 and Q4. The maximum sulphate concentration was recorded in Q4 2016 (352 mg/L).

		<p>In 2016, sodium concentrations were recorded above the relevant assessment criteria in Q1, Q3 and Q4. The maximum sodium concentration was recorded in Q3 2016 (362 mg/L).</p> <p>CEM increased from 2 mg/L in Q2 2016 to 1,562 mg/L in Q4 2016.</p>
	VOCs	<p>In 2016, VOCs were only detected in Q1 (10 µg/L) at well MW5 and VOCs were not recorded above the relevant assessment criteria.</p>
	Hydrocarbons	<p>DRO and GRO were detected above MDLs in each of the four monitoring rounds in 2016 at well MW5. Elevated TPH concentrations were recorded in Q1 2016 (8,292 µg/L) and Q3 2016 (9,266 µg/L). TPH concentrations decreased to 2,371 µg/L in Q4 2016. Concentrations of TPH at well MW5 will be kept under review in 2017.</p>
MW5	Miscellaneous Parameters	<p>Concentrations of major ions remained generally low and below relevant assessment criteria throughout 2016.</p> <p>Concentrations of ammoniacal nitrogen exceeded the relevant assessment criteria in Q4 2016 (0.19mg/L).</p> <p>Chloride was the only major ion to exceed the relevant assessment criteria in each monitoring round in 2016 at well MW5. Chloride concentrations ranged between 87 mg/L in Q4 2016 and 108 mg/L in Q1 2016. Reported concentrations of CEM were elevated in Q4 2016 (995 mg/L). There are no relevant assessment criteria for CEM.</p>

4. Conclusions

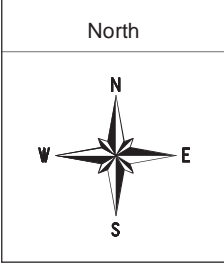
The findings of the Q4 (December) 2016 groundwater monitoring event are as follows:

- Groundwater contours indicate that groundwater, particularly in the central part of the Enva site is influenced by pumping from the Enva Production Well
- The general direction of groundwater flow under Q4 2016 hydrogeological conditions is to the south and south-west
- The highest concentration of VOCs was reported in the groundwater sample collected from monitoring well MW4S (total VOCs 1,695 µg/L). Well MW4S is located in the southern part of the site
- The groundwater sample collected from well MW4S in December 2016, contained concentrations of VC (311 µg/L), cDCE (899 µg/L), TCE (4 µg/L) and benzene (5 µg/L) above the assessment criteria
- At well MW3, VOC concentrations decreased between Q3 2016 (56 µg/L) and Q4 2016 (28 µg/L). MW3 is located in the northwest of the site
- All VOCs were below MDLs in the groundwater sample collected from well MW5 (located in the western part of the site) in Q4 2016
- No SVOCs were detected in groundwater from wells MW3, MW4S and MW5 in Q4 2016
- DRO and GRO were detected above MDLs in MW4S and MW5 in Q4 2016. Reported TPH concentrations ranged between 709 µg/L (MW4S) and 2,371 µg/L (MW5), both results exceed the assessment criteria
- The total TPH concentration at well MW4S decreased from 464 µg/L in September 2016 to 237 µg/L in December 2016. TPH detections in groundwater at well MW4S reflect the elevated solvent concentrations in this well, rather than actual petroleum hydrocarbon detections
- The total TPH concentration in groundwater from well MW5 decreased from 9,266 µg/L in Q3 2016 to 2,371 µg/L in Q4 2016. A slight hydrocarbon sheen was noted from the purged water and the groundwater sample collected at well MW5 in December 2016. The TPH composition at MW5 is different to that at well MW4S, being predominantly in the DRO C₈-C₄₀ carbon chain length range and with no chlorinated solvents detected. This detection may be related to anecdotally-reported historical issues with a former diesel fuel storage tank adjacent to MW5 on a third party site
- Concentrations of chloride and potassium above the adopted assessment criteria were reported at wells MW3 and MW4S in December 2016
- Ammonium concentrations also exceeded the adopted assessment criteria in MW3, MW4S and MW5 in Q4 2016
- Groundwater conditions beneath the site remain reducing and conducive to the continuing in-situ degradation of chlorinated organic solvents. Long term monitoring results indicate significant reductions (almost two orders of magnitude) in solvent concentration in groundwater in key well MW4S since peak detections in the period 2000-2002. Dissolved phase chlorinated solvents continue to be broken down through reductive dechlorination

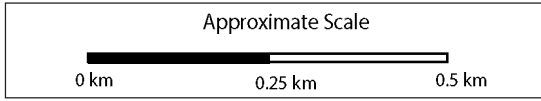
5. Recommendations

Based on the fourth round of 2016 quarterly groundwater monitoring, conducted in December 2016, which indicates continuing, gradual, declining long-term trends in the key VOC concentrations across the site with no apparent seasonality, AECOM continue to recommend that agreement should be sought from the Agency to reduce the groundwater monitoring frequency from quarterly to biannually.

Figures



**SITE
LOCATION**



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CLIENT
ENVA IRELAND LIMITED

PROJECT LOCATION
**SMITHSTOWN INDUSTRIAL ESTATE,
SHANNON**

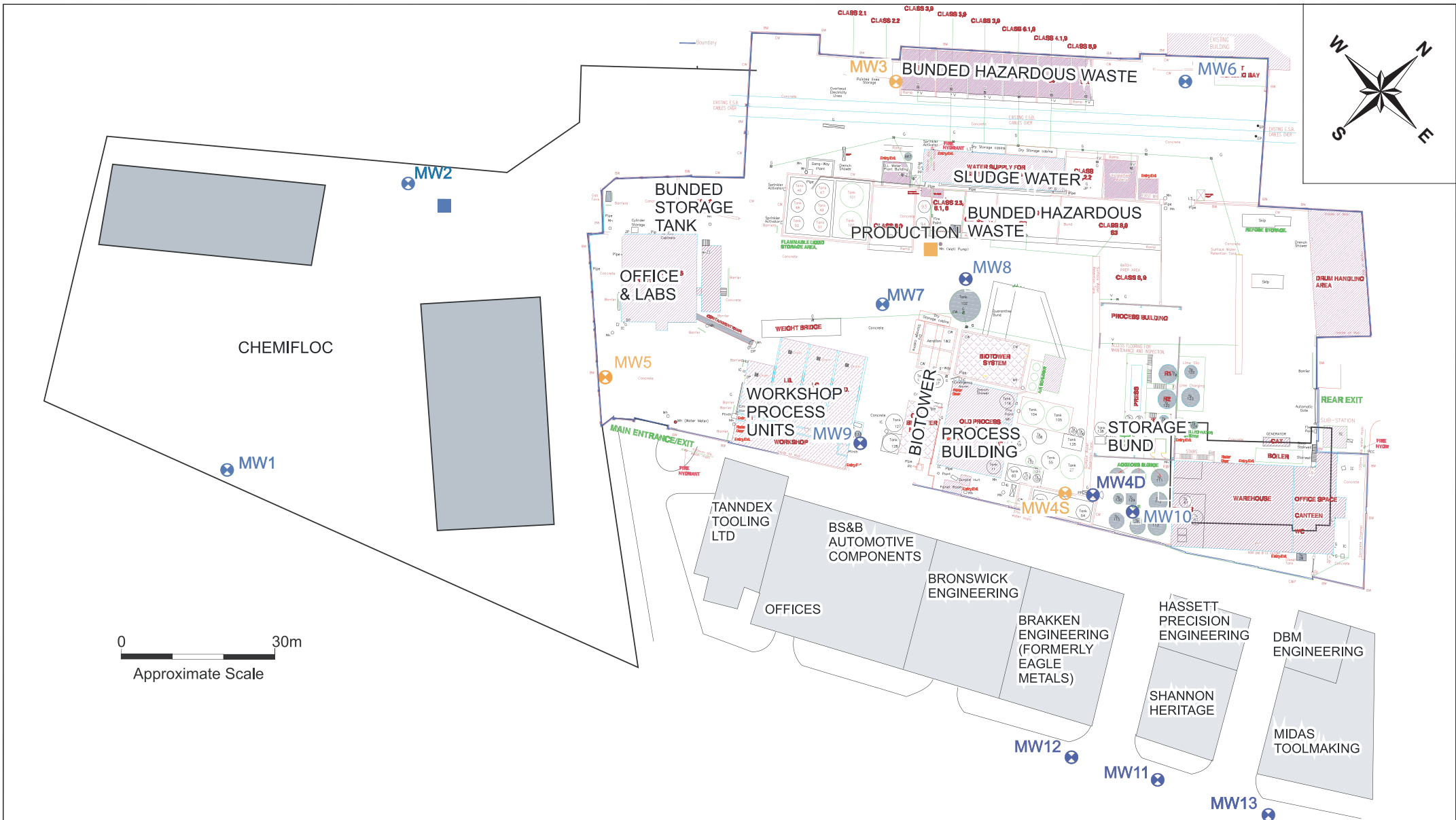
DRAWING TITLE
FIGURE 1 - SITE LOCATION PLAN

ENVIRONMENTAL CONSULTANTS



**Douglas Business Centre
Carrigaline Road, Douglas Cork.
Tel 021 4365 006**

DRAWN FO'R	TRACED	CHECKED FO'R	APPROVED KF/COR	DATE DEC 2016
SCALE AS SHOWN	Job No. 60490964		A	



CLIENT
ENVA IRELAND LIMITED

PROJECT LOCATION
**SMITHSTOWN INDUSTRIAL ESTATE,
SHANNON, CO. CLARE**

DRAWING TITLE
**FIGURE 2
SITE LAYOUT PLAN SHOWING
BOREHOLE LOCATIONS
DECEMBER 2016**

DRAWN FO'R	TRACED	CHECKED KF	APPROVED KF/CORK	DATE DEC 2016
SCALE N.T.S	Job No. 60490964	REV. A		

Key

	ENVA SITE BOUNDARY
	MW3 MONITORING WELL SAMPLED
	MW1 MONITORING WELL DIPPED
	SITE PRODUCTION WELL SAMPLED
	CHEMIFLOC PRODUCTION WELL (NOT SAMPLED)

ENVIRONMENTAL CONSULTANTS



**Douglas Business Centre
Carrigaline Road, Douglas Cork.
Tel 021 4365 006**



CLIENT
ENVA IRELAND LIMITED

DRAWING TITLE
FIGURE 3_GROUNDWATER CONTOUR PLAN (ENVA Q4 2016)

PROJECT LOCATION
SMITHSTOWN INDUSTRIAL ESTATE,
SHANNON, CO. CLARE

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		KF	KF	DEC 2016
SCALE	Job No.	60490964		REV.
As Shown				A

Key

	ENVA SITE BOUNDARY
	MONITORING WELL SAMPLED
	MONITORING WELL DIPPED
	SITE PRODUCTION WELL
	CHEMIFLOC PRODUCTION WELL
	GROUNDWATER ELEVATION (m Above Site Datum)
	GROUNDWATER CONTOUR
	GROUNDWATER FLOW DIRECTION

ENVIRONMENTAL CONSULTANTS



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Tables

Table 1: Sample Inventory - Enva Shannon, December 2016

Sampling Location	Laboratory Parameters								
	pH	EC	VOCs	SVOCs	Total Hydrocarbons	Ammoniacal Nitrogen	Total Organic Carbon (TOC)	Total Oxidised Nitrogen (TON)	Cyclohexane Extractable Matter (CEM)
MW3	x	x	x	x	x	x	x	x	x
MW4S	x	x	x	x	x	x	x	x	x
MW5	x	x	x	x	x	x	x	x	x

Table 2: Water Level and Field Measurements - Enva Shannon, 06 December 2016

Sample Location	Sampling Date	SWL	Well Elevation	SWL	Total Depth	Well Volume	Minimum Purge Volume	Actual Purge Volume	pH**	EC**	Eh	T	DO	Observations
		mbtoc	mASD	mASD	m	L	L	L		µS/cm	mV	°C	mg/L	
MW1		9.34	10.80	1.46	12.20	--	--	--	--	--	--	--	--	--
MW2		6.14	11.05	4.91	8.55	--	--	--	--	--	--	--	--	--
MW3	06-Dec-16	5.57	10.72	5.16	12.21	13	39	45	7.21	1,158	--	--	--	Clear water. NEC.
MW4S	06-Dec-16	6.71	11.05	4.34	10.30	7	21	18*	7.33	2,121	--	--	--	Clear water. Foaming during purging.
MW4D		6.99	10.99	4.00	26.46	--	--	--	--	--	--	--	--	--
MW5	06-Dec-16	7.26	10.57	3.31	12.42	10	30	20	7.20	957	--	--	--	Clear water. Hydrocarbon sheen on water and hydrogen sulphide odour.
MW6		4.97	10.75	5.78	11.86	--	--	--	--	--	--	--	--	Surface water in well headworks - well headworks not adequately sealed.
MW7		5.56	10.13	4.57	15.02	--	--	--	--	--	--	--	--	--
MW8		5.81	10.00	4.19	15.93	--	--	--	--	--	--	--	--	--
MW9		6.22	9.97	3.75	23.28	--	--	--	--	--	--	--	--	--
MW10		6.68	10.99	4.31	17.13	--	--	--	--	--	--	--	--	--
MW11		4.50	8.88	4.39	12.72	--	--	--	--	--	--	--	--	No well label.
MW12		5.32	8.72	3.40	12.65	--	--	--	--	--	--	--	--	No well label.
MW13		3.84	8.50	4.66	12.47	--	--	--	--	--	--	--	--	No well label.
Production Well		--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

SWL - standing water level
 mASD - metres above site datum
 mbtoc - metres below top of casing
 -- Not Measured

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

NEC - No Evidence of Contamination

* Well purged dry before three well volumes were purged - well sampled upon recovery

Table 3: Volatile Organic Compound Results (mg/L) - Enva Shannon, December 2016

Volatile Organic Compound	MDL	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Dichlorodifluoromethane	2	nv	nv	-	-	-
Methyl Tertiary Butyl Ether	0.1	10	30	0.2	2.6	-
Chloromethane	3	nv	nv	-	-	-
Vinyl Chloride	0.1	0.375	nv	4	311	-
Bromomethane	1	nv	nv	-	-	-
Chloroethane	3	nv	nv	-	-	-
Trichlorofluoromethane	3	nv	nv	-	-	-
1,1-Dichloroethene	3	nv	30*	-	6	-
Dichloromethane	5	15	10	-	-	-
trans-1-2-Dichloroethene	3	0.375	30*	-	-	-
1,1-Dichloroethane	3	nv	nv	18	121	-
cis-1-2-Dichloroethene	3	0.375	30*	-	899	-
2,2-Dichloropropane	1	nv	nv	-	-	-
Bromochloromethane	2	nv	nv	-	-	-
Chloroform	2	75	12	-	8	-
1,1,1-Trichloroethane	2	nv	500	6	330	-
1,1-Dichloropropene	3	nv	nv	-	-	-
Carbon tetrachloride	2	nv	2	-	-	-
1,2-Dichloroethane	2	2	3	-	-	-
Benzene	0.5	0.75	1	-	4	-
Trichloroethene	3	7.5	10, 70**	-	8	-
1,2-Dichloropropane	2	nv	nv	-	-	-
Dibromomethane	3	nv	nv	-	-	-
Bromodichloromethane	2	75	nv	-	-	-
cis-1-3-Dichloropropene	2	nv	nv	-	-	-
Toluene	0.5	525	10	-	-	-
trans-1-3-Dichloropropene	2	nv	nv	-	-	-
1,1,2-Trichloroethane	2	nv	nv	-	-	-
Tetrachloroethene	3	7.5	10, 40***	-	4	-
1,3-Dichloropropane	2	nv	nv	-	-	-
Dibromochloromethane	2	75	nv	-	-	-
1,2-Dibromoethane	2	nv	nv	-	-	-
Chlorobenzene	2	nv	1	-	-	-
1,1,1,2-Tetrachloroethane	2	nv	nv	-	-	-
Ethylbenzene	1	nv	10	-	2	-
p/m-Xylene	2	nv	10****	-	-	-
o-Xylene	1	nv	10****	-	3	-
Styrene	2	nv	nv	-	-	-
Bromoform	2	75	nv	-	-	-
Isopropylbenzene	3	nv	nv	-	-	-
1,1,2,2-Tetrachloroethane	4	nv	nv	-	-	-
Bromobenzene	2	nv	nv	-	-	-
1,2,3-Trichloropropane	3	nv	nv	-	-	-
Propylbenzene	3	nv	nv	-	-	-
2-Chlorotoluene	3	nv	nv	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	-
4-Chlorotoluene	3	nv	nv	-	-	-
tert-Butylbenzene	3	nv	nv	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-
sec-Butylbenzene	3	nv	nv	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-
1,3-Dichlorobenzene	3	nv	nv	-	-	-
1,4-Dichlorobenzene	3	nv	nv	-	-	-
n-Butylbenzene	3	nv	nv	-	-	-
1,2-Dichlorobenzene	3	nv	10	-	-	-
1,2-Dibromo-3-chloropropane	2	nv	nv	-	-	-
1,2,4-Trichlorobenzene	3	nv	0.4*****	-	-	-
Hexachlorobutadiene	3	nv	0	-	-	-
Naphthalene	2	nv	1	-	-	-
1,2,3-Trichlorobenzene	3	nv	0.4*****	-	-	-

Notes:

BOLD Exceeds GTV
Italics Exceeds Draft IGV
 MDL Method Detection Limit
 - Less than the MDL
 nv No value

*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

Table 4: Semi - Volatile Organic Compound Results (mg/L) - Enva Shannon, December 2016

Semi Volatile Organic Compound	MDL	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Phenols						
2-Chlorophenol	1	nv	200	-	-	-
2-Methylphenol	0.5	nv	0.5 ¹	-	-	-
2-Nitrophenol	0.5	nv	0.5 ¹	-	-	-
2,4-Dichlorophenol	0.5	nv	0.5 ¹	-	-	-
2,4-Dimethylphenol	1	nv	0.5 ¹	-	-	-
2,4,5-Trichlorophenol	0.5	nv	0.5 ¹	-	-	-
2,4,6-Trichlorophenol	1	nv	200	-	-	-
4-Chloro-3-methylphenol	0.5	nv	0.5 ¹	-	-	-
4-Methylphenol	1	nv	0.5 ¹	-	-	-
4-Nitrophenol	10	nv	0.5 ¹	-	-	-
Pentachlorophenol	1	nv	2	-	-	-
Phenol	1	nv	0.5 ¹	-	-	-
PAHs						
2-Chloronaphthalene	1	nv	nv	-	-	-
2-Methylnaphthalene	1	nv	nv	-	-	-
Naphthalene	1	0.075 ^A	1	-	-	-
Acenaphthylene	0.5	nv	nv	-	-	-
Acenaphthene	1	nv	nv	-	-	-
Fluorene	0.5	nv	nv	-	-	-
Phenanthrene	0.5	nv	nv	-	-	-
Anthracene	0.5	nv	10000	-	-	-
Fluoranthene	0.5	nv	1	-	-	-
Pyrene	0.5	nv	nv	-	-	-
Benz(a)anthracene	0.5	nv	nv	-	-	-
Chrysene	0.5	nv	nv	-	-	-
Benzo(bk)fluoranthene	1	0.075 ^A	0.5, 0.05 ³	-	-	-
Benzo(a)pyrene	1	0.0075	0.01	-	-	-
Indeno(123cd)pyrene	1	0.075 ^A	0.05	-	-	-
Dibenzo(ah)anthracene	0.5	nv	nv	-	-	-
Benzo(ghi)perylene	0.5	0.075 ^A	0.05	-	-	-
Phthalates						
Bis(2-ethylhexyl) phthalate	5	nv	8	-	-	-
Butylbenzyl phthalate	1	nv	5 ²	-	-	-
Di-n-butyl phthalate	1.5	nv	2	-	-	-
Di-n-Octyl phthalate	1	nv	5 ²	-	-	-
Diethyl phthalate	1	nv	5 ²	-	-	-
Dimethyl phthalate	1	nv	5 ²	-	-	-
Other SVOCs						
1,2-Dichlorobenzene	1	nv	10	-	-	-
1,2,4-Trichlorobenzene	1	nv	0.4	-	-	-
1,3-Dichlorobenzene	1	nv	nv	-	-	-
1,4-Dichlorobenzene	1	nv	nv	-	-	-
2-Nitroaniline	10	nv	nv	-	-	-
2,4-Dinitrotoluene	0.5	nv	nv	-	-	-
2,6-Dinitrotoluene	10	nv	nv	-	-	-
3-Nitroaniline	10	nv	nv	-	-	-
4-Bromophenylphenylether	1	nv	nv	-	-	-
4-Chloroaniline	10	nv	nv	-	-	-
4-Chlorophenylphenylether	1	nv	nv	-	-	-
4-Nitroaniline	0.5	nv	nv	-	-	-
Azobenzene	0.5	nv	nv	-	-	-
Bis(2-chloroethoxy)methane	0.5	nv	nv	-	-	-
Bis(2-chloroethyl)ether	1	nv	nv	-	-	-
Carbazole	0.5	nv	nv	-	-	-
Dibenzofuran	0.5	nv	nv	-	-	-
Hexachlorobenzene	1	nv	0.03	-	-	-
Hexachlorobutadiene	1	nv	0.1	-	-	-
Hexachlorocyclopentadiene	10	nv	nv	-	-	-
Hexachloroethane	1	nv	nv	-	-	-
Isophorone	0.5	nv	nv	-	-	-
N-nitrosodi-n-propylamine	0.5	nv	nv	-	-	-
Nitrobenzene	1	nv	10	-	-	-

Table 5: Hydrocarbons (µg/L) - Enva Shannon, December 2016

Compound	MDL	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
DRO/EPH						
DRO/EPH (C ₈ -C ₄₀)	10	nv	10	-	190	1,720
GRO						
GRO (C ₄ -C ₁₂)	100	nv	10	-	519	651
Total TPH	100	7.5	10	-	709	2,371

Notes:

BOLD	Exceeds GTV
<i>Italics</i>	Exceeds Draft IGV
MDL	Method Detection Limit
-	Less than the MDL
NA	Not Analysed
nv	no value
ug/l	micrograms per litre

Table 6: Miscellaneous Parameters (mg/L) - Enva Shannon, December 2016

Compound	MDL	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Ammonium (NH ₄)	-	0.065 - 0.175	0.150	0.56	11.14	0.19
Chloride	0.3	24 - 187.5	30	<i>100</i>	352	87
Sulphate	0.05	187.5	200	153	314	37
Sodium	0.1	nv	150	75	352	52
Potassium	0.1	nv	5	6	10	3
Total Oxidised Nitrogen as N	0.2	nv	No abnormal change	-	-	-
Total Organic Carbon	2	nv	No abnormal change	4	29	8
Cyclohexane Extractable Matter	1	nv	nv	817	1,562	995

Notes:

BOLD	Exceeds (Upper) GTV
<i>Italics</i>	Exceeds Draft IGV
MDL	Method Detection Limit
-	Less than the MDL
nv	No value
nr	Not Recorded

Appendix A - Schedule of Analysis

Shannon Facility: The following table sets out the monitoring requirements of Waste Licence W0041-01 as detailed in Schedule F.3.

