

Facility Information Summary

AER Reporting Year	2017
Licence Register Number	P0830-02
Name of site	Whitegate Power Station
Site Location	Fort David Road, Whitegate, Co. Cork
NACE Code	3521
Class/Classes of Activity	Thermal Power Station
National Grid Reference (6E, 6 N)	51 49'07" N, 8 15'17"W

A description of the activities/processes at the site for the reporting year. This should include information such as production increases or decreases on site, any infrastructural changes, environmental performance which was measured during the reporting year **and an overview of compliance with your licence listing all exceedances of licence limits (where applicable) and what they relate to e.g. air, water, noise.**

Whitegate Power Station is a Combined Cycle Power Plant (CCGT), which utilises natural gas and distillate oil as fuel to generate up to 450 MW of electricity for supply to the NationalGrid. The site is located to the southwest of Whitegate village, County Cork on the Fort Davis Road. The power station site is approximately ten hectares. Neighbouring lands are used for a variety of activities, including: an adjacent oil refinery, a gas bottling plant depot, agricultural activities, and the Fort Davis fortifications to the west. Bord Gais Eireann (Owner) is the IPPC Licence holder and has contracted General Electric Operations and Maintenance (GE O&M) to operate and maintain the power station and its environmental policy, aspects and impacts on their behalf.

Declaration:

All the data and information presented in this report has been checked and certified as being accurate. The quality of the information is assured to meet licence requirements.

<i>Melissa Morrissey</i>	0
EHS Manager	Date 23-Mar-18
Group/Facility manager	
(or nominated, suitably qualified and experienced deputy)	

AIR-summary template	Lic No: P0830-02	Year: 2017
-----------------------------	------------------	------------

Answer all questions and complete all tables where relevant

- 1 Does your site have licensed air emissions? If yes please complete table A1 and A2 below for the current reporting year and answer further questions. If **you do not have** licenced emissions and **do not complete a solvent management plan** (table A4 and A5) you do not need to complete the tables

	Additional information
Yes	

Periodic/Non-Continuous Monitoring

- 2 Are there any results in breach of licence requirements? If yes please provide brief details in the comment section of TableA1 below
- 3 Was all monitoring carried out in accordance with EPA guidance [Basic air monitoring checklist](#) note AG2 and using the basic air monitoring checklist? [AGN2](#)

No	
Yes	

Table A1: Licensed Mass Emissions/Ambient data-periodic monitoring (non-continuous)

Emission reference no:	Parameter/ Substance	Frequency of Monitoring	ELV in licence or any revision thereof	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence limit	Method of analysis	Annual mass load (kg)	Comments - reason for change in % mass load from previous year if applicable
A1-1	volumetric flow	Biannually	250000	Daily average < ELV	205648.8	m3	yes	OTH	4555298	
A1-1	volumetric flow	Biannually	50000	All 1-hour averages < ELV	8568.7	m3	yes	OTH		
A1-1	Nitrogen oxides (NOx/NO2)	Biannually	200	All 1-hour averages < 2 x ELV	101.9	mg/Nm3	yes	EN 14792:2005	538	Natural Gas License Limits.
A1-1	Sulphur oxides (SOx/SO2)	Biannually	10	All 1-hour averages < ELV	0.4	mg/Nm3	yes	EN 14791:2005	2.24	Natural Gas License Limits.
A1-1	Particulate matter (PM10)	Biannually	5	All 1-hour averages < ELV	0.4	mg/Nm3	yes		2.61	Natural Gas License Limits.
A1-1	Nitrogen oxides (NOx/NO2)	Biannually	400	All 1-hour averages < 2 x ELV	0	mg/Nm3	yes	EN 14792:2005	0	Liquid Fuel License Limits. Aux. Boiler not operated.
A1-1	Sulphur oxides (SOx/SO2)	Biannually	100	All 1-hour averages < ELV	0	mg/Nm3	yes	EN 14791:2005	0	Liquid Fuel License Limits. Aux. Boiler not operated.
A1-1	Particulate matter (PM10)	Biannually	20	All 1-hour averages < ELV	0	mg/Nm3	yes		0	Liquid Fuel License Limits. Aux. Boiler not operated.

AIR-summary template				Lic No:	P0830-02	Year	2017		
A2-1	Sulphur oxides (SOx/SO2)	Biannually	10	All 1-hour averages < ELV	1.03 mg/Nm3	yes	EN 14791:2005	20575.4	Natural Gas License Limits.
A2-1	Particulate matter (PM10)	Biannually	2	All 1-hour averages < ELV	0.1 mg/Nm3	yes	SELECT	1804.2	Natural Gas License Limits.
A2-1	Sulphur oxides (SOx/SO2)	Biannually	60	All 1-hour averages < ELV	0 mg/Nm3	yes	EN 14791:2005	0	Liquid Fuel License Limits.
A2-1	Particulate matter (PM10)	Biannually	20	All 1-hour averages < ELV	0 mg/Nm3	yes	SELECT	0	Liquid Fuel License Limits.

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

AIR-summary template	Lic No: P0830-02	Year: 2017
Continuous Monitoring		

4	Does your site carry out continuous air emissions monitoring? If yes please review your continuous monitoring data and report the required fields below in Table A2 and compare it to its relevant Emission Limit Value (ELV)	Yes	
5	Did continuous monitoring equipment experience downtime? If yes please record downtime in table A2 below	Yes	
6	Do you have a proactive service agreement for each piece of continuous monitoring equipment?	Yes	Signal Ambitech for CEMS
7	Did your site experience any abatement system bypasses? If yes please detail them in table A3 below	No	

Table A2: Summary of average emissions -continuous monitoring

Emission reference no:	Parameter/ Substance	ELV in licence or any revision thereof	Averaging Period	Compliance Criteria	Units of measurement	Annual Emission	Annual maximum	Monitoring Equipment downtime (hours)	Number of ELV exceedences in current reporting year	Comments
A2-1	volumetric flow	4000000	Hourly	All 1-hour averages < ELV	m3	1645819	2640912			
		75	Hourly			36.04	58.46	30		Hours lost due to maintenance. Notifications made on Alder
A2-1	Nitrogen oxides (NOx/NO2)			Daily average < ELV	mg/Nm3					
		90	Hourly			0	0			Liquid Fuel License Limits.
A2-1	Nitrogen oxides (NOx/NO2)			Daily average < ELV	mg/Nm3					
		100	Hourly			2.16	37.15			Natural Gas License Limits.
A2-1	Carbon monoxide (CO)			Daily average < ELV	mg/Nm3					
		100	Hourly			0	0			Liquid Fuel License Limits.
A2-1	Carbon monoxide (CO)			Daily average < ELV	mg/Nm3					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					

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

Table A3: Abatement system bypass reporting table

[Bypass protocol](#)

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

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

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

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

Additional information	
Yes	SW2 licenced Stormwater point
Yes	Not a licence requirement but based on recommendations by ARUP in their Hydrogeological Assessment of site in 2015, monthly monitoring of the Glenagow Stream takes place at entrance and exit of site

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

Table W1 Storm water monitoring

Location reference	Location relative to site activities	PRTR Parameter	Licensed Parameter	Monitoring date	ELV or trigger level in licence or any revision thereof*	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Comments
SW2	downstream	ic carbon (TOC) (as total d)	Organic Carbon (a	Continuous	40	All results < 1.2 x ELV	5.07	ppm	yes	Pumps interlocked to TOC analyser. Result is average of all.
SW2	downstream		pH	Continuous	5.5-10	No pH value shall deviate from the specified range.	8.37	pH units	yes	Pumps interlocked to pH meter. Result is average
SW2	downstream		Conductivity	Grab Sample	494.9	All results < 1.2 x ELV	207.85	µS/cm @20oC	yes	Average of results
SW2	downstream		COD	Grab Sample	50	All results < 1.2 x ELV	14.875	mg/L	yes	Average of results

*trigger values may be agreed by the Agency outside of licence conditions

Table W2 Visual inspections-Please only enter details where contamination was observed.

Location Reference	Date of inspection	Description of contamination	Source of contamination	Corrective action	Comments
			SELECT		
			SELECT		

Licensed Emissions to water and /or wastewater(sewer)-periodic monitoring (non-continuous)

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

Additional information	
No	
Yes	

4 Was all monitoring carried out in accordance with EPA guidance and checklists for Quality of Aqueous Monitoring Data Reported to the EPA? If no please detail what areas require improvement in additional information box

[External /Internal Lab Quality checklist](#) [Assessment of results checklist](#)

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

Emission reference no:	Emission released to	Parameter/ Substance>Note 1	2	Frequency of monitoring	Averaging period	ELV or trigger values in licence or any revision thereof ^{Note 2}	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Method of analysis	Procedural reference source	Procedural reference standard number	Annual mass load (kg)	Comments
SW1	Water	BOD	composite	Monthly	24 hour	20	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	8.75	mg/L	yes	Other (5 Day Carbonaceous Method based on BS 6068-2:14:1990 ISO 5815:1989	B.S. (British Standard)	ENVCM-031	389.9	All results for the period were within the licence limit. This is an average of all results for 2017.
SW1	Water	Suspended Solids	composite	Weekly	24 hour	30	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	7.42	mg/L	Liquid Fuel License Limits.	Gravimetric analysis	Other (Standard Methods for the Examination of Water and Wastewater, 20th edition 1997, Method 2540-D)	WPS-QAP 06-QWI 112	64.76	All results for the period were reported as less than 10mg/l by external Lab bar one result in May showed as 11mg/l, and internal lab <7.35 bar two samples of 9.5 & 8.5 in April & May. Result shown is an average of the period
SW1	Water	Ammonia (as N)	composite	Weekly	24 hour	5	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	<0.30	mg/L	yes	Other (LCK 304 (salicylate method))	Other (Method 4500-NH3 and ASTM D1426)	WPS-QAP 06-QWI 108	20.04	Bar two results all external lab results were <0.2, the highest was 1.23mg/l
SW1	Water	Total phosphorus	composite	Weekly	24 hour	5	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	<0.35	mg/L	yes	Other (LCK 348 , LCK 349 (ascorbic acid method))	Other (USEPA method 365.2 and Standard Method 4500-P-E for wastewater)	WPS-QAP 06-QWI 106	1.96	Bar two results all external lab results were <0.2, the highest was 0.32mg/l
SW1	Water	Mineral oils	composite	Monthly	24 hour	20	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	<0.1	mg/L	yes	Fourier Infra-Red (FTIR)	ISO	ENVCM-053	2.25	All results <0.1.
SW1	Water	Total Dissolved Solids	composite	Weekly	24 hour	N/A	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	810.8	mg/L	yes	Gravimetric analysis	Other (Standard Methods for the Examination of Water and Wastewater, 20th edition 1997, Method 2540-D)	WPS-QAP 06-QWI 112	33612	No ELV. Site lab average is 810.8mg/l, and external lab average 641.62mg/l
SW1	Water	72 HR IC2 to Phaedactylum Tricornutum	discrete	Annual	24 hour	10	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	<1	NTU	yes	Toxicity Analysis	ISO	Algaltoxkit calculation programme	42.16	
SW2	Water	Conductivity	discrete	Monthly	Monthly	494.9	All results < 1.2 x ELV	207.85	µS/cm@25oC	yes	Conductivity Meter (Electrode)	B.S. (British Standard)	WPS-QAP 06-QWI 118		
SW2	Water	COD	discrete	Monthly	Monthly	50	All results < 1.2 x ELV	14.875	mg/L	yes	standard method, as documented by ISO 15705 ST-COD	ISO	WPS-QAP 06-QWI 111	47.754	

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

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

Continuous monitoring

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

Additional Information	
Yes	SW2 - pH & TOC and for SW1 - pH, temp, Flow

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

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

Yes	Composite sampler failure on 7th September. Fixed 8th, no discharge during
-----	----------------------------------------------------------------------------

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

Yes	For TOC EASL biodelector, pH and temperature probes in house
-----	--------------------------------------------------------------

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

No

Table W4: Summary of average emissions -continuous monitoring

Emission reference no:	Emission released to	Parameter/ Substance	ELV or trigger values in licence or any revision thereof	Averaging Period	Compliance Criteria	Units of measurement	Annual Emission for current reporting year (kg)	% change +/- from previous reporting year	Monitoring Equipment downtime (hours)	Number of ELV exceedences in reporting year	Comments
SW1	Water	volumetric flow	600	24 hour	All values < ELV	m3/day	42158	32.03%	0	0	Increase in volume discharged is due to increased running durations, compounded by greater losses through drain valves, which result in more frequent operation of the water treatment plant
SW1	Water	volumetric flow	50	1 hour	All values < ELV	m3/hour	42.1		0	0	
SW1	Water	pH	6-9	Instantaneous	No pH value shall deviate from the .specified range	pH units	6.51 - 8.74		0	0	
SW1	Water	Temperature	25	Instantaneous	No temperature value shall exceed the limit .value	degrees C	28.99		0	0	
SW2	Water	pH	5.5-10	Instantaneous	No pH value shall deviate from the .specified range	pH units	7.06 - 9.56		0	0	
SW2	Water	Total organic carbon (TOC) (as total C or COD/3)	40	Instantaneous	All values < ELV	mg/L	46.754	-16.73%	0	0	

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

Table W5: Abatement system bypass reporting table

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

*Measures taken or proposed to reduce or limit bypass frequency

Bund testing

dropdown menu click to see options

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

2 Please provide integrity testing frequency period

Does the site maintain a register of bunds, underground pipelines (including stormwater and foul), Tanks, sumps and containers? (containers refers to 3 "Chemstore" type units and mobile bunds)

4 How many bunds are on site?

5 How many of these bunds have been tested within the required test schedule?

6 How many mobile bunds are on site?

7 Are the mobile bunds included in the bund test schedule?

8 How many of these mobile bunds have been tested within the required test schedule?

9 How many sumps on site are included in the integrity test schedule?

10 How many of these sumps are integrity tested within the test schedule?

Please list any sump integrity failures in table B1

11 Do all sumps and chambers have high level liquid alarms?

12 If yes to Q11 are these failsafe systems included in a maintenance and testing programme?

13 Is the Fire Water Retention Pond included in your integrity test programme?

Additional information	
Yes	
3 years	last completed in 2015
Yes	
72	
All	
25	3 new temp bunds purchased 2017
Yes	
All	
18	Sumps normally tested when the bund is been tested.
18	There are also four basins on site, three of which have been tested. Equalisation basin cannot be tested due to plant running regime
No	Nine have level gauges - higher volumes
Yes	listed as environmentally critical
Yes	

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

Bund/Containment structure ID	Type	Specify Other type	Product containment	Actual capacity	Type of integrity test	Other test type	Test date	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)

* Capacity required should comply with 25% or 100% containment rate as detailed in your licence

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

[bundings and storage guidelines](#)

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

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

No	
Yes	
No	

Are you required by your licence to undertake integrity testing* on underground structures e.g. pipelines or sumps etc? If yes please fill out table 2 below listing all 1 underground structures and pipelines on site which failed the integrity test and all which have not been tested within the integrity test period as specified

2 Please provide integrity testing frequency period

*please note integrity testing means water tightness testing for process and foul pipelines (as required under your licence)

Yes	
3 years	

Table B2: Summary details of pipeline/underground structures integrity test

Structure ID	Type system	Material of construction:	Does this structure have Secondary containment?	Type of secondary containment	Type integrity testing	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)
D.01	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
D.01.01	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
D.02	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
D.02.02	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
D.03	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
D.04	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
DA.01.01	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	
DA.01.02	Process	concrete	No		Hydraulic	Yes	Fail	loss of pressure during testing period	Trial repairs with two vendors to develop the most appropriate method for reseal as a number of failures were repeat failures for previous integrity test period	Before end 2018	

