

Facility Information Summary

AER Reporting Year	2017
Licence Register Number	W0041-01
Name of site	Enva Ireland Ltd
Site Location	Smithstown Industrial Estate, Shanson, Co. Clare
NACE Code	E38
Class/Classes of Activity	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 in this schedule. 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. Class 11: Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this schedule. Class 12: Repackaging prior to submission to any activity referred to in a preceding paragraph of this schedule. 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. Class 2: Licensed waste recovery activities, in accordance with the fourth schedule of the Waste Management Act, 1996. Class 3: Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes). Class 4: Recycling or reclamation of metals and metal compounds. Class 5: Recycling or reclamation of other inorganic materials. Class 8: Oil refining or other re-uses of oil.
National Grid Reference (6E, 6 N)	140778.83E, 163241.64N

Site Performance: The company continues to demonstrate its commitment towards HSE management standards- the site maintains ISO14001 and OSHAS 18001. This ensures a standard approach is taken to managing activities from an environmental and safety aspect. Infrastructure/ EMP Progress: In 2017 a waste balancing tank was introduced to further control the discharge of effluent. Work was carried out on Tank Farm 3 which is now fully bonded. All effluent lines and manholes were tested and repaired where needed. An engineer was contracted to complete a Yard Integrity Report for the yard and remedial work has been prioritised as a result of this. Environmental Performance: Stock levels onsite continue to be analysed and monitored closely. There has been a further reduction on the disposal of legacy gas waste. Approval is sought for any stock items on site greater than 6 months. There were no complaints received in 2017. There were 2 CIs raised by the Agency during the reporting period. These are related to a breach in ELY and a Risk to groundwater from material storage and handling. Enva take the actions raised as a part of these CIs very seriously and are committed to addressing the issues raised. Remaining actions have been incorporated into the EMP as a part of this AER.

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.

<i>Thomas Kelleher</i>	2013/18
Signature	Date
Group/facility manager	
* Signed on behalf of Ann Marie O Connell	
(or nominated, suitably qualified and experienced deputy)	

AIR-summary template Lic No: W0041-01 Year 2017

Answer all questions and complete all tables where relevant

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

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

Yes	
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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	0.003	kg/hour	yes	EN 1911-1 to 3:2003	5.5626	
x2	Sulphur Oxides (Sox/So2)	Quarterly	300	100 % of values < ELV	0.00709	kg/hour	yes	TGN 21	14.6	
x2	Nitrogen oxides (NOx/NO2)	Quarterly	300	100 % of values < ELV	0.00121	kg/hour	yes	EN 14792:2005	1.3432	
x2	Ammonia (NH3)	Monthly	30	100 % of values < ELV	0.00709	kg/hour	yes	EN 14791:2005	11.461	
x2	Volumetric Flow	Monthly	4000	100 % of values < ELV	1797	Nm3/h	yes	EN 13284 - 1:2002	18675	
x2	Total Organic Carbon (as C)	Monthly	50	100 % of values < ELV	0.00598	kg/hour	yes	EN 13649:2001	9.9718	

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

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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)

5 Did continuous monitoring equipment experience downtime? If yes please record downtime in table A2 below

6 Do you have a proactive service agreement for each piece of continuous monitoring equipment?

7 Did your site experience any abatement system bypasses? If yes please detail them in table A3 below

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
	SELECT			SELECT	SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					

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

Table A3: Abatement system bypass reporting table [Bypass protocol](#)

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

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

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

Solvent use and management on site

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

Table A4: Solvent Management Plan Summary					
Total VOC Emission limit value		Solvent regulations Please refer to linked solvent regulations to complete table 5 and 6			
Reporting year	Total solvent input on site (kg)	Total VOC emissions to Air from entire site (direct and fugitive)	Total VOC emissions as % of solvent input	Total Emission Limit Value (ELV) in licence or any revision thereof	Compliance
					SELECT
					SELECT

Table A5: Solvent Mass Balance summary								
	(I) Inputs (kg)	(O) Outputs (kg)						
Solvent	(I) Inputs (kg)	Organic solvent emission in waste	Solvents lost in water (kg)	Collected waste solvent (kg)	Fugitive Organic Solvent (kg)	Solvent released in other ways e.g.	Solvents destroyed onsite through	Total emission of Solvent to air (kg)
Total								

1 Does your site have licensed emissions direct to surface water or direct to sewer? If yes please complete table W2 and W3 below for the current reporting year and answer further questions. If **you do not have** licenced emissions you only need to complete table W1 and or W2 for storm water analysis and visual inspections

2 Was it a requirement of your licence to carry out visual inspections on any surface water discharges or watercourses on or near your site? If yes please complete table W2 below summarising only any evidence of contamination noted during visual inspections

Yes	Additional Information
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)

3 Was there any result in breach of licence requirements? If yes please provide brief details in the comment section of Table W3 below

4 Was all monitoring carried out in accordance with EPA guidance and checklists [External/Internal Lab Quality Assessment of results checklist](#) for Quality of Aqueous Monitoring Data Reported to the EPA? If no please detail what areas require improvement in additional information box

No	Additional Information
Yes	

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

Emission reference no:	Emission released to	Parameter/ Substance ^{Note 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	24 hour	250	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	247.1	m3/day	yes	Flow Meter	Other (please specify)			
x1	Wastewater/Sewer	COD	composite	Daily	24 hour	3000	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	2990	mg/L	yes	Spectrophotometry (Colorimetry)	B.S. (British Standard)	BS ISO 15705:2002	71674.509	
x1	Wastewater/Sewer	BOD	composite	Monthly	Monthly	2000	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	753	mg/L	yes	Titration	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th Ed., 1999 Method 5210B	22235.9326	
x1	Wastewater/Sewer	Suspended Solids	composite	3/week		400	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	266	mg/L	yes	Gravimetric analysis	EN ISO	BS EN 872:2005	3782.09	
x1	Wastewater/Sewer	Sulphate	composite	Monthly	Monthly	1500	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1270	mg/L	yes	Spectrophotometry (Colorimetry)	US EPA	EPA Method 325.1 & 325.2	24106.0913	
x1	Wastewater/Sewer	Sulphides	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.398	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th Edition 1999, Method 4500B & C	5.9337	
x1	Wastewater/Sewer	Detergents (as MBAS)	composite	Monthly	Monthly	80	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	6.61	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th Edition 1999, Method 5540 C	86.408	
x1	Wastewater/Sewer	Phenols (as total C)	composite	Monthly	Monthly	3	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.22	mg/L	yes	HPLC	Other (please specify)	By HPLC	4.678	
x1	Wastewater/Sewer	Phosphorus	composite	3/week		50	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	9.8	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 4500-P	84.9889	
x1	Wastewater/Sewer	Ammonia (as N)	composite	3/week		250	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	180.5	mg/L	yes	Spectrophotometry (Colorimetry)	B.S. (British Standard)	BS 2690: Part 7:1968/BS6068: Part 2. 11:1984 / APHA -4500-	2277.9	
x1	Wastewater/Sewer	Nitrate (as N)	composite	Monthly	Monthly	100	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	16.4	mg/L	yes	Spectrophotometry (Colorimetry)	Manufacturer method	HACH Lange Method 10020	172.858	
x1	Wastewater/Sewer	Silver	composite	Monthly	Monthly	2	No pH value shall deviate from the specified range.	1.25	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	16.498	

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER)										Lic No:	W0041-01	Year	2017		
x1	Wastewater/Sewer	Aluminium	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	2.71	mg/L	yes	ICPMS (Inductively Coupled Plasma - Mass Spectrom	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th Edition 1999, Method 3125B	22.381	
x1	Wastewater/Sewer	Cobalt	composite	Monthly	Monthly	0.5	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.116	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	2.549	
x1	Wastewater/Sewer	Cadmium and compounds (as Cd)	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.05	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	1.289	
x1	Wastewater/Sewer	Chromium and compounds (as Cr)	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.16	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	2.217	
x1	Wastewater/Sewer	Copper and compounds (as Cu)	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	4.78	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	121.39	
x1	Wastewater/Sewer	Iron	composite	Monthly	Monthly	20	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	6.33	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	172.58674	
x1	Wastewater/Sewer	Mercury and compounds (as Hg)	composite	Monthly	Monthly	1	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.01	mg/L	yes	AFS	B.S. (British Standard)	BS EN 23506:2002, (BS 6068-2:74:2002) ISBN 0 580 38924 3	0.05974	
x1	Wastewater/Sewer	Nickel and compounds (as Ni)	composite	Monthly	Monthly	20	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1.71	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	22.6928	
x1	Wastewater/Sewer	Lead and compounds (as Pb)	composite	Monthly	Monthly	0.5	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.24	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	6.883	
x1	Wastewater/Sewer	Tin	composite	Monthly	Monthly	2	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.01	mg/L	yes	ICPMS (Inductively Coupled Plasma - Mass Spectrom	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th Edition 1999, Method 3125B	0.3635	
x1	Wastewater/Sewer	Zinc and compounds (as Zn)	composite	Monthly	Monthly	20	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	3.942	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	61.69	
x1	Wastewater/Sewer	Arsenic and compounds (as As)	composite	Monthly	Monthly	1	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.01	mg/L	yes	ICPMS (Inductively Coupled Plasma - Mass Spectrom	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th Edition 1999, Method 3125B	0.1808	
x1	Wastewater/Sewer	Cyanides (as total CN)	composite	Monthly	Monthly	0.5	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.05	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th Edition 1999, Method 4500	3.086	
x1	Wastewater/Sewer	Chlorides (as Cl)	composite	Monthly	Monthly	3000	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	2010	mg/L	yes	Spectrophotometry (Colorimetry)	US EPA	EPA Method 325.1 & 325.2	47687.71	
x1	Wastewater/Sewer	Fluorides (as total F)	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	4.9	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th Edition 1999, Method 4500 F	113.969	
x1	Wastewater/Sewer	Halogenated organic compounds (as AOX)	composite	Weekly		0.15	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.14	mg/L	yes	GCMS (Gas Chromatography Mass Spectroscopy)	US EPA	Modified : US EPA Method 8260b & 624	4.378	
x1	Wastewater/Sewer	Fats, Oils and Greases	composite	Monthly	Monthly	50	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	38.1	mg/L	yes	IR	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 5520	1208.328	
x1	Wastewater/Sewer	Chromium III	composite	Monthly	Monthly	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.16	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	2.217	
x1	Wastewater/Sewer	Chromium VI	composite	Monthly	Monthly	0.05	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.01	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Edition 2005 3111 A	0.617	

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

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

Continuous monitoring

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

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

6 Did continuous monitoring equipment experience downtime? If yes please record downtime in table W4 below

Yes	
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7 Do you have a proactive service contract for each piece of continuous monitoring equipment on site?

Yes	
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8 Did abatement system bypass occur during the reporting year? If yes please complete table W5 below

No	
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Table W4: Summary of average emissions - continuous monitoring

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

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

Table W5: Abatement system bypass reporting table

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

*Measures taken or proposed to reduce or limit bypass frequency

Bund testing

dropdown menu click to see options

Additional information

Are you required by your licence to undertake integrity testing on bunds and containment structures ? if yes please fill out table B1 below listing all **new bunds and containment structures** on site, in addition to **all bunds which failed** the integrity test-**all bunding structures which failed including mobile bunds must be listed in the table below, please include all bunds outside the licenced testing period** (mobile bunds and chemstore included)

- 1
- 2 Please provide integrity testing frequency period
- Does the site maintain a register of bunds, underground pipelines (including stormwater and foul), Tanks, sumps and containers? (containers refers to "Chemstore")
- 3 type units and mobile bunds)
- 4 How many bunds are on site?
- 5 How many of these bunds have been tested within the required test schedule?
- 6 How many mobile bunds are on site?
- 7 Are the mobile bunds included in the bund test schedule?
- 8 How many of these mobile bunds have been tested within the required test schedule?
- 9 How many sumps on site are included in the integrity test schedule?
- 10 How many of these sumps are integrity tested within the test schedule?

Yes	
3 years	
Yes	
	41
	40
	11
Yes	
	11
	6
	4
No	
N/A	
No	

Please list any sump integrity failures in table B1

- 11 Do all sumps and chambers have high level liquid alarms?
- 12 If yes to Q11 are these failsafe systems included in a maintenance and testing programme?
- 13 Is the Fire Water Retention Pond included in your integrity test programme?

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

Bund/Containment structure ID	Type	Specify Other type	Product containment	Actual capacity	Capacity required*	Type of integrity test	Other test type	Test date	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest (if in current reporting year)
AC	reinforced concrete	N/A	Class 3 and Class 9, NON-REG	7.079m3 (Local)	110% of largest container	Other (please specify)	hydrostatic test	09/11/2017	Yes	Pass	N/A	N/A	N/A	N/A
AE	reinforced concrete	N/A	Class 3 and Class 9, NON-REG	5.32m3 (Local)	110% of largest container	Other (please specify)	hydrostatic test	09/11/2017	Yes	Pass	N/A	N/A	N/A	N/A
IA	reinforced concrete	N/A	All classes	4.92m3 (Local)	110% of largest container	Other (please specify)	hydrostatic test	26/10/2017	Yes	Pass	N/A	N/A	N/A	N/A
IC	reinforced concrete	N/A	All classes	6.47m3 (Local)	110% of largest container	Other (please specify)	hydrostatic test	26/10/2017	Yes	Pass	N/A	N/A	N/A	N/A
Bund DS 1 / 2	Steel	N/A	Single class assigned based on storage needs	2000l	110% of largest container	Other (please specify)	hydrostatic test	04/08/2017	Yes	Pass	N/A	N/A	N/A	N/A
Bund DS 3 / 4	Steel	N/A	Single class assigned based on storage needs	2000l	110% of largest container	Other (please specify)	hydrostatic test	04/08/2017	Yes	Pass	N/A	N/A	N/A	N/A
Bund DS 5 / 6	Steel	N/A	Single class assigned based on storage needs	2000l	110% of largest container	Other (please specify)	hydrostatic test	04/08/2017	Yes	Pass	N/A	N/A	N/A	N/A
Bund DS 7 / 8	Steel	N/A	Single class assigned based on storage needs	2000l	110% of largest container	Other (please specify)	hydrostatic test	04/08/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-01	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	09/08/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-02	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	16/01/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-03	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	16/01/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-04	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	04/08/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-05	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	26/10/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-07	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	16/01/2017	Yes	Pass	N/A	N/A	N/A	N/A
SB-08	Plastic	N/A	Single class assigned based on storage needs	1100l	110% of largest container	Other (please specify)	hydrostatic test	04/08/2017	Yes	Pass	N/A	N/A	N/A	N/A

Has integrity testing been carried out in accordance with licence requirements and are all structures tested in line with BS8007/EPA Guidance?

16 Are channels/transfer systems to remote containment systems tested?

17 Are channels/transfer systems compliant in both integrity and available volume?

[bundling and storage guidelines](#)

Yes	
SELECT	
SELECT	

Pipeline/underground structure testing

Are you required by your licence to undertake integrity testing* on underground structures e.g. pipelines or sumps etc ? if yes please fill out table 2 below listing all

- 1 underground structures and pipelines on site **which failed the integrity test and all which have not been tested within the integrity test period as specified**
- 2 Please provide integrity testing frequency period

Yes	
Other (please specify)	5 years

Bund/Pipeline testing template	Lic No:	W0041-01	Year	2017
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*please note integrity testing means water tightness testing for process and foul pipelines (as required under your licence)

Table B2: Summary details of pipeline/underground structures integrity test											
Structure ID	Type system	Material of construction:	Does this structure have Secondary containment?	Type of secondary containment	Type integrity testing	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)
G1	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G2	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G3	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G4	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G5	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G5A	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G6	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G9	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G12	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G20	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass
G21	Process	concrete	Yes	Other (please specify)	Hydraulic	Yes	Fail	Concrete in need of repair	Concrete repair	15/03/2018	Pass

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

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			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
	MW3	VOCs	TM15/PM10	Quarterly	48	33	ug/l			no
							SELECT			SELECT

.* where average indicates arithmetic mean

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

Table 2: Downgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit	GTV's*	SELECT**	Upward trend in yearly average pollutant concentration over last 5 years of monitoring data
	MW4S	VOCs	T15/PM10	Quarterly	1036	918.5	ug/l			no
							SELECT			SELECT

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*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](#)

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](#)

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Table 3: Soil results

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

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

Environmental Liabilities template

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[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	Insurance cover	
7	Financial provision for ELRA expiry date	Insurance cover (29.5.18) 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	2017
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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)	50	Tank Farm 3 now fully bunded (7 tanks)	Section Head	Installation of infrastructure
Materials Handling/Storage/Bunding	Improve Yard Integrity	50	Engineer contracted to complete Yard Integrity for the yard and remedial work has been prioritised.	Individual	Improved Environmental Management Practices
Additional improvements	Continue to implement the agreed plan with a view to eliminating all pre-acquisition waste	90	Further reduction on disposal of legacy gas waste. Performance continues to be reported monthly to the agency, approval is sought for any stock items on site for longer than 6 months.	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	Complete	6 month trail commenced in December 2017 and report submitted to the EPA. Currently in operation and monitored daily.	Section Head	Improved Environmental Management Practices
Materials Handling/Storage/Bunding	Testing of Underground pipelines and Manhole	Complete	All effluent lines and manholes tested. Repair works were carried out where necessary.	Section Head	Improved Environmental Management Practices

Environmental Management Programme/Continuous Improvement Programme template				Lic No:	W0041-01	Year	2017
Materials Handling/Storage/Bunding	Bund Repair	Complete	Repair work carried out on concrete bunds by external contractor. Bunds were assessed. Cracks and joints were sealed and painted to improve bund integrity	Section Head		Improved Environmental Management Practices	
Additional improvements	Automatic Shut off valve to be installed on the balancing tank to further increase the control of effluent discharge	New		Section Head		Improved Environmental Management Practices	
Materials Handling/Storage/Bunding	Review stock control measures onsite	New		Section Head		Improved Environmental Management Practices	
		SELECT		SELECT		SELECT	

Noise monitoring summary report	Lic No: W0041-01	Year	2017
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- | | |
|--|-----|
| 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 |
| | No |
| 3 Does your site have a noise reduction plan | N/A |
| 4 When was the noise reduction plan last updated? | No |
| 5 Have there been changes relevant to site noise emissions (e.g. plant or operational changes) since the last noise survey? | No |

[Noise Guidance note NG4](#)

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)?
20/06/2017	30min	N1		64.9	56.6		81.8	No	SELECT	The main source of noise was from the traffic moving onsite, most notably lorries and forklifts. Other sources of noise recorded at this monitoring point were from people walking and talking nearby, operational noise from Enva and planes taking off from Shannon airport on occasion.	Yes
20/06/2017	30min	N4		62.8	58.8		80.4	No		Sources of noise noted at this monitoring point included onsite traffic movements (trucks and forklifts) as well as Enva personnel walking and talking within range of the noise meter. Planes were also heard taking off from Shannon during the survey.	Yes