Parameter	Quarterly	Annually
Ammoniacal Nitrogen	ü	
Total Organic Carbon	ü	
Cyclohexane Extractable Matter	ü	
Volatile Organic Compounds (VOCs), including chlorinated solvents	ü	
Semi Volatile Organic Compounds (VOCs)	ü	
Total Petroleum Hydrocarbons (TPH)- DRO and PRO banding	ü	
Chloride	ü	
Total Oxidised Nitrogen	ü	
Sulphate	ü	
Potassium	ü	
Sodium	ü	
Phosphate		ü
Total Alkalinity		ü
Calcium		ü
Cyanide		ü
Cadmium		ü
Chromium		ü
Copper		ü
Iron		ü
Lead		ü
Magnesium		ü
Manganese		ü
Mercury		ü
Nickel		ü
Arsenic		ü
Total Dissolved Solids (TDS)-residue on evaporation		ü
Total Phenols		ü

Appendix B - Validated Laboratory Results



Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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

AECOM
Acorn Business Campus
Mahon Industrial Park
Black Rock
Cork
Ireland

Tel: +44 (0) 1244 833780
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Attention : Fergus O'Regan
Date : 13th December, 2016
Your reference : 60490964
Our reference : Test Report 16/18186 Batch 1
Location : Shannon
Date samples received : 7th December, 2016
Status : Final report
Issue : 1

Three samples were received for analysis on 7th December, 2016 of which three were scheduled for analysis. 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:

Simon Gomery BSc
Project Manager

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/18186

SOILS

Please note we are only MCERTS accredited (UK soils only) 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 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.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually 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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

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.

Please include all sections of this report if it is reproduced

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

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
SA	ISO17025 (SANAS) accredited - South Africa.
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.
AD	Samples are dried at 35°C ±5°C
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
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

JE Job No: 16/18186

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM7	Modified USEPA 3540 and 9071 for oily wastes. In house method for the gravimetric determination of a sample following solvent extraction.	PM9	Extraction of organic determinands from a water/leachate sample by mixing with an organic solvent.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes			
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.	Yes			

Appendix C – 2016 Temporal Trends

Table C1: Selected Volatile Organic Compound Results (mg/L) (Non-detects Omitted) - Enva Shannon, Quarterly Monitoring 2016

Volatile Organic Compound	Groundwater Regs 2016	EPA Draft IGV	MW3				MW4S				MW5			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Methyl Tertiary Butyl Ether (MTBE)	10	30	0.2	<0.1	0.3	0.2	1	2.1	6.9	2.6	<0.1	<0.1	<0.1	<0.1
Chloroethane	nv	nv	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Dichlorodifluoromethane	nv	nv	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dichloromethane (DCM)	15	10	<3	<3	<3	<5	<3	<3	<3	<5	<3	<3	<3	<5
Vinyl Chloride (VC)	0.375	nv	11	11	6	4	78	116	274	311	<0.1	<0.1	<0.1	<0.1
Trichlorofluoromethane (TCFM)	nv	nv	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethene (1,1 DCE)	nv	30	13	14	5	<3	<3	5	10	6	<3	<3	<3	<3
trans-1-2-Dichloroethene (tDCE)	0.375	30	3	3	<3	<3	<3	3	5	<3	<3	<3	<3	<3
1,1-Dichloroethane	nv	nv	83	77	33	18	53	68	151	121	<3	<3	<3	<3
cis-1-2-Dichloroethene (cDCE)	0.375	30	8	12	5	<3	167	337	954	899	<3	<3	<3	<3
Chloroform	nv	nv	<2	<2	<2	<2	2	2	8	8	<2	<2	<2	<2
1,1,1-Trichloroethane	nv	500	129	102	7	6	93	145	266	330	3	<2	<2	<2
Benzene	0.75	1.0	<0.5	<0.5	<0.5	<0.5	1.5	2	5	4	<0.5	<0.5	<0.5	<0.5
Trichloroethene (TCE)	7.5	10	<3	4	<3	<3	<3	<3	7	8	<3	<3	<3	<3
Toluene	525	10	<0.5	<5	<5	<5	<0.5	<5	<5	<5	<0.5	<5	<5	<5
Tetrachloroethene (PCE)	7.5	10	<3	<3	<3	<3	<3	<3	4	4	<3	<3	<3	<3
Ethylbenzene	nv	10	<0.5	<0.5	<0.5	<1	2	<0.5	5	2	<0.5	<0.5	<0.5	<1
p/m-Xylene	nv	10	<1	<1	<1	<2	<1	<1	<1	<2	<1	<1	<1	<2
o-Xylene	nv	10	<0.5	<0.5	<0.5	<1	1	<0.5	5	<1	<0.5	<0.5	<0.5	<1
Napthalene	0.075	1	<2	<2	<2	<2	<2	<2	<2	<2	<3	<2	<2	<2
4-Isopropyltoluene	nv	nv	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,2,4 Trimethylbenzene	nv	nv	<3	<3	<3	<3	<3	<3	<3	<3	7	<3	<3	<3
1,3,5 Trimethylbenzene	nv	nv	<3	<3	<3	<2	<3	<3	<3	<3	<3	<3	<3	<2

Notes:

BOLD Exceeds GTV
Italics Exceeds Draft IGV
 nv no value

Table C2: Hydrocarbons (mg/L) - Enva Shannon, Quarterly Monitoring 2016

Compound	Groundwater Regs 2016	EPA Draft IGV	MW3				MW4S				MW5			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
DRO/EPH														
DRO/EPH (C ₈ -C ₄₀)	nv	10	<10	<10	<10	<10	50	<10	150	190	6700	1,240	7,850	1,720
GRO														
GRO (C ₄ -C ₁₂)	nv	10	50	133	56	<10	106	243	564	519	1592	714	1,416	651
TPH (C₄-C₄₀)	nv	10	50	133	56	<10	156	253	714	709	8,292	1,954	9,266	2,371

Notes:

BOLD Exceeds GTV
Italics Exceeds Draft IGV
 nv no value

Table C3: Miscellaneous Parameters (mg/L) - Enva Shannon, Quarterly Monitoring 2016

Compound	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	MW3				MW4S				MW5			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Ammoniacal Nitrogen as NH ₄	0.175	0.15	0.4	0.4	0.5	0.56	19.4	11.6	18.1	11.1	0.12	0.05	0.12	0.19
Chloride	24 - 187.5	30	<i>105</i>	78	<i>104</i>	<i>100</i>	245	<i>114</i>	498	352	<i>108</i>	<i>94</i>	<i>99</i>	<i>87</i>
Sulphate	187.5	200	113	106	153	153	114	97	252	314	21	38	39	37
Sodium	nv	150	76	69	80	75.1	160	134	362	352	59	53	49	52
Potassium	nv	5	6	4	5	6.2	20	16	14	10	3	3	3	3
Total Oxidised Nitrogen as N	nv	No abnormal change	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.7	<0.2	<0.2	<0.2
Total Organic Carbon	nv	No abnormal change	<2	<2	<2	4	<2	<2	15	29	<2	<2	<2	8
Solvent Extractable Matter	nv	nv	11	3	9	817	22	2	7	1562	6	<1	11	995

Notes:
BOLD Exceeds GTV
Italics Exceeds Draft IGV
 nv no value

Appendix D - Historical VOC Trend Graphs

Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Feb-98	Aug-00	Jan-01	Aug-01	Nov-01	Apr-02	Apr-02	Jun-02	Sep-02	Jan-03	Apr-03	Jul-03	Sep-03
Vinyl Chloride	0.375	nv	-	-	-	-	4	9	<0.5	5	5	3	5	5	5
1,1-Dichloroethene	nv	30	-	-	-	-	-	-	13	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.375	30	5	-	14	20	36	40	31	39	30	40	31	25	37
trans-1,2-Dichloroethene	0.375	nv	12	9	15	20	31	30	<0.5	25	21	-	28	18	23
Trichloroethene	7.5	10	-	5	5	7	11	12	9.6	11	14	14	18	13	15
Tetrachloroethene	7.5	10	n/a	-	-	-	-	-	1.5	1	-	-	-	-	-
Chloroethane	nv	nv	-	-	-	-	-	-	n/a	-	-	-	-	-	-
1,1-Dichloroethane	nv	nv	133	107	128	151	241	215	250	185	181	167	205	102	140
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	81	65	105	192	253	195	77	171	87	172	121	79	105
Dichloromethane	15	10	149	-	-	-	-	-	<0.5	-	-	-	-	-	-
Chloroform	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Tetrachloromethane	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
tert-butyl methyl ether	nv	30	n/a	n/a	n/a	-	4	4	n/a	6	7	-	-	-	-
Toluene	525	10	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Ethylbenzene	nv	10	n/a	-	-	-	4	-	<0.5	-	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Benzene	0.75	1	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Total xylene	nv	10	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Total VOC Concentration			380	186	267	390	586	505	382	443	345	396	408	242	325

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to AECOM

n/a - not analysed

Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Jan-04	Apr-04	Jul-04	Jul-04	Oct-04	Nov-04	Feb-05	May-05	May-05	Jul-05	Oct-05
Vinyl Chloride	0.375	nv	3	-	<0.5	6	9	12.4	7	<0.5	6	-	13
1,1-Dichloroethene	nv	30	-	-	<0.5	-	-	8.1	-	7.6	-	-	-
cis-1,2-Dichloroethene	0.375	30	28	66	21.3	34	29	34	30	27.2	27	19	55
trans-1,2-Dichloroethene	0.375	nv	16	24	<0.5	24	20	1.5	20	<0.5	15	-	19
Trichloroethene	7.5	10	11	12	8.5	14	10	6.8	11	8.2	11	-	30
Tetrachloroethene	7.5	10	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
Chloroethane	nv	nv	-	-	n/a	-	-	n/a	-	n/a	-	-	-
1,1-Dichloroethane	nv	nv	107	224	87.3	139	119	100	119	150	126	87	158
1,2-Dichloroethane	nv	nv	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
1,1,1-Trichloroethane	nv	500	61	77	26.3	49	48	28	45	53.1	62	31	63
Dichloromethane	15	10	-	-	n/a	-	-	n/a	-	n/a	-	-	188
Chloroform	nv	nv	-	-	<0.5	-	-	n/a	-	2.3	-	-	-
Tetrachloromethane	nv	nv	-	-	<0.5	-	-	0.8	-	<0.5	-	-	-
tert-butyl methyl ether	nv	30	-	-	n/a	-	-	n/a	-	n/a	-	-	-
Toluene	525	10	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Ethylbenzene	nv	10	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Isopropylbenzene	nv	nv	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Benzene	0.75	1	-	-	<0.5	-	-	<0.7	-	<0.5	-	-	-
Total xylene	nv	10	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Total VOC Concentration			226	403	143	266	235	192	232	248	247	137	526

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2016
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to AECOM

n/a - not analysed

Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Feb-06	Mar-06	May-06	Aug-06	Nov-06	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07
Vinyl Chloride	0.375	nv	-	<0.5	-	17	16	n/a	12	8	8	12	16
1,1-Dichloroethene	nv	30	-	14.5	15	27	-	12.4	-	15	-	13.2	11
cis-1,2-Dichloroethene	0.375	30	33	38.5	-	68	39	32.61	47	42	25	22.5	26
trans-1,2-Dichloroethene	0.375	nv	13	1.7	-	24	11	0.88	18	-	9	0.8	-
Trichloroethene	7.5	10	12	14.1	9	12	11	20.66	13	10	8	9.9	9
Tetrachloroethene	7.5	10	-	0.34	-	-	-	0.34	-	-	-	<0.5	-
Chloroethane	nv	nv	-	n/a	-	-	-	n/a	-	-	-	n/a	-
1,1-Dichloroethane	nv	nv	129	124	110	187	90	n/a	126	134	74	63.2	102
1,2-Dichloroethane	nv	nv	-	0.185	-	-	-	0.185	-	-	-	<0.5	-
1,1,1-Trichloroethane	nv	500	66	43.9	48	77	34	45.1	81	58	68	290.3	178
Dichloromethane	15	10	-	<0.5	-	-	-	0.12	-	-	-	<0.5	-
Chloroform	nv	nv	-	0.138	-	-	-	0.138	-	-	-	<0.5	-
Tetrachloromethane	nv	nv	-	<0.5	-	-	-	6.906	-	-	-	<0.5	-
tert-butyl methyl ether	nv	30	-	n/a	-	-	-	n/a	-	-	-	<0.5	-
Toluene	525	10	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Ethylbenzene	nv	10	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Isopropylbenzene	nv	nv	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Benzene	0.75	1	-	<0.5	-	-	-	<0.5	-	-	-	<0.5	-
Total xylene	nv	10	-	<0.5	-	-	-	0.6	-	-	-	0.6	-
Total VOC Concentration			253	237	182	412	201	119	297	267	192	412	342

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to AECOM

n/a - not analysed

Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Apr-98	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10	Aug-10	Nov-10	Feb-11	May-11	Aug-11	Nov-11
Vinyl Chloride	0.375	nv	22.3	25	26.7	17.5	10.2	4	-	6	-	11	7	-	4
1,1-Dichloroethene	nv	30	13.6	23	14	29	11.2	17	30	20	21	11	8	10	8
cis-1,2-Dichloroethene	0.375	30	n/a	105	43	62.9	48.9	37	59	59	63	41	70	30	23
trans-1,2-Dichloroethene	0.375	nv	1.4	1.4	3.1	-	-	-	-	-	-	-	-	-	-
Trichloroethene	7.5	10	21.9	27	17	25.3	32.8	12	21	27	30	22	7	8	10
Tetrachloroethene	7.5	10	1	1.7	1.7	2.4	9.5	20	18	13	18	15	9	-	8
Chloroethane	nv	nv	n/a	-	1.4	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	nv	nv	102.4	126	105	134	65.6	69	93	94	91	56	38	50	41
1,2-Dichloroethane	nv	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	148.5	209	199	215	54.7	187	-	208	216	77	58	53	301
Dichloromethane	15	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	nv	nv	1.5	1.4	-	2	-	-	-	-	-	-	-	-	-
Tetrachloromethane	nv	nv	<0.5	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
tert-butyl methyl ether	nv	30	<0.5	-	-	-	2	-	-	-	-	-	1	-	-
Toluene	525	10	<0.5	-	-	-	-	-	-	-	-	-	-	4	-
Ethylbenzene	nv	10	<0.5	-	nv	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	nv	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.75	1	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Total xylene	nv	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration			313	520	411	488	235	346	221	427	439	233	198	155	395

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to AECOM
 n/a - not analysed

Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Feb-12	May-12	Aug-12	Nov-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
Vinyl Chloride	0.375	nv	61	7	3	-	3	7	13	6	2.2	2.4	11	4	6	9	4
1,1-Dichloroethene	nv	30	9	10	6	8	8	7	-	-	<3	9	-	23	5	4	4
cis-1,2-Dichloroethene	0.375	30	71	46	35	43	42	66	6	4	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	7	11
Trichloroethene	7.5	10	22	19	17	24	15	6	-	-	-	-	-	-	-	3	5
Tetrachloroethene	7.5	10	10	10	-	12	9	8	-	-	-	-	-	-	-	-	-
Chloroethane	nv	nv	-	-	-	-	-	-	19	22	19	-	24	7	-	-	-
1,1-Dichloroethane	nv	nv	41	49	30	39	38	36	76	31	6	-	15	-	45	41	59
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	391	273	201	157	74	53	-	-	4	4	-	-	-	-	35
Dichloromethane	15	10	-	-	-	-	-	-	-	496	-	-	-	-	-	-	-
Chloroform	nv	nv	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloromethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-butyl methyl ether	nv	30	-	-	-	-	-	-	-	2	-	0.5	-	-	-	-	-
Toluene	525	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	nv	10	-	-	-	-	-	5	-	7	-	-	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.75	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Total xylene	nv	10	-	-	-	-	-	21	-	32	-	-	-	-	-	-	-
Total VOC Concentration			605	416	292	283	191	209	114	600	31	16	50	34	56	64	118

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to AECOM

n/a - not analysed

Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16
Vinyl Chloride	0.375	nv	8	11	11	6	4
1,1-Dichloroethene	nv	30	7	13	14	5	-
cis-1,2-Dichloroethene	0.375	30	-	8	12	5	18
trans-1,2-Dichloroethene	0.375	nv	-	3	3	-	-
Trichloroethene	7.5	10	-	-	4	-	-
Tetrachloroethene	7.5	10	-	-	-	-	-
Chloroethane	nv	nv	-	-	-	-	-
1,1-Dichloroethane	nv	nv	66	83	77	33	-
1,2-Dichloroethane	nv	nv	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	53	129	102	7	6
Dichloromethane	15	10	-	-	-	-	-
Chloroform	nv	nv	-	-	-	-	-
Tetrachloromethane	nv	nv	-	-	-	-	-
tert-butyl methyl ether	nv	30	-	0.2	-	0.3	0.2
Toluene	525	10	-	-	-	-	-
Ethylbenzene	nv	10	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-
Benzene	0.75	1	-	-	-	-	-
Total xylene	nv	10	-	-	-	-	-
Total VOC Concentration			134	247	223	56	28

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2016
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

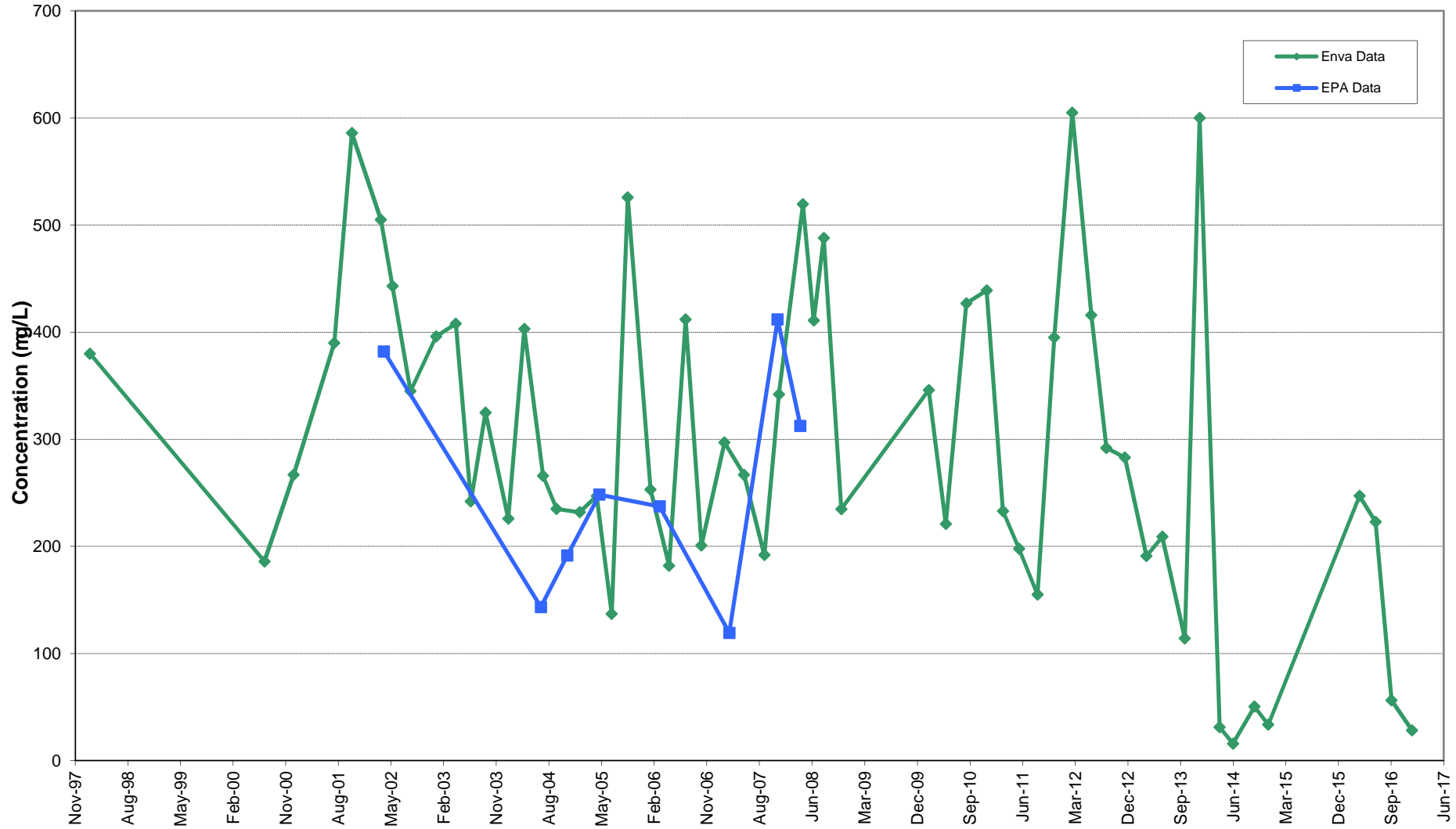
Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to AECOM

n/a - not analysed

Appendix D1: Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016

Total VOC Concentration - MW3
(Maximum Total VOC Concentration = 605 ug/L in February 2012)



VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Feb-98	Aug-00	Jan-01	Apr-01	Aug-01	Nov-01	Apr-02	Apr-02	Jun-02	Sep-02	Jan-03	Apr-03	Jul-03	Sep-03
Vinyl Chloride	0.375	nv	136	2113	768	1061	1477	994	-	1072	918	772	756	648	660	698
1,1-Dichloroethene	nv	30	-	37	16	n/a	54	31	120	48	41	-	34	30	25	29
cis-1,2-Dichloroethene	0.375	30	5235	32712	9580	16363	24450	19517	>20,000	15520	17466	22995	16634	17878	12492	14514
trans-1,2-Dichloroethene	0.375	nv	-	198	75	n/a	283	223	55	234	308	270	-	248	272	324
Trichloroethene	7.5	10	31	108	73	n/a	165	280	120	134	121	158	222	89	100	97
Tetrachloroethene	7.5	10	n/a	84	41	n/a	141	57	160	213	310	294	123	199	197	184
Chloroethane	nv	nv	-	313	62	n/a	-	-	n/a	-	18	-	12	-	-	-
1,1-Dichloroethane	nv	nv	543	2946	935	1691	2484	2484	5200	2180	2593	2572	2342	2023	1628	2019
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	2413	7395	2596	4331	8902	11744	9900	10155	12461	11708	10280	9832	8094	9716
1,1,2-Trichloroethane	nv	nv	-	-	-	n/a	-	-	-	-	4	-	-	-	-	-
Dichloromethane	15	10	1181	2627	1046	2209	4672	5438	4700	4570	4416	4334	3310	2110	1652	1430
Chloroform	nv	nv	105	-	44	n/a	144	149	130	110	141	142	122	111	84	106
Dichlorodifluoromethane	nv	nv	-	-	10	n/a	50	84	n/a	89	-	-	-	-	-	-
Trichlorofluoromethane	nv	nv	4	120	52	n/a	88	43	65	38	47	-	28	30	25	23
Methyl Tertiary Butyl Ether	10	30	n/a	n/a	n/a	n/a	106	125	n/a	67	98	69	-	-	46	-
Benzene	0.75	1	-	24	9	n/a	27	29	16.4	22	26	24	27	22	22	29
Toluene	525	10	14	52	21	n/a	56	175	60	86	102	93	112	103	131	218
Ethylbenzene	nv	10	n/a	7	3	n/a	6	17	8.9	12	14	9	11	9	15	16
p/m-Xylene	nv	10	n/a	10	5	n/a	10	32	19.1	27	29	18	26	17	40	38
o-Xylene	nv	10	n/a	3	2	n/a	4	12	9	9	12	8	13	11	19	18
Chlorobenzene	nv	nv	n/a	-	-	n/a	-	2	-	2	2	-	1	2	2	-
Isopropylbenzene	nv	nv	n/a	-	-	n/a	-	-	-	-	-	-	-	-	1	-
1,2,4-Trimethylbenzene	nv	nv	n/a	-	-	n/a	-	-	1.7	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	nv	nv	n/a	-	-	n/a	-	-	0.6	-	-	-	-	-	-	-
1,2-Dichlorobenzene	nv	nv	n/a	-	-	n/a	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration			9,662	48,749	15,338	25,655	43,119	41,436	40,566	34,588	39,127	43,466	34,053	33,362	25,505	29,459

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

** Result outside calibration range, results should be considered as indicative only and are not accredited

VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Jan-04	Apr-04	Jul-04	Jul-04	Oct-04	Feb-05	May-05	May-05	Jul-05	Oct-05	Feb-06	Mar-06	Jun-06	Aug-06
Vinyl Chloride	0.375	nv	553	407	-	654	556	350	-	585	340	876	929	37.4	518	416
1,1-Dichloroethene	nv	30	24	15	-	24	19	14	140	17	22	18	-	32.8	14	18
cis-1,2-Dichloroethene	0.375	30	13133	9182	304	14736	10426	7604	1300	10574	11596	11445	9468	491.7	11093	12041
trans-1,2-Dichloroethene	0.375	nv	293	213	-	-	209	197	-	197	155	225	183	1.5	15	163
Trichloroethene	7.5	10	132	83	-	76	62	41	42.3	41	22	25	-	5.1	20	26
Tetrachloroethene	7.5	10	142	74	-	57	43	38	19.4	23	20	17	-	0.8	10	14
Chloroethane	nv	nv	6	-	n/a	-	-	-	n/a	-	-	-	-	n/a	-	-
1,1-Dichloroethane	nv	nv	1710	1010	316.8	1766	1347	1000	2400	1305	1353	1456	1405	84.7	1240	1300
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-
1,1,1-Trichloroethane	nv	500	9183	5944	4950	8363	6518	4926	5000	6450	5198	5858	5497	271.4	3592	3749
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	15	10	1114	302	-	332	-	111	510	-	20	-	-	-	-	-
Chloroform	nv	nv	91	62	-	87	69	49	92.8	67	77	72	-	3.6	69	66
Dichlorodifluoromethane	nv	nv	-	-	n/a	-	-	-	n/a	-	39	-	-	-	-	264
Trichlorofluoromethane	nv	nv	17	11	-	17	13	9	-	12	5	12	2357	2.9	4	8
Methyl Tertiary Butyl Ether	10	30	-	-	n/a	-	-	-	n/a	22	22	-	-	n/a	-	42
Benzene	0.75	1	29	19	-	31	27	23	28.2	29	29	41	48	1.4	59	37
Toluene	525	10	271	250	-	424	492	276	660	199	167	273	734	6.7	170	156
Ethylbenzene	nv	10	14	11	-	13	13	14	-	11	8	12	-	-	20	7
p/m-Xylene	nv	10	34	29	-	31	61	37	-	25	-	28	-	-	47	18
o-Xylene	nv	10	19	15	-	16	17	20	-	13	-	13	-	1.8	22	11
Chlorobenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	1	-	-
1,2,4-Trimethylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration			26,765	17,627	5,571	26,627	19,872	14,709	10,193	19,570	19,073	20,371	20,621	945	16,893	18,336

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

** Result outside calibration range, results should be considered as indicative only and ar

VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Nov-06	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07	Apr-08	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10
Vinyl Chloride	0.375	nv	850	n/a	734	261	227	298	472	437.6	496	535	346	669	502	1461
1,1-Dichloroethene	nv	30	17	-	12	14	8	76.2	99	149.1	96	162	127	85	80	96
cis-1,2-Dichloroethene	0.375	30	9386	0.227	6888	8512	4970	5730	5720	n/a	5700	8160	4500	5010	4830	7218
trans-1,2-Dichloroethene	0.375	nv	198	-	-	114	80	16.1	-	16.5	-	361	-	361	9	13
Trichloroethene	7.5	10	21	0.963	29	23	13	21.6	90	137.7	-	90.6	44.6	29.5	26	59
Tetrachloroethene	7.5	10	15	0.134	-	14	11	18	-	19.9	-	<40	20.2	-	11	14
Chloroethane	nv	nv	-	n/a	-	-	-	n/a	-	n/a	-	<40	-	-	4	-
1,1-Dichloroethane	nv	nv	1131	n/a	793	1026	576	696.5	735	898.7	759	949	640	564	533	589
1,2-Dichloroethane	nv	nv	-	-	-	-	-	5.9	-	5.2	-	<40	-	-	-	-
1,1,1-Trichloroethane	nv	500	3904	6.005	2281	2640	2154	3345.3	2850	3218.9	2650	4190	2440	2050	1623	1463
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	1.2	-	1	-	<40	-	-	-	-
Dichloromethane	15	10	-	-	-	-	-	0.7	-	2.1	-	<40	-	-	9	-
Chloroform	nv	nv	51	1.4	34	49	41	84.5	81	165.1	-	129	92.4	82.5	95	78
Dichlorodifluoromethane	nv	nv	-	n/a	-	-	-	65.7	-	171.8	-	<40	-	-	178	-
Trichlorofluoromethane	nv	nv	7	n/a	4	-	2	5.2	-	4	-	<40	-	-	19	23
Methyl Tertiary Butyl Ether	10	30	-	n/a	-	-	-	n/a	-	n/a	-	<40	-	27.1	-	60
Benzene	0.75	1	48	n/a	33	28	19	24.1	-	43.5	-	<40	24.2	23.7	17	16
Toluene	525	10	177	-	180	67	19	34.5	161	133	-	56	76.8	125	118	98
Ethylbenzene	nv	10	20	-	-	2	6	n/a	-	24.6	-	<40	22.9	20.4	21	20
p/m-Xylene	nv	10	55	-	28	10	7	5.8	-	18	-	<40	-	-	39	17
o-Xylene	nv	10	28	-	17	9	9	18.4	-	24.4	-	<40	21.3	-	22	24
Chlorobenzene	nv	nv	-	-	-	-	-	1.1	-	1.3	-	<40	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	0.7	-	-	-	<40	-	-	-	-
1,2,4-Trimethylbenzene	nv	nv	-	-	-	-	-	0.9	-	-	-	<40	-	-	-	-
1,3,5-Trimethylbenzene	nv	nv	-	-	-	-	-	0.5	-	-	-	<40	-	-	-	-
1,2-Dichlorobenzene	nv	nv	-	-	-	-	-	1	-	-	-	<40	-	-	-	-
Total VOC Concentration			15,908	9	11,033	12,769	8,142	10,450	10,208	5,472	9,701	14,633	8,355	9,047	8,136	11,249

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed
 ** Result outside calibration range, results should be considered as indicative only and ar

VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Aug-10	Nov-10	Feb-11	May-11	Aug-11	Nov-11	Feb-12	May-12	Aug-12	Nov-12
Vinyl Chloride	0.375	nv	278	424	-	324	530	619	2198	908	298	1177
1,1-Dichloroethene	nv	30	61	38	-	18	42	67	74	113	37	53
cis-1,2-Dichloroethene	0.375	30	4777	2638	-	1401	2384	4015	4094	6189	2441	3846
trans-1,2-Dichloroethene	0.375	nv	8	-	-	4	7	9	4	16	7	8
Trichloroethene	7.5	10	21	7	-	5	24	39	49	48	30	12
Tetrachloroethene	7.5	10	7	-	-	4	-	10	11	43	-	9
Chloroethane	nv	nv	7	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	nv	nv	417	245	-	160	361	504	-	-	-	-
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	461	681	316	412
1,1,1-Trichloroethane	nv	500	1055	757	-	337	634	1900	2027	2328	932	1274
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-
Dichloromethane	15	10	-	-	-	-	-	-	-	-	-	-
Chloroform	nv	nv	58	31	-	18	40	99	96	108	49	80
Dichlorodifluoromethane	nv	nv	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	nv	nv	17	14	-	4	7	6	7	19	-	5
Methyl Tertiary Butyl Ether	10	30	28	11	-	7	13	14	10	13	5	5
Benzene	0.75	1	12	10	-	3	9	17	14	18	10	12
Toluene	525	10	71	74	-	8	9	14	41	43	23	14
Ethylbenzene	nv	10	6	12	-	-	-	21	20	17	16	21
p/m-Xylene	nv	10	8	14	-	-	-	15	12	12	6	15
o-Xylene	nv	10	11	17	-	-	-	27	23	22	15	27
Chlorobenzene	nv	nv	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	nv	nv	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration			6,842	4,292	0	2,293	4,060	7,376	9,141	10,578	4,185	6,970

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

** Result outside calibration range, results should be considered as indicative only and ar

VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16
Vinyl Chloride	0.375	nv	389	658	811	722	406	594	930	356	412	201	93	101	78	116	274	311
1,1-Dichloroethene	nv	30	43	43	42	60	30	-	70	20	-	12	4	3	-	5	10	6
cis-1,2-Dichloroethene	0.375	30	2689	2631	3255	3879	3694	3356	2365	1057	917	989	496	246	167	337	954	899
trans-1,2-Dichloroethene	0.375	nv	6	6	7	8	6	7	13	5	6	13	-	-	-	3	5	-
Trichloroethene	7.5	10	13	6	10	19	17	13	6	-	-	-	-	-	-	-	7	8
Tetrachloroethene	7.5	10	7	6	9	9	6	6	-	4	6	4	-	-	-	-	4	4
Chloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	nv	nv	395	293	395	393	203	315	419	175	168	103	64	71	53	68	151	121
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	739	884	884	1339	791	994	1022	-	-	237	136	156	93	145	266	330
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	15	10	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
Chloroform	nv	nv	50	40	51	-	29	37	35	17	13	8	4	4	2	2	8	8
Dichlorodifluoromethane	nv	nv	-	-	115	190	-	-	-	-	-	-	9	-	-	-	-	-
Trichlorofluoromethane	nv	nv	4	-	4	4	-	-	10	-	4	3	-	-	-	-	-	-
Methyl Tertiary Butyl Ether	10	30	5	6	5	6	5.2	6	11	3	-	-	-	-	1	2	7	3
Benzene	0.75	1	13	10	12	13	7	10	11	6	5	3	2	3	1.5	2	5	4
Toluene	525	10	32	10	11	16	17.9	14.6	8	22	13	7	3	3	-	-	-	-
Ethylbenzene	nv	10	17	16	6	11	13.6	19	19	-	10	6	-	5	2	-	5	2
p/m-Xylene	nv	10	6	3	3	4	3	3	2	11	2	-	-	-	-	-	-	-
o-Xylene	nv	10	17	20	5	10	15	17	17	7.4	10	4	-	3	1	-	5	3
Chlorobenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration			4,425	4,632	5,625	6,683	5,244	5,392	4,937	1,684	1,566	1,594	802	604	399	680	1,701	1,698