		Comments	
1	Are you required to carry out groundwater monitoring as part of your licence requirements?	yes	
2	Are you required to carry out soil monitoring as part of your licence requirements?	no	
3	Do you extract groundwater for use on site? If yes please specify use in comment section	no	
4	Do monitoring results show that groundwater generic assessment criteria such as GTVs or IGVs are exceeded or is there an upward trend in results for a substance? If yes, please complete the Groundwater Monitoring Guideline Template Report (link in cell G8) and submit separately through ALDER as a licensee return AND answer questions 5-12 below. Groundwater monitoring template	yes	Hydrogeological and Groundwater Contamination Assessment submitted in February 2015 to EPA compiled by ARUP based on results from 2014 and previous years
5	Is the contamination related to operations at the facility (either current and/or historic)	yes	Joint Gr. Water Monitoring report with P66 submitted via Alder on 30th June 2015.
6	Have actions been taken to address contamination issues? If yes please summarise remediation strategies proposed/undertaken for the site	yes	Previous known areas of contamination were excavated and removed prior to construction at the site.
7	Please specify the proposed time frame for the remediation strategy	N/A	
8	Is there a licence condition to carry out/update ELRA for the site?	yes	12.2.2
9	Has any type of risk assessment been carried out for the site?	yes	ELRA & EIS
10	Has a Conceptual Site Model been developed for the site?	yes	
11	Have potential receptors been identified on and off site?	yes	
12	Is there evidence that contamination is migrating offsite?	no	

Please provide an interpretation of groundwater monitoring data in the interpretation box below or if you require additional space please include a groundwater/contaminated land monitoring results interpretation as an additional section in this AER

There were incidences of exceedance of the IGVs for Manganese and Total Petroleum Hydrocarbons (TPHs) observed in some samples in upgradient well waters in 2014 (These incidences were also recorded in previous years 2012 and 2013). An investigation was undertaken by ARUP at the time, and submitted to the EPA. The laboratory results are generally in decline from historic values for the various boreholes with some increases and some decreases in heavy metals and hydrocarbon parameters, but generally an improving trend over time. Upgradient wells include BH01, BH02, BH03, BH04, BH05, BH06, BH08. BH01 has shown a decline in heavy metal concentration in 2017 from 2016 & 2015 figures. Manganese concentration shows a slight decline in BH03 to average of 15ug/l compared to 48.5ug/l in 2016. BH04 has shown an increase in the concentration of manganese from the highest value of 4090ug/l in 2015 to value of 6702ug/l in 2017 but TPH average declined slightly. This bore BH04 has shown historically to have rises and falls in the concentration of these elements since 2012. BH05 has shown a decline in Manganese concentration. Manganese max concentration in BH 08 has dropped from 3101ug/l in 2015 to 902ug/l. BH07A heavy metals concentration levels appear to have stabilised over the last year, and remain at lower levels than does detected in 2015. Chromium down from 3.10 to <1.5ug/l, Cobalt dropped from 2.7 to <2ug/l, Copper down from 9.2 to <7ug/l, Manganese down from 150 to 4ug/l. BH09 has also shown a stabilisation with concentration levels at the limits of detection similar to 2016. There appears to be a general decrease in the concentration levels of heavy metals, and TPH across the wells with decreased concentration levels witnessed in 2016 either improved or stable.

Table 1: Upgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration++	Average Concentration+	unit	GTV's*	IGV	Upward trend in pollutant concentration over last 5 years of monitoring data
10/05/2017	BH01	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
15/11/2017	BH01	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH01	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH01	Cobalt	2	Biannual	<2	<2	ug/l	-	-	no
	BH01	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH01	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH01	Manganese	ICP-OES	Biannual	<2	<2	ug/l	-	50	no
	BH01	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH01	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH01	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH01	Mercury	Cold Vapour Atomic Fluorescence.	Biannual	0.01	0.01	ug/l	0.75		no
	BH01	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH01	TPH(C5-35)	GC-FID	Biannual	<10	<10	ug/l	0.075		no
	BH01	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH01	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH01	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH01	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH01	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH01	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH01	Conductivity	Probe	Biannual	325	300	uS/cm	800-1875	1000	no
	BH01	pH	Probe	Biannual	6.45	6.375	pH units	-	6.5 - 9.5	no

Groundwater/Soil monitoring template

Lic No:

P0830-02

Year

2017

Date	Location	Parameter	Method	Frequency	2016	2017	Unit	2016	2017	Result
10/05/2017	BH02	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
15/11/2017	BH02	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH02	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH02	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH02	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH02	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH02	Manganese	ICP-OES	Biannual	7	5	ug/l	-	50	no
	BH02	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH02	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH02	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH02	Mercury	Vapour Atomic Fluorescence	Biannual	0.01	0.01	ug/l	0.75	1	no
	BH02	Mineral Oil (>C10-40)	GC-FID	Biannual	<10	<10	ug/l	-	10	no
	BH02	TPH (C5-35)	GC-FID	Biannual	<10	<10	ug/l	0.75		no
	BH02	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH02	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH02	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH02	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH02	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH02	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH02	Conductivity	Probe	Biannual	342	338.5	uS/cm	800-1875	1000	no
	BH02	pH	Probe	Biannual	6.43	6.32	pH units	-	6.5 - 9.5	no
10/05/2017	BH03	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
15/11/2017	BH03	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH03	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH03	Cobalt	ICP-OES	Biannual	2	2	ug/l	-	-	no
	BH03	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH03	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH03	Manganese	ICP-OES	Biannual	21	15	ug/l	-	50	no
	BH03	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH03	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH03	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH03	Mercury	Vapour Atomic Fluorescence	Biannual	0.02	0.015	ug/l	0.75	1	no
	BH03	Mineral Oil (>C10-40)	GC-FID	Biannual	<10	<10	ug/l			no
	BH03	TPH (C5-35)	GC-FID	Biannual	<10	<10	ug/l	-	10	no
	BH03	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH03	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH03	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH03	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH03	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH03	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH03	Conductivity	Probe	Biannual	364	346.5	uS/cm	800-1875	1000	no
	BH03	pH	Probe	Biannual	6.8	6.68	pH units	-	6.5 - 9.5	no

Groundwater/Soil monitoring template

Lic No:

P0830-02

Year

2017

09/05/2017	BH04	Arsenic	ICP-OES	Biannual	<5	<5	ug/l	7.5	10	no
14/11/2017	BH04	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH04	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH04	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH04	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH04	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH04	Manganese	ICP-OES	Biannual	6702	5658	ug/l	-	50	no
	BH04	Nickel	ICP-OES	Biannual	2	2	ug/l	15	20	no
	BH04	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH04	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH04	Mercury	Vapour Atomic Fluorescence	Biannual	0.02	0.015	ug/l	0.75	1	no
	BH04	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH04	TPH (C5-35)	GC-FID.	Biannual	58	42	ug/l	-	10	yes
	BH04	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH04	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH04	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH04	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH04	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH04	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH04	Conductivity	Probe	Biannual	545	524	uS/cm	800-1875	1000	no
	BH04	pH	Probe	Biannual	6.8	6.765	pH units	-	6.5 - 9.5	no
10/05/2017	BH05	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
15/11/2017	BH05	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH05	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH05	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH05	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH05	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH05	Manganese	ICP-OES	Biannual	<2	<2	ug/l	-	50	yes
	BH05	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH05	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH05	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	yes
	BH05	Mercury	Vapour Atomic Fluorescence	Biannual	0.04	0.025	ug/l	0.75	1	no
	BH05	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH05	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH05	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH05	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH05	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH05	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH05	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH05	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH05	Conductivity	Probe	Biannual	414	397	uS/cm	800-1875	1000	no
	BH05	pH	Probe	Biannual	6.83	6.745	pH units	-	6.5 - 9.5	no

Groundwater/Soil monitoring template

Lic No:

P0830-02

Year

2017

09/05/2017	BH06	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
14/11/2017	BH06	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH06	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH06	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH06	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH06	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH06	Manganese	ICP-OES	Biannual	<2	<2	ug/l	-	50	no
	BH06	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH06	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH06	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH06	Mercury	Vapour Atomic Fluorescence	Biannual	0.01	0.01	ug/l	0.75	1	no
	BH06	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH06	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH06	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH06	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH06	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH06	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH06	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH06	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH06	Conductivity	Probe	Biannual	443	421	uS/cm	800-1875	1000	no
	BH06	pH	Probe	Biannual	6.88	6.85	pH units	-	6.5 - 9.5	no
09/05/2017	BH08	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
14/11/2017	BH08	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH08	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH08	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH08	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH08	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH08	Manganese	ICP-OES	Biannual	902	796.5	ug/l	-	50	no
	BH08	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH08	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH08	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH08	Mercury	Vapour Atomic Fluorescence	Biannual	0.02	0.015	ug/l	0.75	1	no
	BH08	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH08	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH08	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH08	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH08	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH08	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH08	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH08	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH08	Conductivity	Probe	Biannual	585	560	uS/cm	800-1875	1000	no
	BH08	pH	Probe	Biannual	7.12	6.98	pH units	-	6.5 - 9.5	no

.+ where average indicates arithmetic mean

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

Table 2: Downgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration++	Average Concentration+	unit	GTV/s*	IGV	Upward trend in yearly average pollutant concentration over last 5 years of monitoring data
09/05/2017	BH07A	Arsenic	ICP-OES	Biannual	2.7	2.6	ug/l	7.5	10	no
14/11/2017	BH07A	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH07A	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH07A	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH07A	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH07A	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH07A	Manganese	ICP-OES	Biannual	4	3	ug/l	-	50	no
	BH07A	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH07A	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH07A	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH07A	Mercury	Vapour Atomic Fluorescence	Biannual	0.02	0.015	ug/l	0.75	1	no
	BH07A	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH07A	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH07A	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH07A	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH07A	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH07A	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH07A	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH07A	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH07A	Conductivity	Probe	Biannual	377	372	uS/cm	800-1875	1000	no
	BH07A	pH	Probe	Biannual	6.99	6.775	pH units	-	6.5 - 9.5	no
10/05/2017	BH09	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
15/11/2017	BH09	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH09	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH09	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH09	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH09	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH09	Manganese	ICP-OES	Biannual	11	6.5	ug/l	-	50	no
	BH09	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH09	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH09	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH09	Mercury	Vapour Atomic Fluorescence	Biannual	<0.01	<0.01	ug/l	0.75	1	no
	BH09	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH09	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH09	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH09	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH09	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no

Groundwater/Soil monitoring template

Lic No:

P0830-02

Year

2017

	BH09	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH09	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH09	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH09	Conductivity	Probe	Biannual	511	466.5	uS/cm	800-1875	1000	no
	BH09	pH	Probe	Biannual	7.41	7.315	pH units	-	6.5 - 9.5	no
09/05/2017	BH10	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
14/11/2017	BH10	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH10	Chromium	ICP-OES	Biannual	3.6	3.15	ug/l	37.5	30	no
	BH10	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH10	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH10	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH10	Manganese	ICP-OES	Biannual	<2	<2	ug/l	-	50	no
	BH10	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH10	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH10	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH10	Mercury	Vapour Atomic Fluorescence	Biannual	<0.01	<0.01	ug/l	0.75	1	no
	BH10	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH10	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH10	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH10	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH10	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH10	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH10	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH10	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH10	Conductivity	Probe	Biannual	184	172.5	uS/cm	800-1875	1000	no
	BH10	pH	Probe	Biannual	7.39	7.15	pH units	-	6.5 - 9.5	no

Groundwater/Soil monitoring template

Lic No:

P0830-02

Year

2017

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit	Year	2017	no
10/05/2017	BH11	Arsenic	ICP-OES	Biannual	<2.5	<2.5	ug/l	7.5	10	no
14/11/2017	BH11	Cadmium	ICP-OES	Biannual	<0.5	<0.5	ug/l	3.75	5	no
	BH11	Chromium	ICP-OES	Biannual	<1.5	<1.5	ug/l	37.5	30	no
	BH11	Cobalt	ICP-OES	Biannual	<2	<2	ug/l	-	-	no
	BH11	Copper	ICP-OES	Biannual	<7	<7	ug/l	1500	30	no
	BH11	Lead	ICP-OES	Biannual	<5	<5	ug/l	18.75	10	no
	BH11	Manganese	ICP-OES	Biannual	<2	<2	ug/l	-	50	no
	BH11	Nickel	ICP-OES	Biannual	<2	<2	ug/l	15	20	no
	BH11	Tin	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH11	Titanium	ICP-OES	Biannual	<5	<5	ug/l	-	-	no
	BH11	Mercury	Vapour Atomic Fluorescence	Biannual	<0.01	<0.01	ug/l	0.75	1	no
	BH11	Mineral Oil (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l			no
	BH11	TPH (>C10-40)	GC-FID.	Biannual	<10	<10	ug/l	-	10	no
	BH11	MTBE #	GC-FID	Biannual	<5	<5	ug/l			no
	BH11	Benzene #	GC-FID	Biannual	<5	<5	ug/l	0.75		no
	BH11	Toluene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH11	Ethylbenzene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH11	m/p-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH11	o-Xylene #	GC-FID	Biannual	<5	<5	ug/l			no
	BH11	Conductivity	Probe	Biannual	421	414.5	uS/cm	800-1875	1000	no
	BH11	pH	Probe	Biannual	6.89	6.815	pH units	-	6.5 - 9.5	no

*please note exceedance of generic assessment criteria (GAC) such as a Groundwater Threshold Value (GTV) or an Interim Guideline Value (IGV) or an upward trend in results for a substance indicates that further interpretation of monitoring results is required. In addition to completing the above table, please complete the Groundwater Monitoring Guideline Template Report at the link provided and submit separately through ALDER as a licensee return or as otherwise instructed by the EPA.

More information on the use of soil and groundwater standards/ generic assessment criteria (GAC) and risk assessment tools is available in the EPA published guidance (see the link in G31)

Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 2013).

**Depending on location of the site and proximity to other sensitive receptors alternative Receptor based Water Quality standards should be used in addition to the GTV e.g. if the site is close to surface water compare to Surface Water Environmental Quality Standards (SWEQS), if the site is close to a drinking water supply compare results to the Drinking Water Standards (DWS)

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

Table 3: Soil results

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

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

[Click here to access EPA guidance on Environmental Liabilities and Financial provision](#)

2016

20

Commentary

1	ELRA initial agreement status	Submitted and agreed by EPA	14/08/2014
2	ELRA review status	Review required and not completed;	ARUP have been engaged to conduct the ELRA review in 2017, and this is currently been finalised for submission to EPA
3	Amount of Financial Provision cover required as determined by the latest ELRA	3,276,013	
4	Financial Provision for ELRA status	Submitted and agreed by EPA	May-16
5	Financial Provision for ELRA - amount of cover	€6,000,000,	
6	Financial Provision for ELRA - type		parent company guarantee
7	Financial provision for ELRA expiry date	N/A	
8	Closure plan initial agreement status	Closure plan submitted and agreed by EPA	05/08/2014
9	Closure plan review status	Review required and completed	26/09/2017
10	Financial Provision for Closure status	Submitted and agreed by EPA	May-16
11	Financial Provision for Closure - amount of cover	2,423,584	
12	Financial Provision for Closure - type		parent company guarantee
13	Financial provision for Closure expiry date	N/A	

Highlighted cells contain dropdown menu click to view

Additional Information

1	Do you maintain an Environmental Mangement System (EMS) for the site. If yes, please detail in additional information	Yes	ISO 14001:2015
2	Does the EMS reference the most significant environmental aspects and associated impacts on-site	Yes	
3	Does the EMS maintain an Environmental Management Programme (EMP) as required in accordance with the licence requirements	Yes	
4	Do you maintain an environmental documentation/communication system to inform the public on environmental performance of the facility, as required by the licence	Yes	

Environmental Management Programme (EMP) report

Objective Category	Target	Status (% completed)	How target was progressed	Responsibility	Intermediate outcomes
Additional improvements	Retain certification to 14001	100%	1 opportunity for improvement identified in scheduled audit with NSAI	Section Head	Improved Environmental Management Practices
Additional improvements	Earth Day Event (Community based Initiative)	100%	Event with local school done at site in March, brich tree planted to mark occasion.	Individual	Improved Environmental Management Practices
Materials Handling/Storage/Bunding	Chemical Sweep	100%	Review of chemical storage areas, bunding, storage of chemicals, SDS availability & emergency arrangements with site team	Individual	Improved Environmental Management Practices
Additional improvements	Permit Day Event	100%	Permit conditions review with GE Corporate	Section Head	Increased compliance with licence conditions
Reduction of emissions to Air	CEMS Crosscheck	100%	Verification of CEMS System, completed in August 2017 with inclusion of flow from top of stack	Section Head	Increased compliance with licence conditions

