

6 CONDITIONS APPLYING TO EMISSIONS FROM THE INCINERATION PROCESS

6.1 Air Emission Conditions and Limits

- 6.1.1 The emissions to air specified in Table 6.1, shall only be permitted from the Emission locations specified in that Table and shall comply with the criteria in Conditions 6.1.6 to 6.1.10.
- 6.1.2 Any percentage limit specified in Table 6.1 shall be based on the averaging period and time span specified in Table 6.2, where the percentage is the percentage of averaging periods within the time span that must not exceed the percentage limit. Compliance with the limits specified in Table 6.1 shall be assessed as described in Conditions 6.4.1 to 6.4.8.
- 6.1.3 The Operator shall carry out continuous (C) monitoring and periodic monitoring (also known as spot sampling, SS) of emissions of the parameters specified in Tables 6.2 and 6.3 respectively, at the sampling location specified in Table 6.1 and subject to the requirements for monitoring specified in Tables 6.2 and 6.3.
- 6.1.4 For any parameter specified in Table 6.1 other than oxygen, visible plume, smoke or odour, all results of monitoring carried out under Condition 6.1.3 shall be corrected to the reference conditions 273K, 101.3 kPa, and at the relevant oxygen concentration specified in Condition 6.1.5. The results of all tests and data used to correct the monitoring results to the reference condition specified in this Condition shall be recorded.
- 6.1.5 For the purposes of Condition 6.1.4, the relevant oxygen concentration shall be whichever is the lower of the measured oxygen concentration expressed as v/v in dry gas, or 11% v/v, dry gas.
- 6.1.6 No continuously monitored daily average concentration in gaseous releases other than carbon monoxide, calculated and recorded as required by Conditions 6.4.1 to 6.4.7, shall exceed the daily average limit for that parameter in Table 6.1.
- 6.1.7 At least 97% of continuously monitored daily average concentration of carbon monoxide in gaseous releases, calculated and recorded as required by Conditions 6.4.1 to 6.4.7, shall not exceed the daily average limit for that parameter in Table 6.1.
- 6.1.8 Subject to Condition 5.3.2, the reported values for the continuously monitored concentrations of those substances listed in column 2 of Table 6.1 in gaseous releases, calculated and recorded as required by Conditions 6.4.1 to 6.4.7, shall comply with at least one of the criteria stipulated below:
- (a) no half hourly average reported values shall exceed the relevant concentration limit stipulated in column 4 of Table 6.1; or
 - (b) 97% of the half hourly average reported values shall not exceed the relevant concentration limit stipulated in column 5 of Table 6.1.

- 6.1.9 Subject to Condition 5.3.2, the reported values for the continuously monitored concentration of carbon monoxide in gaseous releases, calculated and recorded as required by Conditions 6.4.1 to 6.4.7, shall comply with at least one of the criteria stipulated below:
- (a) no half hourly average reported values shall exceed the relevant concentration limit stipulated in column 4 of Table 6.1; or
 - (b) 95% of the 10 minute average reported values shall not exceed the relevant concentration limit stipulated in column 5 of Table 6.1.
- 6.1.10 All reported values for the concentration of those periodically monitored substances listed in column 2 of Table 6.1 in gaseous releases, calculated and recorded as required by Conditions 6.5.8, shall not exceed the relevant concentration limit stipulated in column 4 of Table 6.1.
- 6.1.11 In respect of each occasion of abnormal operation detailed in Condition 5.3, no half hourly average reported value concentration in gaseous releases, calculated and recorded as required by Conditions 6.4.1 to 6.4.7, shall exceed the relevant concentration limit of 150 mgm^{-3} for total dust, 100 mgm^{-3} for carbon monoxide and 20 mgm^{-3} for total organic carbon.
- 6.1.12 The Operator shall record and report the mass emission results for the parameters of the combined emissions specified in Table 6.4, using the method agreed in writing with SEPA (as summarised in Table 6.4). This information shall be reported in a format agreed in writing with SEPA.
- 6.1.13 Information used to estimate mass emissions in compliance with Condition 6.1.12 shall be recorded for each estimate.
- 6.1.14 In respect of each occasion when the "Bagfilter Bypass Relief Device" operates, no waste shall be fed to the incinerator until the Operator has identified the cause of the operation and taken any actions required to reduce the probability of a recurrence of the problem.
- 6.1.15 Each occasion when any operation of the "Bagfilter Bypass Relief Device" takes place shall be viewed as an incident for the purposes of Conditions 2.4.1 to 2.4.5.

