Annual Environmental Report

FOR

DUBLIN WASTE TO ENERGY LTD.

EPA Ref. Nº:	W0232-01

Original

Prepared by:-

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On behalf of
Dublin Waste to Energy Facility,
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Dublin 4.

29 March 2019

Annual Environmental Report

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EPA Ref. Nº:	W0232-01

AER Number 2

User is Responsible for Checking the Revision Status of This Document

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1.0	AER for 2018	M. Heffernan	February 2019
1.1	Final version for Issue	M.Heffernan	29 March 2019

Keywords: EMS, EMP, ERP, site operations, infrastructure, nuisance, waste handling, environmental monitoring

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Introduction

The Environmental Protection Agency (EPA) issued Dublin City Council with waste license W0232-01 on the 1st December 2008. Under section S76A (11) of the Waste Management Act 1996 the license was amended to an Industrial Emissions License on the 7th January 2014.

The license was transferred to Dublin Waste to Energy (DWTE) on the 31st October 2014.

The industrial emissions license (W0232-01) conditions 11.6 and 11.7 state the following:

11.6- Pollutant Release and Transfer Register (PRTR)

"The licensee shall prepare and report a PRTR for the site. The substances and/or waste to be included in the PRTR shall be agreed by the Agency each year by reference to EC Regulation NO.166/2006 concerning the establishment of the European Pollutant Release and transfer Register and amending Council Directives 91/689/EEC and 96/61/EC. The PRTR shall be prepared in accordance with any relevant guidelines issued by the Agency and shall be submitted electronically in specified format and as part of the AER."

11.7 Annual Environmental Report

11.7.1 – The licensee shall submit to the Agency, by the 31st of March each year, an annual Environmental Report (AER) covering the previous calendar year.

11.7.2 – The AER shall include as a minimum:

a) *The information specified in Schedule D: Annual Environmental Report, of this license and shall be prepared in accordance with any relevant written guidance issued by the Agency.*

b) *A report of annual audits undertaken by the licensee of the waste disposal, treatment recovery sites for the residues and other wastes dispatched from the facility.*

c) *Pollutant Release and Transfer Register (PRTR)*

Annual Environmental Report

The Annual Environmental Report (AER) shall contain as a minimum the contents outlined in schedule D of W0232-01. The following report outlines the schedule D requirements as per the headings listed in Schedule D- Annual Environmental Report Content.

1.0 Reporting Period

This is the second AER for the Dublin Waste to Energy facility. It covers the period for 1st January 2018 to the 31st December 2018. This AER covers the first full year of operation for the Dublin Waste to Energy facility.

2.0 Details of Waste Activities for 2018

The waste activities carried out at the Dublin Waste to Energy facility are licensed as follows under Section 76A(11) Amendment to Industrial Emissions License W0232-01.

11.3 (a)	*Disposal or Recovery of waste in waste incineration plants or in waste co-incineration plants for non-hazardous waste with a capacity exceeding 3 tonnes per hour*
11.1	*The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a license or revised license under Part IV is in force or in respect of which a license under the said Part is or will be required.*

3.0 Quantity and Composition of Waste Received, Recovered and Removed for 2018

The figures for waste received and consumables delivered for 2018 are outlined in the tables below. Total waste delivered for 2018 amounts to 599,001.24 tonnes.

Waste Delivered to DWTE for 2018 by EWC Codes	Tonnes
020103	93.28
020202	2.86
020203	30.82
020704	295.64
040209	1.98
120105	222.98
150203	13.62
160306	14.94
190501	57.96
190801	431.86
191212	66,783.24
200301	514,087.86
200307	16,964.20
Total Waste Accepted for 2018	**599,001.24**

Consumables Delivered for 2018	Tonnes
Activated Carbon	239.20
Ammonia	208.82
Sodium Hydroxide (Caustic)	81.92
Diesel Fuel	1,592.28
Hydrated Lime	1,747.70
Hypochlorite	206.10
Milled Lime	4,502.88

Waste Processed for 2018

The tonnage of waste processed for 2018 at the Dublin Waste to Energy facility is outlined in table below:

Waste Processed 2018	Line 1 (tonnes)	Line 2 (tonnes)	Total Processed	Total Processed (Adjusted for Evap. Rate)
Total for 2018	**266,980.90**	**283,417.80**	**550,398.70**	**599,421.30**

The summary below outlines the waste sent off site for disposal/recovery for 2018. The tonnage is broken down by EWC code. The total tonnage that left site for 2018 is 131,172.50 tonnes.