Groundwater protection	Process Drainage Repairs	10%	Reline of a number of manholes, trialing methods with two contractors	Section Head	Installation of infrastructure
Groundwater protection	Remedial Works to surface water lines	10%	Reline of a number of manholes, trialing methods with two contractors	Section Head	Installation of infrastructure
Materials Handling/Storage/Bunding	Bund Modification	50%	Installation of Level Detection Systems in outside bunds based on selected priority bunds. Equipment purchased, and PO for installation	Individual	Increased compliance with licence conditions
Waste reduction/Raw material usage efficiency	Recycling Rate of 45% for Non Hazardous Waste	100%	Improved recycling & recovery rates with vendor. Less waste generated. Achieved 72%	Section Head	Improved Environmental Management Practices
Additional improvements	Internal Audit Plan	100%	All audit complete and actions tracked	Section Head	Improved Environmental Management Practices
Additional improvements	Fugitive emissions	10%	Assessment of hogger platform drains	Individual	Improved Environmental Management Practices
Energy Efficiency/Utility conservation	Action Plan based on Energy Efficiency Assessment findings	100%	Anomolert monitoring major items of plant. Lighting in hallways changed to LED. Move towards T5 from a T8 for fluroscent tubes been replaced	Individual	Improved Environmental Management Practices

- 1 Was noise monitoring a licence requirement for the AER period?
If yes please fill in table N1 noise summary below Yes
- 2 Was noise monitoring carried out using the EPA Guidance note, including completion of the "Checklist for noise measurement report" included in the guidance note as table 6? Yes
- 3 Does your site have a noise reduction plan Yes
- 4 When was the noise reduction plan last updated? 30/11/2016
- 5 Have there been changes relevant to site noise emissions (e.g. plant or operational changes) since the last noise survey? No

[Noise Guidance note NG4](#)

Table N1: Noise monitoring summary

Date of monitoring	Time period	Noise location (on site)	Noise sensitive location -NSL (if applicable)	LA _{eq}	LA ₉₀	LA ₁₀	LA _{max}	Tonal or Impulsive noise* (Y/N)	If tonal /impulsive noise was identified was 5dB penalty applied?	Comments (ex. main noise sources on site, & extraneous noise ex. road traffic)	Is site compliant with noise limits (day/evening/night)?
15/02/2017 @17.06	30 Minute	Day	NSL1	48.2	43.2	49.3	71.5	No	No	The sound level meter was positioned on hard ground within the car park and oriented towards the Power Station for each measurement. The LAeq for the day time round one, two and three measurements was 48.2dB, 47.2dB and 47.5dB respectively. The LAeq for the evening time measurement was 45.3dB and the LAeq for the night time round one and two measurements was 44.8dB and 45.6dB respectively. The measured night time round two LAeq levels are above the night time noise limit of 45dB LAeq as set out in Guidance Note for Noise (NG4) [1]. However as mentioned above, the major contributor to measured LAeq levels during this measurement is considered to be noise from passing traffic, water lapping and distant traffic. Due to the constant and steady nature of noise generated by the Power Station, the LA90 as discussed in Section 3.4 above can be referenced to determine the specific noise level from the facility at this location. The LA90 for the day time round one, two and three measurements was 43.2dB, 42.9dB and 43.3dB respectively. The LA90 for the evening time measurement was 43.4dB and the LA90 for the night time round one and two measurements was 42.6dB and 42.8dB respectively. Measured LA90 values as deemed attributable to the Power Station are below the day, evening and night limits of 55dB, 50dB and 45dB LA90 as set out in Guidance Note for Noise (NG4) [1].	Yes
15/02/2017 @17.37	30 Minute	Day	NSL1	47.2	42.9	46.6	71.3	No	No		Yes
15/02/2017 @18.07	30 Minute	Day	NSL1	47.5	43.3	46.2	72.2	No	No		Yes
15/02/2017 @19.00	30 Minute	Eve	NSL1	45.3	43.4	45.3	69.8	No	No		Yes
15/02/2017 @23.00	30 Minute	Night	NSL1	44.8	42.6	44.8	69.6	No	No		Yes
15/02/2017 @23.30	30 Minute	Night	NSL1	45.6	42.8	45.3	72.9	No	No		Yes

15/02/2017 @17.00	30 Minute	Day	NSL2	52.3	41.3	51.5	72.8	No	No	The LAeq for the day time round one, two and three measurements was 52.3dB, 49.2dB and 50.6dB respectively. The LAeq for the evening time measurement was 45.0dB and the LAeq for the night time round one and two measurements was 43.4dB and 45.6dB respectively. The measured night time round two LAeq levels are above the day and night time noise limit values of 45dB LAeq set out in Guidance Note for Noise (NG4) [1]. However as mentioned above, the major contributor to measured LAeq levels during this measurement is considered to be noise from passing cars. Due to the constant and steady nature of noise generated by the Power Station, the LA90 as discussed in Section 3.4 above can be referenced to determine the specific noise level from the facility at this location. The LA90 for the day time round one, two and three measurements was 41.3dB, 42.6dB and 42.5dB respectively. The LA90 for the evening time measurement was 42.0dB and the LA90 for the night time round one and two measurements was 39.6dB and 39.9dB respectively. Measured LA90 values as deemed attributable to the Power Station are below the day, evening and night limits of 55dB, 50dB and 45dB LA90 as set out in Guidance Note for Noise (NG4) [1].	Yes
15/02/2017 @17.30	30 Minute	Day	NSL2	49.2	42.6	49.8	69.4	No	No		Yes
15/02/2017 @18.00	30 Minute	Day	NSL2	50.6	42.5	47.3	73.9	No	No		Yes
15/02/2017 @19.00	30 Minute	Eve	NSL2	45	42	44	67.2	No	No		Yes
15/02/2017 @23.00	30 Minute	Night	NSL2	43.4	39.6	42.2	69.4	No	No		Yes
15/02/2017 @23.30	30 Minute	Night	NSL2	45.6	39.9	42.9	72	No	No		Yes

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

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

**** please explain the reason for not taking action/resolution of noise issues?**

In June 2016, Silencers were installed on the Hogger Relief Vents and the PRV. In July, an acoustic barrier was installed around the site of the Hogger. The purpose of these noise control measures was to reduce the tonal component that was been reportly heard during start-up process from this system. Since that date, Whitegate have had experienced no further complaints regards noise. Further noise assessments have been undertaken to demonstrate reduction that there is no detected tonal or impulsive components by Allegro Acoustics in November 2016.

1 When did the site carry out the most recent energy efficiency audit? Please list the recommendations in table 3 below

2 Is the site a member of any accredited programmes for reducing energy usage/water conservation such as the SEAI programme linked to the right? If yes please list them in additional information

3 Where Fuel Oil is used in boilers on site is the sulphur content compliant with licence conditions? Please state percentage in additional information

Additional information

16/12/2016	Site is only operational since 2010. Number of plant modifications made to increase efficiency of unit.
No	
Yes	

Energy Use	Previous year	Current year	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*
Total Energy Used (MWHrs)	5249870.036	5483179.332	4.44%	
Total Energy Generated (MWHrs)	2634129	2742336	4.11%	0.32%
Total Renewable Energy Generated (MWHrs)	0	0	0	
Electricity Consumption (MWHrs)	52724	55958	6.13%	0.04%
Fossil Fuels Consumption:				
Heavy Fuel Oil (m3)	0	0	0.00%	
Light Fuel Oil (m3)	4.3	6.499	51.14%	
Natural gas (m3)	504478639.2	520730878	3.22%	
Coal/Solid fuel (metric tonnes)	0	0	0.00%	
Peat (metric tonnes)	0	0	0.00%	
Renewable Biomass	0	0	0.00%	
Renewable energy generated on site	0	0	0.00%	

* where consumption of energy can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.

** where site production information is available please enter percentage increase or decrease compared to previous year

Water use	Water extracted Previous year m3/yr.	Water extracted Current year m3/yr.	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*	0.18 Water Emissions		Water Consumption	Unaccounted for Water:
					Volume Discharged back to environment(m ³ /yr):	Volume used i.e not discharged to environment e.g. released as steam m3/yr		
Groundwater	0	0	0.00%					
Surface water	0	0	0.00%					
Public supply	77480	97460	25.79%		42158	35322	Steam from hogger and blowdown tanks	
Recycled water	105069	140878	34.08%		0	0		
Total	182549	238338	30.56%		42158	35322		

* where consumption of water can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.

** where site production information is available please enter percentage increase or decrease compared to previous year

Table R3 Waste Stream Summary		Landfill	Incineration	Recycled	Other
	Total				
Hazardous (Tonnes)	80.051		73.574	6.477	
Non-Hazardous (Tonnes)	37.51	9.767		27.743	

Table R4: Energy Audit finding recommendations								
Date of audit	Recommendations	Description of Measures proposed	Origin of measures	Predicted energy savings %	Implementation date	Responsibility	Completion date	Status and comments
16/12/2016	Replace fluorescent lamps with LED	Replace failures with LED	Ongoing measure	50	Apr-15	Maintenance		Ongoing measure as items fail
16/12/2016	Occupancy Control Lighting	Occupancy sensing be implemented in electrical switch rooms and the Waste Water Treatment Plant Building	Energy Audit	80	Under review	EHS team		Ongoing
16/12/2016	Energy management	Monitoring of large consumers over time	Energy Audit	5	05/10/2017	EHS team	05/10/2017	Complete. Anomlert monitoring
16/12/2016	Staff training in energy awareness	Staff training, Posters, etc	Energy Audit	5	Under review	EHS team		Ongoing

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

	Unit ID: WG1	Unit ID	Unit ID	Unit ID	Station Total
Technology	CCGT				
Primary Fuel	Natural Gas				
Thermal Efficiency	56.30%				
Unit Date of Commission	08/11/2010				
Total Starts for year	22				
Total Running Time	7019				
Total Electricity Generated (GWH)	2742.336				
House Load (GWH)	55.598				
KWH per Litre of Process Water	12.53805533				
KWH per Litre of Total Water used on	11.5060796				

Complaints

Have you received any environmental complaints in the current reporting year? If yes please complete summary details of complaints received on site in table 1 below

Yes	
-----	--

Table 1 Complaints summary							
Date	Category	Other type (please specify)	Brief description of complaint (Free txt <20 words)	Corrective action< 20 words	Resolution status	Resolution date	Further information
01/02/2017	Dust		EPA contacted as report made re:plume. Verified that no issues on site, and notified via alder	None required	Complete	08/02/2017	
Total complaints open at start of reporting year		0					
Total new complaints received during reporting year		1					
Total complaints closed during reporting year		1					
Balance of complaints end of reporting year		0					

Incidents			
Have any incidents occurred on site in the current reporting year? Please list all incidents for current reporting year in Table 2 below			Yes
*For information on how to report and what constitutes an incident	What is an incident		

Table 2 Incidents summary														
Date of occurrence	Incident nature	Location of occurrence	Incident category*please refer to guidance	Receptor	Cause of incident	Other cause(please specify)	Activity in progress at time of incident	Communication	Occurrence	Corrective action<20 words	Preventative action <20 words	Resolution status	Resolution date	Likelihood of reoccurrence
07/09/2017	Monitoring equipment offline	Licensed discharge point (ty	1. Minor	Water	Plant or equipment	Monitoring equipment	Normal activities	EPA	Recurring	In the interim, we installed a temporary method for collection of sample where a hose shall be connected to the sample point of the discharge line, and the other end placed in a drum which shall collect water been discharged. The composite sample from discharges shall be taken from this drum then. Replacement equipment was on site and installed the next day.	Three sets of spare parts including tubes, pumps and rollers were ordered. Complete a stock review to ensure that the required spares for environmental critical equipment are inventoried as spares, and all the required spares are available on site	Complete	Nov-17	Low
23/10/2017	Uncontrolled release	Licensed discharge point (ty	1. Minor	Water	Plant or equipment	Monitoring equipment	Normal activities	EPA	New	No impact on external environment. Process water containing Ammonia entered surface water system, which was captured in SW2 Storm Water Collection Pond. The SW2 Storm Water Collection Pond was analysed for Ammonia concentration on the 22nd of October and the 23rd of October where the result obtained were 1.2mg/l and 0.538mg/l. Our Process Waste Water has a limit of 5mg/l when discharged through SW1. After discussion with EPA on morning of 23rd, water contained in SW2 was transferred to SW1	The faulty check valve was replaced. A investigation was undertaken in all valves that open down to drain and bungee cords were installed on the frame of the lean too to prevent plastic flapping and hitting valve handles	Complete	01/02/2018	Low
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
Total number of incidents current year														2
Total number of incidents previous year														2
% reduction/increase														0%

SECTION A-PRTR ON SITE WASTE TREATMENT AND WASTE TRANSFERS TAB- TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES

[PRTR facility logon](#)

dropdown list click to see options

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

Additional Information

Were any wastes accepted onto your site for recovery or disposal or treatment prior to recovery or disposal within the boundaries of your facility ?; (waste generated within your boundaries is to be captured through PRTR reporting)

No	
----	--

If yes please enter details in table 1 below

2 Did your site have any rejected consignments of waste in the current reporting year? If yes please give a brief explanation in the additional information

No	
----	--

No	
----	--

3 Was waste accepted onto your site that was generated outside the Republic of Ireland? If yes please state the quantity in tonnes in additional information

Table 1 Details of waste accepted onto your site for recovery, disposal or treatment (do not include wastes generated at your site, as these will have been reported in your PRTR workbook)

Licensed annual tonnage limit for your site (total tonnes/annum)	EWC code European Waste Catalogue EWC codes	Source of waste accepted	Description of waste accepted Please enter an accurate and detailed description - which applies to relevant EWC code European Waste Catalogue EWC codes	Quantity of waste accepted in current reporting year (tonnes)	Quantity of waste accepted in previous reporting year (tonnes)	Reduction/ Increase over previous year +/- %	Reason for reduction/ increase from previous reporting year	Packaging Content (%) - only applies if the waste has a packaging component	Disposal/Recovery or treatment operation carried out at your site and the description of this operation	Quantity of waste remaining on site at the end of reporting year (tonnes)	Comments -

SECTION C-TO BE COMPLETED BY ALL WASTE FACILITIES (waste transfer stations, Composters, Material recovery facilities etc) EXCEPT LANDFILL SITES

4 Is all waste processing infrastructure as required by your licence and approved by the Agency in place? If no please list waste processing infrastructure required onsite	SELECT	
5 Is all waste storage infrastructure as required by your licence and approved by the Agency in place? If no please list waste storage infrastructure required on site	SELECT	
6 Does your facility have relevant nuisance controls in place?	SELECT	
7 Did your site experience any abatement system bypasses? If yes please detail them in table A3 below	SELECT	
8 Do you maintain a sludge register on site?	SELECT	Does your facility have relevant nuisance controls in place?

