

# ANNUAL ENVIRONMENTAL REPORT

Waste Licence

Registration No.: W0167-02

Licensee: Indaver Ireland Limited

Location of Activity: Carranstown,

Duleek, Co-Meath

Attention: Environmental Protection Agency

Office of Environmental Enforcement

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#### 1.0 Introduction

#### 1.1 Reporting Period

The following is the Annual Environmental Report (AER) for the period 1<sup>st</sup> January 2014 to the 31<sup>st</sup> December 2014 for the Waste to Energy Facility located at Carranstown, Duleek, Co-Meath, operated by Indaver Ireland Limited. Waste activities commenced at the site on the 15<sup>th</sup> August 2011.

This report has been prepared as per schedule D of Indaver's waste licence (Register No. W0167-02)

#### 1.2 Description of On-Site Waste Activities

Indaver commenced operations in 1977 and is one of Ireland's leading companies in the recovery, treatment and disposal of hazardous and non hazardous waste.

Indaver has offices in Dun Laoghaire, Dublin Port, Cork and Meath and operates:

- A custom-built hazardous waste transfer station and solvent recovery facility in Dublin Port
- □ A Waste to Energy Facility in Duleek, Co Meath
- □ Civic amenity sites in Newcastle West, Killmallock and Mungret on behalf of Limerick County Council

The development in Meath is valued at €130 million and represents the largest ever single investment in solid waste management infrastructure in Ireland. Indaver's Meath facility uses the most advanced technology, to process 200,000 tonnes of waste annually, generating enough energy to meet the needs of 20,000 homes. The development of a thermal treatment plant with energy recovery is in line with the North East Regional Waste Management Plan.

Construction of the facility began in September 2008. This state of the art WTE facility provides the Northeast region and surrounding areas with an alternative recovery treatment solution to landfill. It offers municipal waste collectors and Local Authorities a treatment solution for their residual waste.

Indaver currently employs 180 people with 35 of these working at the Meath facility



#### **Meath Waste to Energy Facility:**

The primary operation on the Meath Waste-to-Energy Facility is the incineration of non hazardous wastes with associated energy recovery in the form of steam which is used to generate electricity.

In general terms, the Meath WtE Facility is designed to incinerate and recover energy from the residual fraction of non-hazardous household, commercial and industrial waste and non-hazardous wastewater sludge. It consists of an incineration plant with energy recovery and ancillary services, and the throughput of the facility for incineration is 200,000tpa.

The facility comprises of the following main elements:

- The main process building (comprising of tipping hall, waste bunker, furnace boiler, steam turbine, flue gas treatment and ash storage) including the control room, labs and administration offices
- The building housing the air cooled condenser
- A contractors' compound / building with workshop
- A transformer compound and ESB substation with emergency generator
- A security building with weighbridge at facility entrance
- A water storage tank and pump house

The main process building is approximately 160 m long, 40 m wide at the widest point and 40 m above ground at the highest point. The stack is 65 m tall and vents the treated combustion gases to atmosphere. The plant is based on conventional grate furnace technology with a horizontal steam boiler and an advanced flue gas treatment system designed to meet the current emissions regulations. The plant will produce up to 17.2 MW electricity of which approximately 15.1MW is exported to the national grid.

Waste is transported to the site by waste contractors in accordance with the site's licensed opening hours. On entering the site, waste contractors follow a well marked two-way route to the tipping hall where inspections on the waste are conducted by Indaver on a routine basis. There is a large turning area outside the tipping hall to allow the waste delivery vehicles turn safely before entering the hall and a maximum speed limit of 15 km/h. In the tipping hall, waste is deposited into the waste bunker where it is mixed by the crane before being placed in the hopper for the furnace. In the furnace, the waste is incinerated at temperatures exceeding 850°C. The ash collected from the bottom of the furnace passes through a wet bath before being stored for collection and removal from the site. The combustion gases from the process pass through a number of treatment stages. This includes two stages of dosing (lime milk and lime) for acid removal and two stages of dosing (expanded clay and activated carbon) for dioxin removal, before passing through filter bags and being discharged to atmosphere via the emissions stack. The emissions to air is continuously monitored automatically and fed back to the control room for the facility where the levels of dosing can be adjusted if required.



# 1.3 Summary of quantity and composition of waste received, recovered and disposed of in reporting period

# 1.3.1 Waste received on site for recovery

For a full breakdown of the waste accepted on site please see Appendix 1.

Waste treated at the facility was from within the state and also from Northern Ireland.

# 1.3.2 Waste moved off site for recovery/disposal

For a full breakdown of the waste removed from site please see Appendix 2.



#### 1.4 Summary Report on emissions

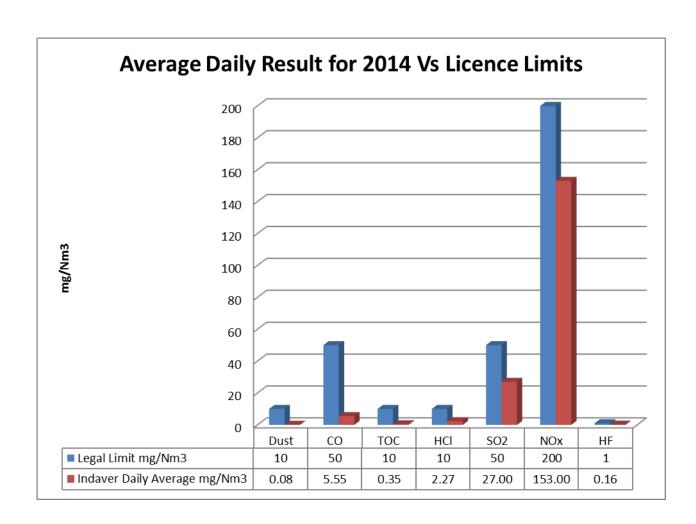
#### 1.4.1 Air Emission Reports

#### 1.4.1.1 Continuous Monitoring

Please see below the summary report on the continuous air monitoring emissions.

Please see below *figure 1.4.1.1.1*, in graphical format which shows the average value for each parameter as listed in Schedule B of the licence. As can be seen below the results for the average result for each parameter for 2014 is below the ELV.

Figure 1.4.1.1.1





Please see below *figure 1.4.1.1.2*, a graphical representation of the dioxin result for a one year period. Dioxins are sampled continuously and tested every 2 weeks. All results were below the threshold value of 0.1ng/Nm<sup>3</sup>.

Figure 1.4.1.1.2

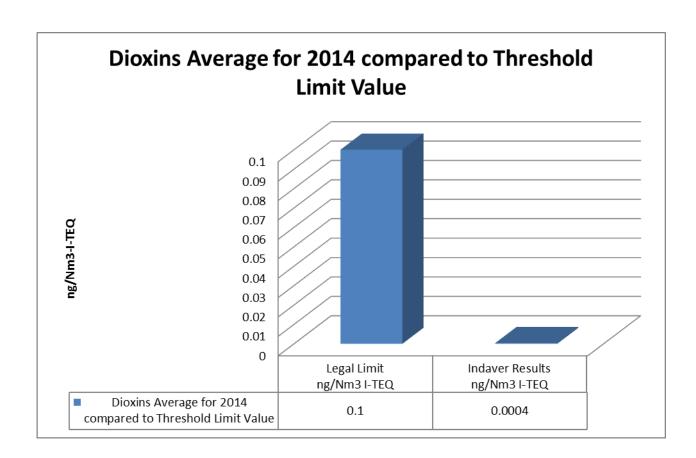




Figure 1.4.1.1.3 below gives an overview of compliance against the A and B norm. All results are given without taking into account the confidence interval but standardised to standard temperature and pressure and 11% oxygen and dry gas.

# Figure 1.4.1.1.3 A norm Compliance

Installation	Parameter	# half hours year to date	# of half hours lower than ELV	# half-hours above A norm ELV
ME1	Dust	16354	16354	0
	СО	16320	16301	19
	TOC	16302	16302	0
	HCI	16303	16303	0
	HF	16303	16303	0
	SO2	16303	16303	0
	NOx	16320	16320	0
	Temp of oven	16323	16323	0

## **B norm Compliance**

Installation	Parameter	# Half-hours	97% B-norm	Ok/NOK
ME1	Dust	16354	100	Ok
	СО	16320	No B norm	Ok
TOC		16302	100	Ok
	HCI		100	Ok
	HF	16303	100	Ok
	SO2	16303	98.2	Ok
NOx		16320	98.1	Ok
	Temp of oven	16323	No B norm	Ok



Figure 1.4.1.1.4 Overview of compliance with the daily emission limit value excluding confidence intervals (measured to standard conditions including 11%  $O_{2}$ , dry gas)

Installation	Parameter	# of Days	% Day Norm Compliance	# of Compliant days
ME1	Dust	339	100	339
	СО	339	100	339
	TOC	338	100	338
	HCI	338	100	338
	HF	338	100	338
	SO2	339	100	339
	NOx	339	100	339
	T oven	339	100	339



## 1.4.1.1.2 Non Continuous Monitoring

Each quarter Indaver Ireland Limited organises for an external contractor to take measurements of the non continuous monitoring parameters as listed in Schedule C.1.2 of W0167-02. These are sent quarterly to the Agency as per the licence requirement. Please see below the average results with legal limit where applicable and the measurement uncertainty shown for the reporting period 2014.

PM10		Measurement Uncertainty mg/Nm3	
Average for 2014	0.2525	0.46	

PM2.5	Year 2014 Average Measurement Uncertainty mg/Nm3	
Average for 2014	0.18	0.34

Cadmium & Thallium	ELV mg/Nm <sup>3</sup>	Year 2014 Average	Measurement Uncertainty mg/Nm3
Average for 2014	0.05	0.00095	0.000175

Mercury	ELV mg/Nm <sup>3</sup>	Year 2014 Average	Measurement Uncertainty mg/Nm3
Average for 2014	0.05	0.000375	0.0000725

				Measurement
			Year 2014	Uncertainty
<b>Heavy Metals</b>	ELV mg/Nm <sup>3</sup>		Average	mg/Nm3
Average for 2014		0.5	0.0675	0.0101

Arsenic	ELV mg/Nm <sup>3</sup>	Year 2014 Average	Measurement Uncertainty mg/Nm3
Average for 2014	0.2	0.000775	0.000075

Dioxins	ELV ng/TEQ		Year 2014 Average	Measurement Uncertainty mg/Nm3
Average for 2014	0.	1	0.0015	0.0003



#### 1.4.2 Surface Water Emissions

#### Surface Water/Pond

The system is monitored continuously at the DCS by the operators. The discharge is checked daily in accordance with the licence. There has been no unusual discharges in 2014. Also, no water can be discharged when the readings are over the trigger levels.

Surface Water Agreed Trigger Levels:

рН	TOC	Conductivity
6-9	Warning Level 25 mg/L Action Level 30mg/L	Warning Level 1000 µScm <sup>-1</sup> Action Level 1200 µScm <sup>-1</sup>

Average Results per quarter for 2014:

Quarter	pH	TOC mg/L	Conductivity µScm <sup>-1</sup>	Discharge Volume m <sup>3</sup>
Quarter 1	7.95	7.3	404.98	6293
Quarter 2	7.8	11.43	201.6	1473
Quarter 3	7.72	16.26	269.98	2396
Quarter 4	7.34	17.72	311.23	5530

Agreement was received in 2013 to change the trigger levels to the levels shown above. The reference for this correspondence is W0167-02/SI11MG.



#### 1.5 Summary of Noise Survey

Noise levels were outside the permitted day time noise limit of 55 dB(A) at AN1-2 and AN1-3. The night time noise limit of 45 dB(A) was exceeded at all four monitoring locations. This is due to road traffic on the busy R152 which runs along the front of the Indayer site.

Noise levels were within the permitted day noise levels at monitoring locations AN1-1 and AN1-4.

Along with off site traffic on the R152, cattle calling in the field immediately adjacent to the AN1-4 caused elevation in recorded noise levels during night time readings.