EWC Code	Tonnes
190111*	104,061.00
190115*	636.20
170201	15.12
170904	40.58
200304	98.66
200307	2.58
060205*	0.36
070101*	0.04
070104*	0.09
080111*	0.47
130508*	129.12
130802*	6.18
150110*	2.49
150202*	0.13
160508*	0.05
190107*	26,178.80
200127*	0.63
Total off Site 2018	**131,172.50**

4.0 Summary Report on Emissions

A summary of all Stack testing for 2018 is outlined in table below:

All stack testing emissions to air results were well below licensed limits during 2018 and are also available to view on our website at www.covantadublin.ie.

Parameter	Units	Result Line 1 Q1 2018	Result Line 2 Q1 2018	Result Line 1 Q2 2018	Result Line 2 Q2 2018	Result Line 1 Q3 2018	Result Line 2 Q3 2018	Result Line 1 Q4 2018	Result Line 2 Q4 2018	EPA License Limit	% below EPA Limit(Avg)
Dates		**8-19 Jan 18**	**8-19 Jan 18**	**30 April to 4th May 2018**	**30 April to 4th May 2018**	**17 to 26 Sept 2018**	**17 to 26 Sept 2018**	**12 to 15 Nov 2018**	**13 to 15 Nov 2018**		
PM_{10} [1]	**mg/m³**	0.176	0.182	0.13	0.161	0.12	0.14	0.124	0.118	-	
$PM_{2.5}$ [1]	**mg/m³**	0.136	0.141	0.15	0.154	0.1	0.12	0.122	0.116	-	
Cadmium & Thallium [1]	**mg/m³**	< 0.00063	<0.00066	0.00068	<0.00065	<0.00081	<0.001	0.00073	<0.00061	0.05	99
Heavy Metals [1]	**mg/m³**	0.019	0.02	0.03526	0.023	0.0114	0.0181	0.037	0.014	0.5	94
Mercury [1]	**mg/m³**	0.00056	0.00056	<0.00027	0.00084	0.00048	0.00073	<0.00023	0.00034	0.05	98
Arsenic [1]	**mg/m³**	0.00104	0.00087	<0.00040	<0.00039	<0.00034	<0.00043	0.00034	<0.00037	0.2	99.5
Dioxins & Furans (NATO I-TEQ) [1]	**ng/m³**	0.00063	0.0006	0.00169	0.0008	0.00082	0.00124	0.0022	0.00035	0.1	99
Hydrogen Fluoride [1]	**mg/m³**	< 0.040	0.074	<0.049	<0.05	<0.038	0.09	0.42	0.5	4	95
Nitrous Oxide [1]	**mg/m³**	2.26	3.86	1.17	0.21	5.52	3.32	1.96	3.34	400	99
Volumetric Flow Rate (REF) [1]	**m³/hr**	227461	223451	229496	232687	245802	240015	260869	248468	275000	
								Average below EPA ELV's			**98%**

Reference Conditions (REF) are 273K, 101.3kPa, dry gas, 11% Oxygen

5.0 Summary Report on Noise Survey

Dublin Waste to Energy have carried out quarterly noise monitoring reports for 2018. A summary of all noise monitoring reports is contained in table 5.1 overleaf.

Due to the distances range from 850 to 1000m between Dublin Waste-to-Energy Facility and residential receptors the sound level is being attenuated by approximately 67 to 68 dB at locations N1, N2, N3, N4 and N5. Considering barriers such as buildings the sound can reduce level further. As the distance from the noise source to non-residential receptor N6 representing nature reserve is approximately 220 m, the sound level is being attenuated by 55dB in this location. Therefore, it is predicted that sound from Dublin Waste-to-Energy facility is being reduced significantly below the background level and will not contribute to the sound climate at any receptor beyond the site boundary.

All noise reports for 2018 were fully compliant with conditions of EPA license W0232-01 and concluded as follows:

"It was noted during the sound measurements that the operation of the Waste to Energy facility was only just audible at all locations within the site boundary. As the nearest residential receptors are located approximately 850m from the site, any sound will be significantly attenuated and will comfortably meet the specified limits. Third octave band analysis demonstrated that there were no audible tonal sound sources measured at the Dublin Waste to Energy facility."