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

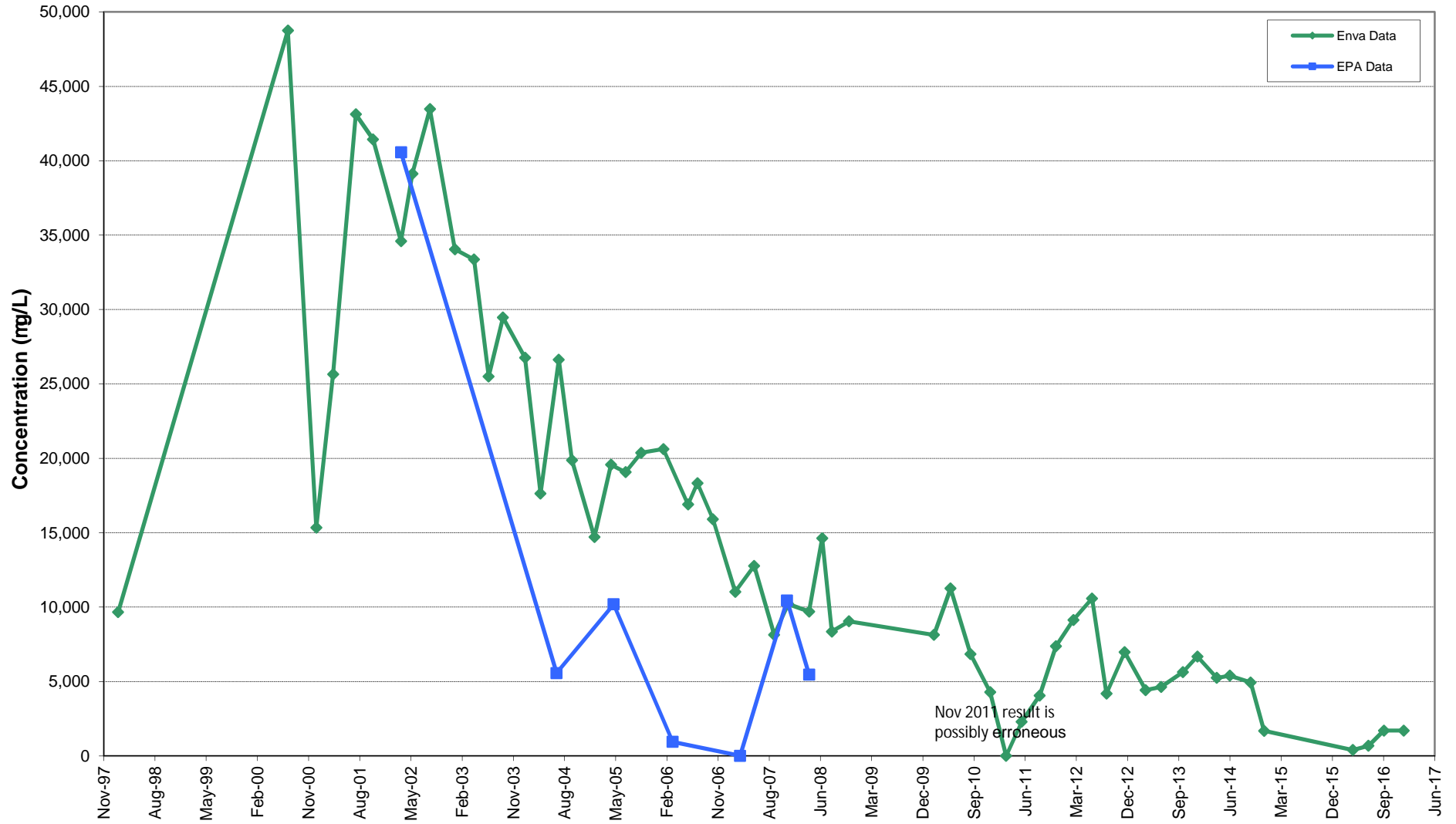
1567 1594 802 604

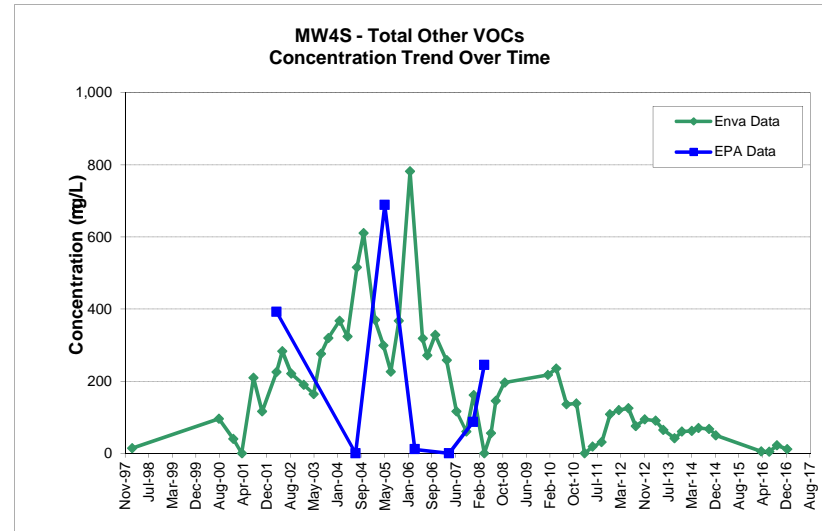
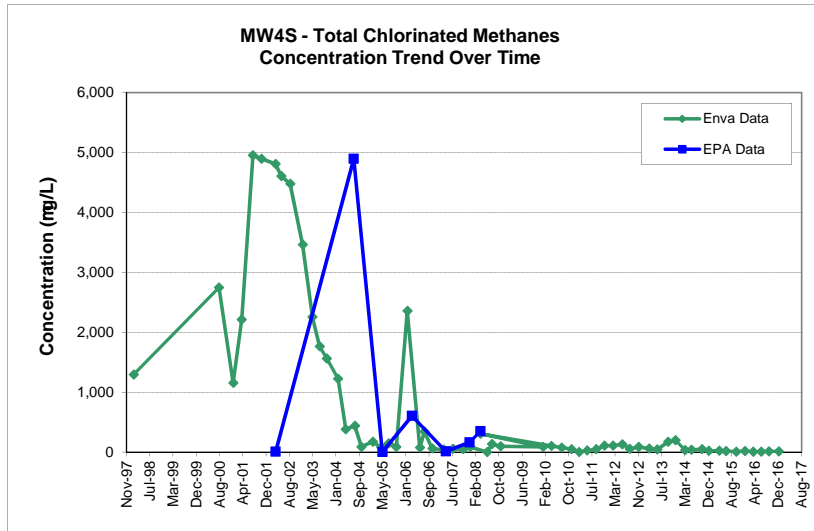
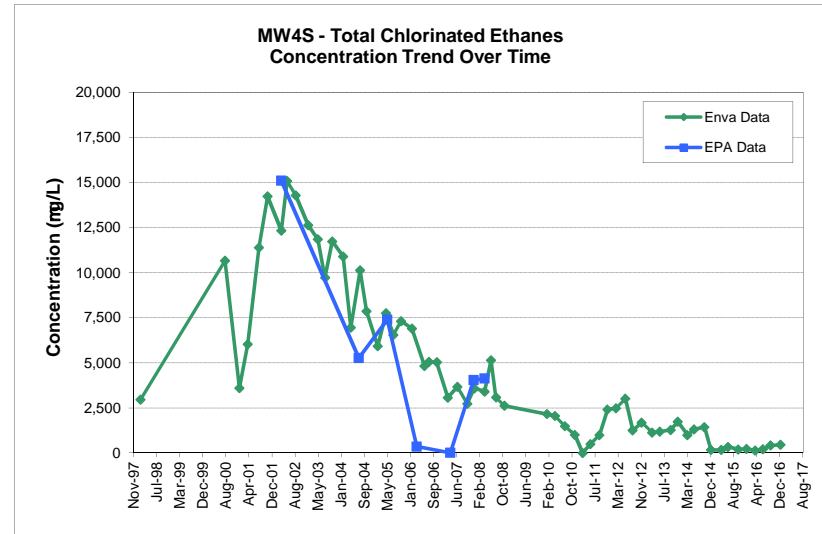
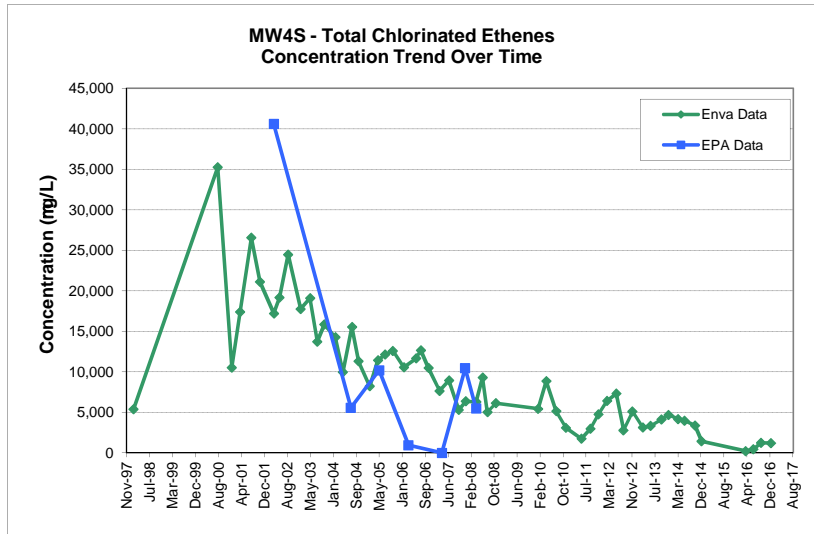
MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed
 ** Result outside calibration range, results should be considered as indicative only and ar

Appendix D2: Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016

Prepared by: FOR
Checked by: KF

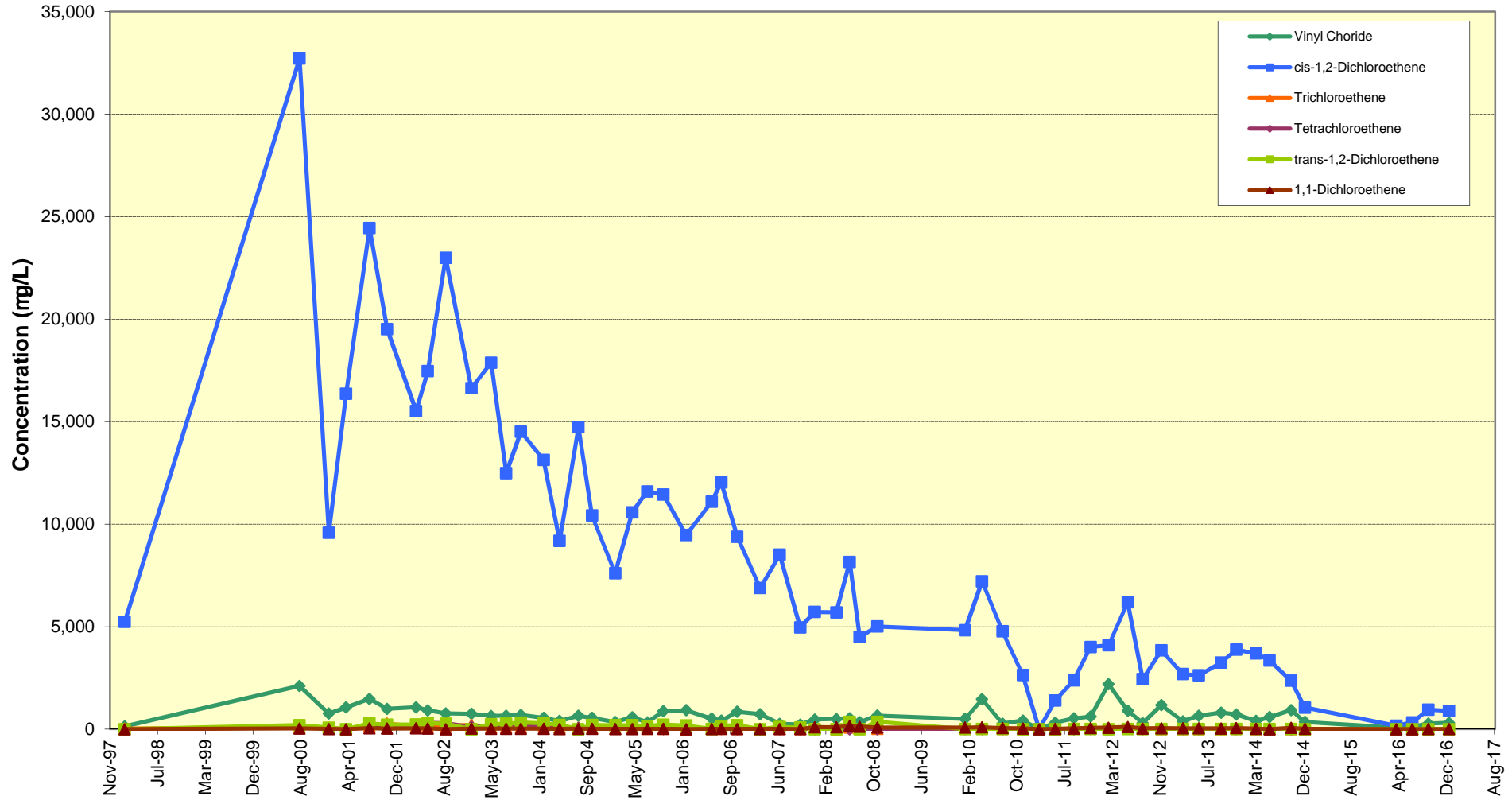
Total VOC Concentration - MW4S (Maximum Total VOC Concentration = 48,749 ug/L in August 2000)





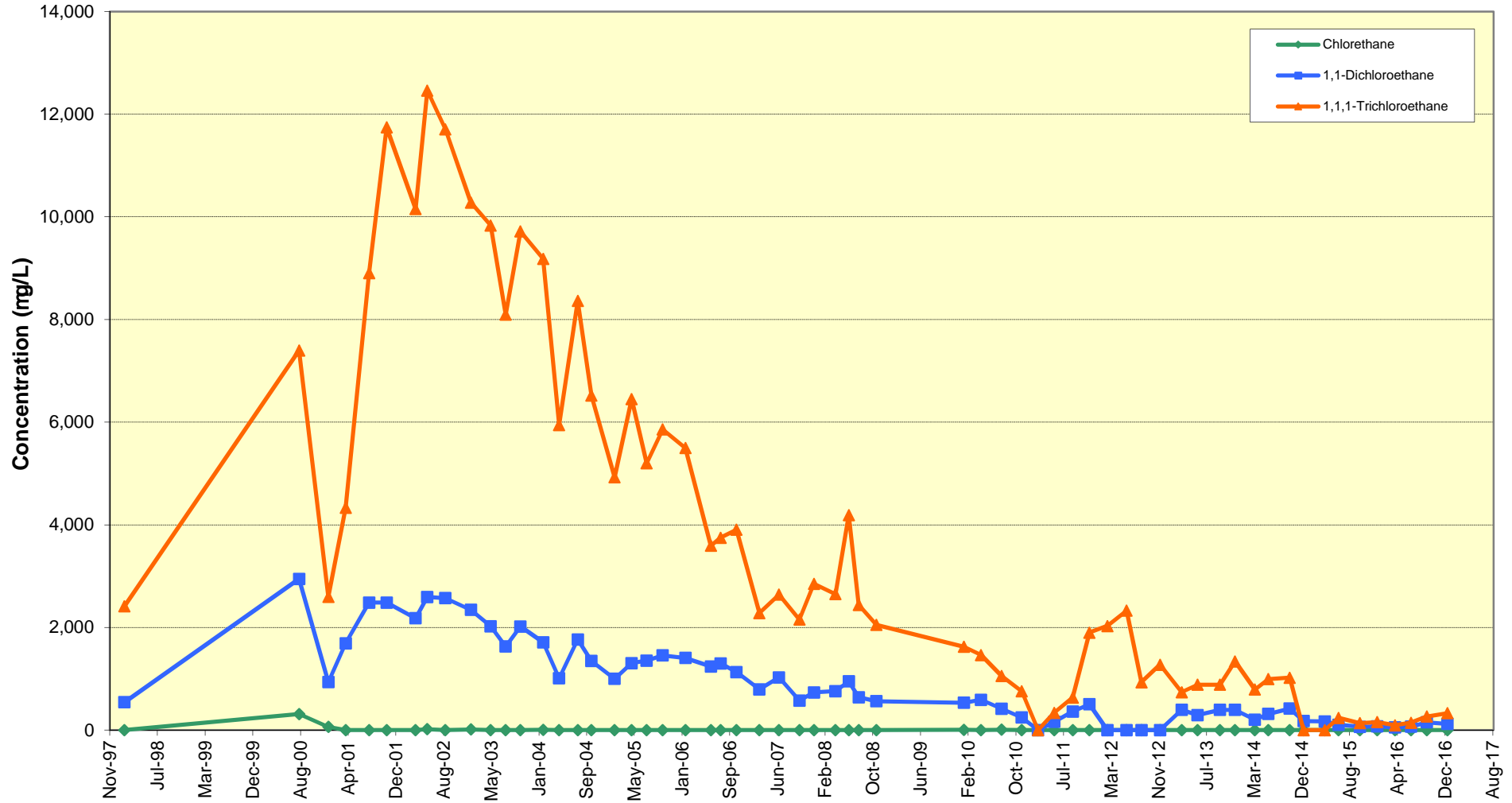
Appendix D2, Enva Shannon

MW4S - Chlorinated Ethene Concentration Trends Over Time



Appendix D2, Enva Shannon

MW4S - Chlorinated Ethane Concentration Trends Over Time



VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Feb-98	Aug-00	Jan-01	Aug-01	Nov-01	Apr-02	Apr-02	Jun-02	Sep-02	Jan-03	Apr-03	Jul-03	Sep-03	Jan-04
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	16	-	-	-	-	n/a	-	2	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	-	1	-	-	n/a	3	2	2	3	-	-	-	-
Tetrachloroethene	1	7.5	10	n/a	-	-	-	-	n/a	-	1	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	2	-	1	-	n/a	6	4	5	6	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	42	46	54	25	10	n/a	37	26	43	25	39	6	9	4
Chloromethane	1	nv	nv	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	148	-	-	-	-	n/a	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	-	4	5	5	3	n/a	8	4	7	6	-	-	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	6	-	-	n/a	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
p/m-Xylene	0.5	nv	10	-	-	nv	-	-	n/a	-	-	-	-	-	-	-	-
Napthalene	2	nv	1	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
1,2,4 Trimethylbenzene	-	nv	nv	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-
1,3,5 Trimethylbenzene	3	nv	nv	-	-	6	-	-	n/a	-	-	-	-	-	-	-	-
Total VOC Concentration				206	52	72	31	13	0	54	39	57	40	39	6	9	4

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed

VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Apr-04	Jul-04	Jul-04	Oct-04	Nov-04	Feb-05	May-05	May-05	Jul-05	Oct-05	Feb-06	Mar-06	May-06	Aug-06
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	-	-	-	-	12	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	3	-	-	2	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	9	-	-	5	-	-	-	-	-	-	2	-	-
1,1,1-Trichloroethane	1	nv	500	8	67	12	-	16	-	3	-	-	-	-	3	4	5
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	-	7	2	-	3	-	-	-	-	-	-	1	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	17	-	-	-	-	-	-	-	-	-	-	5
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Napthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4 Trimethylbenzene	-	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5 Trimethylbenzene	3	nv	nv	-	-	17	-	-	-	-	-	-	-	-	-	-	5
Total VOC Concentration				8	86	48	0	38	0	3	0	0	0	0	6	4	15

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed

VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Nov-06	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07	Apr-08	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	-	-	-	-	-	-	-	12	-	-	-	1	-	-
Trichloroethene	1	7.5	10	-	-	-	-	-	1	1	2	-	-	2	2	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	3	-	4	-	-	1	1	-	-	-	1	2	-	-
1,1,1-Trichloroethane	1	nv	500	4	-	6	2	-	4	5	7	4	3	4	5	-	-
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	-	-	-	-	-	-	2	4	2	-	3	3	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Napthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4 Trimethylbenzene	-	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5 Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				7	0	10	2	0	5	9	25	6	3	9	12	0	0

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed

VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Aug-10	Nov-10	Feb-11	May-11	Aug-11	Nov-11	Feb-12	May-12	Aug-12	Nov-12
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	-	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	7	-	-	3	-	3	-	3	-	-
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	-	-	-	-	-	20	10	-	21	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-
Napthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-
1,2,4 Trimethylbenzene	-	nv	nv	-	-	-	-	-	-	-	-	-	-
1,3,5 Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				7	0	0	3	0	23	10	3	21	0

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed

VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016 (µg/L)

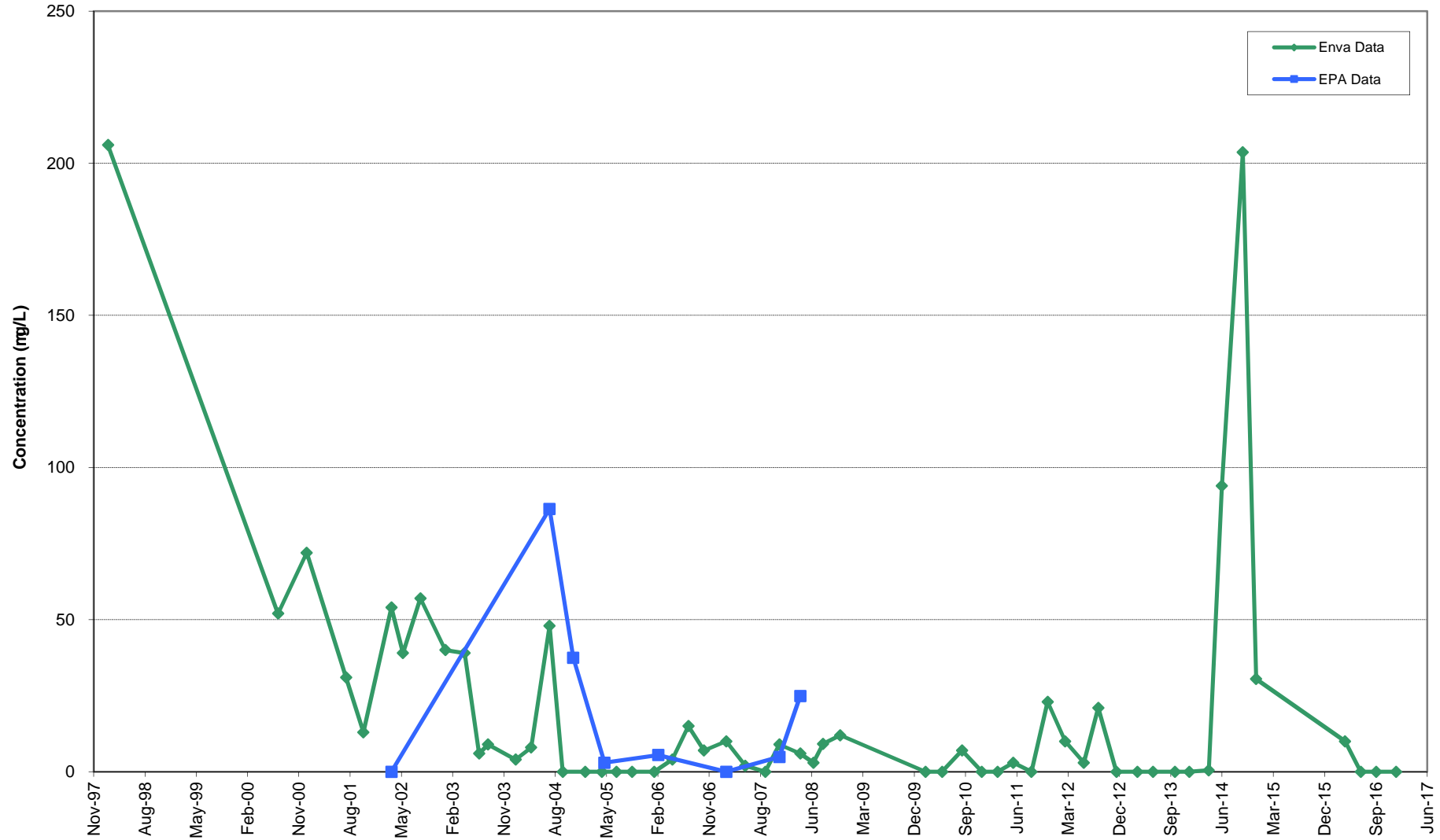
Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	1	36	65	4	4	-	-	-	-	-	-	-
p/m-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-
Napthalene	2	nv	1	-	-	-	-	-	20	58	10	10	7	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-
1,2,4 Trimethylbenzene	-	nv	nv	-	-	-	-	-	-	-	-	37	-	-	-	7	-	-	-
1,3,5 Trimethylbenzene	3	nv	nv	-	-	-	-	-	38	81	15	30	17	6	-	-	-	-	-
Total VOC Concentration				0	0	0	0	1	94	204	31	92	24	6	0	10	0	0	0

xx Indicates data from EPA sampling
 xx Exceeds Groundwater Regulations 2016
 xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit
 - result below MRL
 Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.
 2009 Data not available to URS
 n/a - not analysed

Appendix D3: Enva Shannon, Groundwater Monitoring Data February 1998 to December 2016

Total VOC Concentration - MW5
(Maximum Total VOC Concentration = 206 ug/L in Febraury 1998)



[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	€3,601,477	
4	Financial Provision for ELRA status	Submitted and agreed by EPA	
5	Financial Provision for ELRA - amount of cover	€3,601,477	
6	Financial Provision for ELRA - type	Other please specify	Insurance and bond
7	Financial provision for ELRA expiry date	Insurance cover (11.10.17) Bond (11.10.19)	
8	Closure plan initial agreement status	Closure plan submitted and agreed by EPA	
9	Closure plan review status	Review required and completed	
10	Financial Provision for Closure status	Submitted and agreed by EPA	
11	Financial Provision for Closure - amount of cover	2,277,414	
12	Financial Provision for Closure - type	bond	
13	Financial provision for Closure expiry date	11.10.19	

Environmental Management Programme/Continuous Improvement Programme template		Lic No:	W0041-01	Year	2016
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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	
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	Provide local bunding for bulk waste storage tanks (i.e tank farm bund).		Financial approval received works to be scheduled in 0 2017	Section Head	Installation of infrastructure
Materials Handling/Storage/Bunding	(2016) Improve yard integrity in areas for loading and unloading of waste	100	Improvements made to the incoming yard area. This included resealing of joints and repair of cracks.	Individual	Improved Environmental Management Practices
Materials Handling/Storage/Bunding	(2017) Improve yard integrity in areas for loading and unloading of waste	NEW		Individual	Improved Environmental Management Practices
Additional improvements	Continue to implement the agreed plan with a view to eliminating all pre-acquistion waste		Performance continues to be reported monthly to the Agency, approval is sought for any stock items on site for longer than 6 months. Progress has been made all oleum waste has been 90 disposed.	Section Head	Increased compliance with licence conditions
Materials Handling/Storage/Bunding	Introduce greater effluent balancing for the various effluent streams arising on site prior to discharge to sewer	NEW		Section Head	Improved Environmental Management Practices

Environmental Management Programme/Continuous Improvement Programme template				Lic No:	W0041-01	Year	2016
SELECT		SELECT		SELECT		SELECT	

Noise monitoring summary report	Lic No: W0041-01	Year	2016
--	------------------	------	------

- 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? Yes
[Noise Guidance note NG4](#)
- 3 Does your site have a noise reduction plan No
- 4 When was the noise reduction plan last updated? n/a
- 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)?
	30 min	N1		71	58			No	No	The main source of noise during the survey was from the rotajet c.15m from noise meter and from onsite traffic movement of forklift trucks. Other sources of noise recorded at this monitoring point were operational noise from sludge process building	Yes.
	30 min	N4		60	57			No	No	There was a humming noise from a pump located at the UV processing building and from water coming out of a hose into an an underground bund. Other sources of noise noted at this monitoring point include onsite traffic movements (trucks and forklifts) and the filling of bunds	Yes

								No	No	The main source of noise noted at this point was the movement of forklift trucks close to where the monitor was situated. Other sources of noise were from birds chirping and fans from a neighbouring facility. Traffic on the N19 could be clearly heard at this point.	Yes
	30 min	N5		62	50		86				
								No	No	The greatest source of noise at this location was vehicles entering and leaving the site. Other sources of noise at this point include airplanes flying overhead, birds chirping and a truck idling close to the entrance barrier	Yes
	30 min	N6		56	50		79				
								No	No	The main source of noise was from a truck pulled up unloading its cargo c.10m from noise meter at a neighbouring facility. Other sources of noise noted were from airplanes overhead, people talking close to meter and from traffic on the nearby N19 and throughout the industrial estate.	Yes
	30 min	N8		58	51		86				

*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?

nothing**

Site is located in industrial area, noise levels elevated at times due to external sources
Any additional comments? (less than 200 words)



Air | Noise | Water | Soil | Environmental Consultancy
www.axisenv.ie

Unit 5 Caherdavin Business Centre
Ennis Road
Limerick

ENVA
Shannon Environmental Services Limited
Smithstown Industrial Estate, Shannon, Co Clare


Environmental Noise Survey 2016

Waste Licence Number: W0041-01

Report Reference Number:	3790-16-03
Version:	1
Date of Issue:	29-06-2016
Report Compiled by:	Robert O Brien
Report Reviewed by:	Mark McGarry

Report Content

1.0	Executive Summary	.....	3
2.0	Introduction	.....	4
3.0	Methods Employed	.....	5
4.0	Monitoring Locations	.....	6
5.0	Noise Measurement Data	.....	7
6.0	Conclusions	.....	12

Report Date	29 th June 2016	Site Contact:	JP O'Keefe
Report Issued By	Mark Mc Garry	Version No:	1
Signed:		Client:	ENVA
Notes:			

1.0 Executive Summary

ENVA (Shannon Environmental Services) Limited is required as part of license W0041-01; Condition 7 and Schedule F to carry out a noise survey of the installation on an annual basis. AXIS environmental services were commissioned to complete the survey after proposal acknowledgment and acceptance by ENVA Shannon Environmental Department Representatives.