LA90 readings are the noise levels recorded over 90% of the monitoring duration. These readings remove intermittent noise from the recorded noise level such as noise from passing road traffic. The LA90 readings are a truer reflection of noise from Indaver site operations however when traffic is particularly heavy LA90 readings will also be increased as in day time LA90 readings recorded at AN 1-2 and AN1-3.

The noise levels detected at AN1-1, AN1-2 and AN1-3 are not due to Indaver activities.

No tonal or impulsive noise from site activities was recorded during day or night time monitoring.

In conclusion, noise emissions from the site have a minimal impact on the local environment.



#### 1.5.1 Noise Level Results

Monitoring Point	Date/Time	Sampling Interval minutes	L(A) eq	L(A) 10	L(A) 90	Audible Noise Source
AN1-1	09/10/2014		. , .		,	
						Low level audible noise from site activities
						during daytime hours. Road traffic noise from
	12:22	30	52.6	55.79	46.4	R152 main audible noise source. Some site
	13:01	30	53.3	56.4	46.5	traffic noise entering and exiting main gate
	13:32	30	54.1	57.3	48.1	approx. 120m away.
						Little if any noise from site activities. Road
						traffic noise from R152 main audible noise
	23:15	30	48.7	52.0	37.7	source. Low level noise from incinerator just
	23:46	30	47.83	50.45	37.37	audible. Overhead planes.
AN1-2	09/10/2014					
						Little if any noise from site activities. Road
	14:02	30	67.85	72.1	53.82	traffic noise from R152 main audible noise
	14:38	30	67.46		53.8	source. Some site traffic noise entering and
	15:57	30	68.8	73.0	53.7	exiting main gate approx 40m away
	10/10/2014					
						Little if any noise from site activities. Road
						traffic noise from R152 main audible noise
	00:22	30	58.2	58.9	34.89	source. Low level noise from incinerator just
	01:10	30	60.0	58.0	35.5	audible.
AN1-3	09/10/2014					
	44.50	20	co o	c= 0		Little if any noise from site activities. Some
	14:53	30	62.8	65.9	54.5	site traffic noise entering and exiting main
	15:23	30	63.1	66.1	55.7	gate approx. 60m away. Road traffic noise from
	15:58	30	66.9	71.0	54.7	R152 main audible noise source.
	10/10/2014					United States and States and States Board
						Little if any noise from site activities. Road traffic noise from R152 main audible noise
	00:35	30	55.7	60.2	35.1	
	00:35	30	53.83	57.51	33.03	source. Low level noise from incinerator just audible.
AN1-4	09/10/2014	30	33.83	57.51	33.03	audible.
AN1-4	09/10/2014					
						Forklift operating approx 90m away and waste
						truck unloading approx. 80m away main source
						of site noise during daytime hours.
	11:49	30	50.66	52.16	46.92	or size noise during daytime nours.
	12:19	30	50.08	52.10	47.15	Noise audible from off site road traffic,
	14:10	30	50.08	52.5	46.6	overhead planes and cattle in adjacent field.
	23:05	30	47.29	47.76	40.92	Some low level audible noise from bottom ash
	23:53	30	45.5	48.9	41.4	ball.
	23.33	30	43.3	40.7	41.4	vaii.



# 1.5.2 Tonal or Impulsive Noise

		Tonal or Impulsive	
		Noise from site	
<b>Monitoring Point</b>	Time	activity	Comments
			No significant tonal and impulsive
AN1-1	Day	No	noise from site activities.
	Night		No significant tonal and impulsive
		No	noise from site activities.
	Day		No significant tonal and impulsive
AN1-2		No	noise from site activities.
	Night		No significant tonal and impulsive
		No	noise from site activities.
	Day		No significant tonal and impulsive
AN1-3		No	noise from site activities.
	Night		No significant tonal and impulsive
		No	noise from site activities.
	Day		No significant tonal and impulsive
AN1-4		No	noise from site activities.
	Night		No significant tonal and impulsive
		No	noise from site activities.



## 1.6 Summary of all Environmental Monitoring

# 1.6.1 Groundwater Monitoring

It is a requirement of Schedule C.6.1 of W0167-02 that monthly groundwater monitoring and biannual monitoring of the groundwater monitoring boreholes takes place. Please see below a summary of the results for the same. All these results have been sent to the Agency previously as part of the requirement to send quarterly reports.

**AGW1-1 Upgradient Monitoring Point** 

Monitoring Frequency	TOC(mg/L)	Ammonia (NH4) Ug/L as N	Conductivity uscm- 1@25C
Jan-14	1.29	10	839
Feb-14	4.26	13	840
Mar-14	1.88	27	842
Apr-14	2.17	10	791
May-14	2.39	16	810
Jun-14	2.43	30	737
Jul-14	2.9	19	712
Aug-14	1.72	10	721
Sep-14	1.43	11	684
Oct-14	2.08	10	667
Nov-14	2.43	10	659
Dec-14	2.11	10	664

**AGW1-2 Downgradient Monitoring Point** 

Monitoring Frequency	TOC(mg/L)	Ammonia (NH4) Ug/L as N	Conductivity uscm- 1@25C
Jan-14	0.85	10	638
Feb-14	2.67	10	571
Mar-14	2.35	10	583
Apr-14	1.65	10	709
May-14	1.32	22	719
Jun-14	1.71	32	720
Jul-14	2.46	51	739
Aug-14	1.25	16	725
Sep-14	1.11	10	715
Oct-14	1.24	10	715
Nov-14	1.76	10	633
Dec-14	1.37	10	651



**AGW1-3 Downgradient Monitoring Point** 

Monitoring Frequency	TOC(mg/L)	Ammonia (NH4) Ug/L as N	Conductivity uscm- 1@25C
Jan-14	3.44	10	572
Feb-14	1.24	10	555
Mar-14	2.83	10	563
Apr-14	1.53	10	616
May-14	1.64	29	618
Jun-14	1.85	64	603
Jul-14	2.71	60	606
Aug-14	1.48	15	683
Sep-14	1.16	10	623
Oct-14	1.19	10	608
Nov-14	1.52	10	588
Dec-14	1.23	10	626

## **Biannual Results**

	AGW1-1	AGW1-2	AGW1-3	AGW1-1	AGW1-2	AGW1-3
Date	29/04/14	29/04/14	29/04/14	18/09/14	18/09/14	18/09/14
рН	7.1	7.2	7.2	7.2	7.3	7.2
Nitrate(mg/L as N)	3.39	8.24	8.41	1.97	7.21	7.19
Nitrite(mg/L as N)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chloride (mg/L)	56	79.71	39.83	32.99	82.57	37.85
Fluoride (mg/L)	0.09	0.06	0.09	0.08	0.08	0.1
Metals-Cd (ug/L)	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Metals TI (ug/L)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Metals Hg (ug/L)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Metals Pb (ug/L)	0.238	0.431	0.097	<0.02	<0.02	<0.02
Metals Cr (ug/L)	<2.14	2.787	<2.14	<2.14	3.302	<2.14
Metals Cu (ug/L)	0.248	3.523	0.649	0.248	0.166	0.215
Metals Mn (ug/L)	7.513	48.57	5.056	3.046	0.551	0.595
Metals Ni (ug/L)	0.871	1.455	1.137	0.356	0.254	0.661
Metals As (ug/L)	0.192	0.637	0.332	0.259	0.225	0.233
Metals CO (ug/L)	<0.02	0.264	0.109	0.04	0.11	0.102
Metals V (ug/L)	0.44	1.214	<0.16	0.322	0.341	0.865
Metals Sn (ug/L)	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
Organohalogens	3.267	<1	3.219	16.212	<1	2.423
Total coliforms(no/100ml)	0	0	0	320	80	<10
Faecal Coliforms(no/100ml)	0	0	0	<10	<10	<10



Overall it can be stated the activities on the site at W0167-02 has no significant impact on the groundwater quality as can be shown by the above results.

#### 1.7 Summary record of the use of the emergency generator

The emergency generator was used a total of 70 hours in 2014. The majority of these hours were for testing purposes. It is tested weekly and these records are stored at the facility. Any plant trips would trigger the generator to start and these hours are all included within the 70 hours for 2014.

#### 1.8 Resource and Energy Consumption Summary

# 1.8.1 Diesel Usage

For the year 2014 Indaver Ireland Limited used 251,215L of Diesel fuel oil. This is approximately a 40% reduction in diesel fuel usage compared to the previous year 2013. During 2014 the plant was running under general operating conditions and so this amount of diesel is more normal for a plant of this type. This is used in the auxiliary burners of the plant. The majority of this fuel usage was during the start up and shut down periods for planned maintenance. In 2014 there was a reduced number of shutdowns than in 2012 and 213 and this will account for the reduction in diesel usage between the two years. Fuel oil is also used whenever the temperature goes below 850°C.

# 1.8.2 Water Usage

#### 1.8.2.1 Groundwater:

For the year 2014, Indaver Ireland Limited used 59,402m³ of groundwater for use in the process. This is used for the process to mix with lime which creates lime milk for use in the flue abatement system. Water would also be used inside the plant for clean down purposes. All the clean down washings are reused in the process again. Indaver also has a demineralisation plant to ensure water is of a sufficient quality for use in the boiler. This is a reduction in the amount used in 2013 and there was more waste tonnage treated in 2014. It is anticipated that the volumes will be similar for the year 2015 also.

#### 1.8.2.2 Public Supply:

The public water supply is only used on site for general office purposes and welfare facilities (Showers/toilets/drinking water etc) in the administration block. It is not envisaged to monitor or reduce the amount of water used here.



## 1.8.3 Consumable Usage

The following consumables are used in the process to ensure compliance with the emission limits of W0167-02.

Consumable	Usage during 2014/Ton	Usage during 2013/Ton
Quicklime	2427	2671
Hydrated Lime	1181	655
Expanded Clay	133	199
Activated Carbon	101	92
Ammonia	448	788

Hydrated lime is higher than 2013 because of the high upstream acids. The acids required more neutralisation to ensure compliant readings at the stack.

Ammonia shows a reduction in volume from 2013 and this is because there is better management of the injection points in the furnace. This ensures that ammonia is injected at the correct temperature profile to ensure efficient use of the consumable. Also, this year we have stayed consistent e.g. each month is around the same, last year we had peaks and troughs.

Resource efficiency and consumable usage is a key performance indicator and is monitored daily and reported on a monthly basis.

## 1.8.4 Energy Consumption

An energy audit was completed at the facility in 2014 as required by Condition 7.3 of W0167-02. The energy efficiency calculations as required by Condition 7.3.3 is attached in Appendix 5. Actions arising out of this audit report have been included in our schedule of objectives and targets (Indaver Improvement Plan).

For the reporting year 2014 Indaver exported 129298MWH of electricity to the national grid and imported 689MWH. This is a slight increase in the amount of electricity exported and a slight reduction in the amount of energy imported. Indaver produce electricity to run the facility and only import electricity when in shutdown or constrained by the national grid.

#### 1.9 Waste Recovery Report

The End of Life Vehicles Directive sets a minimum reuse and recovery target of 85% from 2006 increasing to 95% reuse and recovery by 2015. Up to 10% of this target may be met through energy recovery. The Meath waste-to-energy facility is positioned to accept End of Life Vehicle residue in the form of car shred and contribute to this recovery target from 2011 onwards. In the reporting year 2014, a figure of 498.22 Ton of automotive shredder waste was accepted and recovered.

As a recovery option, the waste-to-energy facility can contribute to packaging recovery targets set out under the Packaging Directive (currently 60% recovery). It is estimated that up to 48,000t residual packaging waste in the MSW accepted will be recovered at the facility.

The facility contributed to the national target of diverting 50% household waste from landfill. Approximately 156,646 tonnes of municipal type waste (EWC code Chapter 20) was treated at the facility in 2014, compared with 750,066 tonnes<sup>1</sup> household waste disposed of to landfill in the country. Therefore, the facility contributed ~21% towards this diversion target.



Flue Gas Residue and Boiler ash are removed from site and where possible sent to an underground salt mine in Germany. This is considered a recovery operation, R5, as the mine is being filled up with this material in order to remediate the ground above.