20/06/2017	30min	N5		65.3	49.1			No		The main source of noise noted at this point was the movement of forklift trucks onsite close to where the monitor was situated. Other sources of noise included a low operational hum from Enva, birds chirping and planes taking off from Shannon Airport.	Yes
20/06/2017	30min	N6		53.3	47			No		The greatest source of noise at this location was traffic onsite. There was also some operational noise from Enva but this was less significant. Other sources of noise at this point include airplanes taking off, birds chirping and people talking nearby.	Yes
20/06/2017	30min	N8		61.7	53.8			No		Other sources of noise noted were from airplanes taking off, people taking close to the meter, traffic offsite and noise from a neighbouring site	Yes

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

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

SELECT

** please explain the reason for not taking action/resolution of noise issues?
Any additional comments? (less than 200 words)

- 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

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)	658.534	584.422		
Total Energy Generated (MWHrs)				
Total Renewable Energy Generated (MWHrs)				
Electricity Consumption (MWHrs)	658.534	584.422		
Fossil Fuels Consumption:				
Heavy Fuel Oil (m3)	14.078	13.648		
Light Fuel Oil (m3)				
Natural gas (m3)	2.424	1.794		
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	26208					
Surface water							
Public supply	9167	14178					
Recycled water	1250	1250					
Total	36625	41636					

* 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)		1071.46		1205.582	

Resource Usage/Energy efficiency summary Lic No: W0041-01 Year 2017

Table R4: Energy Audit finding recommendations								
Date of audit	Recommendations	Description of Measures proposed	Origin of measures	Predicted energy savings %	Implementation date	Responsibility	Completion date	Status and comments
			SELECT					
			SELECT					
			SELECT					

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

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

Complaints and Incidents summary template Lic No: W0041-01 Year 2017

Complaints		Additional information
Have you received any environmental complaints in the current reporting year? If yes please complete summary details of complaints received on site in table 1 below		No

Date	Category	Other type (please specify)	Brief description of complaint (Free txt <20 words)	Corrective action < 20 words	Resolution status	Resolution date	Further information
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
Total complaints open at start of reporting year		0					
Total new complaints received during reporting year		0					
Total complaints closed during reporting year		0					
Balance of complaints end of reporting year		0					

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

*For information on how to report and what constitutes an incident [What is an incident](#)

Date of occurrence	Incident nature	Location of occurrence	Incident category* please refer to guidance	Receptor	Cause of incident	Other cause (please specify)	Activity in progress at time of incident	Communication	Occurrence	Corrective action <20 words	Preventative action <20 words	Resolution status	Resolution date	Likelihood of reoccurrence
09/06/2017	Monitoring equipment offline	Licensed discharge point (typ	1. Minor	Sewer	Plant or equipment issues		Normal activities	EPA	New	Scada malfunction, System rebooted	IT support to enable external login by scada software engineer. Scada Ireland now monitoring performance	Ongoing		Medium

Complaints and Incidents summary template				Lic No: W0041-01		Year: 2017							
13/02/2017	Monitoring equipment offline	Licensed discharge point (typ	1. Minor	Sewer	Plant or equipment issues	Normal activities	EPA	New	Composite autosampler pump failure- flow proportional composite sample of effluent discharged to X1 was generated manually.	Service engineer called to site to replace parts, additional training provided to staff, additional spare parts ordered	Complete		Low
28/11/2017	Breach of ELV	Licensed discharge point (typ	1. Minor	Sewer	Operational controls	Normal activities	Other (please spec	New	Investigation into waste streams carried out	Introduction of Balancing tank	Complete		Low
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT			SELECT		SELECT
Total number of incidents current year													3
Total number of incidents previous year													2
% reduction/increase													

WASTE SUMMARY		Lic No:	W0041-01	Year	2017
SECTION A-PRTR ON SITE WASTE TREATMENT AND WASTE TRANSFERS TAB- TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES			PRTR facility Id: none	dropdown list click to see options	

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

Additional Information

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 1 to be captured through PRTR reporting)

If yes please enter details in table 1 below

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

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

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)	EWG code European Waste Catalogue EWG codes	Source of waste accepted	Description of waste accepted Please enter an accurate and detailed description - which applies to relevant EWG code European Waste Catalogue EWG codes	Quantity of waste accepted in current reporting year (tonnes)	Quantity of waste accepted in previous reporting year (tonnes)	Reduction/ increase over previous year +/- %	Reason for reduction/ increase from previous reporting year	Packaging Content (%) - only applies if the waste has a packaging component	Disposal/Recovery or treatment operation carried out at your site and the description of this operation	Quantity of waste remaining on site at the end of reporting year (tonnes)	Comments -
34,000tonne	050105*	05- WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	Oil - refinery spillage	1.138	0.00	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	1.138	
	060101*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Sulphuric acid and sulphurous acid	2.445.088	1,544.67	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	71.627	
	060102*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Hydrochloric acid	34.216	22.18	35%	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	13.046	
	060103*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Hydrofluoric acid	5.263	0.11	98%	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	5.765	
	060104*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Phosphoric and phosphorous acid	478.412	353.23	26%	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	1.030	
	060105*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Nitric acid and nitrous acid	1.480	13.64	-822%	fluctuations in market conditions		R1-Use principally as a fuel or other means to generate energy	1.276	
	060106*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Other acids	896.355	863.20	4%	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	70.083	

WASTE SUMMARY		Lic No:		W0041-01		Year		2017	
060203*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Ammonium hydroxide	62.995	14.24		77%	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	6.670
060204*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Sodium and potassium hydroxide	580.181	648.64		-12%	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	68.565
060205*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Other bases	102.808	91.69		11%	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	19.438
060311*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Solid salts and solutions containing cyanides	158.612	132.09		17%	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	0.575
060313*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Solid Salts and solutions containing heavy metals	0.752	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	0
060405*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Wastes containing other heavy metals	3.041	11.80		-288%	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	0.010
061302*	06- WASTES FROM INORGANIC CHEMICAL PROCESSES	Spent activated carbon (except 06 07 02)	91.810	107.46		-17%	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	10.895
070103*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Organic halogenated solvents, washing liquids and mother liquors	1.100	0.30		73%	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	0
070104*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Other organic solvents, washing liquids and mother liquors	70.284	83.05		-18%	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	12.417
070203*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Organic halogenated solvents, washing liquids and mother liquors	1.000	0.000		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2017	
070204*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Other organic solvents, washing liquids and mother liquors	0.411	5.20		-1164%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
070207*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Halogenated still bottoms and reaction residues	0.000	0.00		#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
070301*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Aqueous washing liquids and mother liquors	74.080	36.70		50%	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
070501*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Aqueous washing liquids and mother liquors	347.089	535.96		-54%	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	76.64
070503*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Organic halogenated solvents, washing liquids and mother liquors	0.00	22.18		#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
070504*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Other organic solvents, washing liquids and mother liquors	1.143	0.51		55%	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	1.091
70512	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Sludges from on site effluent treatment other than those mentioned in 07 05 11	65.640	119.89		-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	0
070513*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Solid wastes containing dangerous substances	12.093	3.20		74%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	2.240
070608*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Other sill bottoms and reaction residues	10.541	0		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
070699	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	wastes not otherwise specified	0.00	0.02		#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	1,573.920	1,544.90		2%	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
070704*	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	other organic solvents, washing liquids and mother liquors	0.00	26.30		#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	4.383
70712	07- WASTES FROM ORGANIC CHEMICAL PROCESSES	Sludges from onsite effluent treatment other than those mentioned in 07 07 11	5.783	6.25		-8%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0

WASTE SUMMARY		Lic No:		W0041-01		Year		2017	
080111*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste paint and varnish containing organic solvents or other dangerous substances	1,211.975	1,023.74		16%	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	90.827
080113*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Sludges from paint or varnish containing organic solvents or other dangerous substances	0.090	1.86		-1969%	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	1.862
080115*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances	3.092	0.00		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
080117*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Wastes from paint or varnish removal containing organic solvents or other dangerous substances	58.432	67.72		-16%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.026
080119*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Aqueous suspensions containing paint or varnish containing organic solvents or other dangerous substances	135.840	130.46		4%	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
080121*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste paint or varnish remover	0.450	0.35		23%	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.)	Waste coating powders	0.00	0.00		#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
80308	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Aqueous liquid waste containing ink	51.740	45.32		12%	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	4.997
080312*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste ink containing dangerous substances	19.676	11.55		41%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	1.471
80313	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste ink other than those mentioned in 08 03 12	8.690	8.29		5%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.934
080317*	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste printing toner containing hazardous substances	0.142	0.13		11%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
'080409	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste adhesives and sealants containing organic solvents or other dangerous substances	31.950	30.41		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	1.387
80410	08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS.)	Waste adhesives and sealants other than those mentioned in 08 04 09	0.772	0.04		95%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0

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080415*	08- WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,)	Aqueous liquid waste containing adhesives or sealants containing organic solvents or other dangerous substances	215.500	208.48		3%	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	38.260
080501*	08- WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,)	Waste isocyanates	0.057	1.63		-2761%	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	1.173	0.26		78%	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
090102*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	Water-based offset plate developer solutions	5.990	8.58		-43%	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	1.216
090104*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	fixed solutions	70.184	106.18		-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	6.761
090105*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	Bleach solutions and bleach fixer solutions	5.172	4.94		4%	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
90107	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	Photographic film and paper containing silver or silver compounds	0.222	0.14		38%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
090111*	09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY	Single-use cameras containing batteries included in 16 06 01, 16 06 02 or 16 06 03.	0.014	0.000		100%	fluctuations in market conditions		0
101312*	10- WASTES FROM THERMAL PROCESSES	Solid waste from gas treatment containing dangerous substances	1.992	0.000		100%	fluctuations in market conditions		1.992
110105*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Pickling acids	739.583	425.18		43%	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	46.663
110106*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Acids not otherwise specified	0.000	21.13		#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	1.02
110107*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Pickling bases	2.018	0.00		100%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	1.238

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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	261.006	157.52	40%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	9.272	
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	107.590	128.57	-20%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	7.620	
110111*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Aqueous rinsing liquids containing dangerous substances	328.603	244.02	26%	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	7.540	
110113*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Degreasing wastes containing dangerous substances	70.952	64.19	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	7.530	
110116*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Saturated or spent ion exchange resins	85.144	128.81	-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	10.000	
110198*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	Other wastes containing dangerous substances	12.279	10.75	12%	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	0.000	
110503*	11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY	solid wastes from gas treatment	0.00	4.36	#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.000	
120104	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	Non-ferrous metal dust and particles	5.791	4.74	18%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0	
120105	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	Plastics shavings and turnings	6.668	1.49	78%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	3.479	
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)	6.538	1.06	84%	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	1.120	
120109*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	Machining emulsions and solutions free of halogens	31.825	30.44	4%	fluctuations in market conditions		8.377	
120113	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	Welding Wastes	0.048	0	100%	fluctuations in market conditions		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 16.	0.057	0.51	-800%	fluctuations in market conditions		0.057	

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120116*	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	Waste blasting material containing dangerous substances	0.330	1.72		-420%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
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	0.570	0.00		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
120119	12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS	Readily biodegradable machining oil	3.146	0		100%	fluctuations in market conditions		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	0.00	0.01		#DIV/0!	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0
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	16.101	4.4		73%	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	1.505
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	0.039	0.00		100%	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.	0.187	0.96		-411%	fluctuations in market conditions		0
130113*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	Other hydraulic oils	61.181	57.82		5%	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	10.201
130205*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	Mineral-based non chlorinated engine, gear and lubricating oils	0.050	0.000		100%	fluctuations in market conditions		0
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	128.342	98.47		23%	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	14.738

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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	18.389	0.00	100%	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	0.229
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	1.703	0.47	72%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
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	1.880	12.27	-553%	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	1.88
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	8.508	0.17	98%	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	8.380
130701*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	Fuel oil and diesel	0.516	2.46	-377%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.041
130702*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	Petrol	0.00	0.02	#DIV/0!	fluctuations in market conditions	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)	13.521	1.88	86%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	7.104
130802*	13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)	Other emulsions	0.824	2.37	-187%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.105
140602*	14- WASTE ORGANIC SOLVENTS, REFRIGERANTS AND PROPELLANTS (except 07 and 08)	Other halogenated solvents and solvent mixtures	0.439	0	100%	fluctuations in market conditions		0.225
140603*	14- WASTE ORGANIC SOLVENTS, REFRIGERANTS AND PROPELLANTS (except 07 and 08)	Other solvents and solvent mixtures	86.858	122.53	-41%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	3.795
150102	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	Plastic packaging	56.304	51.30	9%	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	0.576
150110*	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	Packaging containing residues of or contaminated by dangerous substances	842.735	727.30	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	31.880
150202	15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED		0.549	0.00	100%	fluctuations in market conditions		0

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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	262.469	226.33		14%	fluctuations in market conditions	R9-Oil re-refining or other reuses of oil	12.821
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	21.890	19.06		13%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
160114*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Antifreeze fluids containing dangerous substances	1.295	1.31		-1%	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	0.00	#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	0.00	2.00	#DIV/0!		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	0	#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	11.428	58.20		-409%	fluctuations in market conditions	R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)	0
160304	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	inorganic wastes other than those mentioned in 16 03 03	0.00	1.70	#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
160305*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Organic wastes containing dangerous substances	158.138	147.34		7%	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	29.318
160306	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	organic wastes other than those mentioned in 16 03 05	0.00	9.00	#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	0
160504*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Gases in pressure containers (including halons) containing dangerous substances	3.147	1.87		41%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.644
160506*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	551.028	811.61		-47%	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	218.551
160507*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Discarded inorganic chemicals consisting of or containing dangerous substances	64.598	24.02		63%	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	14.983

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160508*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Discarded organic chemicals consisting of or containing dangerous substances	291.828	81.37		72%	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	27.009
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	116.053	71.75		38%	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	3.057
160604	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Alkaline batteries except 160603	0.000	0.00		#DIV/0!	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.022
160605	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Other batteries and accumulators	0.042	0.03		26%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0
160708*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Wastes containing oil	5.080	10.38		-104%	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	24.433	134.45		-450%	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	1.028
160903*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Peroxides, for example hydrogen peroxide	2.468	17.95		-627%	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	0.200
161001*	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Aqueous liquid wastes containing dangerous substances	1,140.982	1,248.91		-9%	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	6.962
161002	16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST	Aqueous liquid wastes other than those mentioned in 16 10 01	9,998.420	7,145.590		29%	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	47.120
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	0.00	0.39		#DIV/0!	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
170204*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	Glass, plastic and wood containing or contaminated with dangerous substances	16.457	6.99		58%	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	0.000
170302	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	Bituminous mixtures other than those mentioned in 17 03 01	0.129	3.13		-2322%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0
170503*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	Soil and stones containing dangerous substances.	0.522	3.94		-654%	fluctuations in market conditions		0.000

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170603'	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)		0.000	0.00	#DIV/0!	fluctuations in market conditions			0.760
170605*	17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	Construction materials containing asbestos.	0.086	0.000	100%	fluctuations in market conditions			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	Amalgam waste from dental care	3.004	2.14	29%	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 R5-Recycling/reclamation or other inorganic materials which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials	0.000
190204*	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	Premixed wastes	45.413	9.45	79%	fluctuations in market conditions			5.450
190205*	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	Sludges from physico/chemical treatment containing dangerous substances.	21.764	0.000	100%	fluctuations in market conditions			0.000
190703	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	Landfill leachate other than those mentioned in 19 07 0	4345.280	14,186.98	-226%	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	0.000
190814	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	Sludges from other treatment of industrial waste water other than those mentioned in 19 08 13	0.00	1.07	#DIV/0!	fluctuations in market conditions		R1-Use principally as a fuel or other means to generate energy	0.000
190904	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	spent activated carbon	0.00	4.10	#DIV/0!	fluctuations in market conditions		R1-Use principally as a fuel or other means to generate energy	0.000
191106	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	sludges from on-site effluent treatment other than those mentioned in 191105	0.00	8.69	#DIV/0!	fluctuations in market conditions		R1-Use principally as a fuel or other means to generate energy	0.000
191211	19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN	other wastes (including mixture of materials) from mechanical treatment of waste containing hazardous substances	0.00	1.04	#DIV/0!	fluctuations in market conditions		R1-Use principally as a fuel or other means to generate energy	0.000
200114*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Acids	1.848	0.01	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	1.848
200119*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Pesticides	1.847	28.54	-1445%	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	0.068
200121*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Edible oil and fat	0.110	0.02	81%	fluctuations in market conditions		R4- Recycling/reclamation of metals and metal compounds	0.034

WASTE SUMMARY		Lic No:		W0041-01		Year		2017	
200125	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Edible oil and fat	0.141	0.00		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	0.000
200127*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Paint, inks, adhesives and resins containing dangerous substances	29.180	22.67		22%	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	9.217
200128	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	paint, inks, adhesives and resins other than those mentioned in 20 01 27	0.00	0.29	#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	0.000
200129*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Detergents containing dangerous substances	18.914	23.20		-23%	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	8.099
200130	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Detergents other than those mentioned in 20 01 29	0.017	0.00		100%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.000
200131*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	cytotoxic and cytostatic medicines	0.00	13.54	#DIV/0!		fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.000
200132	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Medicines other than those mentioned in 20 01 31	0.221	0.03		85%	fluctuations in market conditions	R1-Use principally as a fuel or other means to generate energy	0.000
200133*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing	0.067	0.23		-249%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.000
200135*	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	Discarded electronic equipment other than those mentioned in 200121 and 200123 containing hazardous substances	0.047	1.38		-2826%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.000
200140	20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY	metals	0.353	0.000		100%	fluctuations in market conditions	R4- Recycling/reclamation of metals and metal compounds	0.353

WASTE SUMMARY Lic No: W0041-01 Year: 2017

[Landfill Manual-Monitoring Standards](#)

Table 4 Environment	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
Was meteorological monitoring in compliance with Landfill Directive (LD) standard in reporting year *								

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

Table 5 Capping-La	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
Area uncapped*	SELECT UNIT					
SELECT UNIT						

*please note this includes daily cover area

9 **Table 6 Leachate-Landfill only**

10 is leachate from your site treated in a Waste Water Treatment Plant?