Table 5.1 – Noise Monitoring Results Summary for 2018

Period 2018			NL07	NL08	NL09	NL10
			dB	dB	dB	dB
Quarter 1 2018 (Day)	L (A) $_{EQ}$		53	63	63	51
	L (A) $_{10}$		54	67	65	53
	L (A) $_{90}$		49	53	61	48
	Frequency Analysis		N	N	N	N
Quarter 1 2018 (Night)	L (A) $_{EQ}$		54	57	61	44
	L (A) $_{10}$		51	58	62	45
	L (A) $_{90}$		48	55	60	42
	Frequency Analysis		N	N	N	N
Quarter 2 2018 (Day)	L (A) $_{EQ}$		56	63	61	50
	L (A) $_{10}$		58	66	63	51
	L (A) $_{90}$		52	54	60	47
	Frequency Analysis		N	N	N	N
Quarter 2 2018 (Night)	L (A) $_{EQ}$		51	53	61	44
	L (A) $_{10}$		53	54	62	45
	L (A) $_{90}$		48	52	60	42
	Frequency Analysis		N	N	N	N
Quarter 3 2018 (Day)	L (A) $_{EQ}$		56	63	61	52
	L (A) $_{10}$		57	66	52	54
	L (A) $_{90}$		50	55	59	47
	Frequency Analysis		N	N	N	N
Quarter 3 2018 (Night)	L (A) $_{EQ}$		50	52	61	43
	L (A) $_{10}$		51	54	62	44
	L (A) $_{90}$		47	51	60	41
	Frequency Analysis		N	N	N	N
Quarter 4 2018 (Day)	L (A) $_{EQ}$		56	64	62	56
	L (A) $_{10}$		58	67	64	57
	L (A) $_{90}$		51	57	61	50
	Frequency Analysis		N	N	N	N
Quarter 4 2018 (Night)	L (A) $_{EQ}$		53	55	61	47
	L (A) $_{10}$		56	56	62	50
	L (A) $_{90}$		50	53	60	45
	Frequency Analysis		N	N	N	N
N = No Tonal noise detected (1/3 Octave Band Analysis)						

6.0 Summary of all Environmental Monitoring

The following is a summary of all Environmental monitoring carried out at the Dublin Waste to Energy Facility during 2018.

- 4 no. Noise monitoring
- 4 no. Emissions to Air Stack Testing by EXOVA
- 2 no. EPA Emissions to Air Stack Testing by SOCOTEC
- Continuous Emissions to Air Monitoring by CEMS
- Sampling and Analysis of Flue Gas Treatment Residue (FGTR)
- Sampling and Analysis of Incinerator Bottom Ash (IBA)
- Meteorological Monitoring – on site weather station
- Ambient Groundwater Monitoring Annually –GW1 (Results for 16 Nov 2018 in Appendix 2)

7.0 Marine Biological & Thermal Discharge Survey Report Summary

Biological and Toxicity testing were completed in April 2018 and were as expected for estuarine waters in the area.

The thermal survey results show that the license conditions are met at all stages of the tide. The maximum cross-sectional area impacted by the mixing zone is 12% and is thus well below the requirement of 25%. Maximum measured temperature rise above the background level was 7.20°C on April 20th and 6.55°C on April 24th, both being below the allowable ELV of 9.0°C.

DWTE will carry out a revised thermal survey in May 2019 as requested by the Agency.

8.0 Resource and Energy Consumption Summary

An energy audit was carried out by energy consultants PowerTherm Solutions Ltd in compliance with condition number 7.3 of the license on the 20th April 2018 and demonstrated the facility is in compliance with the minimum required efficiency of 65% and concluded as follows:

"The benchmarking exercise demonstrates that the overall electrical efficiency of the facility is higher than the best performing plants in Europe, and perhaps more importantly, the efficiency as calculated using the EPA methodology is higher than the minimum standard thereby meaning Covanta are in compliance with condition 7.2 of the EPA's Industrial Emissions License. When the Dublin District Heating scheme becomes operational the measured overall efficiency of the plant will increase well above the current 71.5% figure."

The Agency requested the inclusion of the energy efficiency formulae which is now presented below as per condition 7.2 of W0232-01.