Ferrous metals are recovered from the bottom ash on site using a magnet and sent to metal brokers within Ireland. Indaver are now recovering non ferrous metal from the bottom ash on site using an eddy current system. This begun in June 2014.

Residue	Tonnage	Recovery Option
Ferrous Metal	6796	R4
Non Ferrous Metal-NEW!	396	R4
Flue Gas Residue	8033	R5
Boiler Ash	2103	R5
Bottom Ash	14765	R10

Bottom ash is currently being landfilled. An alternative landfill to Whiteriver has been used and the bottom ash is being used for cover which allows the recovery code R10 to be assigned.

#### 1.10 Tank, drum, pipeline and bund testing and inspection report

There were several bund and double skinned tanks that were retested in 2014. In 2013 a map was produced showing the location of all the bunds and this was checked during a recent EPA audit. This testing is followed up on the maintenance programme in SAP.

9	Underground recovered water pit ( Dirty Water Pit)	Dirty Water Pit	UYA99-BB009
10	Underground recovered water pit ( Clean Water Pit)	Clean Water Pit	UYA99-BB010
11	Underground retention tank beside the pond/Fire Water Retention tank	Fire Water Retention tank	UYA99-BB011
14	Bund Tray in Chemstore Unit for Warehouse	Chemstore MH001 Warehouse	UYA99-BB014
16	2.5m3 Storage tank Ammonia Slab area	2.5m3 Storage tank Ammonia Slab area	UYA99-BB016

<sup>&</sup>lt;sup>1</sup> Figures from 2011, From the National Waste Report 2011, EPA



#### 1.11 Summary of reported incidents and complaints

#### 1.11.1 Summary of Incidents

All Environmental Incidents are dealt with as per the Environmental Incident Investigation and Reporting Procedure.

There were 17 reported environmental incidents in 2014 which is a reduction of >40% compared to 2013. Please see breakdown of the incidents below. All incidents have been closed out.

Rank of Incident		# of Reported Incidents for 2014
1	ELV Elevated Value: CO	17

#### 1.11.2 Summary of complaints

All Environmental Complaints are dealt with as per the Environmental Complaints Procedure.

There were 12\* environmental complaints registered in 2014. There were a number of complaints registered at the facility which upon investigation were not linked to any of our activities e.g. slurry spreading on neighbouring land, mushroom compost etc. This is shown in the table below. All 2014 complaints have been closed out.

	Complaints Investigated	Complaints actually related to our activities	
Detail	Total	Total	
Litter	3	1	
Noise	2	1	
Plant Emissions	1	0	
Odour	7	1	
Drainage	1	0	
Pollution	1	0	
Traffic	1	0	

<sup>\*</sup>Note the numbers in the total complaints investigated adds up to more that 12 as some complaints had more than one complaint type at the time e.g. noise and odour were listed together



# 1.12 Summary of audits of waste disposal, treatment and recovery sites for the residues from facility

During 2011, Indaver Group audited K&S, the facility for the recovery of our flue gas residues and boiler ash. There two minor observations raised at this audit. The facility was approved for use and continued use.

Hammond Lane, the facility which accepts the ferrous metal from the site was audited in March 2014. There were 2 recommendations and 4 minor observations raised at this audit. The facility was approved for continued use.

#### 1.13 Environmental Management System

#### 1.13.1 Environmental Management Programme – Report for previous year

Indaver Ireland Limited commenced waste activities on the 15th August 2011. Condition 2.3.2.3 of W0167-02 requires that an Environmental Management Programme be submitted to the Agency not later than six months from the date of commencement of waste activities. The EMP was submitted in February 2012. Correspondence (W0167-02/ap02mg) was received from the Agency stating that the EMP was largely to the Agency's agreement and any changes that were required to the schedule of objectives and targets were updated in accordance to the letter that was received by the Agency.

#### 1.13.2 Environmental Management Programme – Proposal for current year-Indaver Improvement Plan - Schedule of QESH Objectives and Targets

The Indaver Improvement Plan details the company's objectives and targets for the improvement and maintenance of the quality, environmental and safety & health management systems. It is used to comply with Condition 2.3.2.3 in relation to the implementation and management of objectives and targets.

Version 67 of the Indaver Improvement Plan was issued on the 22nd March 2013. A number of new actions were added to this Version.

The following are our 9 core Objectives:

OBJECTIVE 1: LEGISLATIVE COMPLIANCE INCLUDING WASTE LICENCES AND

**PERMITS** 

**OBJECTIVE 2: CUSTOMER FOCUS** 

OBJECTIVE 3: OPERATIONAL EFFICIENCY & BUSINESS PERFORMANCE

OBJECTIVE 4: EMPLOYEE DEVELOPMENT AND INVOLVEMENT

**OBJECTIVE 5: ENERGY AND RESOURCE USE** 

**OBJECTIVE 6: HEALTH AND SAFETY** 

**OBJECTIVE 7: QESH SYSTEMS** 



# OBJECTIVE 8: CONTROL AND MANAGEMENT OF SUPPLIERS & CONTRACTORS OBJECTIVE 9: WASTE HANDLING AND TRANSPORT

Under each of these Objectives the Indaver Improvement Plan specifies the following information:

- Specific objective and associated targets
- 2. The specific actions outlined for achieving targets
- 3. Where the action arose from
- 4. Target date for completion of the action
- 5. Person responsible for completion of the action
- 6. Manager of person responsible for completion of the action
- 7. Department of the person responsible for completion of the action
- 8. Current status of objective/target

Actions are added and closed on an ongoing basis.

See Appendix 6 for a list of actions closed.

See Appendix 7 for a list of planned actions.

#### 1.13.3 Overview of Environmental Management System

It is the policy of Indaver to conduct its activities in such a manner as to minimise or eliminate any potential adverse effects on the environment

This commitment is expressed in the company's QESH (Quality, Environmental and Safety & Health) Policy and by the installation of an Environmental Management System to control and minimise the environmental impact that the activities on site may pose.

#### 1.13.4 Structure of Environmental Management System

Indaver have an integrated Quality, Environmental and Safety & Health (QESH) management system. The Quality, Environmental or the Health & Safety Management Systems for the Facility were certified by NSAI to the ISO 9001, ISO 14001 and OHSAS 18001 standards in July 2014. This now means that all of Indaver's activities are certified to ISO 9001, ISO 14001 and OHSAS 18001 standard.

Figure 1.13.4.1 shows the basic structure of the QESH Management System.



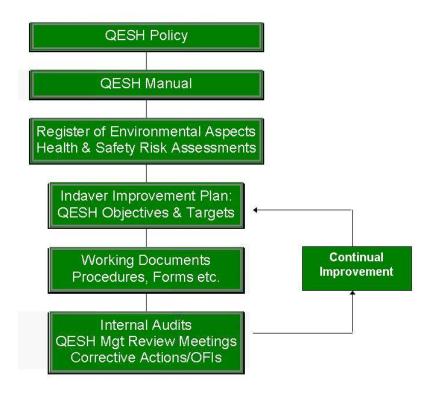


Figure 1.13.4.1 Structure of QESH Management System

#### 1.13.5 Register of Environmental Aspects

The Register of Environmental Aspects identifies any significant environmental aspects of Indaver's activities. An environmental aspect is an element of Indaver's activities that can interact with the environment. The Register of Environmental Aspects for the Meath facility was drawn up in 2012 after consultation with the management and staff at the facility and finalized and issued in 2013. These were reviewed again in 2014 and issued in January 2015.

The following 9 aspects are currently in place:

- 1. Vehicle Movements
- 2. Tipping Hall
- 3. Storage & mixing of wastes
- 4. Incineration of wastes
- **5.** Ash and metal handling & storage
- **6.** Air emissions treatment process
- 7. Fire & Firewater
- 8. Ancillary Services
- 9. Resource, Consumable usage and generation of waste

Aspect 1 is split into two sections: 1a-Waste movements and 1b-Consumable and Chemical movements.

Each aspect is assigned a Significance Rating. All of these aspects were deemed significant and are controlled via the objectives and targets or through operational procedures.

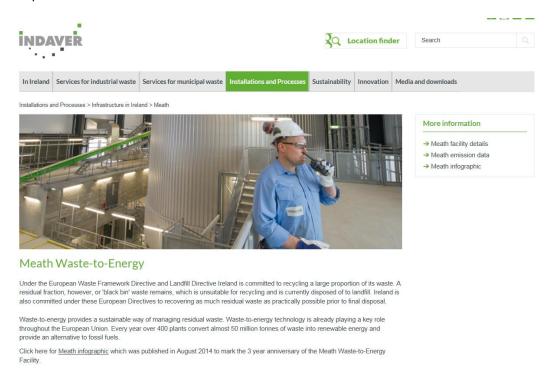


#### 1.13.6 Communication/Public Information

All communications with interested parties is dealt with as per Operations 6.1 Internal & External Communications Procedure. Indaver has several visits per year from interested parties e.g. schools, universities etc. Also customers can audit the site at a pre arranged agreed time to audit Indaver's systems and treatment of their waste streams.

Environmental information is made available to interested parties upon request and Indaver aims to facilitate all requests by customers to conduct audits and by interested partied to conduct visits of the facility.

Indaver's website, <u>www.indaver.ie</u>, is a valuable source of information for customers and interested parties.



Indaver is also an active member of the Indaver Community Liaison Committee which consists of Slane Area Councillors, Carranstown Residents Committee and Indaver personnel and is chaired by Meath County Council.



#### 1.14 Pollutant Release and Transfer Register-report for previous year

As per the PRTR regulations, S.I. No 123 of 2007, require that Indaver report releases of pollutants and off site transfers of waste. Indaver submitted their E-PRTR on 30<sup>th</sup> March 2014 and is attached in Appendix 4.

#### 1.15 Pollutant Release and Transfer Register-proposal for current year

It is anticipated that Indaver will continue to monitor the same pollutants in our air emissions as in 2014. These are TOC, HCl, HF,  $SO_2$ ,  $NO_x$ , CO, dust and dioxins.

#### 1.16 Particulates Monitoring

Dust is monitored continuously using as per Schedule B of W0167-02. The quarterly reports contain the results for each months results for dust measurements. Here is the summary of dust figures for 2014.

The dust produced and emitted through A1-1 for the year 2014 is the following:

Dust ELV mg/Nm3	Average Result for 2014 mg/Nm3	Mass of dust emitted in 2014
10	0.08	101Kg

Quarterly testing took place in 2014 as per the licence schedule and the following is the results of the particulate monitoring from this campaign. The full reports have been sent to the Agency as part of the quarterly reports.

PM10	Year 2014 Average mg/Nm3	Measurement Uncertainty mg/Nm3
Average for 2014	0.2525	±0.46

PM2.5	Year 2014 Average mg/Nm3	Measurement Uncertainty mg/Nm3
Average for 2014	0.18	±0.34



#### 1.17 Review of Decommissioning Management Plan

The Closure, Restoration, Aftercare management plan was completed and sent to the EPA for review in 2011. This was approved by the Agency on the 22nd August 2011. This was reviewed during 2014 and a process of updating it has begun for completion in 2015 prior to the acceptance of hazardous waste at the facility.

# 1.18 Statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities)

Condition 12.2.1 of waste licence W0167-02 requires Indaver to submit an annual statement as to the measures taken or adopted at the site in relation to the prevention of environmental damage.

The statement of measures is outlined in Appendix 5 of the Environmental Liabilities Risk Assessment that was submitted to the Agency and agreed by the Agency on 22nd August 2011. A copy of this is attached in Appendix 3.

#### 1.19 Environmental Liabilities Risk Assessment Review

Condition 12.2.2 requires that the ELRA shall be reviewed as necessary to reflect any significant changes on site and in any case within three years following initial agreement. The ELRA was submitted to the Agency and received agreement on the 22nd August 2011. The financial provisions which were in place were also agreed with the Agency on the same date. The process for updating and reviewing the document begun in 2014 and will be completed in 2015. Updated versions of both the ELRA and CRAMP will be submitted to the Agency in early 2015 for agreement.