The purpose of the survey was to monitor daytime noise at predetermined locations to assess the sites compliance against licence conditions.

All operations at ENVA were running as normal throughout the survey. Sources of noise were recorded at each individual location which are summarised in the report.

The survey was carried out in strict accordance with the standard ISO 1996 Parts 1 – 3, Acoustics – description, measurement and assessment of environmental noise. Reference was also made to the EPA guidelines NG4 *“Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities”* January 2016.

Five points were monitored for the noise survey N1, N4, N5, N6 and N8. NM01 – NM06 are boundary monitoring points which are located within the confines of the site and are in close proximity to site activities in operation. N8 was located outside the boundary of the site close to other industries within Shannon Industrial Estate.

There was no tonal or impulsive noise observed at any locations for the duration of the assessment.

2.0 Introduction

ENVA (Shannon Environmental Services) Limited is required as part of license W0041-01; Condition 7 and Schedule F to carry out a noise survey of the installation on an annual basis. The purpose of the survey was to monitor day time noise at five predetermined locations to assess the sites compliance against licence conditions. The Agency and ENVA have agreed the monitoring points chosen to meet the requirements of the licence.

AXIS environmental services were commissioned to complete the survey after proposal acknowledgment and acceptance by ENVA Shannon Environmental Department Representatives

The licence W0041-01 outlines ENVA's requirements under Conditions 7 and Schedule F, which have been documented as follows:

2.1 Condition 7.3:

The licensee shall ensure that the activities shall be carried out in a manner such that emissions, noise or odours do not result in significant impairment of, or significant interference with, amenities or the environment beyond the facility boundary. There shall be no clearly audible tonal or impulsive component in the noise emission from the facility at the facility boundary.

2.2 Schedule F

Table 1: Summary of Noise Monitoring Requirements

<i>Location</i>	<i>Measurement</i>	<i>Frequency</i>
N1	30 minute day survey to include 1/3 rd octave measurements	Annually
N4	30 minute day survey to include 1/3 rd octave measurements	Annually
N5	30 minute day survey to include 1/3 rd octave measurements	Annually
N6	30 minute day survey to include 1/3 rd octave measurements	Annually
N8	30 minute day survey to include 1/3 rd octave measurements	Annually

3.0 Methods

Monitoring was carried out in strict accordance with ISO 1996 Parts 1 – 3, Description and Measurement of Environmental Noise. Reference was also made to the EPA guidelines NG4 "Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities" April 2016.

Table 2: Equipment Details

	Meter No 2	Meter No 3
Manufacturer	Cirrus Optimus Green	Cirrus Optimus Green
Model	CR:171B	CR:172B
Serial Number	G061082	G061817
Firmware	V2.3.1156	V2.4.1529
Calibrator	CR:515 Acoustic Calibrator	CR:515 Acoustic Calibrator
Microphone	B&K4180 - 1893453	B&K4180 - 1893453
Windshield Type	UA:237 90mm Foam Windshield	UA:237 90mm Foam Windshield
Calibration Date		
Noise Meter	20 th April 2016 – 2017	09 th October 2015 - 2016
Certificate Number	227467	232526
Calibrator	20 th April 2016 – 2017	October 2015 - 2016
Certificate Number	227465	227467
On site SLM calibration		
Prior to Survey	93.7	93.7
Calibration Offset	-1.79	-0.08
Post Survey	93.7	93.7
Frequency Weighting	A - Broadband	A - Broadband
Meter Response Time	Fast	Fast

4.0 Monitoring Locations

4.1 N1 Day Time Survey

N1 is located north of the site at the rear gate entrance to the facility close to the Drum Handling Area and Sludge Process Building. The main source of noise was from the rotajet c.15m from noise meter and from on-site traffic movement of forklift trucks.

Other sources of noise recorded at this monitoring point were operational noise from the Sludge process building.

4.2 N4 Day Time Survey

This monitoring point was located along the eastern boundary of the site in close proximity to large silos and the UV processing building. There was a humming noise from a pump located at the UV processing building and from water coming out of a hose into an underground bund.

Other sources of noise noted at this monitoring point include onsite traffic movements (trucks & forklifts) and the filling of bunds.

4.3 N5 Day Time Survey

This monitoring point was located along the western boundary of the site in front of bund AF. The main source of noise noted at this point was the movement of forklift trucks close to where the monitor was situated.

Other sources of noise were from birds chirping and fans from a neighbouring facility. Traffic on the N19 could be clearly heard at this point.

4.4 N6 Day Time Survey

This monitoring point was located on the southern boundary of the site at the main entrance car park. The greatest source of noise at this location was vehicles entering and leaving the site.

Other sources of noise at this point include airplanes flying overhead, birds chirping and a truck idling close to entrance barrier.

4.5 N8 Day Time Survey

This monitoring point was located outside the boundary of ENVA in the car park north of the site. The main source of noise was from a truck pulled up unloading it's cargo c.10m from noise meter at a neighbouring facility.

Other sources of noise noted were from airplanes overhead, people talking close to meter and from traffic on the nearby N19 and throughout the industrial estate.

4 Summary of Noise Measurements

Noise Monitoring Location: N1 (Boundary Monitoring Point)					
Period:	Time	Measured Noise Levels (dB re. 2 x 10 ⁻⁵ Pa)			Comments
		L _{Aeq}	L _{AFMAX}	L _{A90}	
Daytime:	10:28	71	99	58	The main source of noise was from the rotajet c.15m from noise meter and from on-site traffic movement of forklift trucks. Other sources of noise recorded at this monitoring point were operational noise from the Sludge process building.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		71	99	58	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2016.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	15	-	-		
Wind Speed (m/s)	1.5-2	-	-		
Wind Direction:	WNW	-	-		
Precipitation:	0.1-1.2	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location therefore limits would not apply					

Noise Monitoring Location: N4 (Boundary Monitoring Point)					
Period:	Time	Measured Noise Levels (dB re. 2 x 10 ⁻⁵ Pa)			Comments
		L _{Aeq}	L _{AFMAX}	L _{A90}	
Daytime:	10:57	60	80	57	There was a humming noise from a pump located at the UV processing building and from water coming out of a hose into an underground bund. Other sources of noise noted at this monitoring point include onsite traffic movements (trucks & forklifts) and the filling of bunds.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		60	80	57	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2016.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	15	-	-		
Wind Speed (m/s)	1.5-2	-	-		
Wind Direction:	WNW	-	-		
Precipitation:	0.1-1.2	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location therefore limits would not apply					

Noise Monitoring Location:					
N5 (Boundary Monitoring Point)					
Period:	Time	Measured Noise Levels (dB re. 2 x 10 ⁻⁵ Pa)			Comments
		L _{Aeq}	L _{AFMAX}	L _{A90}	
Daytime:	10:23	62	86	50	The main source of noise noted at this point was the movement of forklift trucks close to where the monitor was situated. Other sources of noise were from birds chirping and fans from a neighbouring facility. Traffic on the N19 could be clearly heard at this point.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		62	92	51	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2016.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	15	-	-		
Wind Speed (m/s)	1.5-2	-	-		
Wind Direction:	WNW	-	-		
Precipitation:	0.1-1.2	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location therefore limits would not apply					

Noise Monitoring Location:					
N6 (Boundary Monitoring Point)					
Period:	Time	Measured Noise Levels (dB re. 2 x 10 ⁻⁵ Pa)			Comments
		L _{Aeq}	L _{AFMAX}	L _{A90}	
Daytime:	11:10	56	79	50	The greatest source of noise at this location was vehicles entering and leaving the site. Other sources of noise at this point include airplanes flying overhead, birds chirping and a truck idling close to entrance barrier.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		56	79	50	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	15	-	-		
Wind Speed (m/s)	1.5-2	-	-		
Wind Direction:	WNW	-	-		
Precipitation:	0.1-1.2	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location therefore limits would not apply					

Noise Monitoring Location:					
N8 (Off Site Monitoring Point)					
Period:	Time	Measured Noise Levels (dB re. 2 x 10 ⁻⁵ Pa)			Comments
		L _{Aeq}	L _{AFMAX}	L _{A90}	
Daytime:	11:51	58	86	51	The main source of noise was from a truck pulled up unloading its cargo c.10m from noise meter at a neighbouring facility. Other sources of noise noted were from airplanes overhead, people talking close to meter and from traffic on the nearby N19 and throughout the industrial estate
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		58	86	51	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2012.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	15	-	-		
Wind Speed (m/s)	1.5-2	-	-		
Wind Direction:	WNW	-	-		
Precipitation:	0.1-1.2	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location therefore limits would not apply					

6.0 Conclusions

Five locations were monitored for broadband and 1/3rd Octave frequency as part of this environmental noise survey at ENVA Limited.

N1, N4, N5 and N6 are located within the boundary of the site and are not near any of the licence defined Noise Sensitive Locations. N8 is located outside the boundary walls in the adjacent car park. Each point was monitored for 30 minute periods during the day.

The site has not been issued noise limits but a requirement to ensure that noise from the site does not become a nuisance. The site was not considered to be creating a nuisance on the day.

There was no tonal noise determined at any monitoring location; therefore there are no requirements to apply penalties to the broadband measurement.

Appendix I Graphical Display of Raw Data

Tonal Noise:

The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one third octave bands:

- 15dB in low frequency one third octave bands (25Hz to 125Hz);
- 8dB in middle frequency bands (160Hz to 400Hz), and;
- 5dB in high frequency bands (500Hz to 10,000Hz)

This is the definition outlined by the EPA in the guidance note issued in 2012: NG4.

14/06/2016



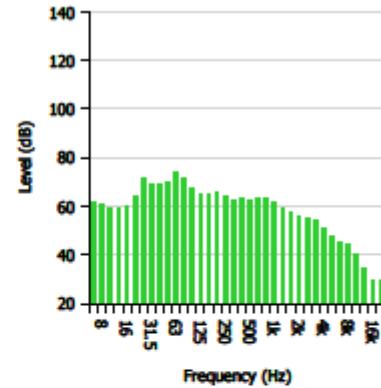
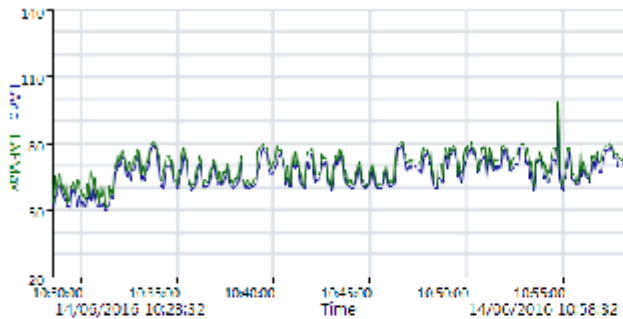
Measurement Summary Report

Name N1
Time 14/06/2016 10:28:32 **Person** Robbie O'Brien **Place** Enva Shannon **Project** Environmental Noise
Duration 00:30:00 **Instrument** G061082, CR:171B

Calibration

Before 14/06/2016 10:25 **Offset** -1.79 dB **After** 14/06/2016 11:09 **Offset** -1.82 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	70.9 dB	LAF1	78.5 dB
L _{AE}	103.5 dB	LAF5	76.9 dB
L _{AFMax}	98.6 dB	LAF10	75.4 dB
		LAF50	65.6 dB
		LAF90	58.3 dB
		LAF95	52.6 dB
		LAF99	49.8 dB



14/06/2016



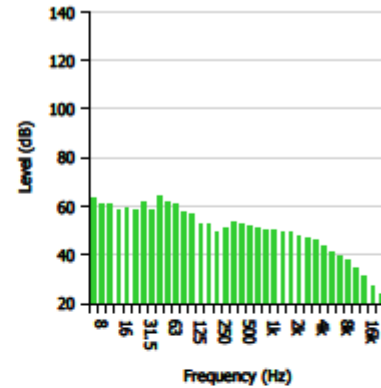
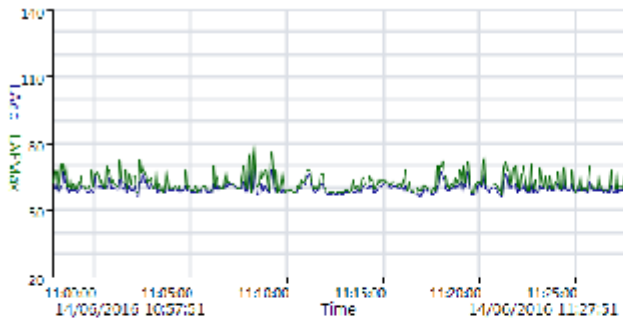
Measurement Summary Report

Name N4
Time 14/06/2016 10:57:51 **Person** **Place** **Project**
Duration 00:30:00 **Robbie O'Brien** **Enva Shannon** **Environmental Noise**
Instrument G061817, CR:172B

Calibration

Before 14/06/2016 09:48 **Offset** -0.08 dB **After** 14/06/2016 11:28 **Offset** -0.26 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	60.3 dB	LAF1	67.9 dB
L _{AE}	92.8 dB	LAF5	64.3 dB
L _{AFMax}	79.8 dB	LAF10	61.7 dB
		LAF50	58.6 dB
		LAF90	57.2 dB
		LAF95	56.8 dB
		LAF99	55.8 dB



14/06/2016



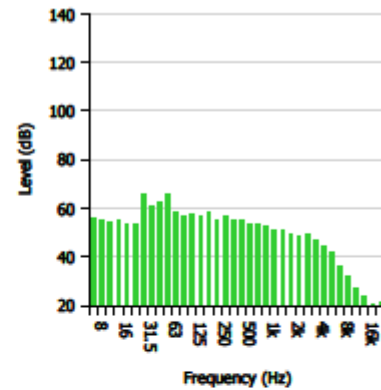
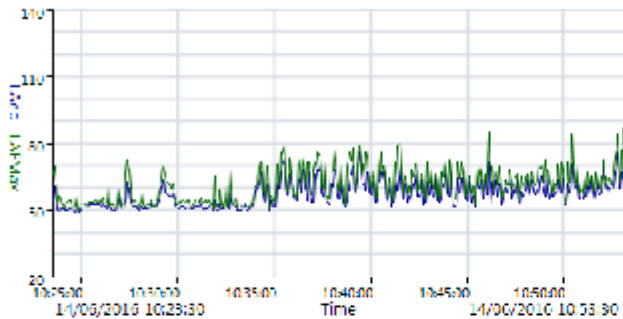
Measurement Summary Report

Name N5
Time 14/06/2016 10:23:30 **Person** **Place** **Project**
Duration 00:30:00 **Robbie O'Brien** **Enva Shannon** **Environmental Noise**
Instrument G061817, CR:172B

Calibration

Before 14/06/2016 09:48 **Offset** -0.08 dB **After** 14/06/2016 11:28 **Offset** -0.26 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	61.8 dB	LAF1	73.2 dB
L _{AE}	94.4 dB	LAF5	67.4 dB
L _{AFMax}	86.4 dB	LAF10	64.5 dB
		LAF50	54.4 dB
		LAF90	50.1 dB
		LAF95	49.6 dB
		LAF99	48.7 dB



14/06/2016



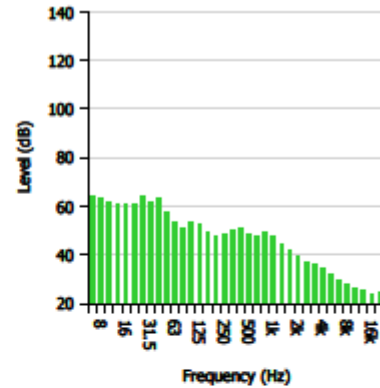
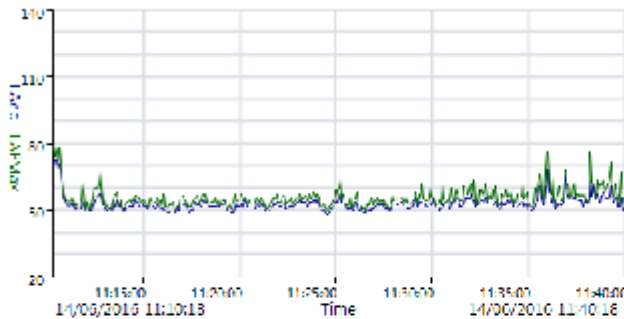
Measurement Summary Report

Name N6
Time 14/06/2016 11:10:18 **Person** Robbie O'Brien **Place** Enva Shannon **Project** Environmental Noise
Duration 00:30:00 **Instrument** G061082, CR:171B

Calibration

Before 14/06/2016 11:09 **Offset** -1.82 dB **After** 14/06/2016 12:22 **Offset** -1.70 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	56.3 dB	LAF1	68.6 dB
L _{AE}	88.8 dB	LAF5	57.5 dB
L _{AFMax}	78.5 dB	LAF10	55.4 dB
		LAF50	51.9 dB
		LAF90	49.5 dB
		LAF95	48.9 dB
		LAF99	48.1 dB



14/06/2016



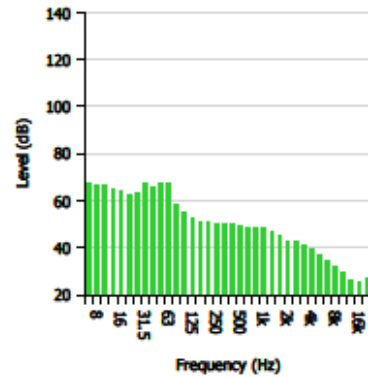
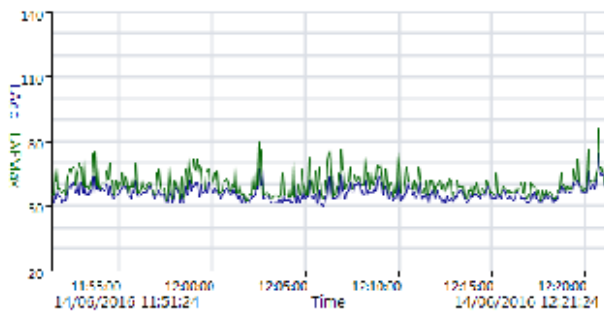
Measurement Summary Report

Name	N8				
Time	14/06/2016 11:51:24	Person	Robbie O'Brien	Place	Enva Shannon
Duration	00:30:00			Project	Environmental Noise
Instrument	G061082, CR:171B				

Calibration

Before	14/06/2016 11:09	Offset	-1.82 dB	After	14/06/2016 12:22	Offset	-1.70 dB
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Basic Values		Statistical Levels (Ln)	
L _{Aeq}	57.6 dB	LAF1	66.2 dB
L _{AE}	90.1 dB	LAF5	61.0 dB
L _{AFMax}	85.8 dB	LAF10	59.1 dB
		LAF50	54.5 dB
		LAF90	51.2 dB
		LAF95	50.6 dB
		LAF99	49.6 dB



MC8D30100000187

Cirrus Research NoiseTools

ReportId



Page 1 of 1

Appendix II Calibration Certificates

Email: sales@cirrusresearch.co.uk

Certificate of Calibration



Cirrus
Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer: Cirrus Research plc
 Instrument Type: CR-171B
 Description: Sound Level Meter
 Serial Number: G061082

Calibration Procedure

The instrument detailed above has been calibrated to the publish test and calibration data as detailed in the instrument hand book, using the techniques recommended in the latest revisions of the International Standards IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2000, IEC 61260:1995, IEC 60942:1997, IEC 61252:1993, ANSE S1.4-1983, ANSI S1.11-1986 and ANSI S1.43-1997 where applicable.
 Sound Level Meters: All Calibration procedures were carried out by substituting the microphone capsule with a suitable electrical signal, apart from the final acoustic calibration.