Dublin WtE Plant

2018 R1 RESOURCE USE AND ENERGY EFFICIENCY

Power	Gross	489502.6	MWhr	3.6			1762209.36	GJ
	Net	439446.3	MWhr				1582006.68	GJ
	Import	1861.5	MWhr					
Waste				CV				
	Waste Processed	599421	t	9.7	MJ/kg		5784412.65	GJ
Diesel Fuel	To Boilers	1541.95	t	46	MJ/kg		70313.03	GJ
EP(elect only)	Gross	4581744.336						
	Net	4113217.368						
Ef		70313.03						
Ew		5784412.65						
Ei		1861.50						

$$\text{Energy Efficiency} = [E_p-(E_f+E_i)] / [0.97 \times (E_w + E_f)]$$

R1 Gross Energy Efficiency		**0.794**						
R1 Net Energy Efficiency		**0.712**						
Correction for Curtailment								
MW Reduced		30550.8	MWhr	3.6			109982.88	GJ
Waste Processed Reduction		6	t/hr	816	4897	t	47257.98	GJ
Ep(elect only)	Net	4192649.448						
Ew		5789309.85						
R1 Net Energy Efficiency (Corrected for Curtailment)		**0.725**						

9.0 Recovery Report

Incinerator Bottom Ash (IBA) from the Dublin Waste to Energy facility is exported abroad under TFS notification to Rock Solid in Netherlands for metal recovery and materials recovery.

FGTR from the Dublin Waste to Energy facility is also exported abroad under TFS notification to the NOAH AS facility, Langoya Island, Norway and the K&S facility in Germany.

IBA Recovery at Rock Solid BV, Netherlands

The Rock Solid facility in the Netherlands recovers the metals (ferrous and non-ferrous) from the IBA material. The remaining bottom ash material is used as aggregate in road building or landfill cover material.

FGTR Recovery at NOAH AS, Langoya, Norway

The NOAH AS Langoya Island facility in Norway is an old limestone quarry. NOAH was formed by the Norwegian Government in 1991 as a result of the BASLE convention. Prior to the commencement of Langoya over 250,000 tonnes of sulphuric acid from the pigment industry was discharged directly to sea. The site will eventually be covered and landscaped. The site will be fully rehabilitated by 2050. The NOAH facility receives the FGTR in tankers or bags by ship. The FGTR is then pneumatically off loaded into silos. Waste H_2SO_4 from the pigment industry is neutralised by a FGTR slurry made up of ground FGTR and process water. This forms a Gypsum solution which is pumped into the quarry and is compacted by the overhead pressure over time. Excess water is reused in the process. The heavy metals are completely encapsulated in the solid material.

FGTR Recovery at K&S, Salt Mine Facility, Germany

The K&S facility is a salt mine in Germany. The mine is situated 800 m below ground. The mine can accept 150,000 tonnes of waste per year. There is a lifespan of 25 to 30 years remaining at this location. The objective of backfilling is to support the pillars in the exhausted mines. The K&S facility can accept both tankers and bags. The material in the bag sets and is moved from a conveyor belt to a holding area for 4 hours. Once the bags are deemed acceptable they are sent down the mine in an elevator 8 bags at a time. The bags are then placed in galleries and sprayed with off-spec salt to fill the spaces between the bags for structural integrity.

Recovery figures for 2018 are as follows:

Material	Tonnage	Recovery Code
Ferrous Metals	7,760	R4
Non Ferrous Metals	5,020	R4
Incinerator Bottom Ash (IBA)	104,061	R12,R4 and R5
Flue Gas Treatment Residue (FGTR)	26,815	R5

10.0 Tank, Drum and Pipeline and Bund Testing and Inspection Report

Bunding report was submitted to EPA on 02 February 2017. All bunds were tested and certified as per condition number 3.12.5 during 2016 for a period of five years. Re-testing of Bunds will take place in 2021.

11.0 Summary of Reported Incidents and Complaints

There were 10 incidents for 2018.

8 for temperature below 850°C, 1 for an ELV breach to cooling water and 1 for CEMS monitoring equipment issues.

EPA Incident No	Incident Nature	Incident Date	Date Submitted	Status	Closed Date
INCI015170	Temp <850°C	18/09/2018	19/09/2018	Closed	06/12/2018
INCI015126	Breach of ELV	10/09/2018	11/09/2018	Closed	06/12/2018
INCI015041	Monitoring Equipment Issues	21/08/2018	21/08/2018	Closed	30/08/2018
INCI014694	Temp <850°C	29/06/2018	29/06/2018	Closed	15/08/2018
INCI014639	Temp <850°C	22/06/2018	22/06/2018	Closed	17/08/2018
INCI013973	Temp <850°C	02/03/2018	02/03/2018	Closed	06/12/2018
INCI013960	Temp <850°C	01/03/2018	01/03/2018	Closed	06/12/2018
INCI013788	Temp <850°C	28/01/2018	29/01/2018	Closed	06/12/2018
INCI013787	Temp <850°C	26/01/2018	29/01/2018	Closed	06/12/2018
INCI013689	Temp <850°C	12/01/2018	15/01/2018	Closed	20/03/2018

(Emission Limit Values=ELV's)

The above incidents took place during the testing and commissioning phase of the project.