Appendix 1: Waste accepted at the facility for recovery from 1st January 2014 to the 31st December 2014

Material Accepted	Quantity/Tonnes
020203 MATERIALS UNFIT FOR CONSUMPTION	14.12
020501 FOOD UNSUITABLE FOR CONSUMPTION	194.04
040222 WASTE FROM PROCESSED TEXTILE	44.68
070512 WWTP SLUDGE	5737.26
070514 NON HAZ SOLID WASTE	32.78
070514 PHARMA WASTE SOLID	230.06
080318 WASTE PRINTING TONER	136.76
110110 SLUDGES AND FILTERCAKES	4.2
150102 EMPTY PLASTIC PACKAGING	0.6
150103 TIMBER PALLETS	0.18
150203 FILTERS/ABSORBENTS/WIPES	39.46
160304 OFF SPEC LIQUID	0.22
160306 OFF SPEC SOLID	333.28
170604 INSULATION	741.38
190203 PREMIXED NON HAZ WASTE	7283.3
190805 SLUDGES FROM URBAN WASTE WATER	56.4
191006 SHREDDINGS FROM METAL CTG WASTE	498.22
191212 RESIDU FROM MECH. TREATM.	59789.52
200111 TEXTILE	19.46
200139 PLASTICS	37.78
200140 METALS	8.54
200301 MUNICIPAL WASTE	155808.42
200307 BULKY WASTE	772.18
080308 WASTE INK SOLUTION	301.41

Appendix 2: Overview of waste removed from the facility from 1st January 2013 to the 31st December 2013

5. ONSITE TREATMENT & OFFSITE TRANSF		PRTR# : W0167   Facility Name : Indaver Irelater all quantities on this sheet in Tonnes	and Limited (Duleek)   Filename : W01	67_2014.xls   Return Year : :	Haz Waste :	: Name and Licence/Permit	
European Waste	Quantit (Tonnes <sub> </sub> Year)	per	Waste	Method Used	No of Ne Non Hz Lice Re	Hext Destination Facility  Haz Waste: Name and sence/Permit No of Recover/Disposer  Max Waste: Name and Non	az Waste: Address of Next  Destination Facility  Name and License / Permit No. and Actual Address of Final Recoverer / Disposer  (HAZARDOUS WASTE ONLY)  Actual Address of Final Recover (HAZARDOUS
Transfer Destination Code	Hazardous	Description of Waste	Operation   WC/E	Method Used	Treatment		Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB-
To Other Countries 06 01 05	Yes	0.0 nitric acid and nitrous acid	D10 M	Weighed	Indaver Ire Abroad Limited,W		2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Ham D1,D1,Ireland Hamburg,Germany Hamburg,Gern Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB-
To Other Countries 06 01 06	Yes	0.0 other acids	D10 M	Weighed	Indaver Ire Abroad Limited,W		2,Borsigstr. 2,D-22113 Borsigstr. 2,D- Quay Road.Dublin Hamburg.Hamburg.D-22113 Hamburg.Ham
					Indaver Ire	reland Tolka Q	D1,D1,Ireland Hamburg,Germany Hamburg,Gern Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Hamburg,Germany Hamburg,Gern D1,D1,Ireland Hamburg,Germany Hamburg,Gern
To Other Countries 06 02 03	Yes	0.0 ammonium hydroxide	D10 M	Weighed	Abroad Limited,W		D1,D1,Ireland Hamburg,Germany Hamburg,Gern Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D-
To Other Countries 06 02 04	Yes	0.0 sodium and potassium hydroxide	D10 M	Weighed	Indaver Ire Abroad Limited,W		A Quay Road, Dublin Hamburg, Hamburg, D-22113 Hamburg, Hamburg, Germany Hamburg, Germany Abfall Verwertungs  Gesellschaft Gmb
To Other Countries 13 02 08	Yes	0.0 other engine, gear and lubricating oils	s D10 M	Weighed	Indaver Ire Abroad Limited,W	reland Tolka Q V0036-02 Port,D1	(AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Ham D1,D1,Ireland Hamburg,Germany Hamburg,Gern Enva Ireland Ltd,196-
Within the Country 13 05 07	Yes	0.0 oily water from oil/water separators	D9 M	Weighed	Offsite in Ireland Enva Irela	MacAnu F Kenne John F I and Ltd,196-1 Road,D	1,MacAnulty Clear  nulty Clear Drains,John Drains,John F Kennedy MacAnulty Clear nnedy Industrial Estate Industrial Estate John F F Kennedy Industrial F Kennedy Road,Naas John F Kennedy Industrial Estate John F F Kennedy Industrial Estate John F Kennedy Road,Naas John F Kennedy Industrial Industr
				S .			Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D-
To Other Countries 13 07 01	Yes	0.0 fuel oil and diesel	D10 M	Weighed	Indaver Ire Abroad Limited,W	V0036-02 Port,D1	Rilta Environmental, W0192-  3 Quay Road, Dublin Hamburg, Hamburg, D-22113 Hamburg, Germany Hamburg, Germany  4 Rilta Environmental, W0192-  5 402, Greenogue 03, Block 402, Greenogue Block 402, Gre
Within the Country 13 08 99	Yes	2.96 wastes not otherwise specified	R9 M	Weighed	Rilta Envir Offsite in Ireland 03	ironmental,W0192- Busines	Rathcoole, Dublin, Ireland Park, Rathcoole, Dublin, Ireland Park, Rathcoole, Dublin, Ireland Abfall Verwertungs  Gesellschaft Gmb  (AVG), IB2234/AVG-GENB-
To Other Countries 15 02 02	Yes	absorbents, filter materials (including filters not otherwise specified), wiping protective clothing contaminated by 0.0 dangerous substances	g cloths,	Weighed	Indaver Ire Abroad Limited,W	reland Tolka Q V0036-02 Port,D1	2,Borsigstr. 2,D-22113 Borsigstr. 2,D-22113 A Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Hamburg,Germany Hamburg,Germany Abfall Verwertungs
To Other Countries 16.05.04	Yes	gases in pressure containers (includ 0.0 halons) containing dangerous substa	ing ances D10 M	Weiahed	Indaver Ire Abroad Limited,W	reland Tolka Q V0036-02 Port D4	Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Ham D1,D1,Ireland Hamburg,Germany Hamburg,Germ
		aqueous liquid wastes containing da	ngerous		Rilta Envir	Block 4	Rilta Environmental,W0192- 402,Greenogue 03,Block 402,Greenogue Block 402,Gre
Within the Country 16 10 01  Within the Country 16 10 02		0.0 substances	D9 M		Offsite in Ireland 03	ndalk and Drogheda Dundall	dalk WWTW,Lower point
Within the Country 16 10 02		aqueous liquid wastes other than the 0.0 mentioned in 16 10 01			Rilta Envir Offsite in Ireland 03	Block 40 ironmental,W0192- Busines	c 402,Greenogue
Within the Country 17 02 01  Within the Country 17 04 05					Panda Wa Offsite in Ireland Limited,W Nurendale Panda Wa	/aste Services Rathdrii V0140 - 03 ,Co Mea le Limited trading as /aste Services Rathdrii	drinagh,Beauparc,Navan
Within the Country 17 04 05  Within the Country 17 05 04		<ul><li>0.0 iron and steel</li><li>soil and stones other than those mer</li><li>0.0 in 17 05 03</li></ul>	D15 M		Panda Wa Offsite in Ireland Limited,W Nurendale	le Limited trading as laste Services Rathdrin N0140 - 03 ,Co Mea le Limited trading as	drinagh,Beauparc,Navan /leath ,Ireland
Within the Country 17 06 04  Within the Country 17 09 04		insulation materials other than those 2.2 mentioned in 17 06 01 and 17 06 03 mixed construction and demolition we other than those mentioned in 17 09 1.68 09 02 and 17 09 03	D15 M astes		Panda Wa Offsite in Ireland Limited,W Nurendale Panda Wa	Vaste Services Rathdrii V0140 - 03 ,Co Mea le Limited trading as Vaste Services Rathdrii	drinagh.Beauparc.Navan
Within the Country 17 09 04  Within the Country 19 01 02		1.68 09 02 and 17 09 03  2.66 ferrous materials removed from botto		Weighed	Offsite in Ireland Limited,W Hammond Company Offsite in Ireland 0013-01 Hegarty M (Internatio	nd Lane Metal Pigeon y Limited,WFP-DC- Road,R 4,Rings	on House I,Ringsend,Dublin gsend,Ireland
Within the Country 19 01 02  Within the Country 19 01 02	No No	<ul><li>0.0 ferrous materials removed from botto</li><li>0.0 ferrous materials removed from botto</li></ul>	om ash R4 M				
			191			Reutilis	K&S Kali GmBH,LicenceM76D310/57,R eutilisation Salt Reutilisation S ilisation Salt Mines(Phillippstaal),Nipper Mines(Phillipp
To Other Countries 19 01 07	Yes 773	1.76 solid wastes from gas treatment	R5 M	Weighed			StraBe 33,36269 StraBe 33,36269 StraBe 33,36269 Philippsthal,36269 Philippsthal,36269 Philippsthal,Germany Indaver NV,MLAV1/9800000485/MV/bd
To Other Countries 19 01 07	Yes	0.0 solid wastes from gas treatment	D9 M	Weighed	Indaver Abroad NV,MLAV1	Industri Afvalver g,B-203 1/9800000485/MV/bd Antwerp	striele ,Industriele Industriele verwerking,Poldervlietwe Afvalverwerking,Poldervlietwe Afvalver
						Werk W Winters Herfagr	NV,MLAV1/9800000485/MV/bd  Werra,Standort ,Industriele Industriele ershall Afvalverwerking,Poldervlietwe Afvalverwerking grund,36266 Herfa g,B-2030 Antwerpen 3,B-2030 g,B-2030 Antw
To Other Countries 19 01 07  Within the Country 19 01 12		bottom ash and slag other than those 0.0 mentioned in 19 01 11	9		Whiteriver County Co	def-79 n 330-51/153 ,36266 or Landfill[Louth Whiterivouncil] Townland Dunlee	66 Herfa ,Germany Antwerpen 3,Belgium Antwerpen 3,Beriver and Gunstown  aland  leer,Co-Louth,Co-
Within the Country 19 01 12  Within the Country 19 01 12	No 1476	0.0 mentioned in 19 01 11  bottom ash and slag other than those 4.66 mentioned in 19 01 11  bottom ash and slag other than those 0.68 mentioned in 19 01 11	R10 M	Weighed	Offsite in Ireland Knockharl	rley,W0146-01	h,.,Ireland
Within the Country 19 01 12	INO 14660	5.00 mentioned in 19 01 11	ט1 M	vveigned	Olisite in Ireland Council,W	Industri Afvalver	Indaver NV,MLAV1/9800000485/MV/bd striele ,Industriele verwerking,Poldervlietwe Afvalverwerking,Poldervlietwe
To Other Countries 19 01 13	Yes	0.0 fly ash containing dangerous substan	nces D9 M	Weighed	Indaver Abroad NV,MLAV1	g,B-203	erpen 3,B-2030 g,B-2030 Antwerpen 3,B-2030 Antwerpen 3,Belgium ,,,,,,,Belgium K&S Kali GmBH,LicenceM76D310/57,R
To Other Countries 19 01 13	Yes	0.0 fly ash containing dangerous substar	nces R5 M	Weighed	K&S Kali Abroad GmBH,Lic	Mines (F	eutilisation Salt Reutilisation Salt Rilisation Salt Mines (Phillippstaal), Nipper StraBe 33,36269 StraBe 33,36269 Philippsthal,36269, Germany Philippsthal, Germany Philippstha
To Other Countries 19 01 13	Yes 1000	0.25 fly ash containing dangerous substan	nces R5 M	Weighed		Werk W Winters Herfagr	K & S,34/Hef-79 n 330- Werra,Standort 51/153,Werk Werra,Standort Werk Werra,Standort Wintershall Wintershall Wintershall Herfagrund,36266 Herfa Herfagrund,36
2. Countinos 1901 13	1980	, somanning uangerous substar	IVI	signed	na5,34/H6	Werra F Waste [	36266 Herfa ,Germany ,36266 Herfa , K & S ,34/Hef-79n330- 51/153,Werra Plant  a Plant Underground Underground Waste Disposal Werra Plant Underground Plant,Herfa-Neurode,36266 Waste Disposed 36266 Heringen 36266 Heringen Neurode 3626
To Other Countries 19 01 13  Within the Country 20 01 39		6.56 fly ash containing dangerous substan	nces D12 M R13 M		Nurendale Panda Wa Offsite in Ireland Limited,W	/Hef-79n330-51/153 ,36266 le Limited trading as /aste Services Rathdrin /V0140 - 03 ,Co Mea	ode,36266 Heringen Heringen ,36266 Heringen Neurode,3626 66 Heringen ,Germany ,Germany ,36266 Hering drinagh,Beauparc,Navan Meath ,Ireland
Within the Country 20 03 01		0.0 mixed municipal waste	R13 M		Nurendale Panda Wa Offsite in Ireland Limited,W Nurendale	le Limited trading as aste Services Rathdri	drinagh,Beauparc,Navan /leath ,Ireland
Within the Country 20 03 01  Within the Country 20 03 01	No	15.6 mixed municipal waste	R1 E	Volume Calculation	Panda Wa Offsite in Ireland Limited,W Indaver Ire  Onsite of generatio Limited,W Indaver Ire Onsite of generatio Limited,W	V0140 - 03 ,Co Mea reland Carrans V0167-02 Meath,N	Meath ,Ireland anstown,Duleek,Co- h,N/A,Ireland
Within the Country 20 03 03  Within the Country 20 03 04	No 2	0.0 street-cleaning residues 7.34 septic tank sludge	K1 M	vveighed Weighed	EPS Dund WWTW,EF Offsite in Ireland Treatment	ndalk and Drogheda Dundall EPS Pumping & road,Cont Systems Louth.lr	dalk WWTW,Lower point Co-Louth,Co- n,Ireland
Within the Country 20 03 04	No	0.0 septic tank sludge	D9 M	Weighed	Offsite in Ireland Navan,D00 Whiteriver	County punty Council-  0059-01  r Landfill[Louth  ouncil]  County  Whiteriv  Council	nty Hall,Railway ot,Navan,Co- h,Ireland eriver and Gunstown
Within the Country 20 03 07	No	7.34 septic tank sludge  0.0 septic tank sludge  0.0 bulky waste discarded electrical and electronic eduction of their than those mentioned in 20 01 0.2 01 23 and 20 01 35  4.24 ferrous materials removed from bottoms of the septiment of the sep	D1 M quipment 21, 20	Weighed	Offsite in Ireland ,W0060-03  Nurendale Panda Wa	Downlar Doubles  Couth,Ir  Is Limited trading as  Vaste Services  Rathdriv	drinagh,Beauparc,Navan
Within the Country 20 01 36  Within the Country 19 01 02	No 2	0.2 01 23 and 20 01 35	R13 M om ash R4 M	Weighed	Offsite in Ireland Limited,W  Multimetal  Offsite in Ireland WW-10-00	v0140 - 03 ,Co Mea Conway al Recycling,WFP- Estate,E 0014-02 cklow,Ir Van Pat	veatn ,ireland vay Port Industrial re,Bollarney,Murrough,Wi v,Ireland Patraestraat 90 ,2660
To Other Countries 19 12 03	No 39	5.94 non-ferrous metal	R4 M	Weighed			
Within the Country 19 01 12	No 33	bottom ash and slag other than those	R10 M	Weighed	Greenstar Offsite in Ireland Limited,W	Ballynager Holdings Landfill, V0165-02 and Kild Drehid PLC),Ki	nagran Residual fill,Ballynagran,Coolbeg Kilcandra,Wicklow,Ireland id Landfill(Bord Na Mona ,Killinagh er,Carbury,Co-
Within the Country 19 01 12	No 670	bottom ash and slag other than those 0.56 mentioned in 19 01 11	R10 M	Weighed	Offsite in Ireland PLC),W20	01-03 Kildare, Standor	re,Ireland  K&S Kali GmbH Werk  Werra,AZ.1325/98  dort AZ6631/99,Standort Standort
To Other Countries 19 01 07		5.04 solid wastes from gas treatment		Weighed	K&S Kali ( Abroad Werra,AZ.	Unterbr wertung GmbH Werk 11,Unte	rbreizbach,Untertagaever Unterbreizbach,Untertagaever Unterbreizbach ung Schaet wertung Schaet wertung Schaet nterbreizbach,D36414,G 11,Unterbreihbach,D36414,G 11,Unterbreihb
		ng the Description of Waste then click the delete butto					
Link to previous years waste data Link to previous years waste summary data Link to Waste Guidance	& percentage change						