Calibration Traceability

The equipment detailed above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards (A.0.6). The standards are:

Microphone Type	B&K 4192	Serial Number	1920791	Calibration Ref.	S6450
Microphone Type	B&K 4220	Serial Number	613843	Calibration Ref.	S6388

Calibrated by: *T.A. Goodall*

Calibration Date: 20 April 2016
 Calibration Certificate Number: 257309

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Brillington Road, Hammanby, North Yorkshire, YO14 0PH
 Telephone: +44 (0) 1723 891635 Fax: +44 (0) 1723 891742
 Email: sales@cirrusresearch.co.uk

Certificate of Calibration



Certificate Number: **105476**
Date of issue: **20 April 2016**

Microphone Capsule

Manufacturer: **Cirrus Research plc** Serial Number: **205268A**
Model Number: **MK224**

Calibration Procedure

The microphone capsule detailed above has been calibrated to the published data as described in the operating manual of the associated sound level meter (where applicable).

The frequency response was measured using an electrostatic actuator in accordance with BS EN 61094-6:2005 with the free-field response derived via standard correction data traceable to the National Physical Laboratory, Middlesex, UK.

The absolute sensitivity at 1 kHz was measured using an acoustic calibrator conforming to IEC 60942:2003 Class 1.

Date of Calibration: **14 April 2016**
Open Circuit: **48.3 mV/Pa**
Sensitivity at 1 kHz: **-26.3 dB rel 1 V/Pa**

Environmental Conditions

Pressure: **100.30 kPa**
Temperature: **22.0 °C**
Humidity: **35.0 %**

Calibration Laboratory

Laboratory: **Cirrus Research plc**
Acoustic House, Bridlington Road, Hunmanby
North Yorkshire, YO14 0PH, United Kingdom

Test Engineer: **Debra Swales**

Cirrus Research plc, Acoustic House, Bridlington Road
Hunmanby, North Yorkshire, YO14 0PH, United Kingdom
Telephone: 0945 230 2434 **fax:** +44 (0)20 87655
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk
UK Registration No. 95768



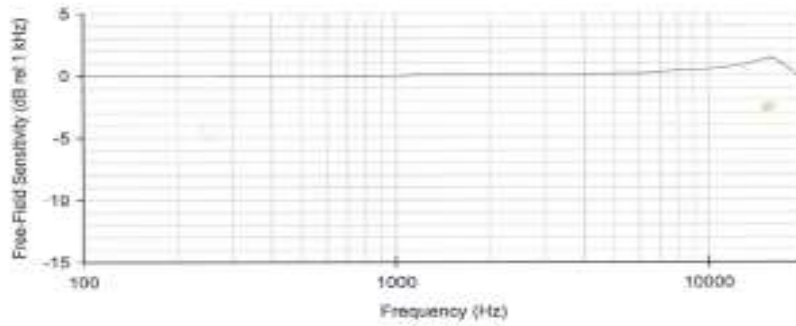
Page 1 of 2

FM 531001

EM 552104

Free-Field Frequency Response

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator to Free-Field Correction (dB)
100	-0.05	0.08
125	-0.01	0.13
160	-0.06	0.11
200	-0.01	0.17
250	0.00	0.19
315	-0.05	0.14
400	-0.03	0.17
500	-0.07	0.13
630	-0.08	0.09
800	-0.08	0.03
1 000	0.00	0.02
1 250	0.12	0.05
1 600	0.15	-0.04
2 000	0.07	-0.21
2 500	0.15	-0.25
3 150	0.07	-0.59
4 000	0.07	-0.90
5 000	0.18	-1.31
6 300	0.17	-2.00
8 000	0.40	-2.82
10 000	0.50	-4.22
12 500	0.76	-5.43
16 000	1.44	-6.64
20 000	-0.14	-9.59



Certificate of Calibration



Equipment Details

Instrument Manufacturer: Cirrus Research plc
Instrument Type: CR-511E
Description: Acoustic Calibrator
Serial Number: 41373

Calibration Procedure

The acoustic calibrator detailed above has been calibrated to the published data as described in the operating manual. The procedures and techniques used to follow the recommendations of the IEC standard Electroacoustics - Sound Calibrators IEC 60942:2003, IEC 60942:1997, BS EN 60942:1998 and BS EN 60942:2003 where applicable. The calibrator's main output is 94.00 dB (1 Pa) and this was set within the 0.01 dB resolution of the test system, i.e. one hundredth of a decibel. Numbers in (parenthesis) refer to the paragraph in IEC 60942.

Calibration Traceability

The calibrator above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards (A.0.6). The standards are:

Microphone Type	B&K 4192	Serial Number	1920791	Calibration Ref.	S6450
Pistonphone Type	B&K 4220	Serial Number	613843	Calibration Ref.	S6388

Calibration Climate Conditions

The climatic test conditions were all maintained within the permitted limits of IEC 60942:1997.

Temperature	(B.3.2)	Permitted band	15°C to 25°C
Humidity	(B.3.2)	Permitted band	30% to 90% RH
Static Pressure	(B.3.2)	Permitted band	85 kPa to 105 kPa
Ambient Noise Level	(B.3.3.6)	Max permitted level	64 dB(Z)

Measurement Results

The figures below are the Calibration Laboratory test limits for this model calibrator and have a smaller tolerance than those permitted in IEC 60942.

94 dB Output	94.00 dB	Permitted band	93.95 to 94.05 dB
104 dB Output	104.00 dB	Permitted band	103.80 to 104.30 dB
Frequency	998.6 Hz	Permitted band	990 to 1010 Hz

Uncertainty

With an uncertainty coefficient of k=2, i.e. a 95% confidence level, the uncertainty of each measure is

94 dB Output	± 0.13 dB	104 dB Output	± 0.14 dB
Frequency	± 0.1 Hz	Level Stability	± 0.04 dB

Calibrated by

T.A. Goodill

Calibration Date

20 April 2016

Calibration Certificate Number

237308

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hammanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742

Certificate of Calibration



Cirrus
Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer:	Cirrus Research plc		
Instrument Type:	CR172B		
Description:	Sound Level Meter		
Serial Number:	GD61817		

Calibration Procedure

The instrument detailed above has been calibrated to the published test and calibration data as detailed in the instrument hand book, using the techniques recommended in the latest revisions of the International Standards IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2001, IEC 61260:1995, IEC 60942:1997, IEC 61252:1993, ANSI S1.4-1987, ANSI S1.11-1986 and ANSI S1.43-1997 where applicable.

Sound Level Meters: All Calibration procedures were carried out by substituting the microphone capsule with a suitable electrical signal, apart from the final acoustic calibration.

Calibration Traceability

The equipment detailed above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards (A3.0.6). The standards are:

Microphone Type:	B&K 4192	Serial Number:	1920791	Calibration Ref.:	S6450
Microphone Type:	B&K 4220	Serial Number:	613843	Calibration Ref.:	S6388

Calibrated by

Calibration Date

Calibration Certificate Number



09 October 2015

232526

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Brillington Road, Harrogate, North Yorkshire, YO14 0PH
 Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
 Email: sales@cirrusresearch.co.uk

Certificate of Calibration

Certificate Number: **102903**

Date of Issue: **09 October 2015**



**Cirrus
Research plc**
Dedicated to noise measurement

Microphone Capsule

Manufacturer: **Cirrus Research plc** Serial Number: **203029A**
 Model Number: **MK224**

Calibration Procedure

The microphone capsule detailed above has been calibrated to the published data as described in the operating manual of the associated sound level meter (where applicable).

The frequency response was measured using an electrostatic actuator in accordance with BS EN 61094-6:2005 with the free-field response derived via standard correction data traceable to the National Physical Laboratory, Middlesex, UK.

The absolute sensitivity at 1 kHz was measured using an acoustic calibrator conforming to IEC 60942:2003 Class 1.

Date of Calibration: **08 October 2015**
 Open Circuit: **43.2 mV/Pa**
 Sensitivity at 1 kHz: **-27.3 dB rel 1 V/Pa**

Environmental Conditions

Pressure: **101.10 kPa**
 Temperature: **21.0 °C**
 Humidity: **38.0 %**

Calibration Laboratory

Laboratory: **Cirrus Research plc**
 Acoustic House, Bridlington Road, Hunmanby
 North Yorkshire, YO14 0PH, United Kingdom

Test Engineer: **Debra Swatwell**



Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH, United Kingdom

Telephone: 0945 230 240 Fax: +44 1903 69555

Email: sales@cirrusresearch.co.uk

Web: www.cirrusresearch.co.uk

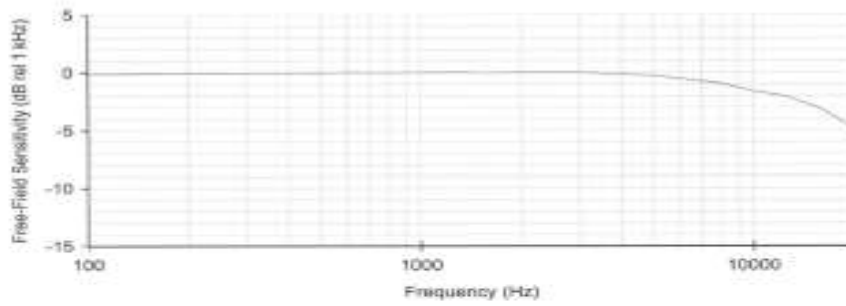
UK Registration No: 96790



Page 1 of 2 FM 531001 EMS 552104

Free-Field Frequency Response

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator to Free-Field Correction (dB)
100	-0.12	-2.10
125	-0.13	-1.41
160	-0.10	-0.88
200	-0.04	-0.52
250	-0.04	-0.33
315	-0.06	-0.25
400	-0.03	-0.12
500	-0.04	-0.08
630	0.02	0.01
800	-0.03	-0.05
1 000	0.00	-0.01
1 250	0.04	-0.04
1 600	-0.02	-0.21
2 000	0.03	-0.28
2 500	0.08	-0.45
3 150	0.00	-0.76
4 000	-0.14	-1.31
5 000	-0.28	-2.02
6 300	-0.61	-3.11
8 000	-0.94	-4.62
10 000	-1.62	-6.78
12 500	-2.07	-8.77
16 000	-3.16	-11.25
20 000	-4.75	-14.96



Certificate of Calibration



Certificate Number: **102905**
Date of Issue: **09 October 2015**

Acoustic Calibrator

Manufacturer: **Cirrus Research plc** Serial Number: **59318**
Model Number: **CR-515**

Calibration Procedure

The sound calibrator detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC 60942:2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK:224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

Date of Calibration: **09 October 2015**

Calibration Results

Measurement	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
1	94.02	1000.0	0.39
2	94.00	1000.0	0.38
3	94.00	1000.0	0.39
Average	94.01	1000.0	0.39
Uncertainty	± 0.13	± 0.1	± 0.10

The reported uncertainties of measurement are expanded by a coverage factor of k=2, providing a 95% confidence level.

Cirrus Research plc, Acoustic House, Bedington Road,
Huddersfield, North Yorkshire, YO14 0PH, United Kingdom
Telephone: 0945 232 3454 **fax:** +44 1725 891655
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk
UK Registration No: 987960



Environmental Conditions

Pressure: 101.49 kPa
Temperature: 21.8 °C
Humidity: 48.1 %

Evidence of Pattern Approval

The manufacturer's product information indicates that this model of sound calibrator has been formally pattern approved to IEC 60942:2003 Annex A to Class 1. This has been confirmed with the Physikalisch-Technische Bundesanstalt (PTB).

Statement of Calibration

As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the Class 1 requirements of IEC 60942:2003.

Calibration Laboratory

Laboratory: Cirrus Research plc
Acoustic House, Bridlington Road, Hummerby
North Yorkshire, YO14 0PH, United Kingdom

Test Engineer: Mark Berry

M. BERRY

Appendix III Glossary of Terms

Note: Not all terms were used in the description of noise for this noise survey.

Ambient noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
Acoustic shadow	An acoustic shadow is an area through which sound waves fail to propagate, due to topographical obstructions or disruption of the waves via phenomena such as wind currents.
Background noise	The steady existing noise level present without contribution from any intermittent sources. The A weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T (LAF90,T).
Broadband	Sounds that contain energy distributed across a wide range of frequencies.
Competent person	Individual possessing a combination of technical knowledge, experience and skills as outlined in Section 2.0 and who can demonstrate both practical and theoretical competence.
Criterion noise level	The long term mean value of the noise level that must not be exceeded. This is generally stipulated in the IPPC/Waste licence and it may be applied to a noise source, a boundary of the activity or to an NSL in the vicinity of the site.
dB	Decibel. The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro pascals (20 uPa).
Facade level	The noise level at a location 1m from the facade of a building is described by the term facade level, and is subject to a higher noise level than one in an open area (free-field conditions) due to reflection effects.
Free field	These are conditions in which the radiation from sound sources is unaffected by the presence of any reflecting boundaries or the source itself. In practice, it is a field in which the effects of the boundaries are negligible over the frequency range of interest. In environmental noise, true free-field measurement conditions are seldom achieved and generally the microphone will be positioned at a height between 1.2 and 1.5 metres above ground level. To minimise the influence of reflections, measurements are generally made at least 3.5 metres from any reflecting surface other than the ground.
Hertz (Hz)	The unit of sound frequency in cycles per second.
Impulsive	A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background.
LAeq,T	This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T). The closer the LAeq value is to either the LAF10 or LAF90 value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources, such as traffic, on the background.
LAFN	The A-weighted noise level exceeded for N% of the sampling interval. Measured using the "Fast" time weighting.
LAr,T	The Rated Noise Level, equal to the LAeq during a specified time interval (T), plus specified adjustments for tonal character and/or impulsiveness of the sound.

LAF10	Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period. It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting.
LAF90	Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level. Measured using the "Fast" time weighting.
LAFmax	The maximum RMS A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.
LAFmin	The minimum RMS A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.
Lden	Is the 24 hour noise rating level determined by the averaging of the Lday with the Levening plus a 5 dB penalty and the Lnight plus a 10 dB penalty.
Low background noise	An area of low background noise is one where the existing background noise levels measured during an environmental noise survey are as follows: <ul style="list-style-type: none"> o Average Daytime Background Noise Level ≤ 40dB LAF90, and; o Average Evening Background Noise Level ≤ 35dB LAF90, and; o Average Night-time Background Noise Level ≤ 30dB LAF90.
Low frequency noise	LFN - noise which is dominated by frequency components towards the lower end of the frequency spectrum; see Appendix VI for a more detailed discussion.
LpA (dB)	An 'A-weighted decibel' K a measure of the overall level of sound across the audible frequency range (20Hz – 20kHz) with A-frequency weighting (i.e. 'A-weighting') to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Noise	Any sound, that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it, is known as noise.
Noise sensitive location	NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
Octave band	A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards.
Rating level	See LAr,T.
RMS	The RMS (Root Mean Square) value of a set of numbers is the square root of the average of their squares.
SEL (LAX or LAE)	Sound exposure level – a measure of the A-weighted sound energy used to describe noise events such as the passing of a train or aircraft; it is the A-weighted sound pressure level if occurring over a period of 1 second, would contain the same amount of A-weighted sound energy as the event.
Sound pressure level	Sound pressure refers to the fluctuations in air pressure caused by the passage of a sound wave. It may be expressed in terms of sound pressure level at a point.
Specific noise level	A component of the ambient noise which can be specifically identified by acoustical means and may be associated with a specific source. In BS 4142, there is a more precise definition as follows: 'the equivalent continuous A-

weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval (LAeq, T)'.

Time weighting

One of the averaging times (Fast, Slow or Impulse) used for the measurement of RMS sound pressure level in sound level meters.

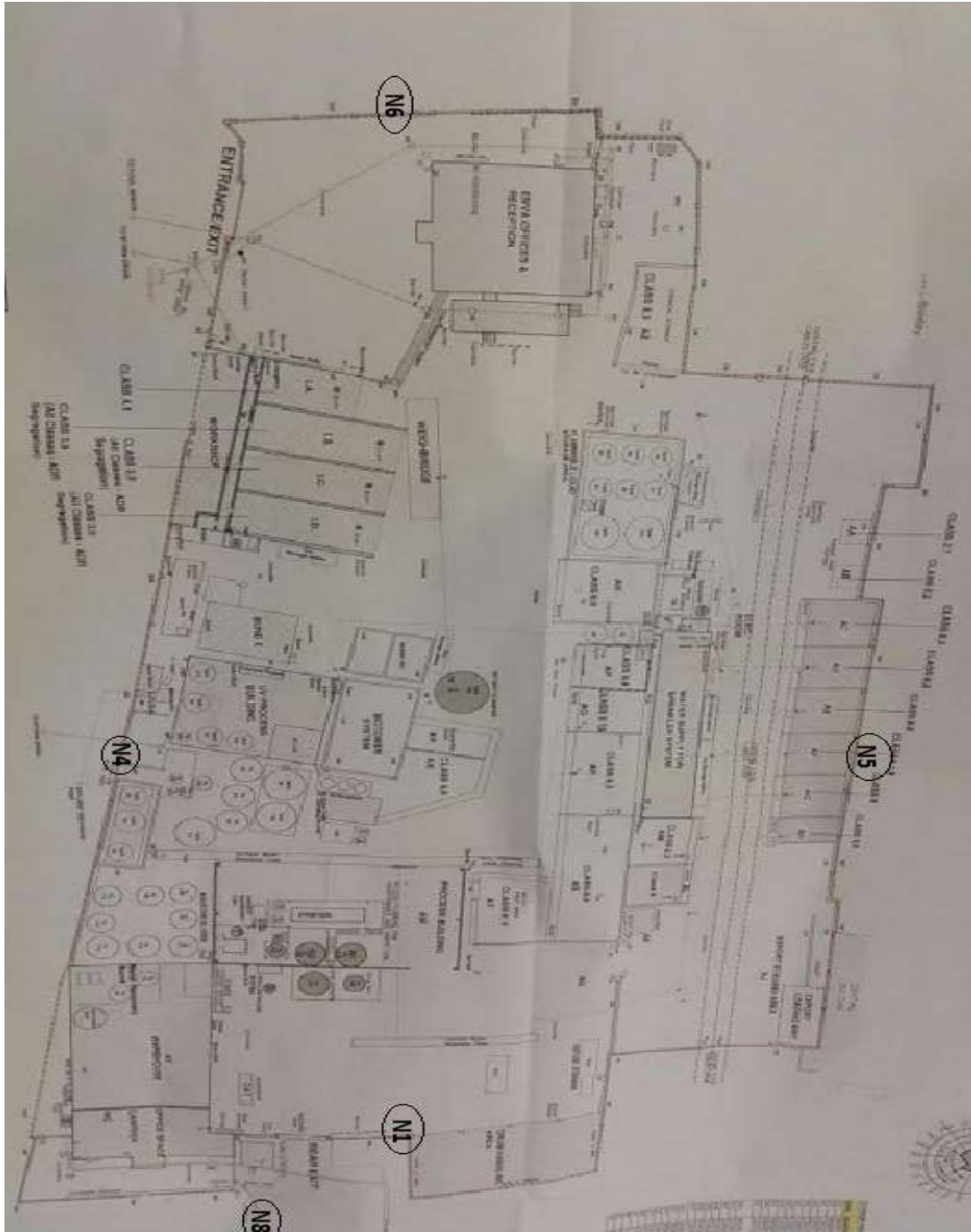
Tonal

Sounds which cover a range of only a few Hz which contains a clearly audible tone, i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.

1/3 octave analysis

Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one-third of an octave each.