Complaints 2018

Complaints for 2018 totaled 13. Only two complaints can be attributed to the Dublin Waste to Energy facility. All complaints for 2018 are closed out.

Site File Ref Number	EPA Complaint Number	Issue	Occurred On	Status
2018/013	COM008281	Air Quality	06/11/2018	Closed
2018/012	Site File	Plume/Air Quality	26/07/2018	Closed
2018/011	COM007668	Water Quality	28/06/2018	Closed
2018/010	COM007249	Air Quality	27/06/2018	Closed
2018/009	Site File	Plume	26/06/2018	Closed
2018/008	COM007370	Odour / Smells	22/05/2018	Closed
2018/007	Site File	Vector Control	28/05/2018	Closed
2018/006	COM007304	Air Quality	27/04/2018	Closed
2018/005	COM007226	Vibration	03/04/2018	Closed
2018/004	Site File	Odour / Smells	03/04/2018	Closed
2018/003	Site File	Plume	11/03/2018	Closed
2018/002	COM007140	Odour / Smells	02/03/2018	Closed
2018/001	COM007074	Vibration	31/01/2018	Closed
Summary 2018				
EPA Complaints =		8		
Site File complaints =		5		
Total complaints for 2018 =		13		

12.0 Summary of Audits of Waste Disposal, Treatment and Recovery Sites for the Residues from the Facility.

During 2018, Dublin Waste to Energy visited both the K&S facility, Germany and the NOAH AS facility in Norway. Both facilities recover the Flue Gas Treatment Residue (FGTR) produced at the Dublin Waste to Energy facility.

Dublin Waste to Energy also visited the Rock Solid VF facility in the Netherlands during 2018. The Rock Solid facility recovers the Incinerator Bottom Ash (IBA) produced at the Dublin Waste to Energy facility. The metal recovery also takes place at this facility.

These facilities were approved for continued use.

13.0 EMP – Report for Previous Year

The EMP has received the Agencies agreement and the recommended amendments will be included in the EMP revision which will be submitted under a separate cover. This revision will include a review of the schedule of objectives and targets listed below as requested by the Agency.

Schedule of Objectives and Targets: GENERAL ITEMS

SECTION A GENERAL ITEMS				
Item	Status	Responsible	Timeframe	Date Completed
All pre waste acceptance EPA documentation submitted to EPA before Waste acceptance	Waste acceptance commenced 24th April 2017- All documentation was submitted pre waste acceptance as required.	M. Heffernan	24th April 2017	20th April 2017
Successful Completion of Testing and Commissioning Phases	At time of writing this report the 720 hour performance demonstration test is complete and awaiting final certification by the Client	P.Young COVANTA, J.Nolan DCC	End November 2017	Awaiting approval
Commence Commercial Operations at Dublin Waste to Energy	On Target	P.Young COVANTA, J.Nolan DCC	End November 2017	ongoing
Complete EMS submission	Complete	M. Heffernan	End October 2017	Review ongoing

Schedule of Objectives and Targets: WASTE

SECTION B WASTE				
Item	Status	Responsible	Timeframe	Date Completed
Waste Acceptance tonnage to 600,000 tonnes	Waste tonnage on target for 2018	K.Mullins	End 2018	31st December 2018.
Install bagging station for FGTR removal	Contractor on site for install	D.Fanning/P.Murphy	End December 2017	
IBA Sampling characterisation completion	Sampling complete, awaiting results from SGS labs and final report from Prof. Carlo Vandecasteele	M.Heffernan	End December 2017	Report complete- awaiting approval
Reduction in FGTR sampling (per consignment)	Full analysis of the FGTR sampling to accompany EPA submission	M.Heffernan	End December 2017	Awaiting approval
Recovery of IBA in Ireland :locate a home solution for the IBA material from DWTE	Currently in discussions with an Irish company and awaiting license approvals	K.Mullins/M.Heffernan	End 2018	In progress
Carry out REPAK waste classification	REPAK engaged and contractors engaged.	K.Mullins / M.Heffernan	End 2018	Ongoing