SELECT
SELECT

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

gas section is consistent with the Landfill Gas Survey submitted in conjunction with PRTR returns

Table 7 Landfill Gas	Power generated (MW / KWh)	Used on-site or to national grid	Was surface emissions monitoring performed during the reporting year?	Comments
Gas Captured&Treated by LFG System m3			SELECT	



Environmental Protection Agency

#N/A

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[Guidance to completing the PRTR workbook](#)

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2017
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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	
	Clare
Country	Ireland
Coordinates of Location	-8.87627 52.7178
River Basin District	IEGBNISH
NACE Code	3821
Main Economic Activity	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Thomas Kelleher
AER Returns Contact Email Address	Thomas.Kelleher@enva.com
AER Returns Contact Position	HSE Co-Ordinator
AER Returns Contact Telephone Number	061707400
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	061707401
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	35
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) ?	
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This question is only applicable if you are an IPPC or Quarry site

4.1 RELEASES TO AIR

[Link to previous years emissions data](#)

#N/A

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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	11.461	11.461	0.0	0.0
08	Nitrogen oxides (NOx/NO2)	M	EN 14792:2005	EN14792:2006	1.3432	1.3432	0.0	0.0
11	Sulphur oxides (SOx/SO2)	M	CRM	TGN21	14.6	14.6	0.0	0.0
80	Chlorine and inorganic compounds (as HCl)	M	EN 1911-1 to 3:2003	EN1911:2010	5.5626	5.5626	0.0	0.0

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

SECTION B : REMAINING PRTR POLLUTANTS

POLLUTANT		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	9.9718	9.9718	0.0	0.0

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

Additional Data Requested from Landfill operators

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

Landfill: Please enter summary data on the quantities of methane flared and / or utilised	Erva Ireland Limited (Shannon)			
	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 Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
			Method Code	Designation or Description					
		M				0.0	0.0	0.0	0.0
06	Ammonia (NH3)	M	OTH	BS2690: Part 7: 1968/BS6068: Part 2. 11:1984/ APHA -4500- NH3-D AWWA/ APHA, 20TH Edition 1999, Method 3125B	2277.9585	2277.9585	0.0	0.0	
17	Arsenic and compounds (as As)	M	OTH	AWWA/ APHA, 20TH Edition 1999, Method 3125B	0.1808	0.1808	0.0	0.0	
18	Cadmium and compounds (as Cd)	M	OTH	AWWA/ APHA, 20TH Edition 1999, Method 3125B	1.289	1.289	0.0	0.0	
79	Chlorides (as Cl)	M	OTH	EPA Method 325.1 & 325.2 AWWA/ APHA, 20th Edition 1999, Method 3125B	47687.71	47687.71	0.0	0.0	
20	Copper and compounds (as Cu)	M	OTH		121.39	121.39	0.0	0.0	
82	Cyanides (as total CN)	M	OTH	AWWA/ APHA 20th Edition 1999, Method 4500	3.086	3.086	0.0	0.0	
83	Fluorides (as total F)	M	OTH	AWWA/ APHA 20th Edition 1999, Method 4500 F	113.969	113.969	0.0	0.0	
23	Lead and compounds (as Pb)	M	OTH	AWWA/ APHA, 20TH Edition 1999, Method 3125B	6.883	6.883	0.0	0.0	
21	Mercury and compounds (as Hg)	M	OTH	BS EN 23506:2002, (BS6068-2.74:2002) ISBN 0 580 38924 3 AWWA/ APHA, 20th Edition 1999, Method 3125B	0.0597	0.0597	0.0	0.0	
22	Nickel and compounds (as Ni)	M	OTH	AWWA 21st Edition 2005 4500-P	22.692	22.692	0.0	0.0	
13	Total phosphorus	M	OTH	AWWA/ APHA, 20TH Edition 1999, Method 3125B	84.988	84.988	0.0	0.0	
24	Zinc and compounds (as Zn)	M	OTH	AWWA/ APHA, 20TH Edition 1999, Method 3125B	61.69	61.69	0.0	0.0	
19	Chromium and compounds (as Cr)	M	OTH	3125B	2.217	2.217	0.0	0.0	
71	Phenols (as total C)	M	OTH	By HPLC	4.678	4.678	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 Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
			Method Code	Designation or Description					
		M				0.0	0.0	0.0	0.0
355	Aluminium	M	OTH	AWWA/ APHA, 20th Edition 1999, Method 3125B	22.381	22.381	0.0	0.0	
303	BOD	M	OTH	AWWA/ APHA, 20th Edition 1999, Method 5210B	22235.9326	22235.9326	0.0	0.0	
356	Cobalt	M	OTH	AWWA/ APHA, 20th Edition 1999, Method 3125B	2.549	2.549	0.0	0.0	
306	COD	M	ALT	BS ISO 15705:2002	71674.509	71674.509	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	1208.32	1208.32	0.0	0.0	
308	Detergents (as MBAS)	M	OTH		86.408	86.408	0.0	0.0	
357	Iron	M	OTH	US EPA Method 8260b	172.858	172.858	0.0	0.0	

327	Nitrate (as N)	M	OTH	HACH Lange Method 10020	172.858	172.858	0.0	0.0
331	Organohalogens	M	OTH	Modified: US EPA Method 8260b & 624	4.378	4.378	0.0	0.0
354	Silver	M	OTH	AWWA/ APHA, 20th Edition 1999, Method 3125B	16.498	16.498	0.0	0.0
343	Sulphate	M	OTH	EPA Method 325.1 & 325.2	24106.091	24106.091	0.0	0.0
353	Sulphides	M	OTH	AWWA/ APHA 20th Edition 1999, Method 4500B & C	5.933	5.933	0.0	0.0
240	Suspended Solids	M	ALT	BS EN 872:2005	3782.09	3782.09	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	0.3635	0.3635	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

#N/A

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Please enter all quantities on this sheet in Tonnes

0

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility	Non	Haz Waste : 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)
						Haz Waste: Name and Licence/Permit No of Recover/Disposer			Non Haz Waste: Address of Recover/Disposer				
						MC/E	Method Used						
To Other Countries	06 01 01	Yes	12.897	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 Suez RR IWS Chemicals,Registration number 44454844000155,Rue Lavoisier CS60013,38801 Le Pont De Claix,"",",France	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 01	Yes	43.489	sulphuric acid and sulphurous acid	R5	M	Weighed	Abroad	Suez RR IWS Chemicals,Registration Number: 44454844000155		Rue Lavoisier CS60013,38801 Le Pont De Claix,"",",France	Rue Lavoisier CS60013,38801 Le Pont De Claix,"",",France	Rue Lavoisier CS60013,38801 Le Pont De Claix,"",",France
To Other Countries	06 01 02	Yes	7.556	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 03	Yes	0.076	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 04	Yes	0.118	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	1.022	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	95.582	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	69.925	ammonium hydroxide	R5	M	Weighed	Abroad	EdelChemie (Eco Option),EPR/RP3931XD		Eco-Option House Lostock Works ,Griffiths Road Lostock,Northwich ,Cheshire,United Kingdom	Eco- Option House Lostock Works,Griffiths Road ,Lostock Cheshire,Cheshire,United Kingdom	Eco- Option House Lostock Works,Griffiths Road ,Lostock Cheshire,Cheshire,United Kingdom
To Other Countries	06 02 04	Yes	46.593	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 05	Yes	18.275	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 13	Yes	0.752	solid salts and solutions containing heavy metals	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	06 04 05	Yes	4.237	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	84.235	spent activated carbon (except 06 07 02)	R13	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	1.1	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	0.07	other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU.Zoning	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	07 01 04	Yes	7.221	other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,,,,,Belgium	,38.152/BP,No 49 B-7181 ,Seneffe ,,,,,Belgium	No 49 B-7181 ,Seneffe ,,,,,Belgium
To Other Countries	07 01 04	Yes	38.06	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 02 04	Yes	0.53	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 05 01	Yes	326.749	aqueous washing liquids and mother liquors	D10	M	Weighed	Abroad	Sava Gmbh,14HRO03002	ostertweute 1,25541 brunsbuttel,,,,Germany	ostertweute 1,25441 brunsbuttel,,,,Germany	ostertweute 1,25441 brunsbuttel,,,,Germany
To Other Countries	07 05 04	Yes	0.384	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 13	Yes	10.189	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	07 07 04	Yes	21.916	other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	ADC,119864/1-BTW BE0540545069	Kiefkenshoer Logistics HUB NV,Geslecth- Haven 1931,Beveren Waas,B-9130,Belgium	ADC,119864/1-BTW BE0540545069,Kiefkenshoer Logistics HUB NV,Geslecth Haven 1931,Beveren Waas,B-9130,Belgium	Kiefkenshoer Logistics HUB NV,Geslecth Haven 1931,Beveren Waas,B-9130,Belgium
To Other Countries	07 07 12	No	6.32	sludges from on-site effluent treatment other than those mentioned in 07 07 11	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	08 01 11	Yes	54.829	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	32.455	waste paint and varnish containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	08 01 13	Yes	0.09	sludges from paint or varnish containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	08 01 17	Yes	14.691	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	0.45	waste paint or varnish remover	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	08 03 08	No	5.317	aqueous liquid waste containing ink	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium		
To Other Countries	08 03 12	Yes	10.771	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 03 13	No	4.751	waste ink other than those mentioned in 08 03 12	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	08 04 09	Yes	32.773	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 04 10	No	0.772	waste adhesives and sealants other than those mentioned in 08 04 09	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	08 05 01	Yes	0.057	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	1.173	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	0.042	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	26.835	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	0.222	photographic film and paper containing silver or silver compounds	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		

To Other Countries	11 01 05	Yes	346.063	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	0.079	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	36.6	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	87.45	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	125.573	sludges and filter cakes containing dangerous substances	R4	M	Weighed	Abroad	WRC World Resources Company GmbH,SL83A0032	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany	GmbH,SL83A0032,Industrie strasse 7 ,04808 Wurzen ,Germany,Germany,Germany	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany
To Other Countries	11 01 10	No	98.757	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	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	11 01 10	No	6.634	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	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 11	Yes	7.525	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 16	Yes	0.144	saturated or spent ion exchange resins	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	12.228	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	6.0	non-ferrous metal dust and particles	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 05	No	3.189	plastics shavings and turnings	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	9.225	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 13	No	0.048	welding wastes	R2	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	0.709	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 19	Yes	3.146	readily biodegradable machining oil spent grinding bodies and grinding materials other than those mentioned in 12	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	12 01 21	No	14.596	01 20	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	13 01 11	Yes	0.187	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 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland
Within the Country	13 01 13	Yes	0.261	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 01 13	Yes	14.787	other hydraulic oils	R2	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 02 08	Yes	44.925	other engine, gear and lubricating oils	R2	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	51.465	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 02 08	Yes	0.145	other engine, gear and lubricating oils	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industriel D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industriel D ehein,B 4480 - Engis,,,,Belgium	Zoning Industriel d'Ethein,4480 ENGIS,Belgium,Belgium,Belgium
To Other Countries	13 03 08	Yes	1.757	synthetic insulating and heat transmission oils	R2	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	0.128	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	0.543	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
Within the Country	13 07 03	Yes	8.288	other fuels (including mixtures)	R9	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	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland
To Other Countries	13 08 02	Yes	0.293	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	13 08 02	Yes	0.426	other emulsions	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industriel D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industriel D ehein,B 4480 - Engis,,,,Belgium	Zoning Industriel D ehein,B 4480 - Engis,,,,Belgium

To Other Countries	14 06 03	Yes	22.962	other solvents and solvent mixtures	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 Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	No 49 B-7181 ,Seneffe ,,,,Belgium
To Other Countries	14 06 03	Yes	1.274	other solvents and solvent mixtures	R12	M	Weighed	Abroad	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	10.779	other solvents and solvent mixtures	R2	M	Weighed	Offsite in Ireland	Veolia Environmental Solutions Technical Services Ltd.,W0050- 02	Corrin,Fermoy,Co. Cork,," ,Ireland AM Waldeck 6,77885	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	
To Other Countries	15 01 02	No	97.59	plastic packaging	R3	M	Weighed	Abroad	Fischer Rohstoffe GMBH,A276140221	Achem- Waghurst," "" ,Germany Resource Renewal Centre,Clermont		
Within the Country	15 01 02	No	342.9	plastic packaging	R3	M	Weighed	Offsite in Ireland	Leinster Environmental,WPT LH 1100 201	Park,Haggardstown,Dundalk ,Ireland		
Within the Country	15 01 03	No	145.86	wooden packaging	R12	M	Weighed	Offsite in Ireland	Thomas O Neill Grain Merchants,WFPLK 2012	Dereen,Castleconnell,Co. Limerick," ,Ireland		
Within the Country	15 01 10	Yes	4.813	packaging containing residues of or contaminated by dangerous substances	R9	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	
To Other Countries	15 01 10	Yes	0.865	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	No 49 B-7181 ,Seneffe ,,,,Belgium	
To Other Countries	15 01 10	Yes	140.262	packaging containing residues of or contaminated by dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,," ,Belgium	Industrial D ehein,B 4480 - Engis,," ,Belgium	
To Other Countries	15 01 10	Yes	28.009	packaging containing residues of or contaminated by dangerous substances	R12	M	Weighed	Abroad	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	2.342	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	Heraeusstrasse 12-14 ,63450 Hanau ,," ,Germany	
To Other Countries	15 02 02	Yes	168.993	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	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	
To Other Countries	15 02 02	Yes	80.169	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,," ,Belgium	Industrial D ehein,B 4480 - Engis,," ,Belgium	
To Other Countries	15 02 02	Yes	7.93	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	D10	M	Weighed	Abroad	Remondis Industrie Service GmbH,CTD000000D10	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany	Niederlassung Bramsche,Am Kanaol 9 ,49565 Bramsche,Germany	
To Other Countries	15 02 03	No	27.337	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		

To Other Countries	16 01 14	Yes	1.295	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
To Other Countries	16 03 03	Yes	2.677	inorganic 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 05	Yes	8.906	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
Within the Country	16 05 04	Yes	1.065	gases in pressure containers (including halons) containing dangerous substances	R4	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland
To Other Countries	16 05 04	Yes	0.405	gases in pressure containers (including halons) containing dangerous substances	R3	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	0.053	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R3	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland
To Other Countries	16 05 06	Yes	0.006	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,49565 Bramsche,Germany
To Other Countries	16 05 06	Yes	7.081	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	16 05 06	Yes	21.775	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 ,Seneffe ,,,,Belgium	,38.152/BP,No 49 B-7181 ,Seneffe ,,,,Belgium	No 49 B-7181 ,Seneffe ,,,,Belgium
To Other Countries	16 05 06	Yes	230.336	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
To Other Countries	16 05 07	Yes	46.813	discarded inorganic chemicals consisting of or 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 05 08	Yes	1.914	discarded organic chemicals consisting of or containing dangerous substances	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,,,,Belgium	,38.152/BP,No 49 B-7181 ,Seneffe ,,,,Belgium	No 49 B-7181 ,Seneffe ,,,,Belgium
To Other Countries	16 05 08	Yes	222.42	discarded organic chemicals consisting of or 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 05 09	No	27.943	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08	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 06 05	No	0.073	other batteries and accumulators	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	,Daingean Road ,Tullamore ,Co Offaly ,Ireland		

To Other Countries	16 09 03	Yes	2.468	peroxides, for example hydrogen peroxide	R1	M	Weighted	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany Enva Ireland Ltd.,W0196-	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	17 02 04	Yes	18.468	glass, plastic and wood containing or contaminated with dangerous substances	R12	M	Weighted	Offsite in 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	John F Kennedy Industrial Estate,John F Kennedy Road,Naas Road,Dublin 12,Ireland
To Other Countries	17 03 02	No	1.646	bituminous mixtures containing other than those mentioned in 17 03 01	R1	M	Weighted	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	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
Within the Country	17 04 05	No	3.22	iron and steel	R4	M	Weighted	Offsite in Ireland	MSM Recycling Ltd.,W079-01	41 Cookstown Industrial Estate,Tallaght,Dublin,24,Ireland		
To Other Countries	17 05 03	Yes	1.274	soil and stones containing dangerous substances	R1	M	Weighted	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	18 01 10	Yes	3.004	amalgam waste from dental care	R12	M	Weighted	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	1071.46	sludges from physico/chemical treatment other than those mentioned in 19 02 05	D5	M	Weighted	Offsite in Ireland	Bord na Mona Energy Limited,W0201-03	Upper,Carbury,Co. Kildare,Ireland		
Within the Country	19 02 06	No	563.12	sludges from physico/chemical treatment other than those mentioned in 19 02 05	R3	M	Weighted	Offsite in Ireland	ERAS ECO (Ormonde Organics),W0211-01	Foxhole,Youghal,Youghal,Co.ork,Ireland		
Within the Country	20 01 01	No	0.192	paper and cardboard	R3	M	Weighted	Offsite in Ireland	DGD Papers Limited,WFP LK2013 09C R1	Bay M1 Raheen Business Park,Ballycummin,Raheen,Limerick,Ireland		
To Other Countries	20 01 19	Yes	21.277	pesticides	R12	M	Weighted	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	0.082	pesticides	R1	M	Weighted	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....Belgium	Industrial D ehein,B 4480 - Engis,....Belgium	Zoning Industrial D ehein,B 4480 - Engis,....Belgium
Within the Country	20 01 21	Yes	0.076	fluorescent tubes and other mercury-containing waste	R4	M	Weighted	Offsite in Ireland	Irish Lamp Recycling,.	Woodstock Industrial Estate ,Kilkenny Road,Athy,Co. Kildare,Ireland	Woodstock Industrial Estate,Kilkenny Road,Athy,Co. Kildare,Ireland	Woodstock Industrial Estate,Kilkenny Road,Athy,Co. Kildare,Ireland
Within the Country	20 01 21	Yes	0.01	fluorescent tubes and other mercury-containing waste	R4	M	Weighted	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	20 01 27	Yes	2.007	paint, inks, adhesives and resins containing dangerous substances	R12	M	Weighted	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,....Belgium	Industrial D ehein,B 4480 - Engis,....Belgium	Zoning Industrial D ehein,B 4480 - Engis,....Belgium
To Other Countries	20 01 27	Yes	19.068	paint, inks, adhesives and resins containing dangerous substances	R12	M	Weighted	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 29	Yes	0.005	detergents containing dangerous substances	R12	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03 ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	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 31	Yes	3.761	cytotoxic and cytostatic medicines	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen, Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen, Germany
To Other Countries	20 01 32	No	0.238	medicines other than those mentioned in 20 01 31	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	20 01 33	Yes	0.067	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 ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	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	0.047	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and and 20 01 23 containing hazardous components	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03 ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	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	06 13 02	Yes	1.68	spent activated carbon (except 06 07 02)	R4	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
Within the Country	07 01 04	Yes	0.079	other organic solvents, washing liquids and mother liquors	R4	M	Weighed	Offsite in Ireland	Limerick Metal Recycling,WFP/L/2017	1A,Ballysimon Road,Limerick ,V94,Ireland	Limerick Metal Recycling,WFP/L/2017,1A,Ballysimon Road,Limerick,V94,Ireland	1A,Ballysimon Road,Limerick,V94,Ireland
Within the Country	07 01 04	Yes	2.441	other organic solvents, washing liquids and mother liquors	R12	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
To Other Countries	07 02 03	Yes	1.0	organic halogenated solvents, washing liquids and mother liquors	R12	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	08 01 15	Yes	3.092	aqueous sludges containing paint or 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 17	Yes	44.208	wastes from paint or varnish removal containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis, ,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis, ,Belgium	Zoning Industrial D ehein,B 4480 - Engis, ,Belgium
To Other Countries	08 03 12	Yes	7.67	waste ink containing dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis, ,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis, ,Belgium	Zoning Industrial D ehein,B 4480 - Engis, ,Belgium
To Other Countries	08 03 13	No	5.627	waste ink other than those mentioned in 08 03 12	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis, ,Belgium		
To Other Countries	08 03 17	Yes	0.269	waste printing toner 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	09 01 11	Yes	0.014	single-use cameras containing batteries included in 16 06 01, 16 06 02 or 16 06 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 S.A Revatech,0421 012 761,Zoning Industrial d'Ehein,Route de Zoning No.6,4480 Engis,4480,Belgium	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany
To Other Countries	11 01 05	Yes	164.465	pickling acids	R5	M	Weighed	Abroad	S.A Revatech,0421 012 761	Zoning Industrial d'Ehein,Route de Zoning No.6,4480 Engis,4480,Belgium	Zoning Industrial d'Ehein,Route de Zoning No.6,4480 Engis,4480,Belgium	
To Other Countries	12 01 17	No	0.57	waste blasting material other than those mentioned in 12 01 16	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	13 01 10	Yes	0.039	mineral-based non-chlorinated hydraulic oils	R2	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	
To Other Countries	13 02 05	Yes	0.05	mineral-based non-chlorinated engine, gear and lubricating oils	R2	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	
To Other Countries	13 03 07	Yes	18.16	mineral-based non-chlorinated insulating and heat transmission oils	R2	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	
To Other Countries	14 06 02	Yes	0.214	other halogenated 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	
To Other Countries	14 06 03	Yes	63.401	other solvents and solvent mixtures absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R12	M	Weighed	Abroad	ADC,119864/1-BTW BE0540545069	Kiefkenshoer Logistics HUB NV,Gesleth-Haven 1931,Beveren Waas,B-9130,Belgium	ADC,119864/1-BTW BE0540545069,Kiefkenshoer Logistics HUB NV,Gesleth-Haven 1931,Beveren Waas,B-9130,Belgium	
Within the Country	15 02 02	Yes	0.922	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R12	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	
To Other Countries	15 02 02	Yes	12.8	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R12	M	Weighed	Abroad	NSB Polymers,04-400-1303415	Bottgerstrasse 2,Dormagen,Dormagen,D-41540,Germany	NSB Polymers,04-400-1303415,Bottgerstrasse 2,Dormagen,Dormagen,D-41540,Germany	
To Other Countries	15 02 03	No	0.397	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	D10	M	Weighed	Abroad	Sava Gmbh,14HRO03002	ostertweute 1,25541 brunsbuttel,,,,Germany		
To Other Countries	16 05 04	Yes	0.044	gases in pressure containers (including halons) containing dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	
To Other Countries	16 05 04	Yes	2.124	gases in pressure containers (including halons) containing dangerous substances	R4	M	Weighed	Abroad	Remondis Industrie Service GmbH,E36236037	SAD Knapsack,Tonstrabe 2,50374 Ertstadt,Germany,Germany	Remondis Industrie Service GmbH,E36236037,SAD Knapsack,Tonstrabe 2,50374 Ertstadt,Germany,Germany	
Within the Country	16 05 06	Yes	7.133	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R12	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	