SECTION D-TO BE COMPLETED BY LANDFILL SITES ONLY

Table 2 Waste type and tonnage-landfill only

Waste types permitted for disposal	Authorised/licenced annual intake for disposal (tpa)	Actual intake for disposal in reporting year (tpa)	Remaining licensed capacity at end of reporting year (m3)	Comments

Table 3 General information-Landfill only

Area ID	Date landfilling commenced	Date landfilling ceased	Currently landfilling	Private or Public Operated	Inert or non-hazardous	Predicted date to cease landfilling	Licence permits asbestos	Is there a separate cell for asbestos?	Accepted asbestos in reporting year	Total disposal area occupied by waste	Lined disposal area occupied by waste	Unlined area	Comments on liner type
										SELECT UNIT	SELECT UNIT	SELECT UNIT	
Cell 8													

Table 4 Environmental monitoring-landfill only [Landfill Manual-Monitoring Standards](#)

Was meteorological monitoring in compliance with Landfill Directive (LD) standard in reporting year +	Was leachate monitored in compliance with LD standard in reporting year	Was Landfill Gas monitored in compliance with LD standard in reporting year	Was SW monitored in compliance with LD standard in reporting year	Have GW trigger levels been established	Were emission limit values agreed with the Agency (ELVs)	Was topography of the site surveyed in reporting year	Has the statement under S53(A)(5) of WMA been submitted in reporting year	Comments

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

Table 5 Capping-Landfill only

Area uncapped*	Area with temporary cap	Area with final cap to LD Standard m ² ha, a	Area capped other	Area with waste that should be permanently capped to date under licence	What materials are used in the cap	Comments
SELECT UNIT	SELECT UNIT					

*please note this includes daily cover area

Table 6 Leachate-Landfill only

9 Is leachate from your site treated in a Waste Water Treatment Plant?

SELECT

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

SELECT

Volume of leachate in reporting year(m ³)	Leachate (BOD) mass load (kg/annum)	Leachate (COD) mass load (kg/annum)	Leachate (NH4) mass load (kg/annum)	Leachate (Chloride) mass load kg/annum	Leachate treatment on-site	Specify type of leachate treatment	Comments

Please ensure that all information reported in the landfill gas section is consistent with the Landfill Gas Survey submitted in conjunction with PRTR returns

Table 7 Landfill Gas-Landfill only

Gas Captured&Treated by LFG System m ³	Power generated (MW / KWh)	Used on-site or to national grid	Was surface emissions monitoring performed during the reporting year?	Comments
			SELECT	

Bord Gáis Energy

**Whitegate Independent Power
Plant (WIPP)**

Update of Decommissioning
Management Plan (DMP) 2017

REP/1

Issue 3 | 26 September 2017

Document Verification

Job title	Whitegate Independent Power Plant (WIPP)	Job number 331662-05
Document title	Update of Decommissioning Management Plan (DMP) 2017	File reference

Job number 331662-05

Contents

	Page
Summary of Decommissioning Management Plan	1
1 Introduction	3
1.1 Site Description and Activity	3
1.2 Licence Details	3
1.3 Planning Permission Requirements	4
1.4 Methodology	5
1.5 Closure Scenarios Covered in the Plan	6
2 Site Evaluation	7
2.1 Operator Performance	7
2.2 Environmental Pathways and Sensitivity	10
2.3 Site Processes and Activities	12
2.4 Inventory of Site Buildings, Plant, Raw Materials and Wastes	14
2.5 Inventory of Raw Materials, Products and Wastes	15
2.6 Maximum Storage Capacity For Raw Material, Products Wastes And Maximum Storage Amount In Practice	18
3 Closure Tasks and Programmes	18
3.1 Introduction	18
3.2 Plant or Equipment Decontamination Requirements	18
3.3 Plant and Materials Disposal or Recovery	18
3.4 Waste Disposal or Recovery	25
3.5 Decommissioning Programme	26
3.6 Ongoing Tasks Following Decommissioning	26
3.7 Soil or Spoil Recovery	26
4 Criteria for Successful Closure	26
5 Closure Plan Validation	27
5.1 Independent Audit	27
5.2 Final Report	27
5.3 Licence Surrender	27
6 Closure Plan Costing	27
6.1 Planning Application to Cork County Council	28
6.2 Plant and Equipment Decontamination Costs	28
6.3 Plant and Equipment Decommissioning Costs	28
6.4 Demolition Costs	28
6.5 Waste Recovery or Disposal Costs	28

6.6	Environmental Monitoring Costs	28
6.7	Site Security Costs	29
6.8	Validation Costs	29
6.9	Management and Utility Costs	29
7	Closure Plan Review and Update	29
7.1	Proposed Frequency of Review	29
7.2	Proposed Scope of Review	29
8	Financial Provision	30

Appendices

Appendix A

Programme for Implementation of DMP

Appendix B

Site Decommissioning Costs

Summary of Decommissioning Management Plan

Introduction

The 2014 decommissioning management plan was prepared in accordance with Condition 10.2 of the IE Licence and was approved by the Agency in August 2014. In accordance with Condition 10.2.2 of the Industrial Emissions (IE) Licence an annual review of the Decommissioning Management Plan (DMP) has been undertaken.

The objective of the plan is clean closure. The methodology for the development of the report follows EPA guidance and has been carried out by an independent and appropriately qualified consultant.

The total closure and decommissioning costs for the worst-case scenario have been calculated as €2,423,584, including contingency (ex VAT).

In July 2014, Bord Gáis Energy was sold to Centrica plc in a single share purchase agreement. Centrica has made the necessary financial provisions to cover any liabilities incurred during decommissioning by means of a Parent Company Guarantee which was finalised in May 2016.

Centrica plc is a public company registered in England and Wales which is listed on the official list of the UK Listing Authority and traded on the main market of the London Stock Exchange under the ticker CNA. Centrica has a current market capitalisation of approximately £18 billion and is a top 30 member of the FTSE 100 Index. In addition, Centrica's credit rating is A- / Stable credit from Standard & Poor's and A3 / Stable from Moody's.

Activity Details

Activity:	Whitegate Independent Power Plant
Owner:	Bord Gáis Energy
Operator:	General Electric Operation & Maintenance
Address:	Whitegate (Corkbeg and Glanagow townlands), Co Cork Licence number P0830-02
Activity licensed:	Class 2.1 Combustion of fuels in installations with a total rated thermal input of 50MW or more.
RBME Category:	B3

Report Preparation

This decommissioning management plan has been updated by Celine Doody (Bord Gáis Energy, EHS) and reviewed by Declan Lynch (Bord Gáis Energy, Operations).

Review

This decommissioning management plan will be reviewed annually and any changes will be submitted to the EPA for approval in the Annual Environmental Report.

1 Introduction

1.1 Site Description and Activity

The Whitegate Independent Power Plant (WIPP) consists of a nominal 450 Megawatt Combined Cycle Gas Turbine (CCGT) power plant, located on circa 10 ha (25 acres) of land in Whitegate (Corkbeg and Glanagow townlands), Co. Cork.

The WIPP power plant is owned by Bord Gáis Energy (BGE). General Electric Operation & Maintenance (GE) operates and maintains the plant on a day to day basis on behalf of BGE. Figure 1 presents the WIPP site layout.

The plant commenced operations in November 2010.

1.2 Licence Details

The Environmental Protection Agency (the Agency) issued BGE with an Integrated Pollution Prevention and Control licence in April 2009, licence number P0830-01. The licence was partially reviewed in 2012 and licence P0830-02 was issued October 2012. The Agency made a technical amendment to the licence in December 2013 to bring it into compliance with the industrial emissions directive. The licence is now an industrial emissions licence (IE).

The licensed activity is:

Class 2.1 Combustion of fuels in installations with a total rated thermal input of 50MW or more.

Condition 10 of the IE Licence imposes requirements for decommissioning planning, as follows:

“Condition 10 Decommissioning & Residual Management

10.1 Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site in the licensed activity, the licensee shall, to the satisfaction of the Agency, decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein, that may result in environmental pollution.

10.2 Decommissioning Management Plan:

10.2.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for the decommissioning or closure of the site or part thereof.

10.2.2 The plan shall be reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the agreement of the Agency.

10.2.3 The licensee shall have regard to the Environmental Protection Agency Guidance on Environmental Liabilities Risk Assessment,

Residuals Management Plans and Financial Provision when implementing condition 10.2.1 above.

10.3 *The Decommissioning Management Plan shall include as a minimum, the following: -*

- (i) *A scope statement for the plan;*
- (ii) *The criteria which define the successful decommissioning of the activity or part thereof, which ensures minimum impact on the environment;*
- (iii) *A programme to achieve the stated criteria;*
- (iv) *Where relevant, a test programme to demonstrate the successful implementation of the decommissioning plan; and*
- (v) *Details of the costings for the plan and the financial provisions to underwrite those costs.*

10.4 *A final validation report to include a certificate of completion for the Decommissioning Management Plan, for all or part of the site as necessary, shall be submitted to the Agency within three months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment.*

The Decommissioning Management Plan (DMP) was submitted to the Agency in September 2009. In March 2013, the Agency notified BGE that the DMP had been assessed and there were a number of matters which should be noted or actioned. An updated DMP was submitted to the Agency and approved in August 2014. This revision of the DMP is to fulfil the IE Licence requirement to undertake an annual review.

1.3 Planning Permission Requirements

The planning permissions, obtained from Cork County Council authorising the development of the site and the activity, do not impose any requirements in relation to decommissioning management. However, condition number one of the initial planning permission for the WIPP project, planning file reference 06/10126, required the development to be undertaken in accordance with the plans and particulars submitted in the planning application. These included an environmental impact statement, Whitegate Independent Power Plant Environmental Impact Statement, August 2006. The environmental impact statement gave the following undertaking:

“3.11 Provision for Decommissioning

The Whitegate IPP has a projected life span of approximately 30 years. At the end of the 30 year life cycle, there will be several options available for the proposed development. The first option could see the plant being redeveloped for further power generation, with the upgrading of plant and machinery and supporting infrastructure. This option would have no environmental impact on the locality.

A further option, decommissioning of the plant, will be implemented, should circumstances arise whereby it becomes necessary to shut down the facility. This will ensure that any negative environmental impact is minimised. All plant and machinery and supporting infrastructure can easily be disconnected and removed for appropriate disposal, and the site returned to development potential with no environmental issues associated with the site. The decommissioning programme will include:

- *Removal of any chemicals or wastes stored on site. Any oils, lubricants or fuels that are on site at the time of closure will be recycled/disposed of through appropriate registered contractors.*
- *Plant equipment and machinery will be emptied on ceasing operations, dismantled and stored under suitable conditions until it is sold, or if a suitable buyer cannot be located, recycled/disposed of through appropriate licensed waste disposal contractors.*
- *The plant buildings will be subject to thorough house cleaning procedures prior to final evacuation.*
- *The site and buildings will be left in a secure manner and appropriate security maintained on site in the event of the site potentially being vacant for an extended period of time.*
- *If the site is being permanently vacated it will be returned to its current use.*
- *There will be no asbestos used in the construction of the facility so its removal during decommissioning will not arise.*

A detailed decommissioning plan will be submitted to the Environmental Protection Agency as part of the application for an IPPC licence.”

The EIS provision for decommissioning is less onerous than the ‘worst case’ provided for in this DMP and no additional costs arise.

1.4 Methodology

The preparation of this update has had regard to the EPA’s “*Guidance on assessing and costing environmental liabilities*, 2014.

This report has been prepared based on data compiled from information provided by BGE and GE, site processes and environmental operations, the 2006 Environmental Impact Statement, and recent Annual Environmental Reports and site compliance data.

The review takes into account operations on the site and includes identification of existing and potential hazards including environmental liabilities which are detailed in the Environmental Liabilities Risk Assessment (which was also approved by the EPA in August 2014).

1.5 Closure Scenarios Covered in the Plan

It is BGE's intention to lead the decommissioning of the WIPP plant, should the need arise and any such decommissioning would be undertaken with due care and diligence in order to reduce or eliminate the risk to the environment during and after decommissioning activities. However the Agency requires the worst case scenario to be examined and costed. Consequently the costings for this DMP update are based on the assumption that external contractors will implement the decommissioning. The costs have been revised for the 2017 review in line with the Consumer Price Index as issued by the Central Statistics Office (<http://www.cso.ie/en/statistics/>).

In order to develop a fully detailed and costed DMP, it is necessary to make a number of assumptions regarding the future decommissioning of the WIPP plant. This DMP has been developed with the following assumptions:

- BGE considers it likely that the date for closure of the facility will be well known in advance of the activation of the DMP. However, as required by the Agency, the DMP update has been prepared on the assumption that the closure will be unplanned.
- Unless stated otherwise, all plant and equipment will assume scrap value.
- It is BGE's aim that all stored fluids or solid materials, be they chemicals, gases, greases or oils would be returned to suppliers where appropriate.
- 'Disposal Off-Site' shall mean that licensed removal contractors, licensed removal equipment and licensed reception facilities' will be utilised where required during the DMP.
- 'Disposal Off-Site' shall mean that a full record and log will be maintained of all plant, equipment, finished or raw materials and fluids removed off site.
- All above ground structures and equipment will be removed.
- All contractors engaged in the DMP shall be fully licensed, experienced and approved to undertake the activities for which they are engaged.
- Environmental monitoring as per the IE licence conditions will continue while the DMP is in operation.
- On conclusion of the DMP, the site will achieve a status of not posing a risk to public health or the environment.

2 Site Evaluation

2.1 Operator Performance

2.1.1 Environmental Management System

BGE and the Operator manage environmental issues associated with the Facility through an appropriately designed Environmental Management System (EMS), to ensure compliance with the IPPC licence and all other applicable environmental legislation that the Facility is subject to. The facility was certified to ISO 14001:2015 in April 2016 and continues to maintain this certification.

The EMS is designed, implemented, operated and managed in a manner that satisfies the requirements of ISO 14001 and ensures the following objectives are achieved:

- Compliance with EPA IPPC licence conditions and all other legislation that will from time to time govern the operation of the Facility.
- Compliance with BGE Environmental Policy.
- Minimisation of environmental risks.
- Prevention of pollution.
- Ensure energy efficiency is maximised.
- All Facility staff, stakeholders and shareholders are made aware of and support the highest of environmental standards for the Facility.

EMS Design Structure

The EMS is designed along the following structure as outlined by ISO 14001.

Plan-Do-Check-Act

- Plan: establish the objectives and processes necessary to deliver results in accordance with the company's environmental policy.
- Do: implement the process.
- Check: monitor and measure processes against environmental policy, objectives, targets, legal and other requirements, and report the results.
- Act: take action to continually improve performance of the environment management system.

2.1.2 Compliance History

The plant achieved full compliance with its then IPPC licence in 2010.

There was an exceedance of the emission limit for BOD in wastewater in November 2011. Results from an external laboratory indicated a level of BOD of 40mg/l, which was in excess of the licence limit of 20mg/l. Tests showed that the source of the problem was a heat exchanger which had leaked causing migration of contaminated water to the raw water tank. All contaminated material from the Effluent Treatment Plant (ETP) was taken off site via road tankers until the BOD level reduced to below the licence limit.

In 2012 there was one breach of the limits on emissions to air. One recorded hourly average of nitrogen oxides (NO_x) was 264mg/m³ which was slightly in excess of the then IPPC licence limit of 240 mg/m³. This occurred during testing of the plant.

In 2012 also one breach of the emission limits for emissions to water occurred. During discharge of one batch of treated process water the suspended solids (SS) concentration was recorded as 43mg/l which was in excess of the licence limit of 30mg/l. It was found that discharge from SW1 occurred while the air blowers were in operation.

This raised the suspended solids concentration in the basins. Trials showed that when the air blowers were switched off a dramatic reduction in the SS concentration.

In 2013 an auto-sampler failed, which did not have significant environmental consequences.

In 2015, there was a malfunction of TOC analyser and a malfunction of the CEMS equipment. Both events were notified to the EPA and neither had significant environmental consequences. Also, in 2015, the EPA issued a notification of non compliance in relation to condition 5.2 of the IE Licence in relation to noise nuisance.

In 2016, there was a malfunction of the CEMS equipment. This event was notified to the EPA and did not have an environmental consequence. Also in 2016, the EPA issued a non compliance in relation to condition 12.2.3 in relation to financial provisions to cover any liabilities.

In 2017, the CEMS report showed an hourly exceedance for CO as the CEMS system included values below minimum generation in the hourly summation values. Also in 2017 the autosampler failed an alternative sampling arrangements were put in place while repairs were made.

2.1.3 Enforcement History

No enforcement actions were taken against BGE arising from the operation of WIPP.

2.1.4 Incident History

Refer to the compliance history above. In addition, in 2012 there was an uncontrolled release of reject water from the raw water treatment plant due to a leak from the drain which connects the raw water treatment plant to the effluent treatment plant.

In 2013 an auto-sampler failed, which did not have significant environmental consequences. In 2015, there was a malfunction of TOC analyser and two instances of a malfunction of the CEMS equipment. Both events were notified to the EPA and neither had significant environmental consequences.

In 2016, there was a malfunction of the CEMS equipment and the EPA was notified. There were no significant environmental consequences.