# **Appendix 3: Statement of Measures**

**Master List of Risk Reduction and Consequence Mitigation Measures** 

Ref	Process / Area	Measure	
01	Vehicle movements	Vehicles only travel over hardstanding areas with drainage to surface water drainage system	
		Vendor selection procedures to eliminate high risk waste contractors	
		Well marked two-way system for waste deliveries on site with a large turning area at tipping hall	
		Outdoor lighting in vehicle movement areas	
		Security gate at weigh bridge entrance to site	
		15 km/h speed limit to be set on site	
		All trucks carrying waste must present paperwork prior to gaining entry to site	
		Visitor pass system	
02	Tipping Hall	All waste depositing operations are manned activities	
		Random waste inspections carried out to identify any unsuitable wastes in contractors loads	
		SOP to be developed for waste loading / unloading	
		Waste quarantine area designated at delivery area for diesel storage	
03	Storage & mixing of wastes	Concrete specification is impervious to liquids that could enter the waste bunker	
		Automatic foam / water cannons system in waste bunker	
		All waste mixing activities in waste bunker are manned activities	
		All waste mixed in waste bunker by grab to achieve consistency in waste to furnace and dilute any spot contamination loads	
04	Heat treatment of wastes	Furnace designed to withstand minor explosions	
05	Ash handling & storage	Ash loading operations are manned activities	

Ref	Process / Area	Measure	
		High level alarms on all ash holding silos	
		Low level alarms on all ash holding silos	
		Fill detectors on road tankers used for unloading ash from silos	
		Bottom ash holding area graded to contain wet ash	
		Spill kits (including absorbent materials)	
		Spill procedures for containing and disposing of ash spills	
		Bottom ash storage capacity of 1,600 m <sup>3</sup> , over one weeks estimated storage capacity	
		Approved vendor supplier vetting process	
		Leak detection system on waste bunker to prevent any leachate entering groundwater	
		Boiler ash and bottom ash to be collected in sealed container or sealed IBCs for disposal	
06	Air emissions treatment process	Ammonia solution area is kerbed & graded towards a dedicated isolated underground 10,000 litre forecourt separator with closure valve to the south west of the tank	
		Ammonia solution tank filling operations are manned activities	
		Double skinned tank with leak detection and overfill protection used for ammonia solution	
		Tank inspection regime as part of preventative maintenance procedures	
		All ammonia solution pipework above ground	
		High level alarms on all air emission treatment silos	
		Low level alarms on all air emission treatment silos	
		All drains in process building drain to recovered water tanks beside NaOH delivery area	
		Spill kits (including absorbent materials)	

Ref	Process / Area	Measure
		Emergency overpressure vent on activated carbon silo - if overpressure a vent system relieves overpressure to atmosphere
		Approved vendor supplier vetting process
		All NaOH and Nitric acid will be contained in IBCs
		Activated carbon quantities will be minimised once the process has been established
		Duty standby motors for suction fan for process
		Automatic process shutdown for fan failure
07	Fires & Firewater	Fire detection across site with smoke detectors in buildings (connected to fire alarm)
		UV / IR combined fire detectors used in waste bunker are better and more effective than smoke detectors due to height of bunker and dust levels expected
		Four directable water cannons in waste bunker for extinguishing spot fires
		Firewater retention tank with diversion valve linked to control room
		Waste bunker is impermeable and can contain firewater. Manual system for pumping out bunker after a fire event if required
		Fire main & hydrants across process building (hose reels inside, hydrants outside)
		Hand held fire extinguishers across site
		Foam supplies
		TOC, pH and conductivity of runoff monitored twice before leaving outfall
		All surface water runoff must be pumped to hydrobreak before release to drainage ditch
08	Ancillary services	Routine inspections of piping and tanks as per maintenance programme
		Diesel storage area is kerbed & graded towards a dedicated isolated underground 10,000 litre forecourt separator to the south west of the tank

Ref	Process / Area	Measure
		Diesel tank filling operations are manned activities
		Double skinned tank with leak detection used for diesel
		Engine shutoff during diesel unloading
		All diesel pipework above ground
		Spill kits (including absorbent materials)
		Concrete specification is impervious to liquids that could enter the septic tank
		Tank inspection regime as part of preventative maintenance procedures
		Automatic foam / water deluge system in Turbine area for turbine lube oil tank and pipework
		Spill procedure for containment and removal of material/chemical spills
		Break Glass Units across site
		All electrics to ETCI Rules
		Elevated pipe tracks, all process pipes are above ground (apart from drain pipes)
		Planned / preventative maintenance
		Operator training
		Safety briefing for contractors
		Use of qualified vendors
		Chemstore units with spill trays to be used in the contractors' compound for small quantities of hazardous materials stored there
		Inspection / monitoring chamber on puraflo system for domestic type waste effluent
		Bunding around transformers on site

Ref	Process / Area	Measure
		Eye washes and safety showers will be placed in the required locations across the site
		Emergency response and spill response drills will be carried out quarterly as part of the annual training regime for the site

462-X001 64 July 2011

### Appendix 4: E-PRTR



| PRTR# : W0167 | Facility Name : Indaver Ireland Limited (Duleek) | Filename : W0167\_2014.xls | Return Year : 2014 |

Version 1.1.18

Guidance to completing the PRTR workbook

# **AER Returns Workbook**

REFERENCE YEAR 2014

#### 1. FACILITY IDENTIFICATION

TAGIETT IDENTIFICATION	
Parent Company Name	Indaver Ireland Limited
Facility Name	Indaver Ireland Limited (Duleek)
PRTR Identification Number	W0167
Licence Number	W0167-02

#### Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	Carranstown
Address 2	Duleek
Address 3	Meath
Address 4	
	Meath
Country	Ireland
Coordinates of Location	-6.39215 53.6765
River Basin District	
NACE Code	
	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	Grace McCormack
AER Returns Contact Email Address	
	Quality and Environmental Manager
AER Returns Contact Telephone Number	
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	
Production Volume Units	
Number of Installations	
Number of Operating Hours in Year	
Number of Employees	
User Feedback/Comments	The reason for the increase in the volume of pollutants from the facility is that the flow rate was
	corrected and also there was an increase in the tonnage of waste treated at the facility. The
	mass of dioxins has reduced since 2013 which shows better combustion processes.
Web Address	www.indaver.ie

# 2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
	Installations for the incineration of non-hazardous waste in the scope of Directive 2000/76/EC of
	the European Parliament and of the Council of 4 December 2000 on the incineration of waste
5(c)	Installations for the disposal of non-hazardous waste
50.1	General
3. SOLVENTS REGULATIONS (S.I. No. 543 of 20	002)
Is it applicable?	No
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 Do you import/accept waste onto your site for onsite treatment (either recovery or disposal

Guidance on waste imported/accepted onto site

activities) ?