To Other Countries	16 05 07	Yes	0.131	discarded inorganic chemicals consisting of or containing dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
Within the Country	16 05 08	Yes	0.009	discarded organic chemicals consisting of or containing dangerous substances	R12	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Enva Ireland Ltd ,W184-01 ,Portlaoise ,Co. Laois ,,,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland
Within the Country	16 05 08	Yes	1.94	discarded organic chemicals consisting of or containing dangerous substances	R12	M	Weighed	Offsite in Ireland	Limerick Metal Recycling,WFP/L/2017	1A,Ballysimon Road,Limerick ,V94,Ireland	Limerick Metal Recycling,WFP/L/2017,1A,B allysimon Road,Limerick,V94,Ireland	1A,Ballysimon Road,Limerick,V94,Ireland
To Other Countries	16 05 08	Yes	0.149	discarded organic chemicals consisting of or containing dangerous substances	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
Within the Country	16 05 08	Yes	4.793	discarded organic chemicals consisting of or containing dangerous substances	R12	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
To Other Countries	17 01 06	Yes	0.388	mixtures of, or separate fractions of concrete, bricks, tiles and ceramics 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	17 05 03	Yes	0.522	soil and stones containing dangerous substances	R12	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Enva Ireland Ltd ,W184-01 ,Portlaoise ,Co. Laois ,,,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland
Within the Country	17 06 05	Yes	0.085 (18)	construction materials containing asbestos	R12	M	Weighed	Offsite in Ireland	Henkel Ireland Operation & Research Ltd.,,	Tallaght Business Park,Whitestown Road,Dublin,Dublin 24,Ireland	Henkel Ireland Operations & Research Ltd.,,,Tallaght Business Park,Whitestown Road,Dublin,Dublin 24,Ireland	Tallaght Business Park,Whitestown Road,Dublin,Dublin 24,Ireland
To Other Countries	19 02 04	Yes	49.416	premixed wastes composed of at least one hazardous waste	R12	M	Weighed	Abroad	EdelChemie (Eco Option),EPR/RP3931XD	Eco-Option House Lostock Works ,Griffiths Road Lostock,Northwich ,Cheshire,United Kingdom	EdelChemie (Eco Option),EPR/RP3931XD,Eco- Option House Lostock Works,Griffiths Road ,Lostock Cheshire,Cheshire,United Kingdom	Eco- Option House Lostock Works,Griffiths Road ,Lostock Cheshire,Cheshire,United Kingdom
To Other Countries	19 02 05	Yes	21.764	sludges from physico/chemical treatment 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,Industrie strasse 7 ,04808 Wurzen ,Germany,Germany,Germany	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany
To Other Countries	20 01 25	No	0.141	edible oil and fat	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 28	No	0.29	paint, inks, adhesives and resins other than those mentioned in 20 01 27	R12	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED20 08/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,,,,Belgium	Recyfuel SA,D3200/61080/RGPED20 08/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	20 01 29	Yes	24.353	detergents 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	20 01 30	No	0.017	detergents other than those mentioned in 20 01 29	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	734.34	sludges from physico/chemical treatment other than those mentioned in 19 02 05	R12	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,Ireland
Within the Country	17 04 05	No	52.7	iron and steel	R4	M	Weighed	Offsite in Ireland	Greenstar,W0082-03	Ballykeefe Townland,Dock Road,Limerick,"",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](#)

Enva Ireland Limited - Shannon

Groundwater Monitoring Round 4 2017

Project Number: 60538142/CKRP0004

02 January 2018

DRAFT

Quality information

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Appendix B - Validated Laboratory Results

Appendix C – 2017 Temporal Trends

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1. Introduction

AECOM Ireland Limited (AECOM) is pleased to present this report to Enva Ireland Limited (Enva) for the Quarter 4 (Q4 - December) 2017 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 OPP-594349, '*Enva Shannon Groundwater Monitoring 2017*', dated 08 February 2017. The project was approved by Enva on 08 March 2017; under purchase their order number 34200.

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 2017 Waste Licence groundwater monitoring was completed by AECOM on 06 December 2017.

2. Scope of Works

The following scope of work was completed by an experienced AECOM field scientist on 06 December 2017:

- Water level measurement at all accessible monitoring wells, both on and off-site
- Well purging and measurement of water quality parameters 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 both 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 groundwater monitoring wells to be sampled was calculated based on measured water levels. 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.

Water quality field measurements were taken toward the end of purging using a calibrated water quality field meter in a flow-through cell fitted to the sampling tubing (where possible). Pumping continued until stable field measurements were recorded. Field measurements including pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and oxidation-reduction potential (ORP) were recorded.

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.

3. Results

3.1 Field Observations

The following observations were recorded during purging and sampling on 06 December 2017:

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

Field measurements of water quality parameters recorded in Q4 2017 are presented in Table 2 and are summarised below:

- pH values ranged from 7.12 (MW5) to 7.19 (MW4S) and were within the normal range for groundwater at the site
- EC values ranged from 704 $\mu\text{S}/\text{cm}$ (MW5) to 2,211 $\mu\text{S}/\text{cm}$ (MW4S) in December 2017. EC was recorded above the EPA Draft Interim Guideline Value (IGV) = 1,000 $\mu\text{S}/\text{cm}$ and Upper Groundwater Threshold Value (GTV) = 1,875 $\mu\text{S}/\text{cm}$ at well MW4S
- Field ORP readings were compensated, as recommended by the instrument manufacturer. The adjusted redox (Eh) readings ranged between 91 mV (MW4S) and 170 mV (MW3) and indicate reducing (anaerobic) groundwater conditions
- Groundwater temperatures ranged between 12.4 $^{\circ}\text{C}$ (MW4S) and 13.0 $^{\circ}\text{C}$ (MW5). The groundwater temperature readings were slightly above the normal range for groundwater in Ireland (10.0 $^{\circ}\text{C}$ to 12.0 $^{\circ}\text{C}$)
- DO concentrations ranged from 2.83 mg/L (MW4S) to 5.17 mg/L (MW3). Groundwater conditions beneath the site can therefore be described as anaerobic (under saturated with respect to oxygen) and are consistent with the ORP readings noted above. For comparison, fully aerated groundwater at the observed temperatures would be expected to have DO concentrations in the region of 10 mg/L

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 at the wellhead.

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 2017, the overall 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 (not directly down hydraulic gradient 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)

3.4 Analytical Results

Volatile Organic Contaminants (VOCs)

VOC results for the (Q4 December) 2017 monitoring round are presented in Table 3 and are summarised below.

Concentrations of vinyl chloride (VC) above the GTV (0.375 µg/L) were reported at well MW3 (3.9 µg/L) and well MW4S (199.7 µg/L). There is no IGV defined for VC.

Trans-1-2-dichloroethene (tDCE) was detected above the GTV (0.375 µg/L) at monitoring well MW4S (6.0 µg/L).

Cis-1-2-dichloroethene (cDCE) was detected above the GTV (0.375 µg/L) and IGV (30 µg/L) at monitoring well MW4S (350.0 µg/L). At well MW3 (4.0 µg/L), the reported cDCE concentration exceeded the GTV only.

Toluene (18.0 µg/L) at well MW4S exceeded the IGV (10 µg/L) but was considerably below the GTV (525 µg/L).

Benzene was reported above both the GTV (0.75 µg/L) and IGV (1.0 µg/L) at well MW4S (7.9 µg/L).

Methyl tert butyl ether (MTBE), 1,1-dichloroethene, 1,1-dichloroethane, chloroform, 1,1,1-trichloroethane, ethylbenzene, p/m-xylene and o-xylene were detected above their respective MDLs at one or more wells, but at concentrations that did not exceed the relevant assessment criteria (where available).

Total VOC concentrations increased slightly at well MW4S from 801 µg/L in September 2017 to 1,036 µg/L in December 2017.

Semi-Volatile Organic Contaminants (SVOCs)

SVOC results are presented in Table 4.

In December 2017, no SVOCs were detected above laboratory MDLs at wells MW3 and MW5.

At well MW4S, 2,4-dichlorophenol (11.2 µg/L) was the only SVOC detected above laboratory MDLs. The IGV for the sum of phenol compounds is 0.5 µg/L.

Hydrocarbons

Hydrocarbon results are presented in Table 5.

GRO (C₄-C₁₂) were reported at concentrations of 343 µg/L (MW4S) and 329 µg/L (MW5) in December 2017.

Diesel range organics (DRO) (C₈-C₄₀) were detected above the laboratory MDL in groundwater from wells MW4S (330 µg/L) and MW5 (300 µg/L) in December 2017.

Total petroleum hydrocarbon (TPH) concentrations in groundwater from monitoring wells MW4S (673 µg/L) and MW5 (629 µg/L) exceeded the assessment criteria (IGV of 10 µg/L and GTV of 7.5 µg/L) in December 2017.

At well MW4S, THP decreased from 1,278 µg/L in September 2017 to 673 µg/L in December 2017.

The TPH concentration at well MW5 decreased from 4,455 µg/L in September 2017 to 629 µg/L in December 2017.

At well MW5, the TPH composition is different to that at well MW4S, typically being predominantly in the C₈-C₄₀ carbon chain length range. This detection is likely related to anecdotally-reported historical issues with a former diesel fuel storage tank on a third party site adjacent to MW5.

Ammonium as NH₄

In water, ammonia (NH₃) typically dissociates to form the ammonium ion (NH₄), particularly at pH values of less than 7. Reported concentrations of ammoniacal nitrogen (as NH₄) in all three groundwater samples (MW3 (0.47 mg/L), MW4S (15.00 mg/L) and MW5 (0.18 mg/L)) exceeded the adopted assessment criteria. The GTV for ammonium is 0.065 - 0.175 mg/L and the IGV is 0.15 mg/L.

The concentration of ammonium at well MW4S decreased from 23.03 mg/L in September 2017 to 15.00 mg/L in December 2017.

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

Chloride

Reported concentrations of chloride ranged between 61 mg/L (well MW3) and 533.9 mg/L (well MW4S). The concentrations of chloride reported for all three groundwater samples collected in December 2017 exceeded the Lower GTV (24 mg/L) and IGV (30 mg/L). The chloride concentration at well MW4S was also above the Upper GTV of 187.5 mg/L.

The concentration of chloride at well MW4S decreased from 889 mg/L in September 2017 to 533.9 mg/L in December 2017.

Sulphate

Reported concentrations of sulphate ranged between 26.2 mg/L (well MW5) and 131 mg/L (well MW3). The sulphate concentration at well MW4S increased from 18 mg/L in September to 77 mg/L in December 2017.

Sodium

Reported concentrations of sodium ranged between 50.8 mg/L (well MW5) and 387.2 mg/L (well MW4S). The reported sodium concentration at well MW4S exceeded the IGV (150 mg/L) in December 2017; there is no GTV defined for sodium.

The concentration of sodium at well MW4S decreased from 791 mg/L in September 2017 to 387.2 mg/L in December 2017.

Potassium

Reported concentrations of potassium ranged between 2.7 mg/L (well MW5) and 28.4 mg/L (well MW4S). The reported concentration of potassium in sample MW4S exceeded the IGTV (5 mg/L). There is no GTV defined for potassium.

The potassium concentration of potassium at well MW4S decreased from 58 mg/L in September 2017 to 28.4 mg/L in December 2017.

Total Oxidised Nitrogen (TON)

TON was below the laboratory MDL (<0.2 mg/L) in groundwater sample MW3. TON was detected at a trace concentration (0.3 mg/L) at well MW4S and at a concentration of 1.8 mg/L at well MW5 in December 2017. There are no applicable assessment criteria available for TON.

Total Organic Carbon (TOC)

TOC was only detected above the MDL at well MW4S (38 mg/L) in December 2017. The TOC concentration at well MW4S decreased from 110 mg/L in September 2017 to 38 mg/L in December 2017.

There are no relevant assessment criteria available for TOC.

Cyclohexane Extractable Matter (CEM)

Concentrations of CEM ranged from less than the MDL (<1 mg/L) at wells MW3 and MW5 to 2 mg/L at well MW4S. There are no relevant assessment criteria available for CEM.

3.5 Temporal Trends 2017

Groundwater analytical results collected for monitoring wells MW3, MW4S and MW5 on a quarterly basis throughout 2017 are presented in Appendix C. Historical VOC trend graphs are presented in Appendix D.

Monitoring Well	Contaminant	Apparent Trend in 2017
MW3	VOCs	<p>Concentrations of VOCs remained low throughout 2017 at well MW3. Total VOC concentrations increased slightly between March (17 µg/L) and December (48 µg/L).</p> <p>At well MW3, VC exceeded the GTV (0.375 µg/L) in each monitoring round in 2017. Concentrations of VC increased from 1.5 µg/L in Q1 2017 to 4.1 µg/L in Q4 2017.</p> <p>cDCE was the only other VOC to exceed the GTV (0.375 µg/L) at well MW3 in Q2 (3 µg/L) and Q3 and Q4 (both 4 µg/L).</p>
	Hydrocarbons	<p>In 2017, DRO and GRO were below laboratory MDLs in Q1, Q2 and Q4. Low concentrations of GRO were detected in Q3 (31 µg/L) only.</p>
	Miscellaneous Parameters	<p>Concentrations of ammoniacal nitrogen (as NH₄) consistently exceeded the relevant assessment criteria in 2017 at well MW3. Concentrations were stable and ranged between 0.47 mg/L (Q4) and 0.59 mg/L (Q2).</p> <p>Chloride exceeded the Lower GTV (24 mg/L) and IGTV (30 mg/L) in each quarter at well MW3 but remained below the Upper GTV (187.5 mg/L). Chloride concentrations ranged from 61 mg/L in Q4 to</p>

		<p>91 mg/L in Q2.</p> <p>All other additional parameters remained below the relevant assessment criteria throughout 2017.</p>
MW4S	VOCs	<p>Total VOC concentrations decreased between Q1 2017 (2,013 mg/L) and Q4 2017 (1,036 mg/L) at well MW4S.</p> <p>During 2017, VC exceeded the GTV in each of the four monitoring rounds and ranged between 183 mg/L (Q3) and 271 mg/L (Q2).</p> <p>cDCE also exceeded the IGV and GTV in each monitoring round in 2017, with a maximum reported cDCE concentration of 1,214 mg/L being recorded in Q1 2017, decreasing to 350 mg/L in Q4 2017.</p> <p>Benzene concentrations exceeded the relevant assessment criteria in each of the four monitoring rounds and concentrations ranged between 4.0 µg/L (Q2) and 7.9 µg/L (Q4).</p> <p>Toluene exceeded the IGV (10 µg/L) in Q3 (17 µg/L) and Q4 (18 µg/L) but concentrations were significantly below the GTV (525 µg/L).</p>
	Hydrocarbons	<p>At well MW4S, an elevated TPH concentration was recorded in Q2 2017 (79,744 µg/L). The well was resampled in July 2017 and a lower TPH concentration was recorded (15,390 µg/L). TPH concentrations reduced significantly to 673 µg/L in Q4 2017.</p>
	Miscellaneous Parameters	<p>In Q2 (June) 2017, elevated concentrations of major ions (ammonium, chloride, sulphate, sodium, potassium) and TOC, were reported at well MW4S.</p> <p>Repeat sampling of well MW4S took place in July 2017 and comparable elevated concentrations of major ions were reported. In Q3 and Q4 2017 major ions and TOC concentrations declined to more typical values, similar to those previously recorded at the well.</p> <p>Concentrations of ammoniacal nitrogen (as NH₄) consistently exceeded the relevant assessment criteria in 2017 at well MW4S and ranged from 13.7 mg/L (Q1) to 34 mg/L (Q2).</p> <p>Chloride concentrations exceeded the IGV and Upper GTV throughout 2017. The maximum chloride concentration was recorded in Q2 (repeat sampling, 2,364 mg/L) declining to 534 mg/L in Q4.</p> <p>Sulphate was reported above the relevant assessment criteria in Q1, Q2 and in July 2017. The maximum sulphate concentration was recorded in Q2 2017 (1,685 mg/L) and sulphate decreased to 77 mg/L in Q4.</p> <p>Sodium concentrations were recorded above the relevant assessment criteria in each monitoring round in 2017. The maximum sodium concentration was recorded in Q2 (July, repeat sampling (1,816 mg/L) and the minimum sodium concentration was recorded in Q4 (387 mg/L).</p> <p>Potassium concentrations remained above relevant assessment criteria in 2017 ranging from 28 mg/L in Q4 to 317 mg/L in Q2 (July repeat sampling).</p>