In 2017, there were two incidents where there were small leaks (distillate and caustic). In both instances the leaks were contained in bunds.

2.1.5 Complaints History

The site received a total of 11 complaints in 2010, seven of which related to noise, two related to air and two related to light pollution. There were no complaints in 2011. There was one noise complaint in 2012 arising from the Graball Bay area of Cork Harbour. The incident was investigated and the source of the noise identified and rectified. Historically it should be noted that some of the noise complaints recorded at the site were not attributable to site operations.

There were no complaints in 2013 and 2014.

In 2015, there were four noise complaints made to the EPA from residents in the Graball Bay area of Cork Harbour. The EPA issued a notice of non compliance against condition 5.2 of the IE Licence.

In 2016, a noise complaint was made to the EPA from a local resident. In June 2016 a noise attenuation programme was completed on site.

In 2017, a complaint was made by a local resident regarding an air plume. This was not attributed to the site.

2.1.6 Monitoring and/ or Site investigations Carried Out

The WIPP plant is located on circa 10ha (25 acres) of land in the control of Bord Gáis Energy and adjacent Whitegate oil refinery, IE licence P0266-02. The site of the power plant is under the legal control of BGE.

Figure 2 shows the site location in relation to the oil refinery.

Prior to August 2007, the site of the WIPP power plant was primarily green field land within the boundary of the oil refinery. No buildings, structures, plant or equipment were built or located on this land.

Historically, there were documented cases of land filling and waste disposal activities on the site. These were addressed under the oil refinery's IPPC licence, P0266-01.

In August 2007, BGE leased and assumed legal control over the site formerly within the boundary of the adjacent oil refinery for the purposes of the WIPP. At that time the area was still within the boundary of the refinery's IPPC licence. During site clearance, in late 2007 and early 2008, two areas of oil contaminated soil and oily waste material were uncovered on the WIPP site. These were fully remedied under a landfill decommissioning plan approved by the Agency. A clean-up target concentration of 2,500mg/kg mineral oil in soil was approved. The validation testing, undertaken as part of the landfill decommissioning plan, determined that all material, with a mineral oil level in excess of this, was removed. Validation reports were submitted to the Agency on completion of the works. This work was carried out under the refinery's IPPC licence.

Apart from some groundwater contamination issues addressed under the refinery IPPC licence, further site investigations undertaken for the WIPP construction project showed no detections of contamination.

Groundwater monitoring undertaken in accordance with the WIPP IE licence during 2012 and 2013 has detected hydrocarbons in some of the groundwater wells. A joint investigation was completed between BGE and Philips 66 on foot of a compliance investigation issued by the EPA. The report on this investigation was submitted in June 2015. The EPA issued a response in July 2015 indicating that they consider the compliance investigation closed and that reports on bi-annual monitoring should continue to be submitted to them for assessment.

2.2 Environmental Pathways and Sensitivity

2.2.1 Underlying Geology And Hydrogeology

2.2.1.1 Soils and Geology

The Geology of South Cork (UCC 1988) indicates that the site is underlain by Upper Devonian sandstones and siltstones of the Kiltorcan Formation (Ballyknock Member). To the north of the site, in the area crossed by the access road, the bedrock is formed of sandstones and siltstones of the Old Head Formation (Glanagow and White Bay Members) and slate of the Castle Slate Formation. The bedrock is highly folded in the area. The bedrock is overlain by between one and five metres of glacial till. The glacial till is generally described as silty sandy clay and clayey silt with gravel.

2.2.1.2 Hydrogeology

The hydrogeological data for the site indicate that the ground water flows mirror the surface topography and surface drainage. The groundwater flows into the site towards the Glanagow stream from the north and east, from the main part of the oil refinery, and from the west, from the farmland. In the site groundwater also flows towards the stream.

2.2.1.3 Groundwater Vulnerability

The groundwater in the vicinity of the site is designated by the GSI as a Locally Important (Li) aquifer, moderately productive in local zones, and with an extreme vulnerability rating (E). Refer to the GSI web site www.gsi.ie.

2.2.2 Proximity To Surface Water Bodies, Their Classification And Status

The site and the adjacent oil refinery are on a ridge, with the ground falling away steeply to the northwest, to the shore of Cork Harbour. The southern part of the site falls to the southwest to the valley of the Glanagow stream.

2.2.2.1 Glanagow Stream

The Glanagow stream rises in the oil refinery, just to the east of the site, and crosses the site on a south-westerly course. The south-western part of the refinery and the land to the south drain to the stream. The eastern and northern parts of the

refinery drain eastwards and northwards respectively and are not in the stream's catchment.

The stream has been realigned and culverted where it crosses the WIPP site. The WIPP site has been graded in a series of terraces, which generally drain to the stream.

The portion of the Glanagow stream, within the refinery and within the site, runs dry in a spell of fine weather.

Beyond the site boundary the stream runs southwards through farmland to enter the sea at White Bay beach.

2.2.2.2 Cork Harbour

The site is located close to the shores of Cork Harbour. To the southwest of the site, the Harbour entrance is at Roches Point and the entrance channel is approximately one kilometre wide, between Ram's Head and Dogsnose, close to the site. Northwards of this point the Harbour opens out to give a large body of sheltered water, into which several rivers flow and in which several islands are located. There are extensive mud banks and shallows in the Harbour, which provide valuable habitat for wildlife, particularly birds.

The Harbour has a twice daily tidal cycle with a range of approximately 4m in spring tides. The tide runs quickest through the narrows between Ram's Head and Dogsnose and the speed reduces away from the narrows.

Currently, sewage from the Lower Harbour towns and villages of Whitegate / Aghada, Saleen, Crosshaven, Carrigaline, Ringaskiddy, Cobh, Monstown and Passage West is discharged untreated into the Harbour.

Lower Cork Harbour is designated as coastal and estuarine. The water quality in the Harbour has a moderate biological status and fails to achieve a good chemical status, as reported in the South Western River Basin District Management Plan 2009 - 2015. This is due to winter levels of dissolve inorganic nitrogen in the Upper Harbour from diffuse agricultural sources in the tributary river catchments.

2.2.3 Proximity to Sensitive Receptors, Including Humans

The nearest occupied dwelling to the site is 750 metres from the site boundary. Dairy farming is carried out on lands adjoining the site to the south and southwest, within 50 metres of the activity footprint. The adjoining land to the west and northeast are in industrial use. Beyond the oil refinery to the north is an area of woodland which extends to the shores of the Harbour. The intertidal mud flats, located approximately 1km to the northeast of the site, between the causeway to Corkbeg Island and Whitegate village, are designated as part of the Cork Harbour Special Protection Area, site code 4030.

2.2.4 Details Of The Nearest Habitat, SAC, SPA, NHA

The intertidal mud flats, located approximately 1km to the northeast of the site, between the causeway to Corkbeg Island and Whitegate village, are designated as part of the Cork Harbour Special Protection Area, site code 004030. The mud flats are also designated as the Whitegate Bay pNHA, site code 001084.

2.2.5 List Of Emission And Discharge Points

A2-1 Main Stack

A3-1 Emergency Generator

A4-1 Gas AGI creep relief valve

A4-2 Gas treatment skid relief valve

A4-3 Gas turbine gas cabinet block and bleed valve

A4-4 Turbine lubricating oil skid vapour extraction

A4-5 Fuel gas heater relief valves

A4-6 Refinery off gas relief valve

A4-7 Supplementary firing block and bleed valve

A4-8 Spill from distillate storage tanks

SW1 – Process Effluent discharge

SW2 – Surface water drainage discharge to Glanagow Stream

2.2.6 Neighbouring Developments

The oil refinery, IE licence P0266-02, is located adjacent to the WIPP site, to the north and northeast. The Calor LPG depot is located to the west of the WIPP entrance road.

2.2.7 Environmental Pathways

The potential pathways through which the activity could impact on the surrounding environment are:

- An undetected spill or leak of a hazardous substance from banded storage.
- An undetected leak from an in-ground drain.
- An accidental release of natural gas.
- An emission to air exceeding the licensed limits.
- A discharge of surface water to the Glanagow Stream or of treated process effluent to the Harbour, exceeding the licensed limits.

2.3 Site Processes and Activities

The following section provides a brief description of the operation of the WIPP plant.

2.3.1 Plant Operations

The plant is designed for fully automatic single button start and control from a Central Control Room (CCR). The power plant control system is designed for continuous 24 hour operations. The WIPP plant is of a single shaft

configuration, i.e. one gas turbine, one generator and one steam turbine all coupled together on one shaft centreline. The WIPP plant utilises the following process:

- A gas turbine burning natural gas is coupled on one main shaft, which rotates at high speed, to a generator (alternator) which produces electricity.
- Exhaust gases from the gas turbine passes through a heat recovery steam generator (HRSG) to generate steam.
- The steam generated in the HRSG drives a steam turbine, which is also coupled to the generator (alternator) to increase electrical power output.
- The HRSG has been designed to provide 50 tonnes per hour of steam at 45barg which is conveyed to the oil refinery.
- A supplementary fired burner is provided in the first stage of the HRSG tubes. The supplementary fired burner can burn both natural gas and refinery off-gas, supplied from the adjacent oil refinery.
- The plant is designed to run on 0.1% sulphur content distillate, as standby fuel.
- The low pressure steam, expanded across the steam turbine, is condensed in air cooled condensers.
- The plant requires make up water for the HRSG. This is supplied by potable water from the Irish Water water main.

The power generation process can be summarised as follows:

Air for combustion air is drawn through air filters and compressed in the gas turbine compressor section, before going to the combustion chambers. Natural gas, at approximately 38bar, is injected and mixed with the air in the combustion chambers (combustors) where it burns at a very high temperature ($>1000^{\circ}\text{C}$). The pressurised hot combustion gases expand across the power section of the gas turbine, which produces the motive power required for the air compressor section compressor and an excess of power to drive the electrical generator. The generator produces electricity at 19kV. The exhaust gases from the gas turbine exit at a high temperature of $\sim 650^{\circ}\text{C}$, and such energy is recovered in the Heat Recovery Steam Generator (HRSG), with the exhaust gas exiting via the main stack (60 metres) at approximately 80°C . High pressure superheated steam at approximately 160 bar is generated in the HRSG. This steam is fed to and expanded across the Steam Turbine to produce motive power to also help drive the electrical generator. The exhaust steam from the Steam Turbine is fed to the Air Cooled Condenser (ACC) which condenses the steam. The condensate is then returned as feed water to the HRSG.

2.4 Inventory of Site Buildings, Plant, Raw Materials and Wastes

2.4.1 Main Buildings

Table 1 Main Buildings on Site

	Main Buildings and Structures	Permitted Dimensions (m)		
		W	L	H
1	Main Turbine Building	42.5	108	60
2	Water Treatment Plant Building	20	42.5	7.4
3	Workshop/Stores/Canteen	13.4	51.56	8
4	Gas Compressor Building	20	35	9
5	Gas Compressor Boiler Building	3.7	6	3.15
6	Administration Building	14	22.7	10.6
7	ACC Control Room	25	10.5	5
8	Auxiliary Boiler Building	14	18	15
9	Gate House	5.6	5.6	3.5

2.4.2 Plant and Structures

- (1) Gas Turbine
- (2) Heat Recovery Steam Generator (HRSG)
- (3) Generator
- (4) Steam Turbine
- (5) Air Cooled Condenser
- (6) Main Transformer
- (7) Auxiliary Transformer
- (8) Electrical Systems and Grid Connection
- (9) Auxiliary Boiler
- (10) Water Treatment Plant
- (11) Process Water System
- (12) Surface Water System
- (13) Emergency Generator
- (14) Fire Fighting Pump House
- (15) Fuel Forwarding Skid
- (16) Fin Fan Coolers
- (17) Fuel Gas Performance Heaters
- (18) Raw Water Tanks (1)
- (19) Demineralised Water Tank (2)

(20) Distillate Tank (2)

2.4.3 Hazardous Or Potentially Polluting Components Or Construction Materials

PCBs or asbestos are not used or present on site.

2.4.4 Bunds, Secured or Protected areas

The bunds, secured or protected areas are as follows:

- Bunds for caustic tanks
- Bunds for hydrochloric acid tanks
- Bunds for hydrochloric acid scrubber towers
- Bunds in waste water treatment building for treatment chemicals
- Fuel management spool piece bund
- Spool piece foam tank bund
- Bunds for Carbonhydrazide tanks HRSG and auxiliary boiler
- Bunds for Ammonia tanks HRSG and auxiliary boiler
- Bund for distillate tanks
- Distillate foam tank bund
- Bunds for fin fan coolers
- Stack drain tank bund
- Hydraulic power unit bund
- CCCW pump bund
- CCW shot feeder tank bund
- GT drains tank bund
- Lube oil tank bund
- Bunds for various diesel tanks
- Bunds for various skids
- Bunds for main and other transformers
- Chem-stores in chemical compound
- Plastic mobile bunds

2.5 Inventory of Raw Materials, Products and Wastes

2.5.1 Raw Materials

The main input material is natural gas, which is supplied by pipeline and is not stored on site. The materials stored on site are listed in Table 2 below. The amount present on site typically is very close to the maximum storage capacity.

The maximum storage quantities are given in Table 2. For the purposes of the DMP, it is assumed that the maximum storage quantity will be present on site.

Table 2 Materials Stored on Site

Material/Substance	Maximum storage capacity
Distillate	1,543 tonnes
Hydrochloric Acid	7,000 litres
Sodium Hydroxide	7,000 litres
Turbine Lubricating Oil	62,000 litres
Inergen gas	7,560 litres
Antiscalant typically based on polyacrylic acid derivative	1,290 litres
Ammonia 30%	2,470 litres
Ammonia 10-25%	2,470 litres
Hydrogen (Gas Bottles)	8 MCPs
Fresh Water	3,850 tonnes
Demineralised Water	9,000 tonnes
Material/Substance	Maximum storage capacity
Condensate Water	800 tonnes
Hydrogen Balance Air	1 bottle
Methane Balance Air	1 bottle
Anvol PE 46XC	1,040 litres
Betzdearborn DCL30	1,290 litres
Biomate	50 litres
Carbon Dioxide	4 MCPs and 9 tonnes
CleanBlade GTC1000	621 kg
FM 200	7,560 litres
Hypersperse	1,290 litres
Kleen MCT 103	0.12 tonnes
Kleen MCT 511	0.138 tonnes
Natural Gas	
Nitrogen	4 MCPs
Nytro Libra	4 transformers (120m ³ , 8m ³ , 3m ³ , 2.3m ³)
Oxygen	2 bottles
Propane	4 bottles
Shell Turbo	62 m ³

2.5.2 Wastes

Table 3 lists the hazardous or non-hazardous wastes and the expected maximum quantities, which are likely to be present on site.

Table 3 Wastes Likely to be Present on Site

Waste Material	EWC Code	Quantity in storage (Tonnes)
Other hydraulic oils	13 01 13*	0.2
other organic solvents, washing liquids and mother liquors	07 01 04*	3
other engine, gear and lubricating oils	13 02 08*	1
fuel oil and diesel	13 07 01*	3
other emulsions	13 08 02*	0.5
mixed packaging	15 01 06	1.5
packaging containing residues of or contaminated by dangerous substances	15 01 10*	0.3
absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	15 02 02*	0.5
other wastes (including mixtures of materials) from mechanical treatment of waste containing dangerous substances	19 12 11*	0.2
wood other than that mentioned in 20 01 37	20 01 38	4
metals	20 01 40	4
mixed municipal waste	20 03 01	4
biodegradable kitchen and canteen waste	20 01 08	1
aqueous rinsing liquids containing dangerous substances	11 01 11*	0.1
other fuels (including mixtures)	13 07 03*	0.1
solid combustible wastes containing dangerous substances	19 02 09*	0.2
paint, inks, adhesives and resins containing dangerous substances	20 01 27*	0.1
laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	16 05 06*	0.1
spent catalysts containing dangerous transition metals (17) or dangerous transition metal compounds	16 08 02*	0.3
waste paint and varnish containing organic solvents or other dangerous substances	08 01 11*	0.2
waste adhesives and sealants containing organic solvents or other dangerous substance	08 04 09*	0.1
alkaline batteries (except 16 06 03)	16 06 04	0.1
discarded equipment other than those mentioned in 16 02 09 to 16 02 13	16 02 14	0.1
wastes from cooling-water treatment	10 01 26	25
solutions and sludges from regeneration of ion exchangers	19 09 06	20
gases in pressure containers (including halons) containing dangerous substances	16 05 04*	0.05
discarded inorganic chemicals consisting of or containing dangerous substances	16 05 07*	0.05
discarded organic chemicals consisting of or containing dangerous substances	16 05 08*	0.05

Waste Material	EWC Code	Quantity in storage (Tonnes)
other solvents and solvent mixtures	14 06 03*	3

2.6 Maximum Storage Capacity For Raw Material, Products Wastes And Maximum Storage Amount In Practice

Refer to Table 2 above.