Appendix IV Monitoring Point Location Map



Resource Usage/Energy efficiency summary

Lic No:

W0041-01

Year

2016

Additional information

- 1 When did the site carry out the most recent energy efficiency audit? Please list the recommendations in table 3 below
- 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
- 3 Where Fuel Oil is used in boilers on site is the sulphur content compliant with licence conditions? Please state percentage in additional information

Feb-08	
No	
No	not applicable

Energy Use	Previous year	Current year	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*
Total Energy Used (MWHrs)	617.03	658.534		
Total Energy Generated (MWHrs)				
Total Renewable Energy Generated (MWHrs)				
Electricity Consumption (MWHrs)		658.534		
Fossil Fuels Consumption:				
Heavy Fuel Oil (m3)	8.948	14.078		
Light Fuel Oil (m3)				
Natural gas (m3)	2.344	2.424		
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

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*	Water Emissions	Water Consumption	Unaccounted for Water:
					Volume Discharged back to environment(m ³ /yr):	Volume used i.e not discharged to environment e.g. released as steam m3/yr	
Groundwater		26208				n/a	
Surface water						n/a	
Public supply	10751	9167				n/a	
Recycled water		1250				n/a	
Total		36625			35375	n/a	

* 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

	Total	Landfill	Incineration	Recycled	Other
Hazardous (Tonnes)					
Non-Hazardous (Tonnes)		1226.7		583.5	

Resource Usage/Energy efficiency summary Lic No: W0041-01 Year 2016

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					



[Guidance to completing the PRTR workbook](#)

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2016
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1. FACILITY IDENTIFICATION

Parent Company Name	Enva Ireland Limited
Facility Name	Enva Ireland Limited (Shannon)
PRTR Identification Number	W0041
Licence Number	W0041-01

Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	Smithstown Industrial Estate
Address 2	Shannon
Address 3	
Address 4	
Country	Clare
Coordinates of Location	Ireland
River Basin District	-8.87627 52.7178
NACE Code	IEGBNISH
Main Economic Activity	3821
AER Returns Contact Name	Treatment and disposal of non-hazardous waste
AER Returns Contact Email Address	Thomas Kelleher
AER Returns Contact Position	Thomas.Kelleher@Enva.com
AER Returns Contact Telephone Number	HSE Co-Ordinator
AER Returns Contact Mobile Phone Number	061 707400
AER Returns Contact Fax Number	0857740714
Production Volume	061 707401
Production Volume Units	0.0
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	33
User Feedback/Comments	
Web Address	http://www.enva.com/

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
50.1	General

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#: W0041 | Facility Name : Erva Ireland Limited (Shannon) | Filename : AER 2016 final.xls | Return Year : 2016 |

31/03/2017 15:20

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT		METHOD			Please enter all quantities in this section in KGs			
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
06	Ammonia (NH3)	M	CRM	EN14791:2006		8.28915	0.0	0.0
08	Nitrogen oxides (NOx/NO2)	M	EN 14792:2005	EN14792:2006		0.6643	0.6643	0.0
11	Sulphur oxides (SOx/SO2)	M	CRM	TGN 21		1.5768	1.5768	0.0
80	Chlorine and inorganic compounds (as HCl)	M	EN 1911-1 to 3:2003	EN1911:2010		2.9492	2.9492	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

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

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

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

POLLUTANT		METHOD			Please enter all quantities in this section in KGs			
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
351	Total Organic Carbon (as C)	M	EN 13649:2001	EN13649:2014		4.3508	4.3508	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: Please enter summary data on the quantities of methane flared and / or utilised	Erva Ireland Limited (Shannon)				Facility Total Capacity m3 per hour
	T (Total) kg/Year	M/C/E	Method Code	Designation or Description	
Total estimated methane generation (as per site model)	0.0				N/A
Methane flared	0.0				0.0 (Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0 (Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0				N/A

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
06	Ammonia (NH3)	M	OTH	BS 2690: Part 7:1968/BS6068: Part 2, 11:1984 / APHA -4500-NH3-D	4863.315	4863.315	0.0	0.0
17	Arsenic and compounds (as As)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	1.014202	1.014202	0.0	0.0
18	Cadmium and compounds (as Cd)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	0.224101	0.224101	0.0	0.0
79	Chlorides (as Cl)	M	OTH	EPA Method 325.1 & 325.2	29231.05	29231.05	0.0	0.0
20	Copper and compounds (as Cu)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	105.2549	105.2549	0.0	0.0
82	Cyanides (as total CN)	M	OTH	AWWA/APHA 20th Edition 1999, Method 4500	5.672574	5.672574	0.0	0.0
83	Fluorides (as total F)	M	OTH	AWWA/APHA 20th Edition 1999, Method 4500 F	124.8993	124.8993	0.0	0.0
23	Lead and compounds (as Pb)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	2.663166	2.663166	0.0	0.0
21	Mercury and compounds (as Hg)	M	OTH	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	0.002388	0.002388	0.0	0.0
22	Nickel and compounds (as Ni)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	7.975639	7.975639	0.0	0.0
71	Phenols (as total C)	M	OTH	By HPLC	2.852494	2.852494	0.0	0.0
13	Total phosphorus	M	OTH	AWWA 21st Edition 2005 4500-P	108.6362	108.6362	0.0	0.0
24	Zinc and compounds (as Zn)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	22.5131	22.5131	0.0	0.0
19	Chromium and compounds (as Cr)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	3.494986	3.494986	0.0	0.0

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

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

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
355	Aluminium	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	4.639085	4.639085	0.0	0.0
303	BOD	M	OTH	AWWA/APHA, 20th Ed., 1999 Method 5210B	22216.5	22216.5	0.0	0.0
356	Cobalt	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	1.147157	1.147157	0.0	0.0
306	COD	M	ALT	BS ISO 15705:2002	81814.91	81814.91	0.0	0.0
314	Fats, Oils and Greases	M	OTH	The determination of hydrocarbons oils in waters by solvent extraction, infra red absorption and gravimetry 1983, HMSO Standard methods for the examination of water and wastewater, 20th Edition, 1998	553.627	553.627	0.0	0.0
308	Detergents (as MBAS)	M	OTH	US EPA Method 6010B	23.8972	23.8972	0.0	0.0
357	Iron	M	OTH	HACH Lange Method 10020	130.7447	130.7447	0.0	0.0
327	Nitrate (as N)	M	OTH	Modified : US EPA Method	59.64847	59.64847	0.0	0.0
331	Organohalogens	M	OTH	8260b & 624	2.343733	2.343733	0.0	0.0

354	Silver	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	1.335216	1.335216	0.0	0.0
343	Sulphate	M	OTH	EPA Method 325.1 & 325.2	14314.88	14314.88	0.0	0.0
353	Sulphides	M	OTH	AWWA/APHA 20th Edition 1999, Method 4500B & C	12.38782	12.38782	0.0	0.0
240	Suspended Solids	M	ALT	BS EN 872:2005	2913.168	2913.168	0.0	0.0
358	Tin	M	OTH	Standard methods for the examination of water and wastewater, 16th Edition, alpha, Washington DC, USA. ISBN 0-87553-131-8	0.169475	0.169475	0.0	0.0

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR# : W0041 | Facility Name : Erva Ireland Limited (Shannon) | Filename : W0041 2016PRTR.xls | Return Year : 2016 |

31/03/2017 17:51

Please enter all quantities on this sheet in Tonnes

73

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility	Haz Waste : Address of Next Destination Facility	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used		Haz Waste : Name and Licence/Permit No of Recover/Disposer	Non Haz Waste: Address of Recover/Disposer		
To Other Countries	06 01 01	Yes	4.782	sulphuric acid and sulphurous acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 01	Yes	43.215	sulphuric acid and sulphurous acid	R5	M	Weighed	Abroad	Suez RR IWS Chemicals,Registration Number: 44454844000155	Rue Lavoiser ,CS60013,38801 Le Pont De Claix,"",France	Suez RR IWS Chemicals,Registration number 44454844000155,Rue Lavoiser CS60013,38801 Le Pont De Claix,"",",",France	Rue Lavoiser CS60013,38801 Le Pont De Claix,"",",",France
To Other Countries	06 01 02	Yes	10.246	hydrofluoric acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 03	Yes	0.11	hydrochloric acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 04	Yes	0.065	phosphoric and phosphorous acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 05	Yes	3.122	nitric acid and nitrous acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 06	Yes	48.627	other acids	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 02 03	Yes	0.64	ammonium hydroxide	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 02 04	Yes	35.957	sodium and potassium hydroxide	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 02 04	Yes	0.015	sodium and potassium hydroxide	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED200 8/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	06 02 05	Yes	27.101	other bases	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

To Other Countries	06 03 11	Yes	0.167 solid salts and solutions containing cyanides	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	06 04 04	Yes	0.142 wastes containing mercury	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	06 04 05	Yes	10.598 wastes containing other heavy metals	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	06 13 02	Yes	117.016 spent activated carbon (except 06 07 02)	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 01 03	Yes	0.322 organic halogenated solvents, washing liquids and mother liquors	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 01 04	Yes	0.101 other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis, , , , ,Belgium	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Zoning Industrial D ehein,B 4480 - Engis, , , , ,Belgium
To Other Countries	07 01 04	Yes	21.245 other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe , , , , ,Belgium	Geocycle S.A. ,38.152/BP	No 49 B-7181 ,Seneffe , , , , ,Belgium
To Other Countries	07 01 04	Yes	41.893 other organic solvents, washing liquids and mother liquors	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 02 04	Yes	5.611 other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 04 01	Yes	11.49 aqueous washing liquids and mother liquors	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 05 01	Yes	427.0504 aqueous washing liquids and mother liquors	D10	M	Weighed	Abroad	Sava Gmbh,14HRO03002	ostertweute 1,25541 brunsbuttel, , , , ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	ostertweute 1,25441 brunsbuttel, , , , ,Germany
To Other Countries	07 05 04	Yes	0.353 other organic solvents, washing liquids and mother liquors	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 05 10	Yes	15.556 other filter cakes and spent absorbents	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 05 13	Yes	2.774 solid wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany

To Other Countries	08 01 11	Yes	46.34690909	waste paint and varnish containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 01 11	Yes	3.374	waste paint and varnish containing organic solvents or other dangerous substances	R3	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....,Belgium	D ehein,B 4480 - Engis,....,Belgium	Zoning Industrial D ehein,B 4480 - Engis,....,Belgium
To Other Countries	08 01 17	Yes	71.536	wastes from paint or varnish removal containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 01 21	Yes	0.347	waste paint or varnish remover	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 03 08	No	1.377	aqueous liquid waste containing ink	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 03 12	Yes	10.538	waste ink containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 04 09	Yes	29.852	waste adhesives and sealants containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 05 01	Yes	1.638	waste isocyanates	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	09 01 01	Yes	0.256	water-based developer and activator solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	09 01 02	Yes	0.107	water-based offset plate developer solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	09 01 04	Yes	2.365	fixed solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	09 01 07	No	0.212	photographic film and paper containing silver or silver compounds	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 05	Yes	17.754	pickling acids	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 06	Yes	19.356	acids not otherwise specified	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

To Other Countries	11 01 09	Yes	16.183 sludges and filter cakes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 09	Yes	90.02 sludges and filter cakes containing dangerous substances	D1	M	Weighed	Abroad	Remondis Industrie Service GmbH,E36236037	SAD Knapsack,Tonstrabe 2,50374 Erfstadt,Germany,Germany	Remondis Industriel Service GmbH,E36236037,SAD Knapsack,Tonstrabe 2,50374 Erfstadt,Germany,Germany	SAD Knapsack,Tonstrabe 2,50374 Erfstadt,Germany,Germany
To Other Countries	11 01 09	Yes	61.786 sludges and filter cakes containing dangerous substances	R4	M	Weighed	Abroad	WRC World Resources Company GmbH,SL83A0032	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany	WRC World Resources Company GmbH,SL83A0032,Industries trasse 7 ,04808 Wurzen ,Germany,Germany,Germany	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany
To Other Countries	11 01 10	No	129.162 sludges and filter cakes other than those mentioned in 11 01 09	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	11 01 10	No	6.275 sludges and filter cakes other than those mentioned in 11 01 09	R1	M	Weighed	Offsite in Ireland	ERAS ECO (Ormonde Organics),W0211-01	Foxhole, Youghal, Youghal, Cork,Ireland		
To Other Countries	11 01 11	Yes	12.671 aqueous rinsing liquids containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 98	Yes	11.489 other wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 04	No	5.339 non-ferrous metal dust and particles	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	12 01 05	No	1.49 plastics shavings and turnings	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	12 01 07	Yes	1.142 mineral-based machining oils free of halogens (except emulsions and solutions)	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 09	Yes	11.134 machining emulsions and solutions free of halogens	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 16	Yes	13.00466667 waste blasting material containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 21	No	4.683 spent grinding bodies and grinding materials other than those mentioned in 12 01 20	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	13 01 11	Yes	0.955 synthetic hydraulic oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,Ireland	Enva Ireland Ltd. ,W184-01 ,Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,Ireland
To Other Countries	13 01 13	Yes	15.736 other hydraulic oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Within the Country	13 01 13	Yes	0.121 other hydraulic oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	13 02 08	Yes	26.355 other engine, gear and lubricating oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
Within the Country	13 02 08	Yes	26.256 other engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	13 03 08	Yes	0.53 synthetic insulating and heat transmission oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	13 05 07	Yes	0.116 oily water from oil/water separators	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
Within the Country	13 07 01	Yes	2.483 fuel oil and diesel	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	13 07 03	Yes	0.009 other fuels (including mixtures)	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	13 08 02	Yes	2.365 other emulsions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	14 06 03	Yes	13.685 other solvents and solvent mixtures	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,Belgium	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	14 06 03	Yes	0.035 other solvents and solvent mixtures	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
Within the Country	15 01 10	Yes	4.003 packaging containing residues of or contaminated by dangerous substances	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	15 01 10	Yes	200.724 packaging containing residues of or contaminated by dangerous substances	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED200 8/2/AP- PU	Zoning Industrial D Eheine,B-4480 Engis, ,Belgium	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	15 01 10	Yes	11.595 packaging containing residues of or contaminated by dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	15 02 02	Yes	2.058 absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R4	M	Weighed	Abroad	Heraeus ,IV/HU43.3-0682/12-Gen28/02	Heraeusstrasse 12-14 ,63450 Hanau , ,Germany	Heraeus ,IV/HU43.3-0682/12-Gen28/02,Heraeusstrasse 12-14 ,63450 Hanau , ,Germany	Heraeusstrasse 12-14 ,63450 Hanau , ,Germany

To Other Countries	15 02 02	Yes	200.392	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	15 02 02	Yes	5.251	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPE200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....,Belgium	Recyfuel SA,D3200/61080/RGPE200 8/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,....,Belgium	Zoning Industrial D ehein,B 4480 - Engis,....,Belgium
Within the Country	15 02 02	Yes	0.207	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R1	M	Weighed	Offsite in Ireland	Envva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	15 02 03	No	16.822	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	16 01 14	Yes	1.314	antifreeze fluids containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
Within the Country	16 02 13	Yes	0.437	discarded equipment containing hazardous components (16) other than those mentioned in 16 02 09 to 16 02 12	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland
To Other Countries	16 03 04	No	0.617	inorganic wastes other than those mentioned in 16 03 03	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	16 03 05	Yes	6.153	organic wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	16 03 06	No	9.0	organic wastes other than those mentioned in 16 03 05	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
Within the Country	16 05 04	Yes	1.238	gases in pressure containers (including halons) containing dangerous substances	R4	M	Weighed	Offsite in Ireland	Envva Ireland Ltd ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Envva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	16 05 06	Yes	6.424	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPE200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....,Belgium	Recyfuel SA,D3200/61080/RGPE200 8/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,....,Belgium	Zoning Industrial D ehein,B 4480 - Engis,....,Belgium
To Other Countries	16 05 06	Yes	46.626	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Senefte ,....,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Senefte ,....,Belgium	No 49 B-7181 ,Senefte ,....,Belgium
To Other Countries	16 05 06	Yes	382.609	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
Within the Country	16 05 06	Yes	0.01	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R3	M	Weighed	Offsite in Ireland	Envva Ireland Ltd ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	16 05 07	Yes	12.82	discarded inorganic chemicals consisting of or containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	16 05 08	Yes	1.842	discarded organic chemicals consisting of or containing dangerous substances	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Senefte ,....,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Senefte ,....,Belgium	No 49 B-7181 ,Senefte ,....,Belgium

To Other Countries	16 05 08	Yes	discarded organic chemicals consisting of or containing dangerous substances	33.887	R4	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 05 09	No	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08	4.971	R4	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	17 02 04	Yes	glass, plastic and wood containing or contaminated with dangerous substances	4.975	R12	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W0196-01	John F. Kennedy Industrial Estate,John F. Kennedy Road,NAAS Road,Dublin 12,Ireland	Enva Ireland Ltd.,W0196-01,John F Kennedy Industrial Estate,John F Kennedy Road,Naas Road,Dublin 12,Ireland	John F Kennedy Industrial Estate,John F Kennedy Road,Naas Road,Dublin 12,Ireland
To Other Countries	18 01 10	Yes	2.912 amalgam waste from dental care		R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	19 02 06	No	sludges from physico/chemical treatment other than those mentioned in 19 02 05	1226.73	D5	M	Weighed	Offsite in Ireland	Bord na Mona Energy Limited,W0201-03	Upper,Carbury,Co. Kildare,Ireland		
To Other Countries	19 09 04	No	4.103 spent activated carbon		R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	19 09 05	No	0.05 saturated or spent ion exchange resins		R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	19 11 06	No	sludges from on-site effluent treatment other than those mentioned in 19 11 05	8.689	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	20 01 14	Yes	0.005 acids		R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 19	Yes	21.403 pesticides		R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	20 01 21	Yes	fluorescent tubes and other mercury-containing waste	0.026	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland	Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland
To Other Countries	20 01 27	Yes	paint, inks, adhesives and resins containing dangerous substances	21.794	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 29	Yes	detergents containing dangerous substances	7.319	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 31	Yes	11.977 cytotoxic and cytostatic medicines		R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 32	No	medicines other than those mentioned in 20 01 31	0.017	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		

Within the Country	20 01 33	Yes	0.267	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland	Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland
Within the Country	20 01 35	Yes	1.375	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metal Recycling Ltd. ,W113-03,Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland
Within the Country	07 05 01	Yes	29.0	aqueous washing liquids and mother liquors	D9	M	Weighed	Offsite in Ireland	Veolia Environmental Solutions Technical Services Ltd.,W0050- 02	Corrin,Fermoy,Co. Cork, ",Ireland	Veolia Environmental Solutions Technical Services Ltd.,W0050-02,Corrin,Fermoy,Co. Cork, ",Ireland	Corrin,Fermoy,Co. Cork, ",Ireland
Within the Country	07 05 03	Yes	22.18	organic halogenated solvents, washing liquids and mother liquors	D9	M	Weighed	Offsite in Ireland	Indaver Meath,W0167-03	Indaver Meath(MEI),Carranstown,Duleek,Meath,Ireland	Indaver Meath (Mei),W0167-03,Carranstown,Duleek,Meath,Co. Meath,Ireland	Carranstown,Duleek,Meath, Co. Meath,Ireland
To Other Countries	07 06 99	No	0.022	wastes not otherwise specified	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 07 01	Yes	1.463	aqueous washing liquids and mother liquors	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	07 07 12	No	5.713	sludges from on-site effluent treatment other than those mentioned in 07 07 11	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	08 01 13	Yes	1.403	sludges from paint or varnish containing organic solvents or other dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	08 04 10	No	0.037	waste adhesives and sealants other than those mentioned in 08 04 09	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	08 04 15	Yes	0.025	aqueous liquid waste containing adhesives or sealants containing organic solvents or other dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	09 01 05	Yes	0.016	bleach solutions and bleach fixer solutions	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	17 03 02	No	1.608	bituminous mixtures containing other than those mentioned in 17 03 01	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	17 05 03	Yes	2.661	soil and stones containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	19 08 14	No	1.073	sludges from other treatment of industrial waste water other than those mentioned in 19 08 13	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	19 12 11	Yes	1.04	other wastes (including mixtures of materials) from mechanical treatment of waste containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany

To Other Countries	20 01 19	Yes	0.299 pesticides	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....,Belgium	Recyfuel SA,D3200/61080/RGPED200 8/2/AP-PU.Zoning Industrial D ehein,B 4480 - Engis,....,Belgium	Zoning Industrial D ehein,B 4480 - Engis,....,Belgium
To Other Countries	20 01 21	Yes	0.011 fluorescent tubes and other mercury-containing waste	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 27	Yes	2.541 paint, inks, adhesives and resins containing dangerous substances	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED200 8/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....,Belgium	Recyfuel SA,D3200/61080/RGPED200 8/2/AP-PU.Zoning Industrial D ehein,B 4480 - Engis,....,Belgium	Zoning Industrial D ehein,B 4480 - Engis,....,Belgium
To Other Countries	16 05 06	Yes	0.01 laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	D10	M	Weighed	Abroad	Remondis Industrie Service GmbH,C7D000000	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,49565 Bramsche,Germany	Remondis Industrie Service GmbH,C7D000000,Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,49565 Bramsche,Germany	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany
Within the Country	16 06 04	No	0.044 alkaline batteries (except 16 06 03)	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Daingean Road ,Tullamore ,Co Offaly ,Ireland	Remondis Industrie Service GmbH,C7D000000,Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany
To Other Countries	16 07 09	Yes	1.069 wastes containing other dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 09 03	Yes	0.012 peroxides, for example hydrogen peroxide	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	14 06 03	Yes	97.34 other solvents and solvent mixtures	R2	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd. ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	15 01 10	Yes	0.057 packaging containing residues of or contaminated by dangerous substances	R3	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,....,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Seneffe ,....,Belgium	No 49 B-7181 ,Seneffe ,....,Belgium
To Other Countries	16 03 03	Yes	11.061 inorganic wastes containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 13	Yes	0.47 degreasing wastes containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 16	Yes	20.072 saturated or spent ion exchange resins	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 05 03	Yes	4.36 solid wastes from gas treatment	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 15	No	0.811 machining sludges other than those mentioned in 12 01 14	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Within the Country	12 01 20	Yes	0.009 spent grinding bodies and grinding materials containing dangerous substances	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly, Ireland	Cappincur Industrial Estate, Daingean Road, Tullamore, Co. Offaly, Ireland
To Other Countries	13 02 08	Yes	0.066 other engine, gear and lubricating oils	R2	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,Belgium	Geocycle S.A. ,38.152/BP, No 49 B-7181 ,Seneffe ,Belgium	No 49 B-7181 ,Seneffe ,Belgium
To Other Countries	13 02 08	Yes	0.127 other engine, gear and lubricating oils	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industriel D Ehein,B-4480 Engis, Belgium	Recyfuel SA,D3200/61080/RGPED/2008/2/AP, Zoning Industriel d'Ethein, 4480 ENGIS, Belgium, Belgium, Belgium	Zoning Industriel d'Ethein, 4480 ENGIS, Belgium, Belgium, Belgium
Within the Country	13 07 02	Yes	0.016 petrol	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Enva Ireland Ltd ,W184-01 ,Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
To Other Countries	06 01 01	Yes	0.4 sulphuric acid and sulphurous acid	D10	M	Weighed	Abroad	Remondis Industrie Service GmbH,CTD000000D10	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany	Remondis Industrie Service GmbH,CTD000000D10,Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany
To Other Countries	08 03 13	No	6.086 waste ink other than those mentioned in 03 12	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Lindenschmidt KG,471498089 ,Kreuztal ,Krombacher Str. 42-46 ,Westfalen ,Germany	
To Other Countries	15 01 01	No	3.225 paper and cardboard packaging	R1	M	Weighed	Abroad	ERAS ECO (Ormonde Organics),W0211-01	Zoning Industriel D Ehein,B-4480 Engis, Belgium	ERAS ECO (Ormonde Organics),W0211-01	
Within the Country	19 02 06	No	583.5 sludges from physico/chemical treatment other than those mentioned in 19 02 05	R3	M	Weighed	Offsite in Ireland	MSM Recycling Ltd.,W079-01	Foxhole, Youghal, Youghal, Co rk, Ireland	MSM Recycling Ltd.,W079-01	
Within the Country	17 04 05	No	10.28 iron and steel	R4	M	Weighed	Offsite in Ireland	Greenstar,W0082-03	41 Cookstown Industrial Estate, Tallaght, Dublin, 24, Ireland	Greenstar,W0082-03	
Within the Country	20 03 01	No	46.8 mixed municipal waste	D10	M	Weighed	Offsite in Ireland	Thomas O Neill Grain Merchants,WFP LK2012	Ballykeefe Townland, Dock Road, Limerick, " , Ireland	Thomas O Neill Grain Merchants, WFP LK2012	
Within the Country	15 01 03	No	93.02 wooden packaging	R12	M	Weighed	Offsite in Ireland	DGD Papers Limited,WFP LK2013 09C R1	Dereen, Castleconnell, Co. Limerick, " , Ireland	DGD Papers Limited, WFP LK2013 09C R1	
Within the Country	20 01 01	No	4.075 paper and cardboard	R3	M	Weighed	Offsite in Ireland	Leinster Environmental,WPT LH 1100 201	Bay M1 Raheen Business Park, Ballycummin, Raheen, Limerick, Ireland	Leinster Environmental, WPT LH 1100 201	
Within the Country	15 01 02	No	110.23 plastic packaging	R3	M	Weighed	Offsite in Ireland	Fischer Rohstoffe GMBH,A276140221	Park, Haggardstown, Dundalk, Ireland	Fischer Rohstoffe GMBH,A276140221	
To Other Countries	15 01 02	No	198.345 plastic packaging	R3	M	Weighed	Abroad	AM Waldeck 6,77885 Achern-Wagshurst, " , " , Germany	AM Waldeck 6,77885 Achern-Wagshurst, " , " , Germany		
Within the Country	16 05 04	Yes	0.015 gases in pressure containers (including halons) containing dangerous substances	R3	M	Weighed	Offsite in Ireland	Indaver Ireland,W0036-02	Tolka Quay Road, Dublin port, Dublin 1 ,n/a, Ireland	Indaver Ireland,W0036-02,Tolka Quay Road, Dublin Port, Dublin, 1, Ireland	Tolka Quay Road, Dublin Port, Dublin, 1, Ireland

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

[Link to previous years waste data](#)

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

[Link to Waste Guidance](#)

WASTE SUMMARY		Lic No:	W0041-01	Year	2016
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

Yes	34000 (request for a temporary 20% increase approved-30/9/17 LR04733)
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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	
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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	
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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)

Licensed annual tonnage limit for your site (total tonnes/annum)	EWC code	Source of waste accepted	Description of waste accepted Please enter an accurate and detailed description which applies to relevant EWC code	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 -
	European Waste Catalogue EWC codes		European Waste Catalogue EWC codes								This line not applicable
	020701	02- WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING	wastes from washing, cleaning and mechanical reduction of raw materials	0.00	3.84		fluctuations in market conditions		D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0	
	050105*	05- WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	Oil - refinery spillage	0.00	97.98		#DIV/0! fluctuations in market conditions		D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0	
	060101*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	sulphuric acid and sulphurous acid	1,544.67	725.22		53% fluctuations in market conditions		D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	99.602	
	060102*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	hydrochloric acid	22.18	30.39		-37% fluctuations in market conditions		D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	4.712	
	060103*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	hydrofluoric acid	0.11	8.41		-7545% fluctuations in market conditions		D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0.578	
	060104*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	phosphoric and phosphorous acid	353.23	428.13		-21% fluctuations in market conditions		D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	2.376	
	060105*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Nitric acid and nitrous acid	13.64	5.06		63% fluctuations in market conditions		R1-Use principally as a fuel or other means to generate energy	11.582	

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
060106*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Other acids	863.20	1204.48		fluctuations in market conditions -40%		D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	119.6657
060203*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Ammonium hydroxide	14.24	1.44		fluctuations in market conditions 90%		R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	12
060204*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Sodium and potassium hydroxide	648.64	778.33		fluctuations in market conditions -20%		D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	64.103
060205*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Other bases	91.69	78.9		fluctuations in market conditions 14%		D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	11.23
060311*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	solid salts and solutions containing cyanides	132.09	39.26		fluctuations in market conditions 70%		D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	4.235
060403*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	wastes containing arsenic	0.00	0.45	#DIV/0!	fluctuations in market conditions		R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	060404*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	wastes containing mercury	0.14	0		100% fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	060405*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	wastes containing other heavy metals	11.80	4.45		62% fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	1.206
	060502*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	sludges from on-site effluent treatment containing hazardous substances	0.00	0.85	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	061302*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	spent activated carbon (except 06 07 02)	107.46	81.62		24% fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	5

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	070103*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	organic halogenated solvents, washing liquids and mother liquors	0.30	1.03		fluctuations in market conditions -246%	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	070104*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	other organic solvents, washing liquids and mother liquors	83.05	86.4		fluctuations in market conditions -4%	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	8.264
	070110*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	other filter cakes and spent absorbents	0.00	1.63	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
	070204*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	other organic solvents, washing liquids and mother liquors	5.20	5.13		fluctuations in market conditions 1%	R1-Use principally as a fuel or other means to generate energy	0.119
	070207*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	halogenated still bottoms and reaction residues	0.00	1.16	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
	070213	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	waste plastic	0.00	0.23	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	070301*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Aqueous washing liquids and mother liquors	36.70	59.98		fluctuations in market conditions -63%	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	070401*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	aqueous washing liquids and mother liquors	0.00	11.5	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	070501*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Aqueous washing liquids and mother liquors	535.96	1981.1	-270%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	305.8896
	070503*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Organic halogenated solvents, washing liquids and mother liquors	22.18	0	100%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0
	070504*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	other organic solvents, washing liquids and mother liquors	0.51	713.8	-139861%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0.332
	070510*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Other filter cakes and spent absorbents	13.71	15.04	-10%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
	070512	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	sludges from on site effluent treatment other than those mentioned in 07 05 11	119.89	0	100%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0
	070513*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	solid wastes containing dangerous substances	3.20	3.38	-6%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.336
	070699	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	wastes not otherwise specified	0.02	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
	070601*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Aqueous washing liquids and mother liquors	0.00	9.64	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
	070701*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	aqueous washing liquids and mother liquors	1,544.90	1180.55	24%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0
	070704*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	other organic solvents, washing liquids and mother liquors	26.30	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	26.3
	070712	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	sludges from onsite effluent treatment other than those mentioned in 07 07 11	6.25	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.537

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
080111*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste paint and varnish containing organic solvents or other dangerous substances	1,023.74	851.06		fluctuations in market conditions 17%	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	64.35167	
080113*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	sludges from paint or varnish containing organic solvents or other dangerous substances	1.86	1.4		fluctuations in market conditions 25%	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	1.862	
080114	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	sludges from paint or varnish other than those mentioned in 08 01 13	0.00	4.71	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
080115*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances	0.00	3.18	#DIV/0!	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0	
080116	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15	0.00	19.24	#DIV/0!	fluctuations in market conditions	D10-Incineration on land	0	
080117*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	wastes from paint or varnish removal containing organic solvents or other dangerous substances	67.72	77.9		fluctuations in market conditions -15%	R1-Use principally as a fuel or other means to generate energy	0.493	
080119*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	aqueous suspensions containing paint or varnish containing organic solvents or other dangerous substances	130.46	628.82		fluctuations in market conditions -382%	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0	

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
080121*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste paint or varnish remover	0.35	0.86		-148%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
080201	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste coating powders	0.00	4.37	#DIV/0!		fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
080308*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	aqueous liquid waste containing ink	45.32	36.4		20%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	8.507
080312*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste ink containing dangerous substances	11.55	12.71		-10%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	4.194
080313	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste ink other than thos	8.29	6.75		19%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	2.622
080317*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste printing toner containing hazardous substances	0.13	0		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.127
080409	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste adhesives and sealants	30.41	19.14		37%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelleting, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	2.21

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
080410	08- WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste adhesives and sealants other than those mentioned in 08 04 09	0.04	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
080411*	08- WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	adhesive and sealant sludges containing organic solvents or other dangerous substances	0.00	0.28	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
080415*	08- WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	aqueous liquid waste containing adhesives or sealants containing organic solvents or other dangerous substances	208.48	230.17	-10%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0	
080501*	08- WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS	waste isocyanates	1.63	1.65	-1%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
090101*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	water-based developer and activator solutions	0.26	0.23	10%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0	
090102*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	water-based offset plate developer solutions	8.58	0.51	94%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	2.539	
090104*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	fixed solutions	106.18	64.48	39%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	12.844	
090105*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	bleach solutions and bleach fixer solutions	4.94	43.62	-783%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0	

WASTE SUMMARY			Lic No: W0041-01		Year 2016			
090107	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	photographic film and paper containing silver or silver compounds	0.14	0.26	-90%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
100104*	10- WASTES FROM THERMAL PROCESSES	oil fly ash and boiler dust	0.00	0.19	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
100122*	10- WASTES FROM THERMAL PROCESSES	aqueous sludges from boiler cleansing containing dangerous substances	0.00	12.34	#DIV/0!	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0
110105*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	pickling acids	425.18	70.45	83%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	86.29786
110106*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	acids not otherwise specified	21.13	125.54	-494%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	1.099
110107*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	pickling bases	0.00	0	#DIV/0!	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0
110108*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	phosphatising sludges	0.00	14.46	#DIV/0!	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0
110109*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	sludges and filter cakes containing dangerous substances	157.52	147.59	6%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	4.764
110110	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	sludges and filter cakes other than those mentioned in 11 01 09	128.57	183.86	-43%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	5.421
110111*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	aqueous rinsing liquids containing dangerous substances	244.02	120.2	51%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	14.072
110113*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	degreasing wastes containing dangerous substances	64.19	72.97	-14%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	1.955
110116*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	saturated or spent ion exchange resins	128.81	31.84	75%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	4
110198*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	other wastes containing dangerous substances	10.75	9.37	13%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0.982

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
110503*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	solid wastes from gas treatment	4.36	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
120104	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	non-ferrous metal dust and particles	4.74	6.63	-40%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.209	
120105	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	plastics shavings and turnings	1.49	0	100%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0	
120107*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	mineral-based machining oils free of halogens (except emulsions and solutions)	1.06	0.13	88%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0	
120109*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	machining emulsions and solutions free of halogens	30.44	23.39	23%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	3.792	
120114*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	machining sludges containing dangerous substances	0.00	4.32	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
120115	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	machining sludges other than those mentioned in 12 01 14	0.51	0.3	42%	fluctuations in market conditions	R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)	0	
120116*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	waste blasting material containing dangerous substances	1.72	96.26	-5506%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.379	
120117	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	waste blasting material other than those mentioned in 12 01 16	0.00	3.2	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0	
120120*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	spent grinding bodies and grinding materials containing hazardous substances	0.01	0	100%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0	

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	120121	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	spent grinding bodies and grinding materials other than those mentioned in 12 01 20	4.40	3.85		fluctuations in market conditions 13%	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	120301	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	aqueous washing liquids	0.00	4.4	#DIV/0!	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0
	130109*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	mineral-based chlorinated hydraulic oils	0.00	1.67	#DIV/0!	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0
	130110*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	mineral based non-chlorinated hydraulic oils	0.00	0	#DIV/0!	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	0
	130111*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	synthetic hydraulic oils	0.96	0.45		fluctuations in market conditions 53%	R9-Oil re-refining or other reuses of oil	0
	130113*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	other hydraulic oils	57.82	67.85		fluctuations in market conditions -17%	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	5.611
	130204*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	mineral-based chlorinated engine, gear and lubricating oils	0.00	0.02	#DIV/0!	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	0
	130206*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	synthetic engine, gear and lubricating oils	0.00	0.13	#DIV/0!	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	130208*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	other engine, gear and lubricating oils	98.47	137.8		fluctuations in market conditions -40%	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	17.014
	130307*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	mineral-based non-chlorinated insulating and heat transmission oils	0.00	2.04	#DIV/0!	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	0
	130308*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	synthetic insulating and heat transmission oils	0.47	2.82		fluctuations in market conditions -496%	R1-Use principally as a fuel or other means to generate energy	0.054
	130310*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	other insulating and heat transmission oils	12.27	10.77		fluctuations in market conditions 12%	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	1.782
	130507*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	oily water from oil/water separators	0.17	1.33		fluctuations in market conditions -701%	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0
	130701*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	fuel oil and diesel	2.46	10.47		fluctuations in market conditions -325%	R1-Use principally as a fuel or other means to generate energy	0.068
	130702*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	Petrol	0.02	0		fluctuations in market conditions 100%	R9-Oil re-refining or other reuses of oil	0
	130703*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	other fuels (including mixtures)	1.88	1.37		fluctuations in market conditions 27%	R1-Use principally as a fuel or other means to generate energy	1.871
	130802*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	other emulsions	2.37	0.55		fluctuations in market conditions 77%	R1-Use principally as a fuel or other means to generate energy	0
	140603*	14- WASTE ORGANIC SOLVENTS, REFRIGERANTS AND PROPELLANTS (except 07 and 08)	other solvents and solvent mixtures	122.53	12.69		fluctuations in market conditions 90%	R1-Use principally as a fuel or other means to generate energy	15.353
	150102	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	plastic packaging	51.30	27.44		fluctuations in market conditions 47%	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0.576

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
150110*	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	packaging containing residues of or contaminated by dangerous substances	727.30	488.17		33%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	84.878
150202*	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	226.33	197.4		13%	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	23.509
150203	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	19.06	32.5		-71%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	5.844
160114*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	antifreeze fluids containing dangerous substances	1.31	0		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
160115	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	antifreeze fluids other than those mentioned in 16 01 14	0.00	0.17	#DIV/0!		fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
160116	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	tanks for liquified gas	2.00	0		100%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0
160213*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	discarded equipment containing hazardous components (2) other than those mentioned in 16 02 09 to 16 02 12	0.00	1.23	#DIV/0!		fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0
160303*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	inorganic wastes containing dangerous substances	58.20	1.51		97%	fluctuations in market conditions	R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)	30.164
160304	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	inorganic wastes other than those mentioned in 16 03 03	1.70	6.28		-269%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0
160305*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	organic wastes containing dangerous substances	147.34	167.6		-14%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	55.96638
160306	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	organic wastes other than those mentioned in 16 03 05	9.00	0.27		97%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0

WASTE SUMMARY		Lic No: W0041-01		Year 2016				
160504*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	gases in pressure containers (including halons) containing dangerous substances	1.87	2	-7%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	1.135
160506	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	811.61	414.24	49%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	94.589
160507*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	discarded inorganic chemicals consisting of or containing dangerous substances	24.02	35.82	-49%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	1.104
160508*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	discarded organic chemicals consisting of or containing dangerous substances	81.37	116.91	-44%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	9.753
160509	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08	71.75	46.95	35%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	2.527
160601*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	lead batteries	0.00	0.12	#DIV/0!	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0
160604	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	alkaline batteries (except 16 06 03)	0.00	0.04	#DIV/0!	fluctuations in market conditions	R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)	0.022
160605	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	other batteries and accumulators	0.03	0.06	-94%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.031
160708*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	wastes containing oil	10.38	5.02	52%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0
160709*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	wastes containing other dangerous substances	134.45	153.51	-14%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	1.489
160901*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	permanganates, for example potassium permanganate	0.00	0.01	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
160903*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	peroxides, for example hydrogen peroxide	17.95	0	100%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0.2	
161001*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	aqueous liquid wastes containing dangerous substances	1,248.91	1122.52	10%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	6.41	
161002	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	aqueous liquid wastes other than those mentioned in 16 10 01	7,145.59	566.7	92%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0	
161101*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	carbon-based linings and refractories from metallurgical processes containing dangerous substances	6.69	12.62	-89%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures which are discarded by means D1 to D12	0	
170106*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances	0.39	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.388	
170204*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	glass, plastic and wood containing or contaminated with dangerous substances	6.99	7.36	-5%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	2.011	
170302	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	bituminous mixtures other than those mentioned in 17 03 01	3.13	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	1.517	
170503*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	soil and stones containing dangerous substances	3.94	6.13	-56%	fluctuations in market conditions	R5-Recycling/reclamation or other inorganic materials which includes soil celaning resulting in recovery of the soil and recycling of inorganic construction materials	1.274	
170603*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	other insulaton materials consisting of or containing hazardous materials	0.76	0	100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.76	

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	180107	18- WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)	chemicals other than those mentioned in 18 01 06	0.00	0.33	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	180109	18- WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)	medicines other than those mentioned in 18 01 08	0.00	0.15	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
	180110*	18- WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)	amalgam waste from dental care	2.14	3		fluctuations in market conditions -40%	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	190204	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	premixed wastes	9.45	0		fluctuations in market conditions 100%	R5-Recycling/reclamation or other inorganic materials which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials	9.453
	190703	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	landfill leachate other than those mentioned in 19 07 0	14,186.98	19487.48		fluctuations in market conditions -37%	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0
	190814	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	Sludges from other treatment of industrial waste water other than those mentioned in 19 08 13	1.07	0		fluctuations in market conditions 100%	R1-Use principally as a fuel or other means to generate energy	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
190904	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	spent activated carbon	4.10	25.24		-51%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
190905	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	saturated or spent ion exchange resins	0.00	8.96	#DIV/0!		fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
190906	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	solutions and sludges from regeneration of ion exchangers	0.00	21.82	#DIV/0!		fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0
191106	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	sludges from on-site effluent treatment other than those mentioned in 191105	8.69	16.98		-95%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
191211	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	other wastes (including mixture of materials) from mechanical treatment of waste containing hazardous substances	1.04	0		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
200114*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	acids	0.01	8.06		-161100%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2016	
	200115*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	alkalines	0.00	0	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre- processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0
	200119*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	pesticides	28.54	18.75	34%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre- processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	19.58
	200121*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	edible oil and fat	0.02	0.22	-948%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.01
	200125	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	edible oil and fat	0.00	1.51	#DIV/0!	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre- processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0

WASTE SUMMARY		Lic No: W0041-01		Year: 2016				
200127*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	paint, inks, adhesives and resins containing dangerous substances	22.67	22.06	3%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	1.112
200128	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	paint, inks, adhesives and resins other than those mentioned in 20 01 27	0.29	0.13	55%	fluctuations in market conditions	R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11)	0.29
200129*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	detergents containing dangerous substances	23.20	7.78	66%	fluctuations in market conditions	D9-Physico-Chemical treatment not specified elsewhere which results in final compounds or mixtures which are discarded by means D1 to D12	14.827
200130	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	detergents other than those mentioned in 20 01 29	0.00	0.39	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
200131*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	cytotoxic and cytostatic medicines	13.54	14.83	-10%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	3.761
200132	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	medicines other than those mentioned in 20 01 31	0.03	0.01	71%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.017
200133*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	0.23	0.79	-238%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0

WASTE SUMMARY	Lic No:	W0041-01	Year	2016
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Table 4 Environmental monitoring-landfill only [Landfill Manual-Monitoring Standards](#)

Was meteorological 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?

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

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	

Unlined area	Comments on liner type
SELECT UNIT	