MW5	VOCs	<p>1,1,1-TCA was the only VOC detected above MDLs at well MW5 in 2017. 1,1,1-TCA was detected at a concentration of 3 µg/L in Q4 2017 and was significantly below the IGV (500 µg/L).</p>
	Hydrocarbons	<p>DRO and GRO were detected above MDLs in each of the four monitoring rounds in 2017 at well MW5.</p> <p>A significantly elevated TPH concentration was recorded in Q2 (135,955 µg/L).</p> <p>Subsequently, TPH concentrations decreased and the lowest concentration was reported in Q4 at just 629 µg/L. Concentrations of TPH at well MW5 will be kept under review in 2018.</p>
	Miscellaneous Parameters	<p>Concentrations of major ions remained generally low and below relevant assessment criteria throughout 2017.</p> <p>Concentrations of ammoniacal nitrogen exceeded the relevant assessment criteria in Q3 2017 (0.25 mg/L) and Q4 2017 (0.18 mg/L).</p> <p>Chloride was the only major ion to exceed the relevant assessment criteria in each monitoring round in 2017 at well MW5. Chloride concentrations ranged between 84 mg/L in both Q3 and Q4 and 121 mg/L in Q1 2017. All chloride results were below the Upper GTV.</p> <p>Reported concentrations of CEM were elevated in Q1 2017 (807 mg/L) but were below the MDL (<1 mg/L) in Q3 and Q4. There are no relevant assessment criteria for CEM.</p>

4. Conclusions

The findings of the Q4 (December) 2017 groundwater monitoring event are as follows:

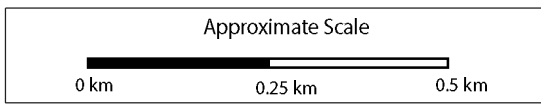
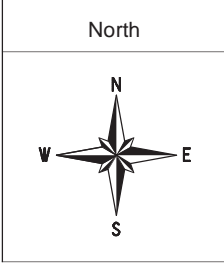
- Groundwater contours indicate that groundwater, particularly in the central part of the Enva site is influenced by pumping from the Enva Production Well. The general direction of groundwater flow across the site was to the south-east and east
- The highest concentration of VOCs was reported in the groundwater sample collected from monitoring well MW4S (total VOCs 1,036 µg/L). Well MW4S is located in the southern part of the site. Total VOC concentrations at well MW4S increased slightly from 801 µg/L in September 2017 to 1,036 µg/L in December 2017. In 2017, total VOCs at the well decreased from 2,013 µg/L in March 2017 to 1,036 µg/L in December 2017
- The groundwater sample collected from well MW4S contained concentrations of VC (199.7 µg/L), cDCE (350 µg/L), trans-1,2-dichloroethene (6 µg/L), benzene (7.9 µg/L) and toluene (18 µg/L) above the assessment criteria
- MW3 is located in the northwest of the site. The groundwater sample collected from well MW3 contained concentrations of VC (4.0 µg/L) and cDCE (4.0 µg/L) above the assessment criteria and the total VOC concentration was 48 µg/L
- No VOCs were detected in the groundwater sample collected from well MW5
- No SVOCs were detected above laboratory MDLs at wells MW3 and MW5
- At well MW4S, 2,4-dichlorophenol (11 µg/L) was the only SVOC detected and above the IGV (0.5 µg/L) for the sum of phenol compounds
- No hydrocarbon compounds were detected at well MW3
- DRO were detected above the laboratory MDL in groundwater from well MW4S (330 µg/L) and MW5 (300 µg/L)
- Concentrations of GRO were reported at concentrations of 343 µg/L (MW4S) and 329 µg/L (MW5)
- Ammonium concentrations exceeded the adopted assessment criteria at all three wells
- Concentrations of chloride exceeded the IGV and Lower GTV in groundwater from all three wells, with the result for well MW4S also exceeding the Upper GTV
- Sodium and potassium were reported above the adopted assessment criteria at well MW4S

5. Recommendations

The fourth round of 2017 quarterly groundwater monitoring, conducted in December 2017, indicates continuing, gradual, declining long-term trends in the key VOC concentrations across the site with no apparent seasonality.

AECOM recommend that monitoring continues in 2018 in line with EPA requirements.

Figures



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CLIENT
ENVA IRELAND LIMITED

PROJECT LOCATION
**SMITHSTOWN INDUSTRIAL ESTATE,
SHANNON**

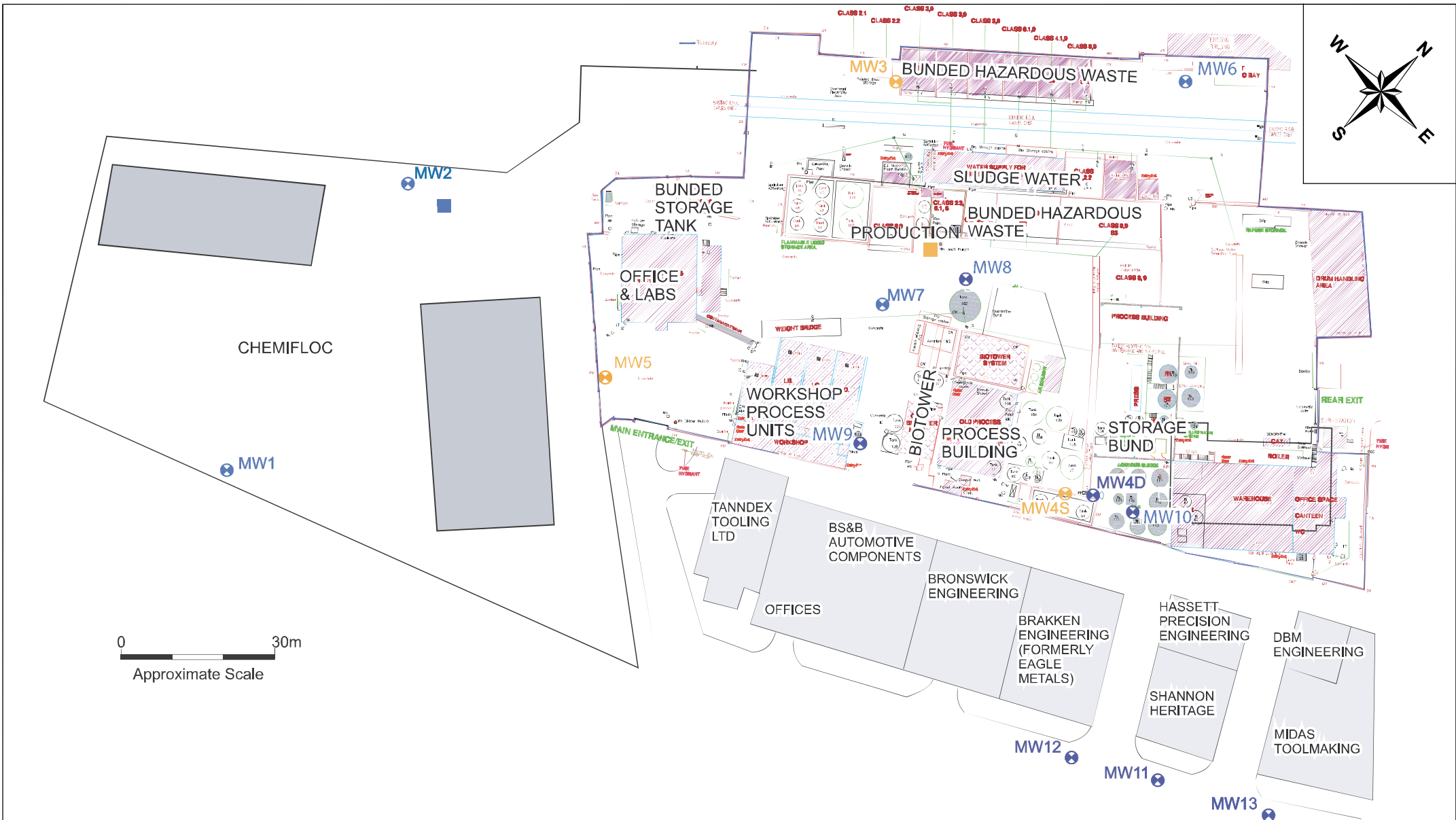
DRAWING TITLE
FIGURE 1 - SITE LOCATION PLAN

ENVIRONMENTAL CONSULTANTS



**1st Floor Montrose House
Carrigaline Road, Douglas, Cork.
Tel 021 4365 006**

DRAWN FO'R	TRACED	CHECKED FO'R	APPROVED KF/COR	DATE DEC 2017
SCALE AS SHOWN	Job No. 60538142		A	



CLIENT
ENVA IRELAND LIMITED

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

DRAWING TITLE
**FIGURE 2
SITE LAYOUT PLAN SHOWING
BOREHOLE LOCATIONS
DECEMBER 2017**

DRAWN FO'R	TRACED	CHECKED KF	APPROVED KF/CORK	DATE DEC 2017
SCALE N.T.S	Job No. 60538142	REV. A		

Key

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

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CLIENT
ENVA IRELAND LIMITED

DRAWING TITLE
FIGURE 3 - GROUNDWATER CONTOUR PLAN (Q4 2017)

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

DRAWN FO'R	TRACED	CHECKED KF	APPROVED KF	DATE DEC 2017
SCALE As Shown	Job No.	60538142		REV. A

Key

	SITE PRODUCTION WELL
	CHEMIFLOC PRODUCTION WELL
6.75	GROUNDWATER ELEVATION (m ASD)
	GROUNDWATER FLOW DIRECTION

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Tables

Table 1: Sample Inventory - Enva Shannon, December 2017

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

Notes:

EC - Electrical Conductivity

Eh - Redox Potential

T - Temperature

DO - Dissolved Oxygen

VOCs - Volatile Organic Compounds

SVOCs - Semi Volatile Organic Compounds

Major Ions - to include Chloride, Sulphate, Potassium and Sodium

Total Hydrocarbons - specifically Diesel Range Organics (DRO) and Gasoline Range Organics (GRO)

Table 2: Water Level and Field Measurements - Enva Shannon, 06 December 2017

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		mS/cm	mV	°C	mg/L	
MW1	--	4.336	10.80	6.46	12.22	--	--	--	--	--	--	--	--	--
MW2	--	3.620	11.05	7.43	8.52	--	--	--	--	--	--	--	--	--
MW3	06-Dec-17	3.614	10.72	7.11	12.24	17	51	55	7.14	734	170	12.8	5.17	Clear and colourless. No odour.
MW4S	06-Dec-17	4.713	11.05	6.34	10.29	11	33	35	7.19	2,211	91	12.4	2.83	Cloudy grey water. Possible solvent odour.
MW4D	--	4.857	10.99	6.13	26.61	--	--	--	--	--	--	--	--	--
MW5	06-Dec-17	2.982	10.57	7.59	12.34	18	55	33*	7.12	704	153	13.0	2.88	Colourless, very slight hydrocarbon sheen and odour.
MW6	--	3.304	10.75	7.45	11.84	--	--	--	--	--	--	--	--	--
MW7	--	3.384	10.13	6.75	14.97	--	--	--	--	--	--	--	--	--
MW8	--	3.572	10.00	6.43	15.94	--	--	--	--	--	--	--	--	--
MW9	--	3.644	9.97	6.33	23.69	--	--	--	--	--	--	--	--	--
MW10	--	4.684	10.99	6.31	17.64	--	--	--	--	--	--	--	--	--
MW11	--	2.413	8.88	6.47	12.76	--	--	--	--	--	--	--	--	No well label.
MW12	--	2.692	8.72	6.03	12.71	--	--	--	--	--	--	--	--	No well label.
MW13	--	2.272	8.50	6.22	12.41	--	--	--	--	--	--	--	--	No well label.
Production Well	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

SWL - standing water level
 mASD - metres above site datum
 mbtoc - metres below top of casing
 -- Not Applicable
 NEC - No Evidence of Contamination

EC - Electrical Conductivity mS/cm - micro Siemens per centimetre
 Eh - Redox Potential mV - millivolts
 T - Temperature °C - degrees Celsius
 DO - Dissolved Oxygen mg/L - milligrams per litre
 Note redox potential readings compensated as recommended by instrument manufacturer

Table 3: Volatile Organic Compound Results (mg/L) - Enva Shannon, December 2017

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	0.3	4.8	-
Chloromethane	3	nv	nv	-	-	-
Vinyl Chloride	0.1	0.375	nv	3.9	199.7	-
Bromomethane	1	nv	nv	-	-	-
Chloroethane	3	nv	nv	-	-	-
Trichlorofluoromethane	3	nv	nv	-	-	-
1,1-Dichloroethene	3	nv	30*	-	5.0	-
Dichloromethane	3	15	10	-	-	-
trans-1-2-Dichloroethene	3	0.375	30*	-	6.0	-
1,1-Dichloroethane	3	nv	nv	31.0	328.0	-
cis-1-2-Dichloroethene	3	0.375	30*	4.0	350.0	-
2,2-Dichloropropane	1	nv	nv	-	-	-
Bromochloromethane	2	nv	nv	-	-	-
Chloroform	2	75	12	-	6.0	-
1,1,1-Trichloroethane	2	nv	500	9.0	81.0	3.0
1,1-Dichloropropene	3	nv	nv	-	-	-
Carbon tetrachloride	2	nv	2	-	-	-
1,2-Dichloroethane	2	2	3	-	-	-
Benzene	0.5	0.75	1	-	7.9	-
Trichloroethene	3	7.5	10, 70**	-	-	-
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	-	18.0	-
trans-1-3-Dichloropropene	2	nv	nv	-	-	-
1,1,2-Trichloroethane	2	nv	nv	-	-	-
Tetrachloroethene	3	7.5	10, 40***	-	-	-
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	0.5	nv	10	-	10.0	-
p/m-Xylene	1	nv	10****	-	10.0	-
o-Xylene	0.5	nv	10****	-	10.0	-
Styrene	2	nv	nv	-	-	-
Bromoform	2	75	nv	-	-	-
Isopropylbenzene	3	nv	nv	-	-	-
1,1,1,2,2-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 2017

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	-	11.2	-
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	0.075 ^A	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 ^{****}	-	-	-
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	6	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-chloroethoxy)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	-	-	-

Notes:

- | | | |
|----------------|------------------------|--|
| BOLD | Exceeds GTV | 1 - Draft IGV is for the sum of phenols |
| <i>Italics</i> | Exceeds Draft IGV | 2 - Draft IGV is for the sum of phthalates |
| MDL | Method Detection Limit | |
| - | Less than the MDL | |
| nv | No value | A - PAH compounds specified in Groundwater Regs 2016 |

Table 5: Hydrocarbons (mg/L) - Enva Shannon, December 2017

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	-	330	300
GRO						
GRO (C ₄ -C ₁₂)	100	nv	10	-	343	329
Total TPH (C₂-C₅) & (C₆-C₄₀)	100	8	10	-	673	629

Notes:

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

Table 6: Miscellaneous Parameters (mg/L) - Enva Shannon, December 2017

Compound	MDL	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Ammonium (NH ₄)	0.03	0.065 - 0.175	0.150	0.47	15.0	0.18
Chloride	0.30	24 - 187.5	30	<i>61.0</i>	533.9	<i>83.7</i>
Sulphate	0.05	187.5	200	131.0	<i>77.0</i>	26.2
Sodium	0.10	nv	150	60.3	<i>387.2</i>	50.8
Potassium	0.10	nv	5	5.0	<i>28.4</i>	2.7
Total Oxidised Nitrogen as N	0.20	nv	No abnormal change	-	0.3	1.8
Total Organic Carbon	2	nv	No abnormal change	-	38.0	-
Cyclohexane Extractable Matter	1	nv	nv	-	2.0	-

Notes:

- BOLD** Exceeds (Upper) GTV
- Italics* Exceeds Draft IGV
- MRL Method Detection Limit
- Less than the MDL
- nv No value

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
4th Floor Adelphi Plaza
Adelphi Centre
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Ireland

Tel: +44 (0) 1244 833780
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Attention : Fergus O'Regan
Date : 13th December, 2017
Your reference : 60538142
Our reference : Test Report 17/20205 Batch 1
Location :
Date samples received : 7th December, 2017
Status : Final report
Issue : 1

Three samples were received for analysis on 7th December, 2017 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.: 17/20205

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.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

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 Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) 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: 17/20205

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/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.	PM0	No preparation is required.				
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, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. 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			

JE Job No: 17/20205

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
NONE	No Method Code	NONE	No Method Code				

Appendix C – 2017 Temporal Trends

Table C1: Selected Volatile Organic Compound Results (mg/L) (Non-detects Omitted) - Enva Shannon, Quarterly Monitoring 2017

Volatile Organic Compound	Groundwater Regs 2016	EPA Draft IGTV	MW3				MW4S				MW5			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Methyl Tertiary Butyl Ether (MTBE)	10	30	0.2	0.3	0.4	0.3	3	<0.1	4	4.8	<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	<3
Vinyl Chloride (VC)	0.375	nv	1.5	4	4	4	220	271	183	200	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	<3	<3	<3	<3	9	11	<3	5	<3	<3	<3	<3
trans-1-2-Dichloroethene (tDCE)	0.375	30	<3	<3	<3	<3	4	4	5	6	<3	<3	<3	<3
1,1-Dichloroethane	nv	nv	15	23	25	31	177	138	292	328	<3	<3	<3	<3
cis-1-2-Dichloroethene (cDCE)	0.375	30	<3	3	4	4	1,214	1,011	183	350	<3	<3	<3	<3
Chloroform	nv	nv	<2	<2	<2	<2	361	7	6	6	<2	<2	<2	<2
1,1,1-Trichloroethane	nv	500	<3	<3	<3	9	12	<2	86	81	<2	<2	<2	3
Benzene	0.75	1.0	<0.5	<0.5	<0.5	<0.5	5	4	6	8	<0.5	<0.5	<0.5	<0.5
Trichloroethene (TCE)	7.5	10	<3	<3	<3	<3	<3	4	5	<3	<3	<3	<3	<3
Toluene	525	10	<0.5	<0.5	<5	<5	<0.5	9	17	18	<0.5	<5	<5	<5
Tetrachloroethene (PCE)	7.5	10	<3	<3	<3	<3	3	6	<3	<3	<3	<3	<3	<3
Ethylbenzene	nv	10	<0.5	<0.5	<0.5	<1	2	<0.5	6	10	<0.5	<0.5	<0.5	<0.5
p/m-Xylene	nv	10	<1	<1	<1	<2	<1	<1	5	10	<1	<1	<1	<1
o-Xylene	nv	10	<0.5	<0.5	<0.5	<1	3	<0.5	4	10	<0.5	<0.5	<0.5	<0.5
Napthalene	0.075	1	<3	<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	<3	<3	<3	<3
1,3,5 Trimethylbenzene	nv	nv	<3	<3	<3	<2	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

BOLD Exceeds GTV
Italics Exceeds Draft IGTV
nv no value

Table C2: Hydrocarbons (mg/L) - Enva Shannon, Quarterly Monitoring 2017

Compound	Groundwater Regs 2016	EPA Draft IGTV	MW3				MW4S					MW5				
			Q1	Q2	Q3	Q4	Q1	Q2	Q2 Repeat	Q3	Q4	Q1	Q2	Q2 Repeat	Q3	Q4
DRO/EPH																
DRO/EPH (C ₈ -C ₄₀)	nv	10	<10	<10	<10	<10	240	74,790	14,070	890	330	6,760	133,900	4,990	3,370	300
GRO																
GRO (C ₄ -C ₁₂)	nv	10	<10	<10	31	<10	658	4,954	1,320	388	343	<10	2,055	705	1,085	329
TPH (C₄-C₄₀)	nv	10	<10	<10	31	<10	898	79,744	15,390	1,278	673	6,760	135,955	5,695	4,455	629

Notes:

BOLD Exceeds GTV
Italics Exceeds Draft IGTV
 nv no value

Table C3: Miscellaneous Parameters (mg/L) - Enva Shannon, Quarterly Monitoring 2017