Schedule of Objectives and Targets: WATER

SECTION C WATER				
Item	Status	Responsible	Timeframe	Date Completed
Toxicity testing of outfall condition 6.16.1	Laboratory nominated and samples have been taken. Awaiting results	M. Heffernan	End December 2017	Ongoing
Biological survey of the receiving water. Condition 6.16.3	Quotes received	M. Heffernan	End April 2018	Ongoing
Prepare and maintain sodium hypochlorite dosing plan for cooling water system. Condition 6.15	Dosing Plan provided by HZI. Attached to EMP.	Walter Eberle/M.Heffernan	End November 2017	Ongoing
Thermal Survey of the Estuary. Condition 6.18	Quotation stage	M.Heffernan	End April 2018	20th April 2018. Ongoing

Schedule of Objectives and Targets: EFFICIENCY

SECTION D EFFICIENCY				
Item	Status	Responsible	Timeframe	Date Completed
Feasibility study on the export of energy to the Ringsend WWTP for the drying of WWTP sludge	In discussions with CAW at Ringsend WWTP	M. Heffernan	End 2018	Ongoing. Review with CAW/Irish Water
A review of all operations and processes	Operations review ongoing	T.Eriksen/D.Fanning Process Engineer Position	Ongoing	Ongoing
Complete an Energy audit of the facility	In goals for maintenance department	P.Murphy	End April 2018	20th April 2018.
Identify opportunities for reduction in the quantity of water used on site including recycling and reuse initiatives where possible	Scheduled for 2018	D.Fanning/P.Murphy Operations Team	Annually	Ongoing
Recovery and recycling of residues	Scheduled for 2018	K.Mullins/M.Heffernan	End March 2018	End 2019
Optimization of fuel and raw material usage on site	Scheduled for 2018	D.Fanning/P.Murphy Operations Team	End March 2018	Ongoing Continuous improvement

Schedule of Objectives and Targets: AIR

SECTION E AIR				
Item	Status	Responsible	Timeframe	Date Completed
Submit QAL 1 CEMS documents to EPA for review	Submitted -Closed	M. Heffernan	Requested by EPA	Completed – Submitted to EPA 25 November 2016
Submit QAL2 CEMS reports to EPA	Submitted to EPA – under review	M. Heffernan	Requested by EPA as part of Testing and Commissioning plan	Submitted 24 October 2017
Reduce Dioxin Stack Testing Monitoring frequency in line with Schedule C.1.2	Quarterly stack testing under way	M. Heffernan	12 months	After testing Commissioning phase-awaiting approval.

14.0 EMP- Proposal for Current Year

The EMP has received the Agencies agreement and the recommended amendments will be included in the revision which will be submitted under a separate cover. This revision will include a review of the schedule of objectives and targets as requested by the Agency.

15.0 PRTR for Previous Year

DWTE submitted the first E-PRTR on 20th March 2018 for 2017 reporting data. The Agency have revised E-PRTR reporting for 2018. There is no longer a requirement to submit E-PRTR with this AER.

16.0 PRTR Proposal for current year

DWTE will continue to report the PRTR requirements under the Agency's new submission portal on EDEN launched in February 2019. This now removes the need to include a copy of the E-PRTR report with this AER.

17.0 Log of Use of Emergency Generator

The standby diesel emergency generator has logged the following run hours for 2018.
Hours Run for 2017 = 54.22 from 146 starts.
Hours Run for 2018 = 299 from 158 starts
2018 Generator use = 244.78 hours Run from 12 Starts in 2018.
The hours run are logged as part of the weekly environmental walk-down.

18.0 Report of Particulates Monitoring

The report on particulates monitoring was carried out as part of the quarterly stack testing for 2018. All stack testing reports for particulate monitoring can be summarized in table below.

Parameter	Units	Result Line 1 Q1 2018	Result Line 2 Q1 2018	Result Line 1 Q2 2018	Result Line 2 Q2 2018	Result Line 1 Q3 2018	Result Line 2 Q3 2018	Result Line 1 Q4 2018	Result Line 2 Q4 2018	2018 Avg Line 1	2018 Avg Line 2
PM_{10} [1]	mg/m³	0.176	0.182	0.130	0.161	0.120	0.140	0.124	0.118	0.138	0.150
$PM_{2.5}$ [1]	mg/m³	0.136	0.141	0.150	0.154	0.100	0.120	0.122	0.116	0.127	0.133

19.0 Hypochlorite Dosing Plan Summary Report

Sodium Hypochlorite is used in the cooling water to eliminate marine growth during the transport of cooling water throughout the plant. The cooling water is then returned to the Liffey estuary. Monitoring of the residual chlorine is a license requirement as per schedule C.2.1 and the dosing plan is included in the EMP which is under review. The current dosing schedule is operating within license requirements.