6.2 Water Emission Conditions and Limits

- 6.2.1 The emissions to water specified in Table 6.5, shall only be permitted from the emission points and to the destinations specified in that Table, and only after having passed through the sample points specified in that Table.
- 6.2.2 Subject to Condition 6.2.3, no mass concentration emission contribution specified in Table 6.5 shall exceed the limit, or be outwith the range, as appropriate, for the parameters specified in said Table.
- 6.2.3 Where the limit for any parameter in Table 6.5 is suffixed with A, IL or IU the following conditions shall apply in respect of that parameter:
- (a) subject to Conditions 6.2.3(b) and (c), no sample of any emission shall exceed the instantaneous lower limit (IL);

- (b) the limit in Condition 6.2.3(a) may be exceeded where, in any series of samples of any emission taken over a year by SEPA at regular but randomised intervals (as listed in columns 1 and 3 of Table 6.8), no more than the number of samples (as listed, in the corresponding row in columns 2 and 4 of Table 6.8) exceed the IL;
 - (c) the limit in Condition 6.2.3(a) may be exceeded where, in any series of samples of any emission taken over any year in accordance with the sampling plan required under Condition 6.2.5 (as listed in columns 1 and 3 of Table 6.8), no more than the number of samples (as listed, in the corresponding row in columns 2 and 4 of Table 6.8) exceed the IL;
 - (d) notwithstanding Conditions 6.2.3(b) and (c), no sample of any emission shall exceed the instantaneous upper limit (IU);
 - (e) no sample of any emission shall exceed the absolute limit (A) for that parameter in Table 6.5.
- 6.2.4 Measurement and/or sampling of the emissions in Table 6.5 shall be carried out by the Operator at the sampling locations specified in that Table subject to the requirements for monitoring specified in Table 6.6 or 6.7, as appropriate.
- 6.2.5 A sampling plan shall be agreed in writing with SEPA and shall be maintained and reviewed annually. The reviewed sampling plan shall be reported each year for the forthcoming calendar year.
- 6.2.6 The Operator shall record and report the mass emission results for the parameters of the combined emissions specified in Table 6.9, in Annex 2 to this Schedule, using the method agreed in writing with SEPA (as summarised in Table 6.9). This information shall be reported in a format agreed in writing with SEPA.
- 6.2.7 The information used to estimate mass emissions in compliance with Condition 6.2.6 shall be recorded for each estimate.
- 6.3 Monitoring, Measurement and Sampling Techniques**
- 6.3.1 The device, or devices, employed for the continuous monitoring of any substance listed in Table 6.1 shall have a 95% confidence interval determined at the daily average emission limit value specified in Table 6.1 that does not exceed the relevant percentage specified in Table 6.2.
- 6.3.2 In compliance with EN 14181, the device, or devices, employed for the continuous monitoring of any substance listed in Tables 6.1 and 6.5 shall:
- (a) be calibrated at least every 3 years by parallel measurements using the appropriate Comité Européen de Normalisation (CEN) standard; or
 - (b) where no CEN standard is available (and only in that circumstance): be calibrated using the relevant default calibration method given in Table 6.2 or Table 6.6.

- 6.3.3 At least once per year, in compliance with EN 14181, the Operator shall undertake an appropriate series of tests to ensure the satisfactory operation of the continuous pollutant monitoring equipment. The principal aim of the tests shall be to confirm that the relevant continuous pollutant monitoring systems for each substance specified in Table 6.2 or Table 6.6 comply with the confidence levels listed in that table for that substance. The results of the tests shall be recorded.
- 6.3.4 The Operator shall undertake regular checks and maintenance of the continuous monitoring devices in compliance with EN 14181.
- 6.3.5 The Operator shall record all maintenance and calibration work carried out on any continuous monitor required by Conditions 6.3.2, 6.3.3 and 6.2.4. If any calibration work identifies that there has been an under or over estimation of any emission limit value greater than the confidence level for that parameter listed in Table 6.2 or Table 6.6, this fact shall be notified to SEPA by first class post or facsimile by the next working day after the identification.
- 6.3.6 The technique employed for the periodic monitoring of any substance listed in Tables 6.3 and 6.7 shall be:
- (a) the appropriate CEN standard; or
 - (b) where no CEN standard is available (and only in that circumstance): the default method for that substance given in Table 6.3 or Table 6.7, as appropriate.