Compound	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	MW3				MW4S					MW5			
			Q1	Q2	Q3	Q4	Q1	Q2	Q2 Repeat	Q3	Q4	Q1	Q2	Q3	Q4
Ammoniacal Nitrogen as NH ₄	0.175	0.15	0.58	0.59	0.52	0.47	13.7	35.1	34.0	23.0	15.0	0.07	0.05	0.25	0.18
Chloride	24 - 187.5	30	89	91	77	61	393	2,137	2,364	889	534	121	87	84	84
Sulphate	187.5	200	165	177	168	131	329	1,685	1,151	18	77	31	91	22	26
Sodium	nv	150	78	83	77	60	404	1,805	1,816	791	387	66	46	54	51
Potassium	nv	5	5	5	5	5	10	279	317	58	28.4	2	3	3	3
Total Oxidised Nitrogen as N	nv	No abnormal change	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	<0.2	0.3	5	<0.2	0.4	1.8
Total Organic Carbon	nv	No abnormal change	<2	4	<2	<2	25	2,786	175	110	38	<2	8	<2	<2
Cyclohexane Extractable Matter (SEM)	nv	nv	29	4	3	<1	72	2	na	2	2	807	9	<1	<1

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 2017 (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 2017 (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 2017 (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 2017 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Apr-08	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	-	-	-	-	-	-	-	-	-	-	-	-
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 2017 (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	Dec-15
Vinyl Chloride	0.375	nv	61	7	3	-	3	7	13	6	2.2	2.4	11	4	6	9	4	8
1,1-Dichloroethene	nv	30	9	10	6	8	8	7	-	-	<3	9	-	23	5	4	4	7
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	66
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	391	273	201	157	74	53	-	-	4	4	-	-	-	-	35	53
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	134

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

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Mar-16	Jun-16	Sep-16	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17
Vinyl Chloride	0.375	nv	11	11	6	4	2	4	4	4
1,1-Dichloroethene	nv	30	13	14	5	-	-	-	-	-
cis-1,2-Dichloroethene	0.375	30	8	12	5	-	-	3	4	4
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	83	77	33	18	15	23	25	31
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	129	102	7	6	-	-	-	9
Dichloromethane	15	10	-	-	-	-	-	-	-	-
Chloroform	nv	nv	-	-	-	-	-	-	-	-
Tetrachloromethane	nv	nv	-	-	-	-	-	-	-	-
tert-butyl methyl ether	nv	30	0.2	-	0.3	0.2	0.2	0.3	0.4	0.3
Toluene	525	10	-	-	-	-	-	-	-	-
Ethylbenzene	nv	10	-	-	-	-	-	-	-	-
Isopropylbenzene	nv	nv	-	-	-	-	-	-	-	-
Benzene	0.75	1	-	-	-	-	-	-	-	-
Total xylene	nv	10	-	-	-	-	-	-	-	-
Total VOC Concentration			247	223	56	28	17	30	33	48

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

MRL - method reporting limit

- result below MRL

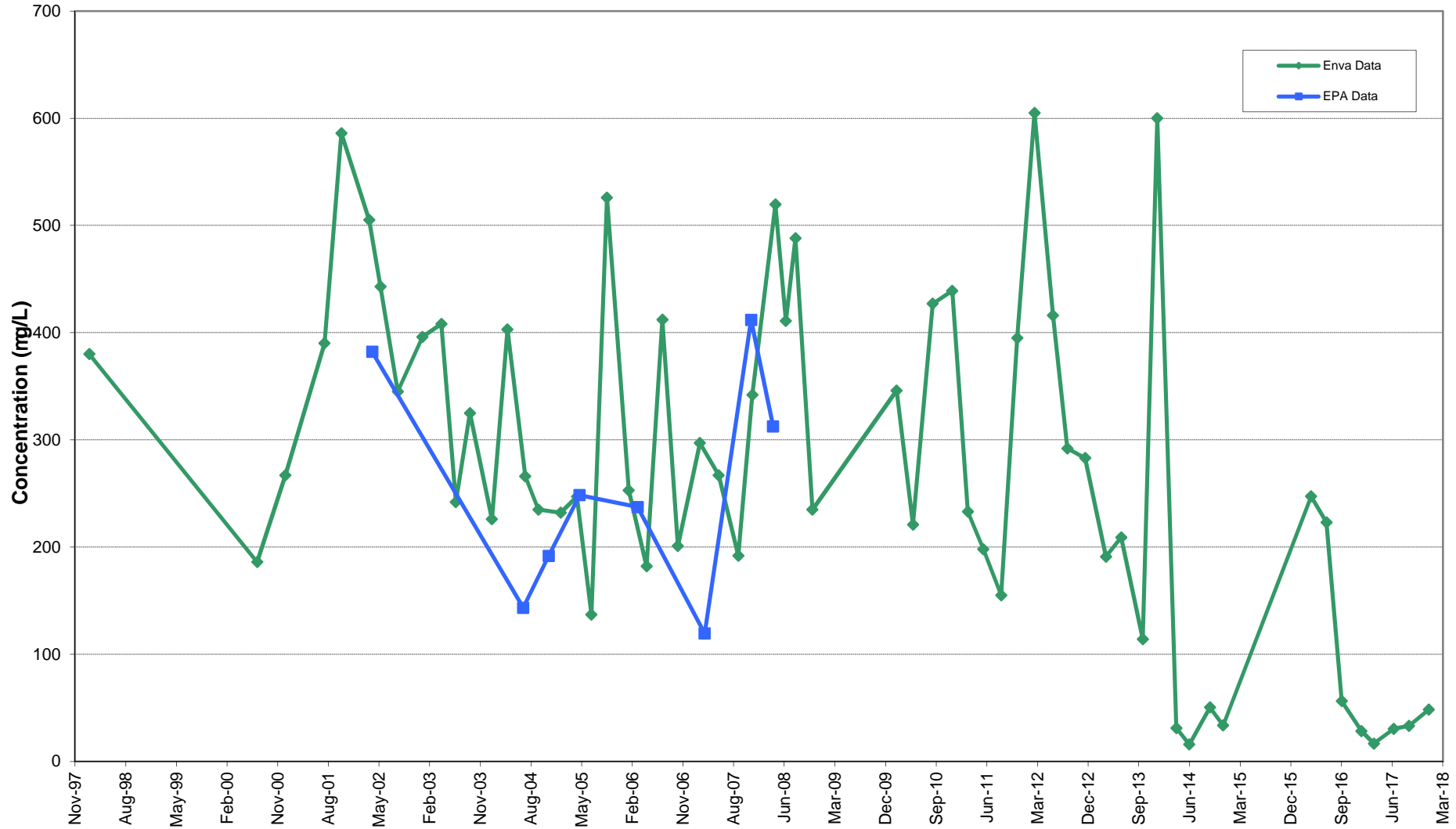
Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to AECOM

n/a - not analysed

Appendix D1: Enva Shannon, Groundwater Monitoring Data February 1998 to December 2017

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 2017 (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	Jan-04
Vinyl Chloride	0.375	nv	136	2113	768	1061	1477	994	-	1072	918	772	756	648	660	698	553
1,1-Dichloroethene	nv	30	-	37	16	n/a	54	31	120	48	41	-	34	30	25	29	24
cis-1,2-Dichloroethene	0.375	30	5235	32712	9580	16363	24450	19517	>20,000	15520	17466	22995	16634	17878	12492	14514	13133
trans-1,2-Dichloroethene	0.375	nv	-	198	75	n/a	283	223	55	234	308	270	-	248	272	324	293
Trichloroethene	7.5	10	31	108	73	n/a	165	280	120	134	121	158	222	89	100	97	132
Tetrachloroethene	7.5	10	n/a	84	41	n/a	141	57	160	213	310	294	123	199	197	184	142
Chloroethane	nv	nv	-	313	62	n/a	-	-	n/a	-	18	-	12	-	-	-	6
1,1-Dichloroethane	nv	nv	543	2946	935	1691	2484	2484	5200	2180	2593	2572	2342	2023	1628	2019	1710
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	9183
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	1114
Chloroform	nv	nv	105	-	44	n/a	144	149	130	110	141	142	122	111	84	106	91
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	17
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	29
Toluene	525	10	14	52	21	n/a	56	175	60	86	102	93	112	103	131	218	271
Ethylbenzene	nv	10	n/a	7	3	n/a	6	17	8.9	12	14	9	11	9	15	16	14
p/m-Xylene	nv	10	n/a	10	5	n/a	10	32	19.1	27	29	18	26	17	40	38	34
o-Xylene	nv	10	n/a	3	2	n/a	4	12	9	9	12	8	13	11	19	18	19
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	26,765

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 2017 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	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	Nov-06	Mar-07
Vinyl Chloride	0.375	nv	407	-	654	556	350	-	585	340	876	929	37.4	518	416	850	n/a
1,1-Dichloroethene	nv	30	15	-	24	19	14	140	17	22	18	-	32.8	14	18	17	-
cis-1,2-Dichloroethene	0.375	30	9182	304	14736	10426	7604	1300	10574	11596	11445	9468	491.7	11093	12041	9386	0.227
trans-1,2-Dichloroethene	0.375	nv	213	-	-	209	197	-	197	155	225	183	1.5	15	163	198	-
Trichloroethene	7.5	10	83	-	76	62	41	42.3	41	22	25	-	5.1	20	26	21	0.963
Tetrachloroethene	7.5	10	74	-	57	43	38	19.4	23	20	17	-	0.8	10	14	15	0.134
Chloroethane	nv	nv	-	n/a	-	-	-	n/a	-	-	-	-	n/a	-	-	-	n/a
1,1-Dichloroethane	nv	nv	1010	316.8	1766	1347	1000	2400	1305	1353	1456	1405	84.7	1240	1300	1131	n/a
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	1.7	-	-	-	-
1,1,1-Trichloroethane	nv	500	5944	4950	8363	6518	4926	5000	6450	5198	5858	5497	271.4	3592	3749	3904	6.005
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	15	10	302	-	332	-	111	510	-	20	-	-	-	-	-	-	-
Chloroform	nv	nv	62	-	87	69	49	92.8	67	77	72	-	3.6	69	66	51	1.4
Dichlorodifluoromethane	nv	nv	-	n/a	-	-	-	n/a	-	39	-	-	-	-	264	-	n/a
Trichlorofluoromethane	nv	nv	11	-	17	13	9	-	12	5	12	2357	2.9	4	8	7	n/a
Methyl Tertiary Butyl Ether	10	30	-	n/a	-	-	-	n/a	22	22	-	-	n/a	-	42	-	n/a
Benzene	0.75	1	19	-	31	27	23	28.2	29	29	41	48	1.4	59	37	48	n/a
Toluene	525	10	250	-	424	492	276	660	199	167	273	734	6.7	170	156	177	-
Ethylbenzene	nv	10	11	-	13	13	14	-	11	8	12	-	-	20	7	20	-
p/m-Xylene	nv	10	29	-	31	61	37	-	25	-	28	-	-	47	18	55	-
o-Xylene	nv	10	15	-	16	17	20	-	13	-	13	-	1.8	22	11	28	-
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			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	15,908	9

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 2017 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	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	734	261	227	298	472	437.6	496	535	346	669	502	1461
1,1-Dichloroethene	nv	30	12	14	8	76.2	99	149.1	96	162	127	85	80	96
cis-1,2-Dichloroethene	0.375	30	6888	8512	4970	5730	5720	n/a	5700	8160	4500	5010	4830	7218
trans-1,2-Dichloroethene	0.375	nv	-	114	80	16.1	-	16.5	-	361	-	361	9	13
Trichloroethene	7.5	10	29	23	13	21.6	90	137.7	-	90.6	44.6	29.5	26	59
Tetrachloroethene	7.5	10	-	14	11	18	-	19.9	-	<40	20.2	-	11	14
Chloroethane	nv	nv	-	-	-	n/a	-	n/a	-	<40	-	-	4	-
1,1-Dichloroethane	nv	nv	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	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	34	49	41	84.5	81	165.1	-	129	92.4	82.5	95	78
Dichlorodifluoromethane	nv	nv	-	-	-	65.7	-	171.8	-	<40	-	-	178	-
Trichlorofluoromethane	nv	nv	4	-	2	5.2	-	4	-	<40	-	-	19	23
Methyl Tertiary Butyl Ether	10	30	-	-	-	n/a	-	n/a	-	<40	-	27.1	-	60
Benzene	0.75	1	33	28	19	24.1	-	43.5	-	<40	24.2	23.7	17	16
Toluene	525	10	180	67	19	34.5	161	133	-	56	76.8	125	118	98
Ethylbenzene	nv	10	-	2	6	n/a	-	24.6	-	<40	22.9	20.4	21	20
p/m-Xylene	nv	10	28	10	7	5.8	-	18	-	<40	-	-	39	17
o-Xylene	nv	10	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			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 2017 (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	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
Vinyl Chloride	0.375	nv	278	424	-	324	530	619	2198	908	298	1177	389	658	811	722	406
1,1-Dichloroethene	nv	30	61	38	-	18	42	67	74	113	37	53	43	43	42	60	30
cis-1,2-Dichloroethene	0.375	30	4777	2638	-	1401	2384	4015	4094	6189	2441	3846	2689	2631	3255	3879	3694
trans-1,2-Dichloroethene	0.375	nv	8	-	-	4	7	9	4	16	7	8	6	6	7	8	6
Trichloroethene	7.5	10	21	7	-	5	24	39	49	48	30	12	13	6	10	19	17
Tetrachloroethene	7.5	10	7	-	-	4	-	10	11	43	-	9	7	6	9	9	6
Chloroethane	nv	nv	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	nv	nv	417	245	-	160	361	504	-	-	-	-	395	293	395	393	203
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	461	681	316	412	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	1055	757	-	337	634	1900	2027	2328	932	1274	739	884	884	1339	791
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	15	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	nv	nv	58	31	-	18	40	99	96	108	49	80	50	40	51	-	29
Dichlorodifluoromethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	115	190	-
Trichlorofluoromethane	nv	nv	17	14	-	4	7	6	7	19	-	5	4	-	4	4	-
Methyl Tertiary Butyl Ether	10	30	28	11	-	7	13	14	10	13	5	5	5	6	5	6	5.2
Benzene	0.75	1	12	10	-	3	9	17	14	18	10	12	13	10	12	13	7
Toluene	525	10	71	74	-	8	9	14	41	43	23	14	32	10	11	16	17.9
Ethylbenzene	nv	10	6	12	-	-	-	21	20	17	16	21	17	16	6	11	13.6
p/m-Xylene	nv	10	8	14	-	-	-	15	12	12	6	15	6	3	3	4	3
o-Xylene	nv	10	11	17	-	-	-	27	23	22	15	27	17	20	5	10	15
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	4,425	4,632	5,625	6,683	5,244

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 2017 (µg/L)

Volatile Organic Compound (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17
Vinyl Chloride	0.375	nv	594	930	356	412	201	93	101	78	116	274	311	220	271	183	200
1,1-Dichloroethene	nv	30	-	70	20	-	12	4	3	-	5	10	6	9	11	-	5
cis-1,2-Dichloroethene	0.375	30	3356	2365	1057	917	989	496	246	167	337	954	899	1,214	1,011	183	350
trans-1,2-Dichloroethene	0.375	nv	7	13	5	6	13	-	-	-	3	5	-	4	4	5	6
Trichloroethene	7.5	10	13	6	-	-	-	-	-	-	-	7	8	-	4	5	-
Tetrachloroethene	7.5	10	6	-	4	6	4	-	-	-	-	4	4	3	6	-	-
Chloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	nv	nv	315	419	175	168	103	64	71	53	68	151	121	177	138	292	328
1,2-Dichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	nv	500	994	1022	-	-	237	136	156	93	145	266	330	361	-	86	81
1,1,2-Trichloroethane	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	15	10	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
Chloroform	nv	nv	37	35	17	13	8	4	4	2	2	8	8	12	7	6	6
Dichlorodifluoromethane	nv	nv	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-
Trichlorofluoromethane	nv	nv	-	10	-	4	3	-	-	-	-	-	-	-	-	-	-
Methyl Tertiary Butyl Ether	10	30	6	11	3	-	-	-	-	1	2	7	3	3	-	4	5
Benzene	0.75	1	10	11	6	5	3	2	3	1.5	2	5	4	5	4	6	8
Toluene	525	10	14.6	8	22	13	7	3	3	-	-	-	-	-	9	17	18
Ethylbenzene	nv	10	19	19	-	10	6	-	5	2	-	5	2	2	4	6	10
p/m-Xylene	nv	10	3	2	11	2	-	-	-	-	-	-	-	-	3	5	10
o-Xylene	nv	10	17	17	7.4	10	4	-	3	1	-	5	3	3	4	10	-
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			5,392	4,937	1,684	1,566	1,594	802	604	399	680	1,701	1,698	2,013	1,699	801	1,036