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

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#### SECTION A: SECTOR SPECIFIC PRTR POLLUTANTS

		RELEASES TO AIR				Please enter all quantities	in this section in KGs		
		POLLUTANT		MET	HOD			QUANTITY	
					Method Used				
	No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					EN 14181 (Continuous				
02		Carbon monoxide (CO)	M	OTH	Monitoring using FID)	7178.0	7178.0	0.0	0.0
					En 14181 (Continuous				
03		Carbon dioxide (CO2)	M	OTH	Monitoring using FTIR)	313800000.0	313800000.0	0.0	0.0
					En 14181 (Continuous				
80		Chlorine and inorganic compounds (as HCI)	M	OTH	Monitoring using FTIR)	2973.0	2973.0	0.0	0.0
					En 14181 (Continuous				
84		Fluorine and inorganic compounds (as HF)	M	OTH	Monitoring using FTIR)	187.0	187.0	0.0	0.0
					En 14181 (Continuous				
21		Mercury and compounds (as Hg)	M	OTH	Monitoring using FTIR)	0.49	0.49	0.0	0.0
					En 14181 (Continuous				
08		Nitrogen oxides (NOx/NO2)	M	OTH	Monitoring using FTIR)	199313.0	199313.0	0.0	0.0
					En 14181 (Continuous				
05		Nitrous oxide (N2O)	M	OTH	Monitoring using FTIR)	2787.81	2787.81	0.0	0.0
86		Particulate matter (PM10)	M	OTH	BS EN ISO 23210	331.26	331.26	0.0	0.0
47		PCDD + PCDF (dioxins + furans)(as Teq)	M	EN 1948-1 to3:2003		0.0000012	0.0000012	0.0	0.0
					En 14181 (Continuous				
11		Sulphur oxides (SOx/SO2)	M	OTH	Monitoring using FTIR)	35720.0	35720.0	0.0	0.0
						0.0	0.0	0.0	0.0

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

#### SECTION B : REMAINING PRTR POLLUTANTS

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

\* 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)

SECTION	N C : REMAINING POLLUTANT EN	MISSIONS (As required in your Licence)							
	RELEASES TO AIR					Please enter all quantities	in this section in KGs		
		POLLUTANT		MI	THOD	QUANTITY			
					Method Used				
	Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					En 14181 (Continuous				
210		Dust	M	OTH	Monitoring using FTIR)	101.0	101.0	0.0	0.0
					EN 14181 (Continuous				
351		Total Organic Carbon (as C)	M	OTH	Monitoring using FID)	459.0	459.0	0.0	0.0
347		Total heavy metals	M	EN 14385:2004	Inclusive of Cd/TI figures	88.55	88.55	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:

Link to previous years emissions data

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

#### **SECTION A: SECTOR SPECIFIC PRTR POLLUTANTS**

RELEASES TO WATERS
LUTANT
Name

<sup>\*</sup> Select a row by double-clicking on the Pollutant Name (Column B)

#### **SECTION B: REMAINING PRTR POLLUTANTS**

	RELEASES TO WATERS
PO	LLUTANT
No. Annex II	Name

<sup>\*</sup> Select a row by double-clicking on the Pollutant Name (Column B)

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

	RELEASES TO WATERS					
POLLUTANT						
Pollutant No.	Name					

<sup>\*</sup> Select a row by double-clicking on the Pollutant Name (Column B)

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should No

			Please enter all quantities	in this section in <b>k</b>	<b>(G</b> s
		Method Used			
M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	
			0.0		0.0

) then click the delete button

			Please enter all quantities	in this section in <b>k</b>	(Gs
		Method Used			
M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	
			0.0		0.0

) then click the delete button

			Please enter all quantities	in this section in K	(Gs
		Method Used			
M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	
			0.0		0.0

) then click the delete button

OT be submitted under AER / PRTR Reporting as this only concerns Releases from your facility

QUANTITY	
A (Accidental) KG/Year	F (Fugitive) KG/Year
0.0	0.0

QUANTITY	
A (Accidental) KG/Year	F (Fugitive) KG/Year
0.0	0.0

QUANTITY	
A (Accidental) KG/Year	F (Fugitive) KG/Year
0.0	0.0

#### **SECTION A: PRTR POLLUTANTS**

OLOHON A : TRIRT OLL	OFFSITE TRANSFER OF POLLUTANTS DESTINED	FOR WASTE-WATER TRE	ATMENT OR SEV	VER	Please enter all quantit	ies in this section in KG	s		
	POLLUTANT		METHOD					QUANTITY	
				Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year		A (Accidental) KG/Year	F (Fugitive) KG/Year
						0.0	0.0	0.0	0.0

<sup>\*</sup> 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)**

	Cicito (ac roquirou in your ziconoc)					_		
OFFSITE TRAN	SFER OF POLLUTANTS DESTINED FOR WASTE-W	ATER TRE	ATMENT OR SEWER		Please enter all quantities i	in this section in KGs		
РО	DLLUTANT		POLLUTANT				QUANTITY	
			Met	hod Used				
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0		0.0	0.0

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

#### **4.4 RELEASES TO LAND**

#### Link to previous years emissions data

#### **SECTION A: PRTR POLLUTANTS**

RELEASES TO LAND
POLLUTANT
Name

<sup>\*</sup> Select a row by double-clicking on the Pollutant Name (Column B)

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

OLOTION B . IXLIII/ MINING I V	222017 at 1 2 mileotette (de required in Joan 21001100)
	RELEASES TO LAND
	POLLUTANT
Pollutant No.	Name

<sup>\*</sup> Select a row by double-clicking on the Pollutant Name (Column B)

			Please enter all quantities
	ME	THOD	
M/C/E	Method Code	Designation or Description	Emission Point 1
			0.0

) then click the delete button

			Please enter all quantities
	ME		
M/C/E	Method Code	Designation or Description	Emission Point 1
			0.0

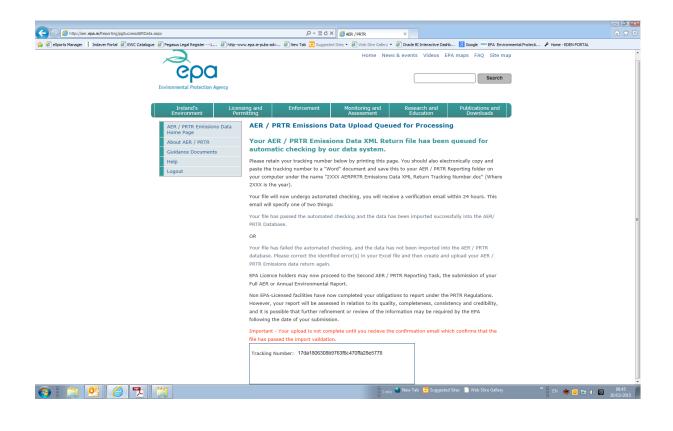
<sup>)</sup> then click the delete button

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in this section in KGs	
	QUANTITY
T (Total) KG/Year	A (Accidental) KG/Year
0.0	0.0

in this section in KGs	
	QUANTITY
T (Total) KG/Year	A (Accidental) KG/Year
0.0	0.0