20.0 Review of Decommissioning Management Plan

The decommissioning plan or CRAMP was submitted on 29th November 2016 and approved by the Agency on 05th January 2017. The financial provision (FP) mechanism was reviewed and accepted by the Agency on 19th December 2017.

21.0 Statement of Measures in relation to Prevention of Environmental Damage and Remedial Actions (Environmental Liabilities)

The ELRA financial provision mechanism was reviewed in 2017 and approved by the Agency on the 19 December 2017. The Agency reviewed the Letter of Credit (LOC) dated 31/01/2018 which is financial provision for CRAMP. On the basis of the information provided, the EPA approved the revised financial provision. The LOC terminates on the expiry date of the 24/11/2032.

22.0 ELRA Review

The ELRA financial provision mechanism was reviewed in 2017 and approved by the Agency on the 19 December 2017. The ELRA financial provision is satisfied by way of an insurance product. The policy number is UKENVC93056 and it expires on the 19th Sept 2019. This will be renewed in the coming months.

23.0 Waste Pre-Treatment Proposals

Only residual municipal solid waste is accepted at the Dublin Waste to Energy facility as per EPA license W0232-01.

No pre-treatment of waste takes place at the Dublin Waste to Energy facility.

APPENDIX 1- Annual GW1 2018 Report

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Mark Heffernan

Covanta Europe Operations Limited
Pigeon House Road
Ringsend
Dublin 4

Certificate Of Analysis

Job Number: 18-47567
Issue Number: 1
Report Date: 15 October 2018

Site: Not Applicable
PO Number: Not Supplied
Date Samples Received: 01/10/2018

Please find attached the results for the samples received at our laboratory on 01/10/2018.

Should you have any queries regarding the report or require any further services, we would be happy to discuss your requirements. For additional information about the company please log-on to our website at the above address.

Thank you for choosing City Analysts Limited. We look forward to assisting you again.

Authorised By: **Authorised Date:** 15 October 2018

Shane Reynolds
Laboratory Manager

Notes:

Results relate only to the items tested.
Information on methods of analysis and performance characteristics is available on request.
Any opinions or interpretations indicated are outside the scope of our INAB accreditation.

City Analysts Limited,
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Dublin 4.

Tel: (01) 613 6003
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Customer

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Dublin 4

Report Reference: 18-47567

Report Version: 1

Site: Not Applicable

Sample Description: GW 01

Sample Type: Ground

Lab Reference Number: 413042

Date of Sampling: 01/10/2018

Date Sample Received: 01/10/2018

Site / Method Ref.	Analysis Start Date	Parameter	Result	Units	PV Value (Drinking Water Only)
D/D3000#	02/10/2018	Ammonia as NH4	< 0.013	mg/l	-
D/D1003#	01/10/2018	CBOD5	5	mg/l O2	-
D/D1009#	02/10/2018	COD	131	mg/l O2	-
EW188#*	-	Copper	0.045	mg/l	-
EW188#*	-	Potassium	28.3	mg/L	-
EW188#*	-	Tin	< 3.0000	ug/L	-
EW188*	-	Thallium	< 3.0000	ug/L	-
EW188#*	-	Nickel	45.0	ug/L	-
EW188#*	-	Mercury	0.17	ug/L	-
EW188#*	-	Manganese	340	ug/L	-
EW188#*	-	Lead	81.9	ug/L	-
EW188#*	-	Cobalt	4.5000	ug/L	-
EW188#*	-	Chromium	13.3	ug/L	-
EW188#*	-	Cadmium	0.6	ug/L	-
EW188#*	-	Arsenic	17.2	ug/L	-
D/D1041#	01/10/2018	PH	6.70	pH Unit	-
VOC EPA Suite					
*U	-	Benzene	< 1.00	ug/l	-

= INAB Accredited, U = UKAS Accredited, * = Subcontracted

Note:
PV Value is the parametric value, taken from European Communities, (Drinking Water) Regulations, 2014. S.I. No. 122 of 2014 and relates only to drinking water samples.
For queries on results, please contact us within two weeks of the report date to ensure that we can accommodate your query as samples cannot be stored indefinitely.
NAC & ATC - No abnormal change and acceptable to customers.
TVC - Total viable count
Site D = Analysed at City Analysts Dublin. Site S = Analysed at City Analysts Shannon