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

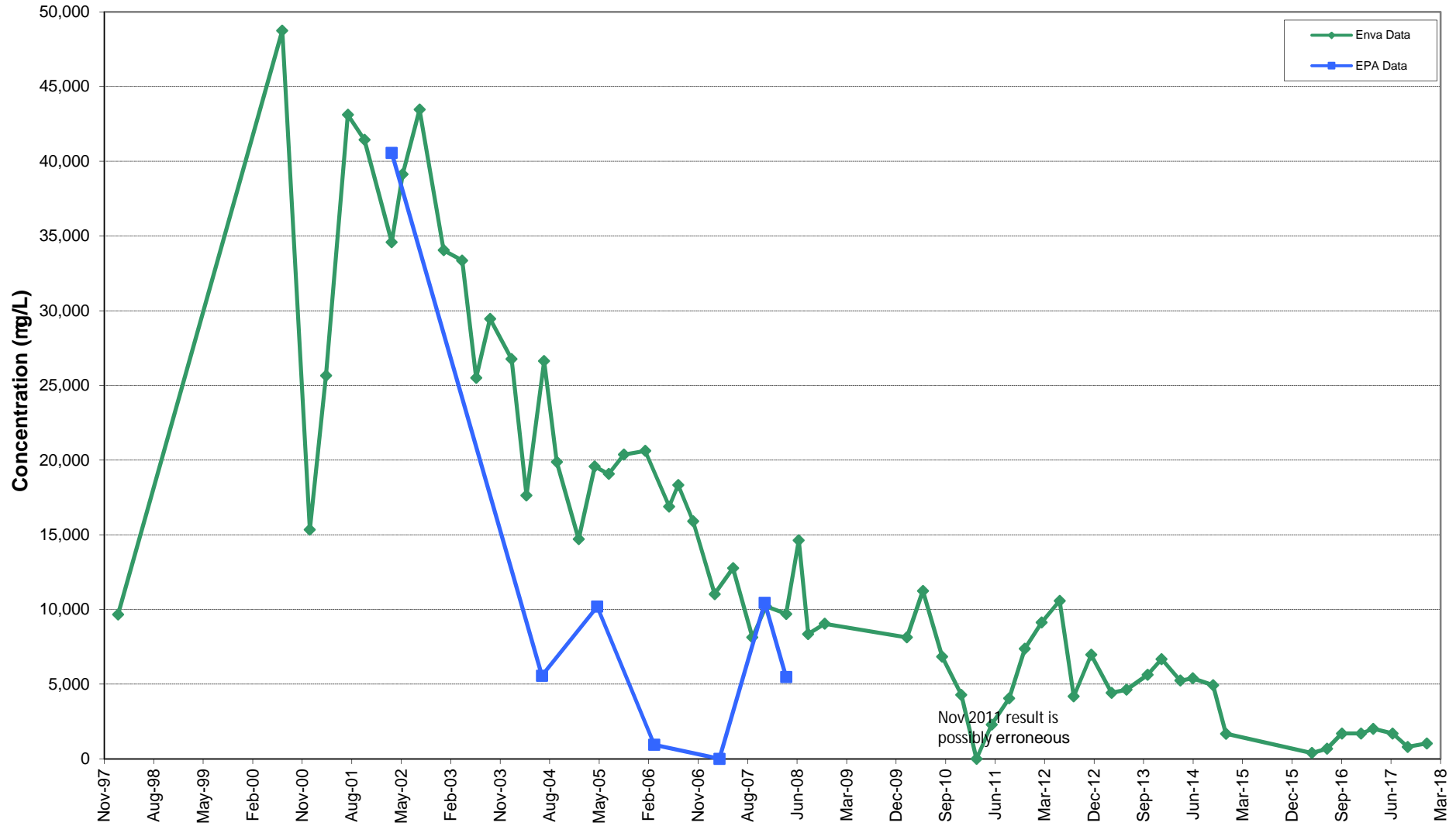
n/a - not analysed

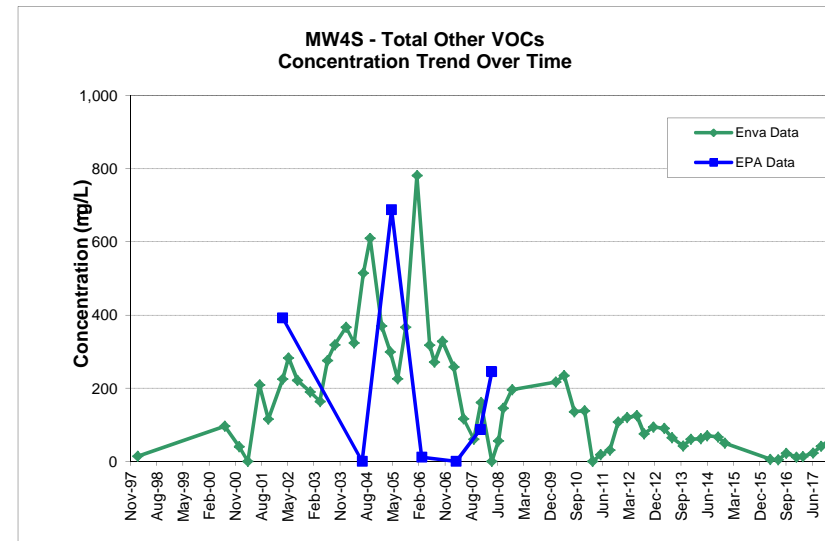
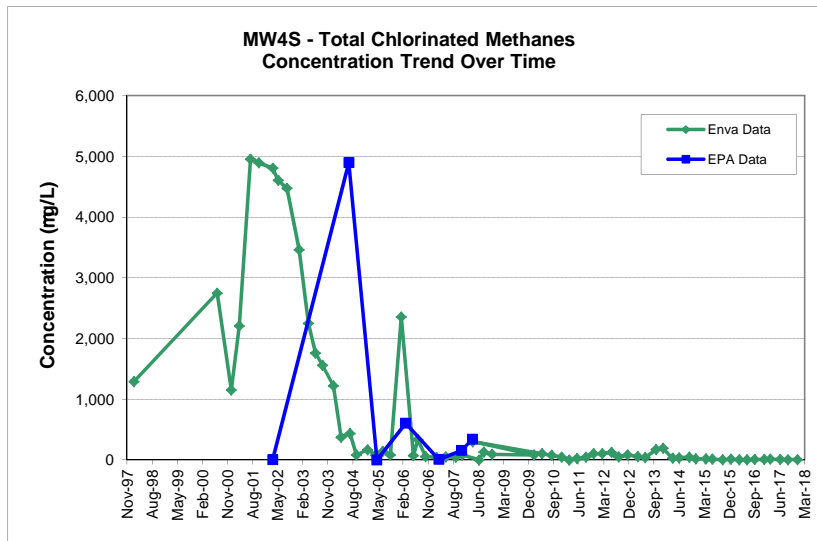
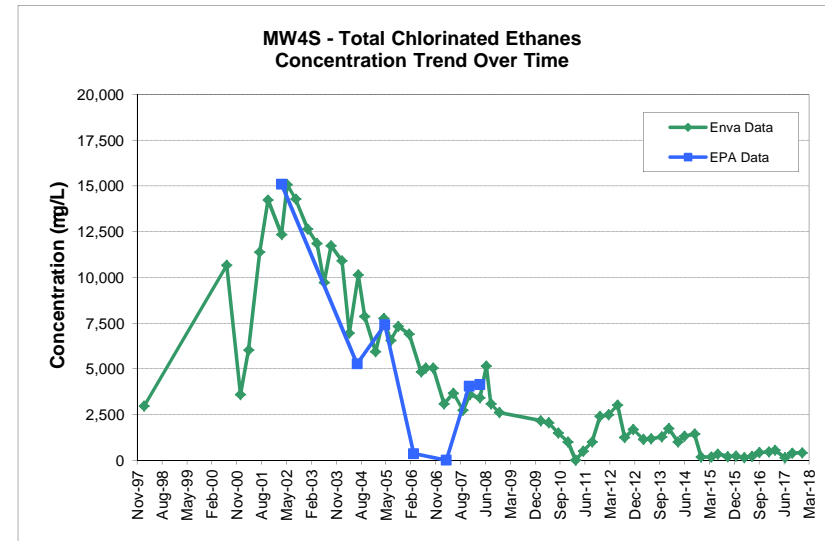
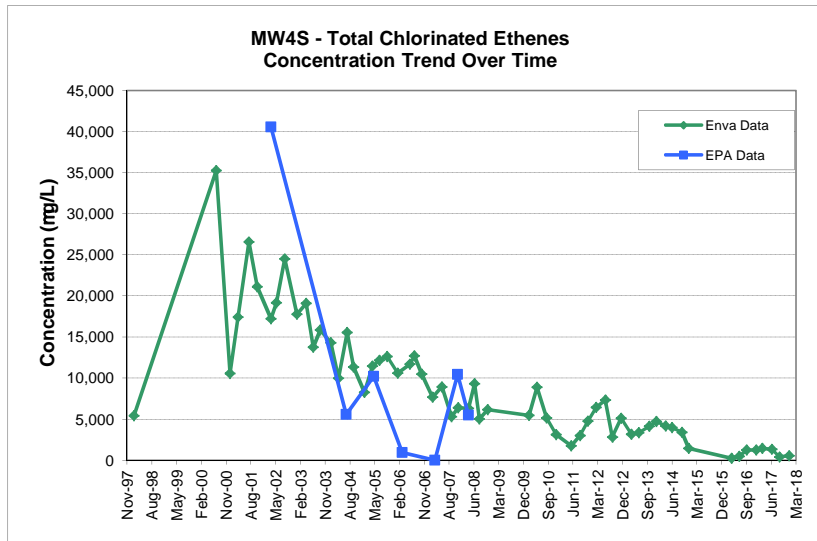
** Result outside calibration range, results should be considered as indicative only and ar

Appendix D2: Enva Shannon, Groundwater Monitoring Data February 1998 to December 2017

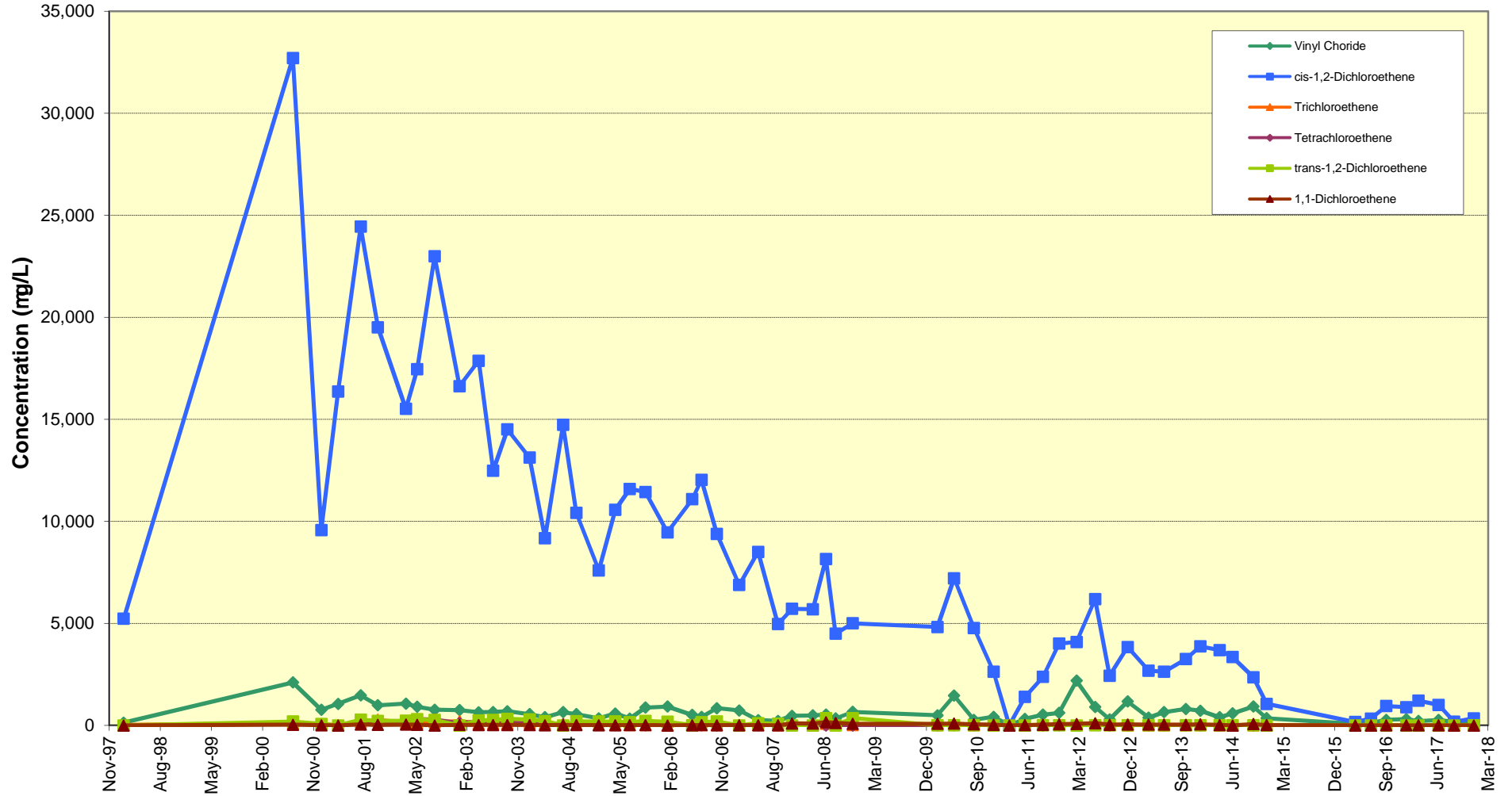
Prepared by: KF
Checked by: FOR

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



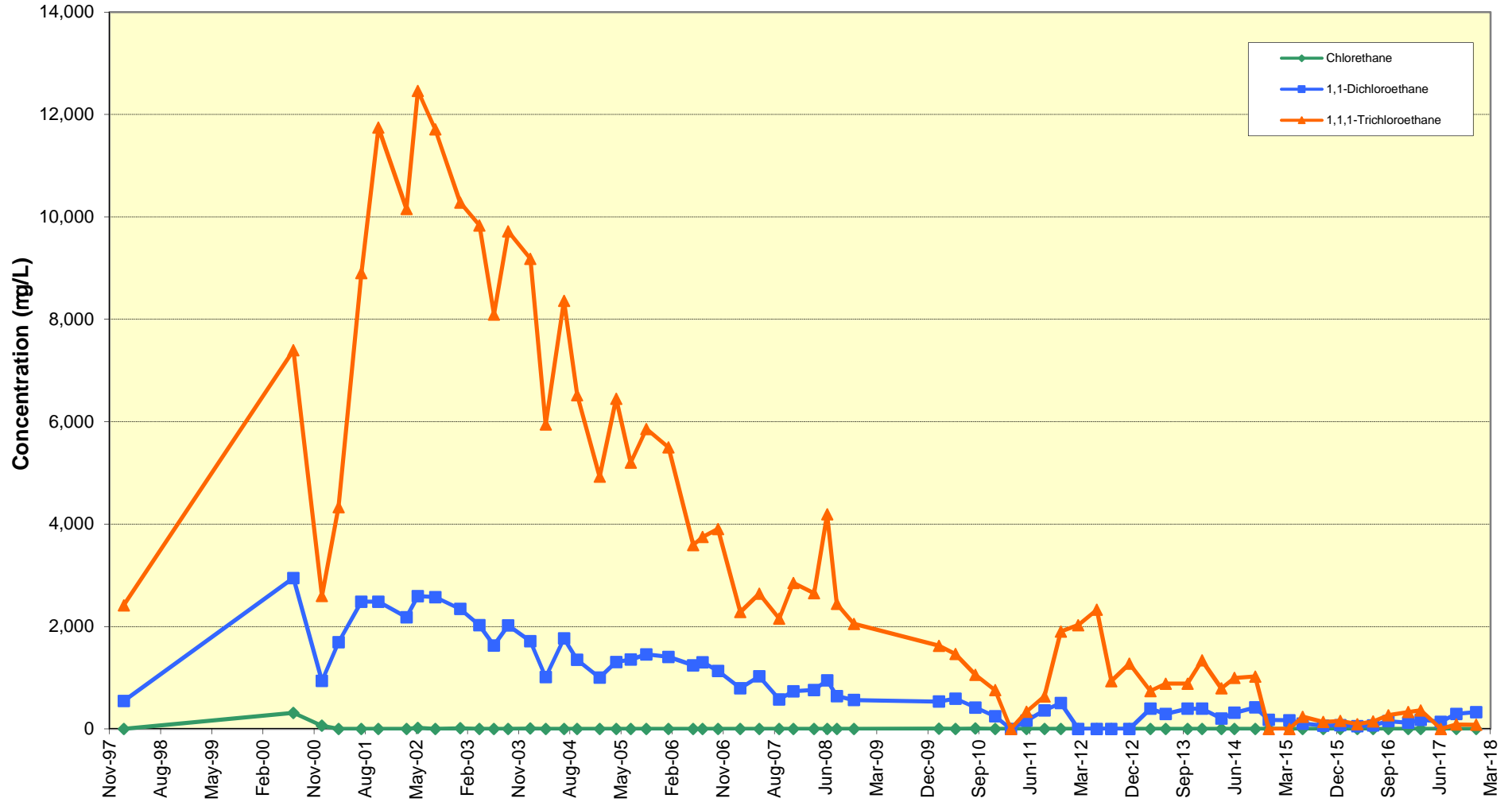


MW4S - Chlorinated Ethene Concentration Trends Over Time



Appendix D2, Enva Shannon

MW4S - Chlorinated Ethane Concentration Trends Over Time



VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to December 2017 (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	Apr-04	Jul-04	Jul-04	Oct-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	-	-	-	-	-	-	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	-	-	-	-	-	-	9	-
1,1,1-Trichloroethane	1	nv	500	42	46	54	25	10	n/a	37	26	43	25	39	6	9	4	8	67	12	-
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	-	-	-	-	-	-	7	2
Benzene	0.5	0.75	1	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	6	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	17
o-Xylene	0.5	nv	10	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	0.5	nv	10	-	-	-	-	-	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	-	-	-	-	-	-	-	-	-	-	-	17
Total VOC Concentration				206	52	72	31	13	0	54	39	57	40	39	6	9	4	8	86	48	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 2017 (µg/L)

Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Nov-04	Feb-05	May-05	May-05	Jul-05	Oct-05	Feb-06	Mar-06	May-06	Aug-06	Nov-06	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07	Apr-08
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Trichloroethene	1	7.5	10	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	5	-	-	-	-	-	-	2	-	-	3	-	4	-	-	1	1	-
1,1,1-Trichloroethane	1	nv	500	16	-	3	-	-	-	-	3	4	5	4	-	6	2	-	4	5	7
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	4
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	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	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
Total VOC Concentration				38	0	3	0	0	0	0	6	4	15	7	0	10	2	0	5	9	25

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 2017 (µg/L)

Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10	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	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	4	3	4	5	-	-	7	-	-	3	-	3	-	3	-	-
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	2	-	3	3	-	-	-	-	-	-	-	-	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				6	3	9	12	0	0	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 2017 (µg/L)

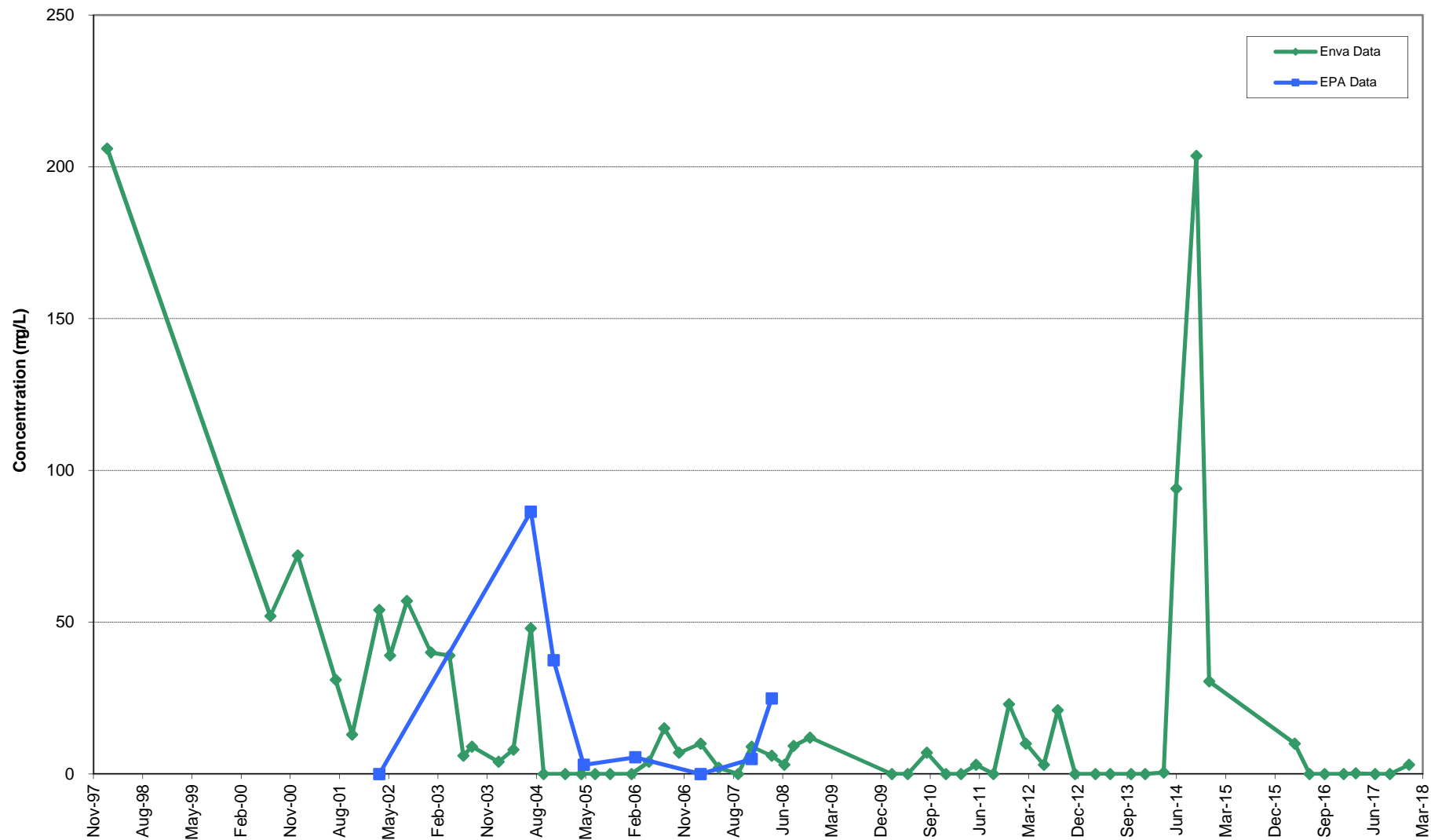
Volatile Organic Compound (mg/L)	MRL (mg/L)	Groundwater Regs 2016	EPA Draft Interim Guideline Value (IGV)	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17
Vinyl Chloride	0.1	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-
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	-	-	-	-	-	-	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	10	-	-	-	-	-	-	-	-	-	-
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	0.2	0	0	3