3 Closure Tasks and Programmes

3.1 Introduction

Upon cessation of operations at the WIPP plant and subsequent decommissioning at the facility, it is anticipated that there will be no remaining environmental liabilities, i.e. clean closure is the target.

The first task will be to apply for planning permission to demolish the buildings on site. A planning application will be submitted to Cork County Council.

3.2 Plant or Equipment Decontamination Requirements

All plant and equipment that has had contact with hazardous materials will be decontaminated to remove of the hazardous materials. All decontamination of plant and equipment will be verified either analytically or through a visual inspection, whichever is appropriate.

Certain sections of plant and equipment utilised on the WIPP site, depending on the numbers of years in service and years since installation, may have operational market value. Where possible, BGE/the DMP implementation contractor will attempt to realise maximum sale value from all plant and equipment. However, for the purposes of this report it is assumed that all plant and equipment will realise scrap value, other than those areas of plant and equipment identified throughout the report that have a higher lifecycle potential and may be retained on site.

3.3 Plant and Materials Disposal or Recovery

This DMP assumes that all plant on the WIPP site will realise scrap value only. Depending on when this DMP is activated, some plant may have operational life remaining and be suitable for use in another facility or retained on site in a ready to use state. When assessing plant life, BGE/the DMP implementation contractor will endeavour to utilise the best economic option, having undertaken a risk assessment and cost-benefit-analysis, to ensure at all times that the criteria for Clean Closure, as specified in this DMP, are achieved.

Table 2, in section 2.5.1, is an inventory of the materials expected to be on site. BGE/the DMP implementation contractor will seek to return all process and production materials, utility chemicals, water treatment plant and waste water treatment plant chemicals, warehouse stores and laboratory stores to the suppliers or to sell the materials, whichever is most appropriate, to realise maximum sale value. For the purposes of the DMP value the sale of materials is assumed to be cost neutral.

3.3.1 Gas Turbine

The Gas Turbine (GT) will have come into contact with air and natural gas on its internal surfaces, plus lubricating oil at the bearings, during operations. The main decommissioning concern for the GT is draining and flushing of the lubricating oil system. The entire GT lubricating oil system will be drained and flushed through to ensure no oil remains in the GT during decommissioning. The GT will be disassembled on site into manageable sections and sold as scrap metal. Lubricating oil and flushing fluid will also be disposed of off-site. The disposal cost of the oil is included in the costs table in Appendix B.

3.3.2 HRSG

The HRSG will have come into contact with water and steam on its internal surfaces and exhaust gas on its external surfaces during operations. When the HRSG has been shut down permanently for decommissioning, the internal water will be drained to the effluent water treatment system for normal discharge off site through SW1, when it has been treated. The HRSG will be disassembled in manageable sections and sold as scrap metal.

3.3.3 Steam Turbine and Generator

The Steam Turbine (ST) will have come into contact with steam on its internal surfaces, plus lubricating oil at its bearings during operations. The main decommissioning concern for the ST is draining and flushing of the lubricating oil system. The entire ST lubricating oil system will be drained and flushed through to ensure no oil remains in the ST during decommissioning. The ST will be disassembled on site into manageable sections and sold as scrap metal. Lubricating oil and flushing fluid will also be disposed off-site. The disposal cost of the oil is included in the costs table in Appendix B.

The Generator will only have used lubricating oil at its bearings during operations. The main decommissioning concern for the Generator is draining and flushing of the lubricating oil system. The entire Generator lubricating oil system will be drained and flushed through to ensure no oil remains in the generator during decommissioning. The Generator will be disassembled on site into manageable sections and sold as scrap metal. Lubricating oil and flushing fluid will also be disposed of off-site. The disposal cost of the oil is included in the costs table in Appendix B.

3.3.4 Air Cooled Condenser

The Air Cooled Condenser (ACC) will have come into contact with steam and water on its internal surfaces and air on its external surfaces during operations.

When the ACC has been shut down permanently for decommissioning, the internal water will be drained to the effluent process water treatment system for normal discharge off site through SW1. The ACC will be disassembled in manageable sections and sold as scrap metal.

3.3.5 Air Inlet Filter

The air inlet filter will have come into contact with air (used for combustion). The air filter cartridges will be removed from the filter housing and disposed of off site. The air filter housing is steel and will be dismantled in manageable sections and sold as scrap metal.

3.3.6 Main Transformer

The main transformer will have come into contact internally with oil during operations. The main decommissioning concern for the main transformer is draining and flushing of the oil system. The oil will be fully drained and disposed of off-site. The disposal cost of the oil is included in the costs table in Appendix B. The oil system will be flushed to ensure no residual oil remains. The transformer will be sold as used equipment or as scrap metal.

3.3.7 Auxiliary transformer

The auxiliary transformer will have come into contact internally with oil during operations. The main decommissioning concern for the auxiliary transformer is draining and flushing of the oil system. The oil will be fully drained and disposed off site. The disposal cost of the oil is included in the costs table in Appendix B. The oil system will be flushed to ensure no residual oil remains. The transformer will be sold as used equipment or as scrap metal.

3.3.8 3.3.8 Fuel gas Performance Heater

The fuel gas heater will have come into contact with natural gas and steam during operations. The heater system will be isolated and purged of natural gas. The steam side condensate will be drained to the effluent process water treatment system for normal discharge off site through SW1. The heater will be dismantled and sold as scrap metal.

3.3.9 Fin Fan Cooler

The fin fan cooler will have come into contact internally with water and externally with air. There will also be lubricating oil in the fan motors. The water will be drained from the internal sections to the effluent process water treatment system for normal discharge off site through SW1. The oil will be drained from all fans prior to dismantling of the fans. The fin fan cooler, motors and fans will be dismantled and sold as scrap metal.

3.3.10 Sample Analysis Panel

The sample analysis panel is linked to probes located in the main stack. The panel mainly consists of electrical and electronic measuring devices. The panel will be dismantled and sold as scrap metal.

3.3.11 Main Stack

The main and auxiliary stacks will have come into contact with exhaust gas from the gas turbine during operations. The stacks will be cleaned, dismantled and sold as scrap metal. Any residual cleaning materials or wastes disposed of off-site.

3.3.12 Distillate

The distillate system consists of two storage tanks, purification/filtering skid and a fuel forwarding skid (pumping unit). For decommissioning of the plant, the distillate stocks will be run down to a minimum stock level. In the event that a large volume of distillate remains in the storage tanks, this supply will be sold off site for alternative use or disposed of accordingly. The decommissioning of the distillate system will include emptying and cleaning of the two storage tanks, emptying and flushing of the purification/filtering skid and fuel forwarding skid. This DMP allocates costs for sale of the tank and systems as scrap metal. However, the cleaned tanks, purification/filtering skid and fuel forwarding skid may be retained in situ as usable assets.

3.3.13 Switchyard

The switchyard compound is leased to EirGrid and all equipment within the compound will be owned and maintained by EirGrid. Therefore decommissioning of the switchyard and grid connection is outside the scope of management of BGE/ the DMP implementation contractor and not included in this DMP.

3.3.14 Auxiliary Boiler

The auxiliary boiler will have come into contact with water and steam on its internal surfaces and exhaust gas on its external surfaces during operations. It will also have potentially used distillate in its dual fired burners. When the auxiliary boiler has been shut down permanently for decommissioning, the internal water will be drained to the process water treatment system for normal discharge off site. The distillate fuel supply to the boiler will be emptied, flushed clean and the remaining flushing fluid disposed of off-site. The boiler unit will be disassembled in manageable sections to be sold as scrap metal.

3.3.15 Workshop/Stores/Canteen

All spare parts located in the stores will be returned to the suppliers, sold as scrap metal. The workshop equipment will be sold as used equipment or as scrap metal. The canteen equipment and furniture will be sold or disposed of off-site as scrap metal.

3.3.16 Water Treatment Plant

The water treatment plant will have come into contact with potable water from the Irish Water water main, and various chemicals for water treatment purposes. Any hazardous chemicals will be sold or returned to the supplier or disposed of off-site. The water treatment plant system will be emptied, flushed clean and the remaining flushing fluid drained to the effluent process water treatment system for normal discharge off site through SW1. This DMP allocates costs for the full disposal of the water treatment plant off site. However, the empty and clean water treatment plant maybe mothballed for potential future use together with the 3 water storage tanks.

3.3.17 Boiler Feed Pumps

The boiler feed pumps will have come into contact internally with condensate. There will also be lubricating oil in the main gearbox drive. The pumps will be drained of condensate which will be discharged to SW1 following treatment in the process water treatment system. The gear box drives will be drained of oil, flushed clean and remaining fluids disposed of off-site. The disposal cost of the oil is included in the costs table in Appendix B. The pumps will be sold as used equipment or as scrap metal.

3.3.18 Fire Pump House

The fire pump house contains the main, auxiliary and jockey electrical motor driven pumps. There is also a diesel engine driven pump. The system is primarily filled with water, with distillate and lubricating oil for the diesel engine. The system will be drained of water, with the water disposed in the process water treatment system. The distillate and oil will be drained from the diesel engine. The pumps and engine will be dismantled and be sold as used equipment or as scrap metal.

3.3.19 Process Water treatment System

The process water treatment system will have mainly come into contact with blow down water from the HRSG and auxiliary boiler, plus waste water from the water treatment plant. The process water treatment system will be emptied, flushed cleaned and the remaining flushing fluid disposed of off-site through SW1. This DMP allocated costs for the full disposal off site of the process water treatment system. This would involve treatment chemicals being sold and pumps, etc. being sold as used equipment or as scrap metal. However, the cleaned effluent tank maybe covered to prevent ingress of rain water and the system mothballed for potential future use with the water treatment system and water storage tanks.

3.3.20 Emergency Generator

The Emergency Generator will have come into contact with lube oil and distillate fuel oil on its internal surfaces and exhaust gas on its external surfaces during operations. When the emergency generator has been shut down permanently for decommissioning, the internals of the engine will be drained, flushed clean and the remaining flushing fluid disposed off site. The disposal cost of the fluids is

included in the costs table in Appendix B. The generator unit will be sold as used equipment or disassembled in manageable sections for disposal off site.

3.3.21 Water storage Tanks

The water storage tanks (3) will have come into contact with raw and demineralised water and also condensate. This DMP allocates costs for the full disposal of water tanks off site. This would involve the tanks being sold as used equipment or as scrap metal. However, the cleaned water tanks maybe mothballed for potential future use.

3.3.22 Electrical Building

The electrical building contains electrical and electronic equipment to power and control plant utilities, offices and office equipment, computer and control systems, fire detection and extinguishing systems, etc. When the decommissioning works are complete to the extent that all electrical power supplied from the electrical building can be discontinued permanently, the building will be shut down and dismantled, with all equipment being sold or disposed of off-site in line with the WEEE Directive.

3.3.23 Ancillary Plant and Equipment

Sewage Treatment Plant

The sewage treatment plant will be maintained in operation until such time as all onsite decommissioning activities are complete and there no longer exists a need for such a system. The sewage treatment plant will have come into contact with grey water and untreated sewage from the plant. The system will be emptied, flushed clean and the remaining flushing fluid disposed of off-site. The sewage treatment system is skid mounted and will be sold as used equipment or as scrap metal.

Small Storage Tanks

The smaller tanks not mentioned above will be cleaned and any residual material will be sold as used equipment or as scrap metal. The tanks will be disposed of off-site.

Natural Gas

Gas Networks Ireland own and operate the gas pipeline and Above Ground Installation (AGI) on site. In the event of decommissioning of the WIPP site, the gas supply to the site would be shut off by Gas Networks Ireland and the AGI made free of gas and made safe. These items of plant and equipment are viewed as third party assets.

Electrical Systems and Transformers

Medium and low voltage electrical switch gear will be decommissioned and sold as used equipment or as scrap metal. Transformers will be decommissioned and drained of insulating oil which will be disposed off site. The disposal cost of the oil is included in the costs table in Appendix B.

Surface Water Drainage System

The surface water drainage system will be maintained in operation after decommissioning. This system will continue to collect surface water from the site in the attenuation pit, where the water will discharge to the Glanagow Stream via an oily water separator and silt traps.

Chemical Injection Systems/Skids

Chemical injection systems and skids will be cleaned and any residual material will be sold or disposed of, off site. The skids will then be sold as used equipment or as scrap metal.

Pumps

All pumps will be isolated, cleaned, flushed where required, and any remaining flushing fluid disposed of off-site. The pumps will be sold as used equipment or as scrap metal.

Air Filters

The air filters will be removed from the filter housing and disposed of off-site. The filter housings will be sold as used equipment or as scrap metal.

Compressed Air Plant

The compressed air plant will have come into contact with air and lubricating oil during operations. The lubricating oil system will be emptied, flushed clean and any remaining flushing fluid disposed of off-site. The air compressors and associated equipment will be sold as used equipment or as scrap metal.

Gas Storage

All gas cylinders will be returned to the suppliers. The gas storage area will be cleaned and any residual material will be disposed of in accordance with the IE licence.

Decommissioning of Sumps and Underground Pipes

All sumps will be emptied, cleaned and rendered safe. All sumps will be dismantled or broken up, backfilled where required and rendered safe. The underground piping consists of water drainage system piping, fire fighting system piping and potable water system piping. All underground pipes will be flushed clean and made safe.

Laboratory Areas

The laboratory shall be maintained in operation until all other decommissioning activities have been completed. Then the following activities will be undertaken:

- Sale, return to supplier or disposal of all laboratory chemicals.
- Sale or disposal of all chemical containers.
- Cleaning and decontamination, sale or disposal of laboratory instruments and equipment.

Offices, Administration, Reception

The DMP for the administration building will involve the removal of administration equipment and furniture for sale or disposal off site.

Buildings

The DMP for the buildings will consist of the following actions:

- Sale or disposal of all unused materials off site.
- Sale or disposal of all opened containers off site.
- Cleaning and decontamination of the storage areas.

Following decommissioning of the facilities, all buildings, other than those previously mentioned that may be retained, will be demolished and removed off site for disposal.

3.4 Waste Disposal or Recovery

All wastes, both non-hazardous and hazardous, will be removed off site for recycling, recovery, treatment or disposal, as the case may be in compliance with the IE licence conditions. The maximum quantities of hazardous and non-hazardous wastes expected to be onsite, arising from normal operations, are listed in section 2.5.2 above. The maximum quantities of hazardous and non-hazardous wastes arising from the decommissioning activities are:

Table 4 Maximum quantities of waste arising from the decommissioning activities Waste material	EWC Code	Quantity (Tonnes)
Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	17 01 07	5,500
Wood, glass, plastic (excluding 17 02 04*)	17 02 01, 17 02 02, 17 02 03	300
Sludges from on-site effluent treatment other than those mentioned in 10 01 20 (includes transport)	10 01 21	3
Sludges from on-site effluent treatment containing dangerous substances (includes transport)	10 01 20*	1
Aqueous sludges from boiler cleansing containing dangerous substances (includes transport)	10 01 22*	0.5
Aqueous sludges from boiler cleansing other than those mentioned in 10 01 20 (includes transport)	10 01 23	0.5
Other hydraulic oils (including transport)	13 01 13	1
Mineral based non-chlorinated insulating and heat transmission oils	13 03 07*	105
Other engine, gear and lubricating oils	13 02 08	0.6

3.5 Decommissioning Programme

A programme for implementation the decommissioning plan is provided in Appendix A. The programme allows for preparing a planning application and obtaining planning permission, procuring a decommissioning contractor, all of the decommissioning tasks, on-going monitoring during the decommissioning phase on site, undertaking validation testing and the preparation of a validation report, and submission of the validation report to the Agency.