5. ONSITE TREATMENT & OFFSITE TRANSF		PRTR# : W0167   Facility Name : Indaver Irelater all quantities on this sheet in Tonnes	and Limited (Duleek)   Filename : W01	67_2014.xls   Return Year : :	Haz Waste :	: Name and Licence/Permit	
European Waste	Quantit (Tonnes <sub> </sub> Year)	per	Waste	Method Used	No of Ne Non Hz Lice Re	Hext Destination Facility  Haz Waste: Name and sence/Permit No of Recover/Disposer  Recover/Disposer	az Waste: Address of Next  Destination Facility  Name and License / Permit No. and Actual Address of Final Recoverer / Disposer  (HAZARDOUS WASTE ONLY)  Actual Address of Final Recover (HAZARDOUS
Transfer Destination Code	Hazardous	Description of Waste	Operation   WC/E	Method Used	Treatment		Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB-
To Other Countries 06 01 05	Yes	0.0 nitric acid and nitrous acid	D10 M	Weighed	Indaver Ire Abroad Limited,W		2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Ham D1,D1,Ireland Hamburg,Germany Hamburg,Gern Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB-
To Other Countries 06 01 06	Yes	0.0 other acids	D10 M	Weighed	Indaver Ire Abroad Limited,W		2,Borsigstr. 2,D-22113 Borsigstr. 2,D- Quay Road.Dublin Hamburg.Hamburg.D-22113 Hamburg.Ham
					Indaver Ire	reland Tolka Q	D1,D1,Ireland Hamburg,Germany Hamburg,Gern Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Hamburg,Germany Hamburg,Gern D1,D1,Ireland Hamburg,Germany Hamburg,Gern
To Other Countries 06 02 03	Yes	0.0 ammonium hydroxide	D10 M	Weighed	Abroad Limited,W		D1,D1,Ireland Hamburg,Germany Hamburg,Gern Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D-
To Other Countries 06 02 04	Yes	0.0 sodium and potassium hydroxide	D10 M	Weighed	Indaver Ire Abroad Limited,W		A Quay Road, Dublin Hamburg, Hamburg, D-22113 Hamburg, Hamburg, Germany Hamburg, Germany Abfall Verwertungs  Gesellschaft Gmb
To Other Countries 13 02 08	Yes	0.0 other engine, gear and lubricating oils	s D10 M	Weighed	Indaver Ire Abroad Limited,W	reland Tolka Q V0036-02 Port,D1	(AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Ham D1,D1,Ireland Hamburg,Germany Hamburg,Gern Enva Ireland Ltd,196-
Within the Country 13 05 07	Yes	0.0 oily water from oil/water separators	D9 M	Weighed	Offsite in Ireland Enva Irela	MacAnu F Kenne John F I and Ltd,196-1 Road,D	1,MacAnulty Clear  nulty Clear Drains,John Drains,John F Kennedy MacAnulty Clear nnedy Industrial Estate Industrial Estate John F F Kennedy Industrial F Kennedy Road,Naas John F Kennedy Industrial Estate John F F Kennedy Industrial Estate John F Kennedy Road,Naas John F Kennedy Industrial Industr
				S .			Abfall Verwertungs Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D-
To Other Countries 13 07 01	Yes	0.0 fuel oil and diesel	D10 M	Weighed	Indaver Ire Abroad Limited,W	V0036-02 Port,D1	Rilta Environmental, W0192-  3 Quay Road, Dublin Hamburg, Hamburg, D-22113 Hamburg, Germany Hamburg, Germany  4 Rilta Environmental, W0192-  5 402, Greenogue 03, Block 402, Greenogue Block 402, Gre
Within the Country 13 08 99	Yes	2.96 wastes not otherwise specified	R9 M	Weighed	Rilta Envir Offsite in Ireland 03	ironmental,W0192- Busines	Rathcoole, Dublin, Ireland Park, Rathcoole, Dublin, Ireland Park, Rathcoole, Dublin, Ireland Abfall Verwertungs  Gesellschaft Gmb  (AVG), IB2234/AVG-GENB-
To Other Countries 15 02 02	Yes	absorbents, filter materials (including filters not otherwise specified), wiping protective clothing contaminated by 0.0 dangerous substances	g cloths,	Weighed	Indaver Ire Abroad Limited,W	reland Tolka Q V0036-02 Port,D1	2,Borsigstr. 2,D-22113 Borsigstr. 2,D-22113 A Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Hamburg,Germany Hamburg,Germany Abfall Verwertungs
To Other Countries 16.05.04	Yes	gases in pressure containers (includ 0.0 halons) containing dangerous substa	ing ances D10 M	Weiahed	Indaver Ire Abroad Limited,W	reland Tolka Q V0036-02 Port D4	Gesellschaft Gmb (AVG),IB2234/AVG-GENB- 2,Borsigstr. 2,D-22113 Borsigstr. 2,D- a Quay Road,Dublin Hamburg,Hamburg,D-22113 Hamburg,Ham D1,D1,Ireland Hamburg,Germany Hamburg,Germ
		aqueous liquid wastes containing da	ngerous		Rilta Envir	Block 4	Rilta Environmental,W0192- 402,Greenogue 03,Block 402,Greenogue Block 402,Gre
Within the Country 16 10 01  Within the Country 16 10 02		0.0 substances	D9 M		Offsite in Ireland 03	ndalk and Drogheda Dundall	dalk WWTW,Lower point
Within the Country 16 10 02		aqueous liquid wastes other than tho			Rilta Envir Offsite in Ireland 03	Block 40 ironmental,W0192- Busines	c 402,Greenogue
Within the Country 17 02 01  Within the Country 17 04 05					Panda Wa Offsite in Ireland Limited,W Nurendale Panda Wa	/aste Services Rathdrii V0140 - 03 ,Co Mea le Limited trading as /aste Services Rathdrii	drinagh,Beauparc,Navan
Within the Country 17 04 05  Within the Country 17 05 04		<ul><li>0.0 iron and steel</li><li>soil and stones other than those mer</li><li>0.0 in 17 05 03</li></ul>	D15 M		Panda Wa Offsite in Ireland Limited,W Nurendale	le Limited trading as laste Services Rathdrin N0140 - 03 ,Co Mea le Limited trading as	drinagh,Beauparc,Navan /leath ,Ireland
Within the Country 17 06 04  Within the Country 17 09 04		insulation materials other than those 2.2 mentioned in 17 06 01 and 17 06 03 mixed construction and demolition we other than those mentioned in 17 09 1.68 09 02 and 17 09 03	D15 M astes		Panda Wa Offsite in Ireland Limited,W Nurendale Panda Wa	Vaste Services Rathdrii V0140 - 03 ,Co Mea le Limited trading as Vaste Services Rathdrii	drinagh.Beauparc.Navan
Within the Country 17 09 04  Within the Country 19 01 02		1.68 09 02 and 17 09 03  2.66 ferrous materials removed from botto		Weighed	Offsite in Ireland Limited,W Hammond Company Offsite in Ireland 0013-01 Hegarty M (Internatio	nd Lane Metal Pigeon y Limited,WFP-DC- Road,R 4,Rings	on House I,Ringsend,Dublin gsend,Ireland
Within the Country 19 01 02  Within the Country 19 01 02	No No	<ul><li>0.0 ferrous materials removed from botto</li><li>0.0 ferrous materials removed from botto</li></ul>	om ash R4 M				
			191			Reutilis	K&S Kali GmBH,LicenceM76D310/57,R eutilisation Salt Reutilisation S ilisation Salt Mines(Phillippstaal),Nipper Mines(Phillipp
To Other Countries 19 01 07	Yes 773	1.76 solid wastes from gas treatment	R5 M	Weighed			StraBe 33,36269 StraBe 33,36269 StraBe 33,36269 Philippsthal,36269 Philippsthal,36269 Philippsthal,Germany Indaver NV,MLAV1/9800000485/MV/bd
To Other Countries 19 01 07	Yes	0.0 solid wastes from gas treatment	D9 M	Weighed	Indaver Abroad NV,MLAV1	Industri Afvalver g,B-203 1/9800000485/MV/bd Antwerp	striele ,Industriele Industriele verwerking,Poldervlietwe Afvalverwerking,Poldervlietwe Afvalver
						Werk W Winters Herfagr	NV,MLAV1/9800000485/MV/bd  Werra,Standort ,Industriele Industriele ershall Afvalverwerking,Poldervlietwe Afvalverwerking grund,36266 Herfa g,B-2030 Antwerpen 3,B-2030 g,B-2030 Antw
To Other Countries 19 01 07  Within the Country 19 01 12		bottom ash and slag other than those 0.0 mentioned in 19 01 11	9		Whiteriver County Co	def-79 n 330-51/153 ,36266 or Landfill[Louth Whiterivouncil] Townland Dunlee	66 Herfa ,Germany Antwerpen 3,Belgium Antwerpen 3,Beriver and Gunstown  aland  leer,Co-Louth,Co-
Within the Country 19 01 12  Within the Country 19 01 12	No 1476	0.0 mentioned in 19 01 11  bottom ash and slag other than those 4.66 mentioned in 19 01 11  bottom ash and slag other than those 0.68 mentioned in 19 01 11	R10 M	Weighed	Offsite in Ireland Knockharl	rley,W0146-01	h,.,Ireland
Within the Country 19 01 12	ino 14660	5.00 mentioned in 19 01 11	ט1 M	vveigned	Olisite in Ireland Council,W	Industri Afvalver	Indaver NV,MLAV1/9800000485/MV/bd striele ,Industriele verwerking,Poldervlietwe Afvalverwerking,Poldervlietwe
To Other Countries 19 01 13	Yes	0.0 fly ash containing dangerous substan	nces D9 M	Weighed	Indaver Abroad NV,MLAV1	g,B-203	erpen 3,B-2030 g,B-2030 Antwerpen 3,B-2030 Antwerpen 3,Belgium ,,,,,,,Belgium K&S Kali GmBH,LicenceM76D310/57,R
To Other Countries 19 01 13	Yes	0.0 fly ash containing dangerous substar	nces R5 M	Weighed	K&S Kali Abroad GmBH,Lic	Mines (F	eutilisation Salt Reutilisation Salt Rilisation Salt Mines (Phillippstaal), Nipper StraBe 33,36269 StraBe 33,36269 Philippsthal, 36269, Germany Philippsthal, Germany Philippsth
To Other Countries 19 01 13	Yes 1000	0.25 fly ash containing dangerous substan	nces R5 M	Weighed		Werk W Winters Herfagr	K & S,34/Hef-79 n 330- Werra,Standort 51/153,Werk Werra,Standort Werk Werra,Standort Wintershall Wintershall Wintershall Herfagrund,36266 Herfa Herfagrund,36
2. Countinos 1901 13	1980	, somanning uangerous substar	IVI	signed	na5,34/H6	Werra F Waste [	36266 Herfa ,Germany ,36266 Herfa , K & S ,34/Hef-79n330- 51/153,Werra Plant  a Plant Underground Underground Waste Disposal Werra Plant U  be Disposal Plant,Herfa-Plant,Herfa-Neurode,36266 Waste Disposal Waste Disp
To Other Countries 19 01 13  Within the Country 20 01 39		6.56 fly ash containing dangerous substan	nces D12 M R13 M		Nurendale Panda Wa Offsite in Ireland Limited,W	/Hef-79n330-51/153 ,36266 le Limited trading as /aste Services Rathdrin /V0140 - 03 ,Co Mea	ode,36266 Heringen Heringen ,36266 Heringen Neurode,3626 66 Heringen ,Germany ,Germany ,36266 Hering drinagh,Beauparc,Navan Meath ,Ireland
Within the Country 20 03 01		0.0 mixed municipal waste	R13 M		Nurendale Panda Wa Offsite in Ireland Limited,W Nurendale	le Limited trading as aste Services Rathdri	drinagh,Beauparc,Navan /leath ,Ireland
Within the Country 20 03 01  Within the Country 20 03 01	No	15.6 mixed municipal waste	R1 E	Volume Calculation	Panda Wa Offsite in Ireland Limited,W Indaver Ire  Onsite of generatio Limited,W Indaver Ire Onsite of generatio Limited,W	V0140 - 03 ,Co Mea reland Carrans V0167-02 Meath,N	Meath ,Ireland anstown,Duleek,Co- h,N/A,Ireland
Within the Country 20 03 03  Within the Country 20 03 04	No 2	0.0 street-cleaning residues 7.34 septic tank sludge	K1 M	vveighed Weighed	EPS Dund WWTW,EF Offsite in Ireland Treatment	ndalk and Drogheda Dundall EPS Pumping & road,Cont Systems Louth.lr	dalk WWTW,Lower point Co-Louth,Co- n,Ireland
Within the Country 20 03 04	No	0.0 septic tank sludge	D9 M	Weighed	Offsite in Ireland Navan,D00 Whiteriver	County punty Council-  0059-01  r Landfill[Louth  ouncil]  County  Whiteriv  Council	nty Hall,Railway ot,Navan,Co- h,Ireland eriver and Gunstown
Within the Country 20 03 07	No	7.34 septic tank sludge  0.0 septic tank sludge  0.0 bulky waste discarded electrical and electronic eduction of their than those mentioned in 20 01 0.2 01 23 and 20 01 35  4.24 ferrous materials removed from bottoms of the septiment of the sep	D1 M quipment 21, 20	Weighed	Offsite in Ireland ,W0060-03  Nurendale Panda Wa	Downlar Doubles  Couth,Ir  Is Limited trading as  Vaste Services  Rathdriv	drinagh,Beauparc,Navan
Within the Country 20 01 36  Within the Country 19 01 02	No 2	0.2 01 23 and 20 01 35	R13 M om ash R4 M	Weighed	Offsite in Ireland Limited,W  Multimetal  Offsite in Ireland WW-10-00	v0140 - 03 ,Co Mea Conway al Recycling,WFP- Estate,E 0014-02 cklow,Ir Van Pat	veatn ,ireland vay Port Industrial re,Bollarney,Murrough,Wi v,Ireland Patraestraat 90 ,2660
To Other Countries 19 12 03	No 39	5.94 non-ferrous metal	R4 M	Weighed			
Within the Country 19 01 12	No 33	bottom ash and slag other than those	R10 M	Weighed	Greenstar Offsite in Ireland Limited,W	Ballynager Holdings Landfill, V0165-02 and Kild Drehid PLC),Ki	nagran Residual fill,Ballynagran,Coolbeg Kilcandra,Wicklow,Ireland id Landfill(Bord Na Mona ,Killinagh er,Carbury,Co-
Within the Country 19 01 12	No 670	bottom ash and slag other than those 0.56 mentioned in 19 01 11	R10 M	Weighed	Offsite in Ireland PLC),W20	01-03 Kildare, Standor	re,Ireland  K&S Kali GmbH Werk  Werra,AZ.1325/98  dort AZ6631/99,Standort Standort
To Other Countries 19 01 07		5.04 solid wastes from gas treatment		Weighed	K&S Kali ( Abroad Werra,AZ.	Unterbr wertung GmbH Werk 11,Unte	rbreizbach,Untertagaever Unterbreizbach,Untertagaever Unterbreizbach ung Schaet wertung Schaet wertung Schaet nterbreizbach,D36414,G 11,Unterbreihbach,D36414,G 11,Unterbreihb
		ng the Description of Waste then click the delete butto					
Link to previous years waste data Link to previous years waste summary data Link to Waste Guidance	& percentage change						



Appendix 5: Energy Efficiency Report

# Indaver Ireland Report on Energy Efficiency Waste Licence W0167-02

#### Introduction

This document reflects the licence requirement in Condition 7.3 to demonstrate the energy efficiency of the site. Energy Efficiency must be, as a minimum, 0.65. This document reports the result of 0.667.

#### Audit

#### Audit period

December 2013 to December 2014

#### Audit personnel

The persons involved in the audit where the Process Engineer, Aidan Kennedy, the Maintenance Manager, Rory Murphy, the team lead for Electrical and Instrumentation Joe Crawley, the Project Engineer, Oliver Kelly and the Quality and Environmental Manager, Grace McCormack.

#### Scope of audit

The scope of the required energy audit is as defined by the 'Guidance Note on Energy Efficiency Auditing', published by the EPA, Johnstown Castle, Co. Wexford, Ireland.

Additional requirements re the energy audit are contained in Condition 7.2 and Condition 7.3 of the Waste Licence. The scope of the audit includes these conditions which read as follows

#### **Energy Efficiency**

7.2 The licensee shall build and operate the facility to achieve an energy efficiency of, as a minimum, 0.65 using the formulae below to calculate Energy Efficiency:

Energy Efficiency =  $[Ep-(Ef + Ei)]/0/97 \times (Ew + Ef]$  where

Emission point = annual energy produced as heat or electricity (GJ/year) (heat produced for commercial use is multiplied by 1.1 and electricity is multiplied by 2.6)

Ef = annual energy input to the system from fuels contributing to the production of steam (GJ/year)

Ew = annual energy contained in the waste input using the net calorific value of the waste (GJ/year)

Ei = annual energy imported excluding Ew and Ei

#### **Energy Efficiency**

Condition 7.2 of the Waste Licence sets minimum energy efficiency. The achievement of this parameter is reviewed.