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*U	-	Chlorobenzene	< 1.00	ug/l	-
*U	-	1,2-Dibromoethane	< 1.00	ug/l	-
*U	-	1,2-Dichloroethane	< 1.00	ug/l	-
*U	-	Hexachlorobutadiene	< 1.00	ug/l	-
*U	-	Bromoform	< 1.00	ug/l	-
*U	-	Dibromomethane	< 1.00	ug/l	-
*U	-	1,2-Dichloropropane	< 1.00	ug/l	-
*U	-	1,1-Dichloroethane	< 1.00	ug/l	-
*U	-	1,3-Dichloropropane	< 1.00	ug/l	-
*U	-	Trichloroethene	< 1.00	ug/l	-
*U	-	N - propylbenzene	< 1.00	ug/l	-
*U	-	o-xylene	< 1.00	ug/l	-
*U	-	Sec - butylbenzene	< 1.00	ug/l	-
*U	-	1,3-Dichlorobenzene	< 2.00	ug/l	-
*U	-	1,4-Dichlorobenzene	< 1.00	ug/l	-
*U	-	4-Chlorotoluene	< 1.00	ug/l	-
*U	-	Bromobenzene	< 1.00	ug/l	-
*U	-	Carbon Tetrachloride	< 1.00	ug/l	-

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*U	-	1,2-Dibromo-3-chloropropane	< 1.00	ug/l	-
*U	-	Toluene	< 1.00	ug/l	-
*U	-	N - butylbenzene	< 1.00	ug/l	-
*U	-	Dibromochloromethane	< 1.00	ug/l	-
*U	-	Bromodichloromethane	< 4.00	ug/l	-
*U	-	1,1,1,2-Tetrachloroethane	< 1.00	ug/l	-
*U	-	1,1,1-Trichloroethane	< 1.00	ug/l	-
*U	-	1,1,2,2-Tetrachloroethane	< 1.00	ug/l	-
*U	-	1,1-Dichloroethene	< 1.00	ug/l	-
*U	-	1,2,3-Trichlorobenzene	< 1.50	ug/l	-
*U	-	1,2,3-Trichloropropane	< 1.00	ug/l	-
*U	-	1,2,4-Trichlorobenzene	< 1.50	ug/l	-
*U	-	1,2,4-Trimethylbenzene	< 1.00	ug/l	-
*U	-	1,2-Dichlorobenzene	< 1.00	ug/l	-
*U	-	1,3,5-Trimethlybenzene	< 1.00	ug/l	-
*U	-	2,2-Dichloropropane	< 2.00	ug/l	-
*U	-	2-Chlorotoluene	< 1.00	ug/l	-
*U	-	Bromochloromethane	< 4.00	ug/l	-

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*U	-	Chloroform	< 1.00	ug/l	-
*U	-	Chloromethane	< 1.00	ug/l	-
*U	-	1,2-Dichloroethene cis (Z)	< 1.00	ug/l	-
*U	-	1,3-Dichloropropene cis (Z)	< 1.00	ug/l	-
*U	-	Dichloromethane	< 27.00	ug/l	-
*U	-	Ethylbenzene	< 1.00	ug/l	-
*U	-	Isopropylbenzene	< 1.00	ug/l	-
*U	-	m,p-xylene	< 2.00	ug/l	-
*U	-	Naphthalene	< 1.00	ug/l	-
*U	-	Styrene	< 1.00	ug/l	-
*U	-	Tert - butylbenzene	< 1.00	ug/l	-
*U	-	Tetrachloroethene	< 1.00	ug/l	-
*U	-	Trans - 1,2-dichloroethene	< 1.00	ug/l	-
*U	-	1,3-Dichloropropene Trans (E)	< 1.00	ug/l	-
*U	-	Trichlorofluoromethane	< 1.00	ug/l	-
*U	-	Vinyl chloride	< 1.00	ug/l	-
*U	-	1,1,2-trichloroethane	< 1.00	ug/l	-
*U	-	1,1-Dichloropropene	< 1.00	ug/l	-

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*U	-	4-isopropyltoluene	< 1.00	ug/l	-
*U	-	Dichlorodifluoromethane	< 1.00	ug/l	-

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