3.6 Ongoing Tasks Following Decommissioning

When the WIPP plant has been successfully decommissioned, there will be minimal, if any, ongoing aftercare tasks. A financial provision will be allowed for routine inspections of the site and general landscaping/caretaking. A security company will be employed to make frequent visits to the site until it is sold.

3.7 Soil or Spoil Recovery

The facility has no requirement under the IE licence to conduct regular soil monitoring. Currently there is no contaminated soil on site. If contaminated soil is uncovered as part of the DMP, it will be managed in accordance with Condition 10.1 of the IE licence.

4 Criteria for Successful Closure

The goal of the DMP is clean closure. An environmental due diligence audit will be undertaken, following decommissioning of the facility, to determine if clean closure has been achieved and that all environmental liabilities have been removed from site. The environmental due diligence audit will demonstrate that the following criteria have been met:

- Compliance with the IE licence requirements.
- All plant and equipment safely decommissioned and decontaminated using standard procedures and appropriately licensed contractors.
- All disposals of wastes, materials and substances complied with regulatory requirements.
- All records relating to decommissioning, decontamination and the disposal of wastes, materials and substances retained throughout the closure process and made available for inspection thereafter for 7 years.
- No soil or groundwater contamination at the site, verified using monitoring data and a soil/groundwater assessment at the time of closure (if required).
- Hazards and environmental risks addressed and the Agency satisfied that the site has been returned to a satisfactory state.
- The Environmental Management System in place and actively implemented during the closure period.

- Sufficient funds in place to cover the full costs.
- The asset is suitable for use as an industrial development site, as demonstrated by the environmental due diligence audit.

5 Closure Plan Validation

5.1 Independent Audit

Prior to the execution of the DMP, BGE/the DMP implementation contractor will engage the services of a suitably qualified and experienced independent environmental consultant. This consultant will be retained to monitor the full execution of the DMP and report on compliance both to BGE/the DMP implementation contractor and the Agency.

In particular, the consultant will report on the following areas:

- Physical verification of removal of all hazardous materials and fluids from site.
- Physical verification that all fluids systems have been emptied, flushed clean and isolated or removed in compliance with the DMP.
- Verification that the facility poses no risk to the environment through contamination of surface water, groundwater, soil or air.
- Issue the Agency with a final report on the execution of the DMP.

5.2 Final Report

In compliance with Condition 10.4 of the IE licence, BGE/ the DMP implementation contractor will issue to the Agency a Final Validation Report, which will include a certificate of the implementation of the DMP.

5.3 Licence Surrender

On completion of the implementation of the DMP, BGE will apply for a surrender of the licence.

6 Closure Plan Costing

Refer to Appendix B for the detailed closure plan costings and notes on the basis of the costings.

6.1 Planning Application to Cork County Council

A planning application will be made to Cork County Council. The planning application fee, newspaper notice cost and costs and expenses for preparing the application will be €4,827 excluding VAT.

6.2 Plant and Equipment Decontamination Costs

The total cost of the plant and equipment decontamination phase of the plant closure is estimated at €153,053 excluding VAT. The unit rate of €3,309 per day for 40 days includes all of the contractor's overheads, facilities, utilities and consumables costs as well as labour costs.

6.3 Plant and Equipment Decommissioning Costs

The total cost of the plant and equipment decommissioning phase of the plant closure is estimated at €285,424 excluding VAT. The unit rate of €1,861 per day for 120 days includes all of the contractor's overheads, facilities, utilities and consumables costs as well as labour costs.

6.4 Demolition Costs

The total cost of the demolition phase of the plant closure is estimated at €206,829 excluding VAT. The costs assumed that all steelwork in buildings will be disassembled and sold as scrap metal. The concrete and concrete block walls, beams and columns and the internal partitions, ceilings, doors, fittings and fixtures etc. will be demolished and the waste removed from site. The unit rate of €1,551 per day for 100 days includes all of the contractor's overheads, facilities, utilities and consumables costs as well as labour costs.

6.5 Waste Recovery or Disposal Costs

The total waste recovery or disposal cost associated with the plant closure is estimated at €947,835 excluding VAT. The cost includes the disposal of the routine wastes, which would be expected to be on site, as listed in Table 2, as well as the wastes arising for the decontamination, decommissioning and demolition of the plant. The tonnage of construction and demolition waste arising from the demolition of the buildings was calculated. The costs are included in Appendix B.

6.6 Environmental Monitoring Costs

On-going environmental monitoring of the site, following the successful decommissioning of the plant will not be required because all materials and plant, which could pose a risk to the environment, will have been removed during the decommissioning phase. BGE has allowed for monthly groundwater and surface water monitoring during the decommissioning works. The cost of this environmental monitoring has been estimated at €37,229 for one year, excluding VAT. This cost is included in Appendix B.

6.7 Site Security Costs

Site security following plant closure and prior to the commencement of the decommissioning works is estimated at €37,229.

Site security during decommissioning will form part of the plant decontamination, decommissioning and demolition costs and the associated costs are included in these.

Following implementation of the DMP, a security contractor will be employed to undertake routine monitoring visits of the site. The anticipated costs for this are €24,819 per annum, excluding VAT.

6.8 Validation Costs

The estimated cost of carrying out the validation audit and preparation of validation report is €16,546 excluding VAT. This cost is included in Appendix B.

6.9 Management and Utility Costs

The overall management and utility costs associated with the decommissioning project are estimated at €305,898 excluding VAT. This cost is included in Appendix B.

7 Closure Plan Review and Update

7.1 Proposed Frequency of Review

In compliance with Condition 10.2.2 of the IE licence, the DMP will be reviewed annually, and any proposed changes will be submitted to the Agency for approval as part of the facility's Annual Environmental Report (AER).

7.2 Proposed Scope of Review

The scope of the annual review of the DMP will cover the following at a minimum:

- Review of compliance with the facility's IE Licence conditions, plus all statutory and regulatory licensing and permitting obligations.
- Review all potential risk areas that may result in surface water, groundwater, soil or air contamination and identify changes that may be require in the DMP.
- Initiate and review all change-order processes relating to the DMP.
- Review of costs associated with changes to the DMP.
- Review all costs associated with the DMP to reflect up to date market conditions.

8 Financial Provision

As outlined in the introduction section, Centrica has put in place a Parental Company Guarantee to cover this liability.

Appendix A

Programme for Implementation of DMP

A1 Programme for Implementation of DMP

ID	Stage	m1	m2	m3	m4	m5	m6	m7	m8	m9	m10	m11	m12	m13	m14	m15	M16	On-going
1	Prepare planning application, apply for permission	█	█	█	█													
2	Appoint DMP implementation contractor					█												
3	Tender and procure decommissioning contractor						█	█										
4	Remove materials and wastes from site								█									
5	Set up segregated C&D/decommissioning waste storage areas								█									
6	Plant and equipment decontamination								█	█								
7	Decommission non-essential services								█	█								
8	Decommission and dismantle equipment									█	█	█	█					
9	Demolish buildings, bunds, plinths etc.									█	█	█	█					
	Remove decommissioning wastes										█	█	█					
10	Monitoring during decommissioning phase								█	█	█	█	█					
11	Validation testing and preparation of validation report										█				█	█		
12	Submit validation report to EPA																█	
13	Site security																	█

Appendix B

Site Decommissioning Costs

B1 Site Decommissioning Costs

Please see site decommissioning costs overleaf.

Closure Costing Table

Task	Description	EW Code	Quantity	Measurement Unit	Unit Rate € 2015	Cost € 2015	Cost € 2016	Cost € 2017	Source of Unit Rates	Unit Rate E, 2017	
1.029											
Planning application	costs for prepare planning application¹					4,784.85	4,784.85	4,827.15		517.07	20,682.90
Plant and equipment decontamination i.e. cleaning and removal of chemicals (and return to suppliers) and other residues (excluding off site waste recovery or disposal costs dealt with below)	Contractor Supervision costs		40	per day	see footnote 1	514.5	20,580.00	20,580.00	Contractor rates	517.07	20,682.90
	Decontamination of all equipment and plant		40	per day	see footnote 2	3292.8	131,712.00	131,712.00	Contractor rates	3,309.26	132,370.56
Plant and equipment decommissioning i.e. removal from service and dismantling of plant and equipment	Contractor Supervision costs		120	per day	see footnote 1	514.5	61,740.00	61,740.00	Contractor rates	517.07	62,048.70
	Decommissioning of all plant and equipment		120	per day	see footnote 3	1852.2	222,264.00	222,264.00	Arup In-house experience	1,861.46	223,375.32
	Plant and equipment recovery or disposal ⁴					0.00	0.00	0.00			0.00
Demolition	Contractor Supervision costs		100	per day	see footnote 1	514.5	51,450.00	51,450.00	Contractor rates	517.07	51,707.25
	Any demolition works required to be carried out in order to remove any risk of environmental pollution and/or return the site to a satisfactory state		100	per day	see footnote 5	1543.5	154,350.00	154,350.00	Arup In-house experience	1,551.22	155,121.75
Waste disposal/recovery	Sludges from on-site effluent treatment other than those mentioned in 10 01 20 (includes transport)	10 01 21	3	tonnes	154.35	463.05	463.05	465.37	Contractor rates	155.12	465.37
	Sludges from on-site effluent treatment containing dangerous substances (includes transport)	10 01 20*	1	tonnes	308.7	308.70	308.70	310.24	Contractor rates	310.24	310.24
	Aqueous sludges from boiler cleansing containing dangerous substances (includes transport)	10 01 22*	0.5	tonnes	308.7	154.35	154.35	155.12	Contractor rates	310.24	155.12
	Aqueous sludges from boiler cleansing other than those mentioned in 10 01 20 (includes transport)	10 01 23	0.5	tonnes	154.35	77.18	77.18	77.56	Contractor rates	155.12	77.56
	Mixed municipal waste (includes transport and landfill levy)	20 03 01	4	tonnes	180.075	720.30	720.30	723.90	Contractor rates	180.98	723.90
	Biodegradable kitchen and canteen waste (includes transport and landfill levy)	20 01 08	1	tonnes	180.075	180.08	180.08	180.98	Contractor rates	180.98	180.98
	Mixed packaging (includes transport and landfill levy)	15 01 06	1.5	tonnes	180.075	270.11	270.11	271.46	Contractor rates	180.98	271.46
	Packaging containing residues of or contaminated by dangerous substances (includes transport and landfill levy)	15 01 10*	0.3	tonnes	282.975	84.89	84.89	85.32	Contractor rates	284.39	85.32
	Wood other than that mentioned in 20 01 37 (includes transport and landfill levy)	20 01 38	4	tonnes	180.075	720.30	720.30	723.90	Contractor rates	180.98	723.90
	Metal (includes transport)	20 01 40	4	tonnes	102.9	411.60	411.60	413.66	Contractor rates	103.41	413.66
	Other hydraulic oils (including transport)	13 01 13	1.2	tonnes	185.22	222.26	222.26	223.38	Contractor rates	186.15	223.38
	Mineral-based non-chlorinated insulating and heat transmission oils	13 03 07*	105	tonnes	257.25	27,011.25	27,011.25	27,146.31	Contractor rates	258.54	27,146.31
	Other organic solvents, washing liquids and mother liquors (including transport)	07 01 04	3	tonnes	185.22	555.66	555.66	558.44	Contractor rates	186.15	558.44
	Other engine, gear and lubricating oils (including transport)	13 02 08	1.6	tonnes	185.22	296.35	296.35	297.83	Contractor rates	186.15	297.83
	Fuel oil and diesel (including transport)	13 07 01	3	tonnes	185.22	555.66	555.66	558.44	Contractor rates	186.15	558.44
	Other emulsions (including transport)	13 08 02	0.5	tonnes	185.22	92.61	92.61	93.07	Contractor rates	186.15	93.07
	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances (includes transport and landfill levy)	15 02 02	0.5	tonnes	282.975	141.49	141.49	142.19	Contractor rates	284.39	142.19
	Other wastes (including mixtures of materials) from mechanical treatment of waste containing dangerous substances (includes transport and landfill levy)	19 12 11*	0.2	tonnes	282.975	56.60	56.60	56.88	Contractor rates	284.39	56.88
	Aqueous rinsing liquids containing dangerous substances (including transport)	11 01 11*	0.1	tonnes	205.8	20.58	20.58	20.68	Contractor rates	206.83	20.68
	Other fuels (including mixtures)	13 07 03	0.1	tonnes	185.22	18.52	18.52	18.61	Contractor rates	186.15	18.61
	Solid combustible wastes containing dangerous substances (including transport)	19 02 09*	0.2	tonnes	205.8	41.16	41.16	41.37	Contractor rates	206.83	41.37
	Paints, inks, adhesives and resins containing dangerous substances (including transport)	20 01 27*	0.1	tonnes	205.8	20.58	20.58	20.68	Contractor rates	206.83	20.68
	Laboratory chemicals, consisting of or containing dangerous substances, including mixtures of lab chemicals (including transport)	16 05 06*	0.1	tonnes	205.8	20.58	20.58	20.68	Contractor rates	206.83	20.68
	Spent catalysts containing dangerous transition metals (17) or dangerous transition metal compounds (including transport)	16 08 02*	0.3	tonnes	205.8	61.74	61.74	62.05	Contractor rates	206.83	62.05
	Waste paint and varnish containing organic solvents or other dangerous substances (including transport)	08 01 11	0.2	tonnes	205.8	41.16	41.16	41.37	Contractor rates	206.83	41.37
	Waste adhesives and sealants containing organic solvents or other dangerous substances (including transport)	08 04 09*	0.1	tonnes	205.8	20.58	20.58	20.68	Contractor rates	206.83	20.68
	Alkaline batteries (except 16 06 03) (including transport)	16 06 04	0.1	tonnes	102.9	10.29	10.29	10.34	Contractor rates	103.41	10.34
	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13 (including transport)	16 02 14	0.1	tonnes	102.9	10.29	10.29	10.34	Contractor rates	103.41	10.34
	wastes from cooling-water treatment	10 01 26	25	tonnes	154.35	3,858.75	3,858.75	3,878.04		155.12	3,878.04
	solutions and sludges from regeneration of ion exchangers	19 09 06	20	tonnes	154.35	3,087.00	3,087.00	3,102.44		155.12	3,102.44
	discarded inorganic chemicals consisting of or containing dangerous substances	16 05 07*	0.05	tonnes	205.8	10.29	10.29	10.34		206.83	10.34
	discarded organic chemicals consisting of or containing dangerous substances	16 05 08*	0.05	tonnes	205.8	10.29	10.29	10.34		206.83	10.34
	other solvents and solvent mixtures	14 06 03*	3	tonnes	205.8	617.40	617.40	620.49		206.83	620.49
Wood, glass, plastic (excluding 17 02 04*)	17 02 01, 17 02 02, 17 02 03	300	tonnes	180.075	54,022.50	54,022.50	54,292.61		180.98	54,292.61	
C&D waste (includes transport and landfill levy)	17 01 07	5500	tonnes	154.35	848,925.00	848,925.00	853,169.63	Contractor rates	155.12	853,169.63	
Environmental Monitoring	Not required post-site restoration					0.00	0.00	0.00			0.00
	Groundwater & surfacewater monitoring during decommissioning (includes lab costs)		12	Per monitoring round	3087	37,044.00	37,044.00	37,229.22	Contractor rates	3,102.44	37,229.22
Site security	Gates, fencing, etc (existing palisade fencing and security gates will be kept in place)					0.00	0.00	0.00			0.00
	CCTV (not required)					0.00	0.00	0.00			0.00
	Security Personnel Costs (based on once per day patrol visits)		12	per month	2058	24,696.00	24,696.00	24,819.48	Contractor rates	2,068.29	24,819.48
	Security prior to decommissioning works (based on twice per day patrol visits) (assume 36 weeks) ⁷		36	per week	1029	37,044.00	37,044.00	37,229.22	Contractor rates	1,034.15	37,229.22
Validation audit	Consultant costs		20	per day	see foot note 1	823.2	16,464.00	16,464.00	Arup In-house experience	827.32	16,546.32
Management and utility costs	Management prior to decommissioning works (assume 36 weeks) ⁷		160	per day	329.28	52,684.80	52,684.80	52,948.22	Arup In-house experience	330.93	52,948.22
	Utilities prior to decommissioning works (assume 36 weeks) ⁸		36	per week	28.812	1,037.23	1,037.23	1,042.42	Current Whitegate power station standing charge rate	28.96	1,042.42
	Management (incl H&S) (assume 18 weeks over duration of decommissioning works)		90	per day	823.2	74,088.00	74,088.00	74,458.44	Arup In-house experience	827.32	74,458.44
	General administration (assume 16 weeks)		80	per day	329.28	26,342.40	26,342.40	26,474.11	Arup In-house experience	330.93	26,474.11
	Insurance (post closure)		1	unit	51,450.00	51,450.00	51,450.00	51,707.25		51,707.25	51,707.25
	Capital works management including design, tendering, contract administration and site monitoring ⁶				0	98,784.00	98,784.00	99,267.29	Arup In-house experience		99,267.29
	Overheads (during decommissioning is included in contractors costs; post closure will be nil)				0	0.00	0.00	0.00			0.00
Total Excluding VAT (€)						0	2,009,634.43	2,009,634.43	2,019,690.35		
Plus contingency at 20% (€)						0	401,926.89	401,926.89	403,893.26		
Overall Total Excluding VAT (€)							2,411,561.31	2,411,561.31	2,423,583.61		