Condition 7.3.3 requires a calculation to be determined for the net usable energy produced per tonne of waste. This calculation was performed and the result is as shown:

Net Usable Energy Per Tonne of Waste Processed	0.640	MWh/Tonne	
--	-------	-----------	--

Condition 7.3.3 also requires a full breakdown of the calculation of each parameter in the equation and the results for this is shown below:

Energy efficiency = 
$$\frac{E_p - (E_f + E_i)}{0.97 * (E_m + E_f)}$$

#### In which:

 $E_p$  means annual energy produced as heat or electricity. It is calculated with energy in the form of electricity being multiplied by 2.6 and heat produced for commercial use multiplied by 1.1 (GJ/year)

 $E_f$  means annual energy input to the system from fuels contributing to the production of steam (GJ/year)

 $E_w$  means annual energy contained in the treated waste calculated using the net calorific value of the waste (GJ/year)

 $E_i$  means annual energy imported excluding  $E_v$  and  $E_f$  (GJ/year)

0.97 is a factor accounting for energy losses due to bottom ash and radiation

In addition, Annex II of the WFD highlights that this formula shall be applied in accordance with the Reference Document on Best Available Techniques for Waste Incineration (BREF WI).

Data used: 1<sup>st</sup> December 2013 to 30<sup>th</sup> November 2014.

#### **Indaver Ireland**

	Total waste treated 1/12/13 to 30/11/14	224634	Tonnes		
	Total electricity produced 1/12/13 to 30/11/14	142547	MWh		
	Type of energy	Unit	Tonne	NCV (kJ/kg)	Energy (MWh)
1.1	Adjusted amount incinerated waste		223,369	9,100	564,628
1.2	Amount sewage sludge		-		-
1.3	Amount used activated carbon		-	-	-
2	E <sub>w</sub> Energy input of waste	MWh			564,628
2.1 + 2.2	Ef: Light fuel oil used for startup / keeping temperature	tonne	121.9	42,000	1,422
2.3	Ef: Natural gas used		-	-	-
3	Ef: Energy input by imported energy with steam	MWh			1,422
3.1	Ei: Light fuel oil used for startup / shutdown	tonne	121.9	42,000	1,422
3.2	Ei: Natural gas used	-	-	-	-
3.3	Ei: imported electricity (multiplied with equivalence factor 2.6)	-	-	-	
3.4	Ei: imported heat	-	-	-	-
4	Ei: Energy input by imported energy without steam	MWh			1,422
4.1	Ep: Adjusted electricity produced and internally used for incineration process	MWh	15,792.00	-	142,040
4.2	Ep: electricity delivered to a third party	MWh	126,501.40	-	
5	Ep: Electricity produced	MWh	142,293.40		142,039.80
5.1 + 5.2	Ep: Heat exported	MWh	-	-	-
6	Ep: Heat exported	MWh	-	-	-
6.1 to	Ep: heat used internally for steam driven pumps,		-	-	-
6.3	backflow, heating flue gas, liquid APC residues				
6.4	Ep: for soot blowing without backflow		-	-	
6.5 to 6.7	Ep: for heating buildings, deaeration, NH4OH injection		-	-	-
7	Ep: Heat used internally	MWh	-	-	-
	Ep	MWh			369,303
	R1				0.667

R1 Result x Climate Correction Factor = New R1 Result

 $0.667 \times 1.117 = 0.745$ 

See below explanation on the climate correction factor

R	1 Adjust	ments: C	urtailme	nt					
Objective:					s plant as	enerav mus	t be spilt d	urina these	periods.
Data affected:		Omit periods where NCC constrains / curtails plant as energy must be spilt during these periods.  ### AWH produced, waste tonnes processed							
Obtaining data:		uced and v			onstraints f	rom NCC			
affect of data		nes of waste in 1.1 reduced to exclude contraint periods							
					•	cted during	contraint		
	_p	, p. caacca		, c.cc.	iony produc				
Frequency of pro	cesssing d	ata:	monthly						
			ilment						
		MWh	t waste						
	Jan-14	97.3	480.7						
	F 1 44								
	Feb-14 Mar-14		40.9						
	Apr-14	0	U						
	May-14	0	0						
	Jun-14		0						
	- Carrir								
	Jul-14	5.1	79.4						
	Aug-14	0	0						
	Sep-14	0	0						
	Oct-14	32.6	187.4						
	Nov-14	33.1	94.8						
	Dec-13								
	Total	253.6	1264.7						

#### **Explanation of the Climate Correction Factor Calculation**

The Council of the European Union has approved the amendment of Annex II to the Waste Framework Directive (Directive 2008/98/EC) to include a Climate Correction Factor (CCF) when calculating the R1 value for incineration facilities dedicated to the processing of municipal solid waste. This is due to be published in the Official Journal of the European Union imminently and will enter into force on the twentieth day following the publication. Following this, each Member State has 12 months in which bring in the necessary laws and regulations to comply with the Directive

This is described in the following link:

http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2016941%202014%20INIT

The CCF is referred to in the approved amendment document above, as follows:

"A report from the Joint Research Centre of the European Commission has shown that in order to achieve a level playing field in the Union it is reasonable to compensate incineration facilities affected by the impact of local climatic conditions with a climate correction factor (CCF) applicable to the R1 formula. Such factor should be based on the reference document on Best Available Techniques for waste incineration."

The CCF is based on number of Heating Degree Days (HDD) which Met Eireann describes as:

"Degree days give a measure of the effect of the seasons' temperatures on crop growth and fuel requirements, especially in the case of a building which is continually heated. For each day that the average temperature is one degree above the base temperature, one degree day has accumulated.

Heating degree days are indicators of household energy consumption for space heating. The sum of the degree days over periods such as a month or an entire heating season is used in calculating the amount of heating required for a building. Degree Days are also used to estimate air conditioning usage during the warm season. "

The proposed amended Annex II of the Waste Framework Directive describes a set of calculations for the CCF, the correct one being determined by the HDD for the region:

"In Annex II to Directive 2008/98/EC, the following text is added under footnote (\*):

'The energy efficiency formula value will be multiplied by a climate correction factor (CCF) as shown below:

1. CCF for installations in operation and permitted in accordance with applicable Union legislation before 1 September 2015.

CCF = 1 if HDD >= 3350 CCF = 1.25 if HDD <= 2150

#### **Indaver Ireland**

$$CCF = -(0.25/1200) \times HDD + 1.698 \text{ when } 2150 < HDD < 3350$$

2. CCF for installations permitted after 31 August 2015 and for installations under 1 after 31 December 2029:

$$CCF = 1$$
 if  $HDD >= 3350$ 

$$CCF = -(0.12/1200) \times HDD + 1.335 \text{ when } 2150 < HDD < 3350$$

(The resulting value of CCF will be rounded at three decimal places).

The value of HDD (Heating Degree Days) should be taken as the average of annual HDD values for the incineration facility location, calculated for a period of 20 consecutive years before the year for which CCF is calculated. For the calculation of the value of HDD the following method established by Eurostat should be applied: (18 °C - Tm) x d if Tm is lower than or equal to 15 °C (heating threshold) and are nil if Tm is greater than 15 °C, here Tm is the mean (Tmin + Tmax / 2) outdoor temperature over a period of d days. Calculations are to be executed on a daily basis (d=1), added up to a calendar month -and subsequently to a year. "

The above calculations can be found below.

The Heating Degree Days below are obtained from the URL link at the following page on the EUROSTAT website:

http://www.eea.europa.eu/data-and-maps/data/external/heating-degree-days-annual-data#tab-produced-figures

Ireland	2,871.271
Border, Midland and Western	2,964.224
Southern and Eastern	2,787.761

The above figures are the mean Heating Degree Days between 1980-2009. Meath is deemed to be located in the Southern and Eastern region.

Therefore, the CCF of Indaver's EfW Meath plant is: (-0.25/1200 \* 2787.761) + 1.698 = 1.117

Therefore, the corrected energy efficiency of the plant is:

R1 Result x Climate Correction Factor = New R1 Result

 $0.667 \times 1.117 = 0.745$ 

R1 result for 2014 = 0.745



Brussels, XXX D036234/02 [...](2014) XXX draft

ANNEX 1

#### **ANNEX**

to the

#### **Commission Directive**

amending Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives

#### **ANNEX**

#### to the

#### **Commission Directive**

# amending Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives

In Annex II to Directive 2008/98/EC, the following text is added under footnote (\*):

'The energy efficiency formula value will be multiplied by a climate correction factor (CCF) as shown below:

3. CCF for installations in operation and permitted in accordance with applicable Union legislation before 1 September 2015.

CCF = 1 if HDD >= 3350

CCF = 1.25 if HDD <= 2150

 $CCF = -(0.25/1200) \times HDD + 1.698 \text{ when } 2150 < HDD < 3350$ 

4. CCF for installations permitted after 31 August 2015 and for installations under 1 after 31 December 2029:

CCF = 1 if HDD >= 3350

 $CCF = 1.12 \text{ if HDD} \le 2150$ 

 $CCF = -(0.12/1200) \times HDD + 1.335 \text{ when } 2150 < HDD < 3350$ 

(The resulting value of CCF will be rounded at three decimal places).

The value of HDD (Heating Degree Days) should be taken as the average of annual HDD values for the incineration facility location, calculated for a period of 20 consecutive years before the year for which CCF is calculated. For the calculation of the value of HDD the following method established by Eurostat should be applied: HDD is equal to (18 °C - Tm) x d if Tm is lower than or equal to 15 °C (heating threshold) and is nil if Tm is greater than 15 °C; where Tm is the mean (Tmin + Tmax / 2) outdoor temperature over a period of d days. Calculations are to be executed on a daily basis (d=1), added up to a year.

# Appendix 6: Objective and Targets Closed Actions 2014

Obj. Re	Target	Action	Completion date	Dept. Resp.
		Monitor waste generated on site for first 3 years of		
	Reduction of waste going	operation-System in place to continously monitor the		Compliance/
5	to landfill	waste generated on site.	2014	Operations
		Ensure that waste generated on site is recovered		
		where practicable-system in place to ensure that		
		where practical waste is recovered rather than		Compliance/
5		disposed.	2014	Operations
		Monitor water usage for first 3 years of operation-		Compliance/
5	Reduction in use of water	system in place to continuously monitor	2014	Operations
		Identify methods of reducing water use on site based		
		on the figures for water usage-reuse of process water		
		has been realised. Boiler blowdown water has been		Compliance/
5		reused to make lime milk for the process.	2014	Operations
	Efficiency of consumable	Monitor consumable usage for first 3 years of		Compliance/
5	use	operation-system in place to continuously monitor	2014	Operations
		Monitor fuel usage-system in place to continuously		Compliance/
5		monitor	2014	Operations
		Monitor Energy Usage figures for first 3 years of		Compliance/
5	Energy Efficiency	operation-system in place to continuously monitor	2014	Operations
		Monitor energy use at finer level-Occupancy sensors		
		now installed in all relevant parts of plant and office.		
		The monitoring of this is part of the routine work for		
5	Energy Efficiency	the maintenance department.	2014	Operations
	Clarify crisis			
	communication	Carry out further training and full roll out the Incident		
6	requirements	Management plan	2014	Communications

# Appendix 7: Objective and Targets Actions for 2015

Target	Action	Due date	Dept. Resp.
	Review best practice documents and BREF's and		
Use of cleaner technology,	report on whether or not they are feasible to		Compliance/
cleaner production	implement.	Dec-16	Commercial
Review of haz streams			
suitable for new licence	Identification and assessment of the suitability of haz		Commercial/Oper
W0167-03	waste streams for the Meath WtE plant	Jun-15	ations
	Review options for better coordination of		
	communication of customer feedback throughout the		
	Region (for example from complaints, tenders, PCQs,		
Customer Focus	BSCs, meetings, customer surveys etc)	Dec-15	Commercial
Energy Efficiency	Investigate Cooler Air inlet for air compressor	Dec-15	Engineering
ELRA/CRAMP	Update and review ELRA/CRAMP	Jun-15	QESH