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 2017

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





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


Environmental Noise Survey 2017

Waste Licence Number: W0041-01

Report Reference Number:	3790-17-01
Version:	1
Date of Issue:	25-07-2017
Report Compiled by:	Daniel Mullins
Report Reviewed by:	Mark McGarry

Report Content

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2.0	Introduction	4
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4.0	Monitoring Locations	6
5.0	Noise Measurement Data	7
6.0	Conclusions	12

Report Date	25-07-2017	Site Contact:	Thomas Kelleher
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 five 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 4
Manufacturer	Cirrus Optimus Green	Cirrus Optimus Green
Model	CR:171B	CR:172B
Serial Number	G061082	G078197
Firmware	V2.4.1569 (1529)	V2.8.2327
Calibrator	CR:515 Acoustic Calibrator	CR:515 Acoustic Calibrator
Microphone	B&K4192 - 1920791	B&K4192 - 1920791
Windshield Type	UA:237 90mm Foam Windshield	UA:237 90mm Foam Windshield
Calibration Date		
Noise Meter	9 th March 2017 – 2018	02 nd June 2016 – 2017
Certificate Number	246921	238637
Calibrator	9 th March 2017 – 2018	9 th March 2017 – 2018
Certificate Number	246920	246920
On site SLM calibration		
Prior to Survey	93.7	93.7
Calibration Offset	-0.15	0.22
Post Survey	93.7	93.7
Calibration Offset	-0.14	0.27
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 traffic moving onsite, most notably lorries and forklifts.

Other sources of noise recorded at this monitoring point were from people walking and talking nearby, operational noise from ENVA and planes taking off from Shannon Airport on occasion.

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.

Other sources of noise noted at this monitoring point included onsite traffic movements (trucks & forklifts) as well as ENVA personnel walking and talking within range of the noise meter. Planes were also heard taking off from Shannon during the survey.

4.3 N5 Day Time Survey

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

Other sources of noise included a low operational hum from ENVA, birds chirping and planes taking off from Shannon airport.

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 traffic offsite. There was also some noise from vehicles moving onsite as well as operational noise from ENVA but these were less significant.

Other sources of noise at this point include airplanes flying overhead, birds chirping and people talking nearby.

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 traffic offsite.

Other sources of noise noted were from airplanes overhead, people talking close to meter, traffic offsite and noise from a neighbouring site.

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:	11:27	64.9	81.8	56.6	The main source of noise was from the traffic moving onsite, most notably lorries and forklifts. Other sources of noise recorded at this monitoring point were from people walking and talking nearby, operational noise from ENVA and planes taking off from Shannon Airport on occasion. 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. This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised license since the guidelines were issued in 2016.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		64.9	81.8	56.6	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	20	-	-		
Wind Speed (m/s)	0 – 1	-	-		
Wind Direction:	Westerly	-	-		
Precipitation:	0	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location					

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:	11:00	62.8	80.4	58.8	Sources of noise noted at this monitoring point included onsite traffic movements (trucks & forklifts) as well as ENVA personnel walking and talking within range of the noise meter. Planes were also heard taking off from Shannon during the survey.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		62.8	80.4	58.8	
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:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised license since the guidelines were issued in 2016.
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	20	-	-		
Wind Speed (m/s)	0 – 1	-	-		
Wind Direction:	Westerly	-	-		
Precipitation:	0	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location					

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:	10:54	65.3	88.9	49.1	The main source of noise noted at this point was the movement of forklift trucks onsite close to where the monitor was situated. Other sources of noise included a low operational hum from ENVA, birds chirping and planes taking off from Shannon airport.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		65.3	88.9	49.1	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised license since the guidelines were issued in 2016.
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	20	-	-		
Wind Speed (m/s)	0 – 1	-	-		
Wind Direction:	Westerly	-	-		
Precipitation:	0	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location					

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:	10:03	53.3	75.9	47.0	The greatest source of noise at this location was traffic offsite. There was also some operational noise from ENVA but this were less significant. Other sources of noise at this point include airplanes taking off, birds chirping and people talking nearby.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		53.3	75.9	47.0	
Daytime Criterion, dB L _{Ar,T} :		-	-	-	
Evening:	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB L _{Ar,T} :		-	-	-	
Night Time:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised license since the guidelines were issued in 2016.
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	20	-	-		
Wind Speed (m/s)	0 – 1	-	-		
Wind Direction:	Westerly	-	-		
Precipitation:	0	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location					

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:	11:33	61.7	78.9	53.8	Other sources of noise noted were from airplanes taking off, people talking close to meter, traffic offsite and noise from a neighbouring site.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		61.7	78.9	53.8	
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:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised license since the guidelines were issued in 2016.
	-	-	-	-	
Arithmetic Average (dB):		-	-	-	
Night time Criterion, dB L _{Ar,T} :		-	-	-	
Weather Conditions:					
	Daytime:	Evening:	Night Time:		
Temperature (°C)	20	-	-		
Wind Speed (m/s)	0 – 1	-	-		
Wind Direction:	Westerly	-	-		
Precipitation:	0	-	-		
Tonal Noise Assessment					
Daytime:	None	-	-		
Night Time:	-	-	-		
Compliance Status – this is not a noise sensitive location					

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.

20/6/17

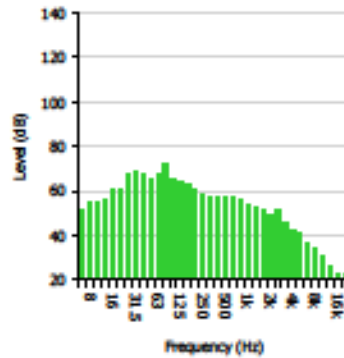
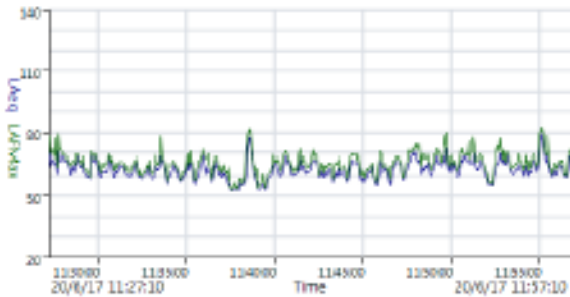


Measurement Summary Report

Name ENVA Shannon - Day - N1
Time 20/6/17 11:27:10 **Person** **Place** **Project**
Duration 00:30:00 **Dan Mullins** **ENVA Shannon 2017** **Environmental Noise**
Instrument G061082, CR:171B

Calibration
Before 20/6/17 09:35 **Offset** -0.15 dB **After** 20/6/17 12:04 **Offset** -0.14 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	64.9 dB	LAF1	75.1 dB
L _{AE}	97.5 dB	LAF5	68.7 dB
L _{AFMax}	81.8 dB	LAF10	67.4 dB
		LAF50	62.1 dB
		LAF90	56.6 dB
		LAF95	55.2 dB
		LAF99	52.7 dB



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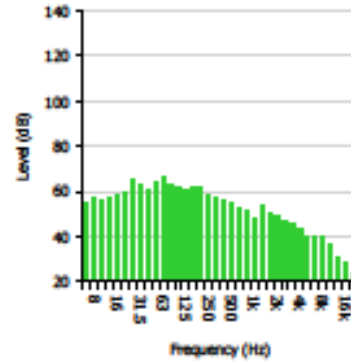


Measurement Summary Report

Name ENVA Shannon - Day - N4
Time 20/6/17 11:00:43 **Person** Dan Mullins **Place** ENVA Shannon 2017 **Project** Environmental Noise
Duration 00:30:00 **Instrument** G078197, CR-1728

Calibration
Before 20/6/17 10:52 **Offset** 0.27 dB **After** 20/6/17 12:08 **Offset** 0.22 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	62.8 dB	LAF1	75.5 dB
L _{AE}	95.3 dB	LAF5	65.4 dB
L _{AFMax}	80.4 dB	LAF10	62.2 dB
		LAF50	59.6 dB
		LAF90	58.8 dB
		LAF95	58.5 dB
		LAF99	54.8 dB



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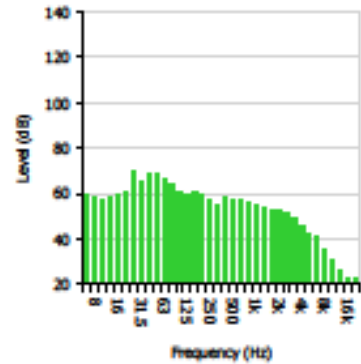
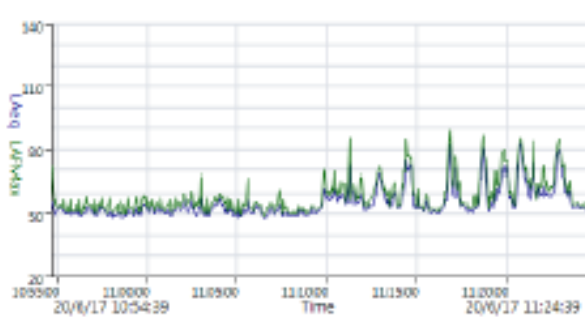


Measurement Summary Report

Name ENVA Shannon - Day - NS
Time 20/6/17 10:54:39 **Person** Dan Mullins **Place** ENVA Shannon 2017 **Project** Environmental Noise
Duration 00:30:00 **Instrument** G061082, CR-171B

Calibration
Before 20/6/17 09:35 **Offset** -0.15 dB **After** 20/6/17 12:04 **Offset** -0.14 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	65.3 dB	LAF1	79.4 dB
L _{AE}	97.8 dB	LAF5	69.3 dB
L _{AFMax}	88.9 dB	LAF10	63.7 dB
		LAF50	52.3 dB
		LAF90	49.1 dB
		LAF95	48.6 dB
		LAF99	47.9 dB



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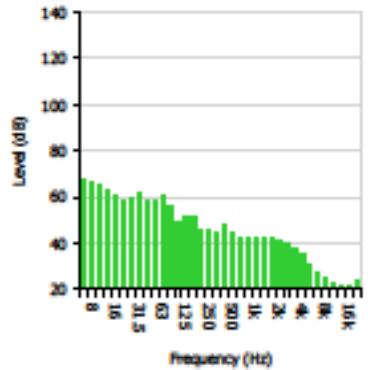
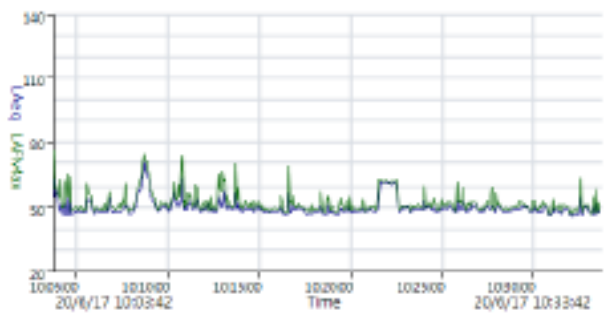


Measurement Summary Report

Name ENVA Shannon - Day - N6
Time 20/6/17 10:03:42 **Person** Dan Mullins **Place** ENVA Shannon 2017 **Project** Environmental Noise
Duration 00:30:00 **Instrument** G061082, CR:1718

Calibration
Before 20/6/17 09:35 **Offset** -0.15 dB **After** 20/6/17 12:04 **Offset** -0.14 dB

Basic Values		Statistical Levels (Ln)	
L _{Aeq}	53.3 dB	LAF1	64.2 dB
L _{AE}	85.9 dB	LAF5	59.5 dB
L _{AFMax}	75.9 dB	LAF10	53.3 dB
		LAF50	48.7 dB
		LAF90	47.0 dB
		LAF95	46.6 dB
		LAF99	46.0 dB



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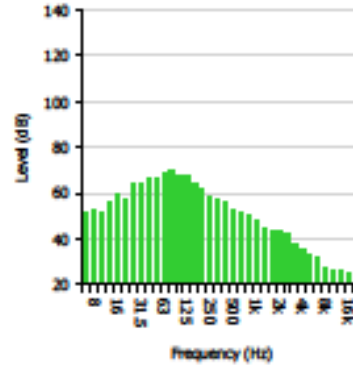
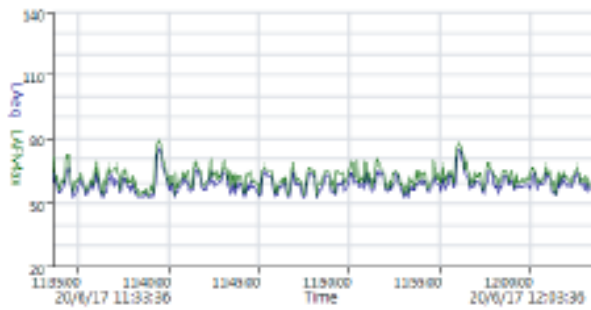


Measurement Summary Report

Name ENVA Shannon - Day - NB
Time 20/6/17 11:33:36 **Person** Dan Mullins **Place** ENVA Shannon 2017 **Project** Environmental Noise
Duration 00:30:00 **Instrument** G078197, CR:1728

Calibration
Before 20/6/17 10:52 **Offset** 0.27 dB **After** 20/6/17 12:08 **Offset** 0.22 dB

Basic Values		Statistical Levels (Ln)	
LAeq	61.7 dB	LAF1	72.9 dB
LAE	94.3 dB	LAF5	65.7 dB
LAFMax	78.9 dB	LAF10	64.2 dB
		LAF50	58.3 dB
		LAF90	53.8 dB
		LAF95	53.0 dB
		LAF99	52.1 dB



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Appendix II Calibration Certificates

Certificate of Calibration



Equipment Details

Instrument Manufacturer: Cirrus Research plc
Instrument Type: CR171B
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 61672-1:2013, IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2001, IEC 61260:1995, IEC 60942:2003, IEC 60942:1997, IEC 61252:1993, ANSI 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.D.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

Calibrated by

T. A. Goodall

Calibration Date

09 March 2017

Calibration Certificate Number

246921

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

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

Certificate of Calibration



Equipment Details

Instrument Manufacturer Cirrus Research plc
Instrument Type CR:511E
Description Acoustic Calibrator
Serial Number 41375

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	103.99 dB	Permitted band	103.80 to 104.30 dB
Frequency	998 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

Calibration Date

09 March 2017

Calibration Certificate Number

246920

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

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

Certificate of Calibration



Certificate Number: **110937**
Date of Issue: **09 March 2017**

Microphone Capsule

Manufacturer: **Cirrus Research plc** Serial Number: **209359D**
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: **27 January 2017**
Open Circuit: **49.4 mV/Pa**
Sensitivity at 1 kHz: **-26.1 dB rel 1 V/Pa**

Environmental Conditions

Pressure: **100.20 kPa**
Temperature: **18.0 °C**
Humidity: **30.0 %**

Calibration Laboratory

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

Test Engineer: Debra Swalwell

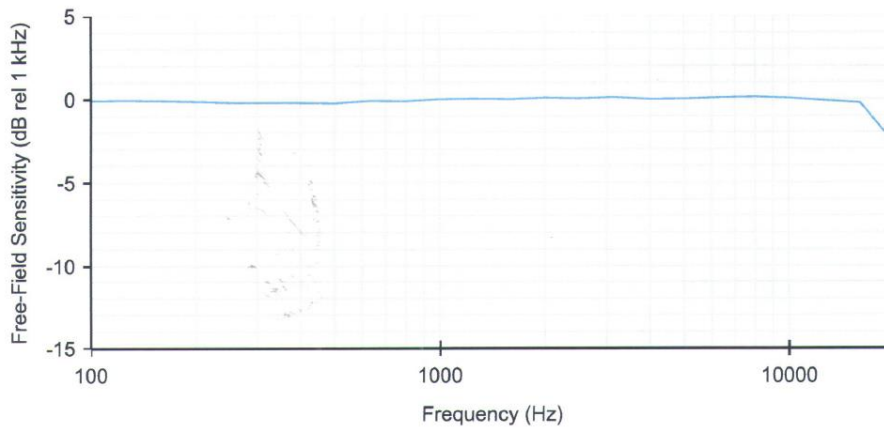
Cirrus Research plc, Acoustic House, Bridlington Road
Hunmanby, North Yorkshire, YO14 0PH, United Kingdom
Telephone: 0845 230 2434 **Int:** +44 1723 891655
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk
UK Registration No. 987160



FM 531001 EMS 552104

Free-Field Frequency Response

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator to Free-Field Correction (dB)
100	-0.09	0.00
125	-0.06	0.04
160	-0.09	0.03
200	-0.13	0.01
250	-0.18	-0.04
315	-0.19	-0.04
400	-0.20	-0.04
500	-0.23	-0.08
630	-0.10	0.03
800	-0.11	-0.04
1 000	0.00	-0.02
1 250	0.04	-0.07
1 600	0.01	-0.22
2 000	0.09	-0.23
2 500	0.04	-0.40
3 150	0.12	-0.58
4 000	0.00	-1.01
5 000	0.02	-1.49
6 300	0.10	-2.12
8 000	0.14	-3.12
10 000	0.06	-4.69
12 500	-0.09	-6.32
16 000	-0.24	-8.36
20 000	-2.68	-12.17



Certificate of Calibration



Equipment Details

Instrument Manufacturer: Cirrus Research plc
 Instrument Type: CR-172B
 Description: Sound Level Meter
 Serial Number: G078197

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 60804:2001, IEC 61260:1995, IEC 60942:1997, IEC 61252:1993, ANSI 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, B, C). The standards are:

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

Calibrated by

Calibration Date

02 June 2016

Calibration Certificate Number

238637

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

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

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.