¹ Supervisor rate per day, rate includes overheads and utilities, etc

² Based on hire of vacuum tanker and crew of 3 operatives x 2, rate includes overheads and utilities, etc

³ Based on hire of decommissioning plant and crew of 1 supervisor and 3 operatives, rate includes overheads and utilities, etc

⁴ For the purposes of this report, an assumption has been made that recovery/disposal of plant and equipment is cost neutral, given the potential value of scrap metal and steel. This is based on the decommissioning of a large facility in 2013, where there was a positive scrap value

⁵ Based on hire of demolition plant and crew, rate includes overheads and utilities, etc

⁶ Breakdown of capital works management as follows:

⁷ The 36 weeks accounts for the time to obtain planning permissions and tender and procure the decommissioning contractor

⁸ Only utilities standing charges apply as no power will be consumed post closure

	days	€ per day	€ Total
Capital works management including:			
Design (assume 4 weeks)	20	640	13,171.20
Tendering (include prep of documents, admin & tender assessment)(assume 4 weeks)	20	640	13,171.20
Contract administration (assume 8 weeks)	40	800	32,928.00
Site supervision (assume half time - 12 weeks over decommissioning duration)	60	640	38,400.00
			97,670.40

⁹ Planning application costs:

expenses including newspaper notice	550
planning fee 1ha x class 13 fee = €10 /0.1ha	100
consultants fee: 5 days@ 800 per day	4000

[Guidance to completing the PRTR workbook](#)

PRTR Returns Workbook

Version 1.1.19

REFERENCE YEAR	2017
-----------------------	------

1. FACILITY IDENTIFICATION

Parent Company Name	Bord Gais Energy Ltd
Facility Name	Bord Gais Energy Ltd
PRTR Identification Number	P0830
Licence Number	P0830-02

Classes of Activity

No.	class_name
-	Refer to PRTR class activities below

Address 1	Whitegate Power Station
Address 2	Whitegate (Corkbeg & Glanagow Townlands)
Address 3	
Address 4	
	Cork
Country	Ireland
Coordinates of Location	-8.25029 51.8149
River Basin District	IESW
NACE Code	3511
Main Economic Activity	Production of electricity
AER Returns Contact Name	Melissa Morrissey
AER Returns Contact Email Address	melissa.morrissey@ge.com
AER Returns Contact Position	EHS Manager
AER Returns Contact Telephone Number	0214656515
AER Returns Contact Mobile Phone Number	0860228844
AER Returns Contact Fax Number	N/A
Production Volume	450.0
Production Volume Units	MW
Number of Installations	1
Number of Operating Hours in Year	8760
Number of Employees	31
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
1(c)	Thermal power stations and other combustion installations

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	No
Have you been granted an exemption?	No
If applicable which activity class applies (as per Schedule 2 of the regulations)?	
Is the reduction scheme compliance route being used?	

4. WASTE IMPORTED/ACCEPTED ONTO SITE

[Guidance on waste imported/accepted onto site](#)

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities)?	No
-----------------------------------------------------------------------------------------------------------	----

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

4.1 RELEASES TO AIR

[Link to previous years emissions data](#)

| PRTR# : P0830 | Facility Name : Bord Gais Energy Ltd | Filename : P0830_2017.xls | Return Year : 2017 |

26/03/2018 18:35

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

POLLUTANT		METHOD			Please enter all quantities in this section in KGs			QUANTITY		
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	Emission Point 2	Emission Point 3	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description						
08	Nitrogen oxides (NOx/NO2)	M	ALT	EN15267-3: 2007	460087.0	537.8	0.0	460624.8	0.0	0.0
02	Carbon monoxide (CO)	M	ALT	EN15267-3: 2007	28767.0	0.0	0.0	28767.0	0.0	0.0
11	Sulphur oxides (SOx/SO2)	M	ALT	EN15267-3: 2007	20575.0	2.24	0.0	20577.24	0.0	0.0
86	Particulate matter (PM10)	C	OTH	USEPA Method 5B	1804.0	2.61	0.0	1806.61	0.0	0.0
03	Carbon dioxide (CO2)	C	ETS		989262067.0	0.0	0.0	989262067.0	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

POLLUTANT		METHOD			Please enter all quantities in this section in KGs			QUANTITY	
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
			Method Code	Designation or Description					
					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 C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

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

Additional Data Requested from Landfill operators

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

Landfill:	Bord Gais Energy Ltd			
Please enter summary data on the quantities of methane flared and / or utilised				
	T (Total) kg/Year	M/C/E	Method Used	Facility Total Capacity m3 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

4.2 RELEASES TO WATERS

[Link to previous years emissions data](#)

[PRTR# : P0830 | Facility Name : Bord Gais Energy Ltd | Filename : P0830_2017.xls | Return Year : 2017 |

26/03/2018 18:35

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this only concerns Releases from your facility

RELEASES TO WATERS					Please enter all quantities in this section in KGs				
POLLUTANT		M/C/E	Method Used		QUANTITY				
No. Annex II	Name		Method Code	Designation or Description	SW1	SW2	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
76	Total organic carbon (TOC) (as total C or COD/3)	M	ALT	ISO 17025:2005	Emission Point 1	Emission Point 2			
13	Total phosphorus	M	ALT	ISO 17025:2005	0.0	46.75	46.75	0.0	0.0
					1.96	0.0	1.96	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 WATERS					Please enter all quantities in this section in KGs			
POLLUTANT		M/C/E	Method Used		QUANTITY			
No. Annex II	Name		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

* 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)

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT		M/C/E	Method Used		QUANTITY			
Pollutant No.	Name		Method Code	Designation or Description	SW1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
303	BOD	M	ALT	ISO 17025:2005	Emission Point 1			
238	Ammonia (as N)	M	ALT	ISO 17025:2005	390.0	390.0	0.0	0.0
240	Suspended Solids	M	ALT	ISO 17025:2005	20.0	20.0	0.0	0.0
363	Total Dissolved Solids	M	ALT	ISO 17025:2005	64.7	64.7	0.0	0.0
					33612.0	33612.0	0.0	0.0

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

4.3 RELEASES TO WASTEWATER OR SEWER

[Link to previous years emissions data](#)

| PRTR# : P0830 | Facility Name : Bord Gais Energy Ltd | Filename : P0830_2017.xls | Return Year :

26/03/2018 18:35

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description				
					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 POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
Pollutant No.	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description				
					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

4.4 RELEASES TO LAND

[Link to previous years emissions data](#)

| PRTR# : P0830 | Facility Name : Bord Gais Energy Ltd | Filename : P0830_2017.xls | Return Year : 2017 |

26/03/2018 18:35

SECTION A : PRTR POLLUTANTS

POLLUTANT		RELEASES TO LAND			Please enter all quantities in this section in KGs		
No. Annex II	Name	M/C/E	METHOD		QUANTITY		
			Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) 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 B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

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

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR# : P0830 | Facility Name : Bord Gais Energy Ltd | Filename : P0830_2017.xls | Return Year : 2017 |

26/03/2018 18:35

Please enter all quantities on this sheet in Tonnes

0

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Haz Waste: Name and Licence/Permit No of Recover/Disposer	Non-Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	15 02 03	No	0.095	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	R1	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland		
Within the Country	16 02 14	No	0.207	discarded equipment other than those mentioned in 16 02 09 to 16 02 13	R4	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland		
To Other Countries	16 06 01	Yes	0.88	lead batteries	R4	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Exide Technologies,501349545,Est rada Nacional 3 Km 6,Vila Nova da Rainha,Azambuja,PT2050-306,Portugal	Estrada Nacional 3 Km 6,Vila Nova da Rainha,Azambuja,PT2050-306,Portugal
Within the Country	16 06 01	Yes	0.035	lead batteries	R5	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	KMK Metals Recycling,W0113-03,Cappincur Industrial Est.,Daingean Road,Tullamore,,Ireland	Cappincur Industrial Est.,Daingean Road,Tullamore,,Ireland
Within the Country	16 10 01	Yes	49.012	aqueous liquid wastes containing dangerous substances	D9	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
To Other Countries	16 10 01	Yes	1.045	aqueous liquid wastes containing dangerous substances	R1	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Moerdijk,,Industrieterrein-seaport M152,Vlasweg 12,Moerdijk,NL 4752PW,Netherlands	Industrieterrein-seaport M152,Vlasweg 12,Moerdijk,NL 4752PW,Netherlands
Within the Country	16 10 01	Yes	1.034	aqueous liquid wastes containing dangerous substances	R1	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	McQuillan Envirocare Ltd.,ROC UT 632,11 Ballinderry Road,Lisburn,,BT28 2SA,Ireland	11 Ballinderry Road,Lisburn,,BT28 2SA,Ireland
Within the Country	16 10 01	Yes	0.39	aqueous liquid wastes containing dangerous substances	D9	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Recyfuel SA,DPA D 3200/61080/ RGPED/ 2008/AP-PU,Zonig Industrial d'Hein,4480 Engis,Liege,n/a,Belgium	Zonig Industrial d'Hein,4480 Engis,Liege,n/a,Belgium
To Other Countries	16 10 02	No	0.1	aqueous liquid wastes other than those mentioned in 16 10 01	R1	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland		
Within the Country	20 01 01	No	0.103	paper and cardboard	R3	M	Weighed	Offsite in Ireland	Pulp Recycling Ltd.,WFP-DS-12-0001-04	Unit 3 Riverside,Whitestown Business Park,Tallaght,Dublin 24,Ireland		
Within the Country	20 01 40	No	0.9	metals	R4	M	Weighed	Offsite in Ireland	Cork Metal Company,WFP-CK-10-0067-02	Dublin Hill,,Cork Metal Company,,Ireland		
To Other Countries	06 01 02	Yes	0.032	hydrochloric acid	R5	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Revatech,,Zoningl'Industrial D'Ehein,B 4480,Engis,,Belgium	Zoningl'Industrial D'Ehein,B 4480,Engis,,Belgium
Within the Country	06 01 06	Yes	0.418	other acids	D9	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	McQuillan Envirocare Ltd.,ROC UT 632,11 Ballinderry Road,Lisburn,,BT28 2SA,Ireland	11 Ballinderry Road,Lisburn,,BT28 2SA,Ireland

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non-Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non-Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	06 02 04	Yes	1.998	sodium and potassium hydroxide	R5	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Revatech,,Zoningl'industrial D'Ehein,B 4480,Engis,,Belgium Afvalstoffen Terminal Moerdijk,,Industrieterrein-seaport M152,Vlasweg 12,Moerdijk,NL 4752PW,Netherlands	Zoningl'industrial D'Ehein,B 4480,Engis,,Belgium Industrieterrein- seaport M152,Vlasweg 12,Moerdijk,NL 4752PW,Netherlands
To Other Countries	06 02 04	Yes	0.1	sodium and potassium hydroxide	R1	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	06 02 04	Yes	0.152	sodium and potassium hydroxide	R1	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	12 01 09	Yes	0.005	machining emulsions and solutions free of halogens	R1	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	13 02 08	Yes	0.536	other engine, gear and lubricating oils	D9	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	13 07 01	Yes	5.069	fuel oil and diesel	D9	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	13 08 02	Yes	18.135	other emulsions	D9	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	15 01 06	No	3.195	mixed packaging	R3	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Irel and	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	15 01 10	Yes	0.086	packaging containing residues of or contaminated by dangerous substances	R4	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
To Other Countries	15 01 10	Yes	0.014	packaging containing residues of or contaminated by dangerous substances	D10	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	SAVA GmbH,,1 Osterweute,Ce25541,Brunsb utel,,Germany	1 Osterweute,Ce25541,Brunsb utel,,Germany
Within the Country	15 01 10	Yes	0.05	packaging containing residues of or contaminated by dangerous substances	R5	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
To Other Countries	15 02 02	Yes	0.748	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R1	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate,Little Island,Co. Cork,Ireland	Recyfuel SA,DPA D 3200/ 61080/ RGPED/ 2008/AP-PU,Zonig Industiral d'Hein,4480 Engis,Liege,n/a,Belgium	Zonig Industiral d'Hein,4480 Engis,Liege,n/a,Belgium

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non-Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non-Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	16 02 13	Yes	0.004	discarded equipment containing hazardous components (16) other than those mentioned in 16 02 09 to 16 02 12	R1	M	Weighed	Abroad	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Afvalstoffen Terminal Moerdijk,,Industrieterrein-seaport M152,Vlasweg 12,Moerdijk,NL 4752PW,Netherlands	Industrieterrein-seaport M152,Vlasweg 12,Moerdijk,NL 4752PW,Netherlands
Within the Country	16 03 05	Yes	0.02	organic wastes containing dangerous substances	R1	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	16 05 04	Yes	0.245	gases in pressure containers (including halons) containing dangerous substances	R3	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Biffa Waste Services,P0090/05A,Cottonmount Quarry,140 Mallusk Road,Newtownabbey,Co. Antrim,Ireland	Cottonmount Quarry,140 Mallusk Road,Newtownabbey,Co. Antrim,Ireland
Within the Country	16 05 04	Yes	0.003	gases in pressure containers (including halons) containing dangerous substances	R1	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Rilta Environmental Limited,W0192-03,Block 402,Grant's Drive,Greenogue Business Park,Rathcoole Dublin,Ireland	Grant's Drive,Block 402,Greenogue Business Park,Rathcoole Dublin,Ireland
Within the Country	20 01 08	No	3.935	biodegradable kitchen and canteen waste	R3	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Ireland and	
Within the Country	20 01 21	Yes	0.04	fluorescent tubes and other mercury-containing waste	R5	M	Weighed	Offsite in Ireland	Lehane Environmental and Industrial Services Ltd.,NWCPO-08-04574-03	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Irish Lamp Recycling,WFP-KE-14-0072-01,Woodstock Industrial Estate,,Athy,Co. Kildare,Ireland	Woodstock Industrial Estate,,Athy,Co. Kildare,Ireland
Within the Country	20 01 38	No	5.16	wood other than that mentioned in 20 01 37	R3	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Ireland and	
Within the Country	20 03 01	No	3.387	mixed municipal waste	D1	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Ireland and	
Within the Country	20 03 01	No	4.508	mixed municipal waste	R12	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Ireland and	
Within the Country	20 03 07	No	6.38	bulky waste	D1	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Ireland and	
Within the Country	20 03 07	No	9.54	bulky waste	R12	M	Weighed	Offsite in Ireland	Greenstar Ltd,W0136-02	Unit 1-3 ,Wallingstown Industrial Estate, Little Island, Co. Cork, Ireland	Sarsfield Court Industrial Estate,Glanmire,Cork,n/a,Ireland and	

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

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