6.4 Data Handling and Reporting - Continuous Monitoring

- 6.4.1 The measured value of each concentration or parameter required to be continuously monitored by Conditions 6.1.3 and 6.2.4 shall be electronically recorded as required by Table 6.2 or Table 6.6, as appropriate, and the time and date of each recorded measured value shall be recorded. The collection of recorded measured values of any concentration or parameter shall be referred to as the measured value data set for that concentration or parameter.
- 6.4.2 The measured value data sets for concentrations of each continuously monitored substance other than oxygen (or moisture if sample not taken on dry basis), shall be electronically filtered on a real time basis as specified in Condition 6.4.3, and for air emissions, corrected on a real time basis as specified in Condition 6.4.4, in order to produce reported value data sets.
- 6.4.3 Each reported value data set shall:
- (a) exclude measured values recorded during any zero, span and calibration checks on the instrument which gave rise to the values;
 - (b) exclude measured values recorded during the start up and shut down periods during which no waste was being incinerated; and,
 - (c) exclude measured values recorded during the failure of monitoring equipment or other equipment that could affect the accuracy of the measurement of the concentration of those substances.

- 6.4.4 Each measured value for concentrations of those continuously monitored substances listed in Table 6.1, other than oxygen and carbon monoxide, which is included within a reported value data set shall:
- (a) have the relevant confidence interval specified in Table 6.2 subtracted on a real time basis, with a minimum value of zero after subtracting the confidence interval; and,
 - (b) be corrected on a real time basis to the reference conditions specified in Condition 6.1.4 using the contemporaneously recorded temperature, pressure, and oxygen concentration.
- 6.4.5 Subject to Conditions 6.4.6 and 6.4.7, the reported value data sets for concentrations of those continuously monitored substances listed in Table 6.1, other than oxygen and carbon monoxide, shall be divided into discrete and consecutive 30 minute subsets (commencing each hour and half hour) and similar 24 hour subsets (commencing at 00h00 each day), and the average concentration of the respective substance for each such subset shall be calculated and recorded within one minute of the subset becoming complete.
- 6.4.6 To obtain the daily average reported value data set for any substance as required in Condition 6.4.5, no more than five half-hourly average reported value data sets in any day shall be excluded, as required by Conditions 6.4.3(a) and (c), due to a malfunction or maintenance of the continuous monitoring system. No more than ten daily average reported value data sets shall be excluded per year due to malfunction or maintenance of the continuous monitoring system.
- 6.4.7 The reported value data set for the concentration of carbon monoxide shall be divided into discrete and consecutive 10 minute subsets (commencing at 0, 10, 20, 30, 40 and 50 minutes past each hour) and similar discrete 30 minute subsets (commencing each hour and half hour) based on a rolling 24 hour period, and 24 hour subsets (commencing at 00h00 each day), and the average concentration of carbon monoxide for each such subset shall be calculated and recorded within one minute of the subset becoming complete.
- 6.4.8 The Operator shall submit a report containing, as a minimum, the following:
- (a) daily average reported value data sets calculated in accordance with Conditions 6.4.3, 6.4.5, 6.4.6 and 6.4.7, as appropriate;
 - (b) for emissions to air, maximum half-hourly or maximum 10 minute average reported value data sets calculated in accordance with Conditions 6.4.5 or 6.4.7 for each day;
 - (c) for emissions to air, for each reporting period, the percentage of half hourly or 10 minute average reported value data sets calculated in accordance with Conditions 6.4.5 or 6.4.7 that exceed the Emission limit value in column 5 of Table 6.1;
 - (d) for emissions to water, daily average reported value data sets calculated in accordance with Condition 6.4.3;

- (e) graphical representations of the data required by Conditions 6.4.8(a), (b) and (d);
- (f) any reported value data set that exceeds the relevant percentage compliance level for that substance;
- (g) the number of hours the incinerator was operated during each week covered by the report;
- (h) the total mass of each classification of waste burned in the incinerator during the period covered by the report.

6.5 Data Handling and Reporting - Periodic Monitoring

- 6.5.1 Any reference in this Permit to the toxic equivalent concentration of either a polychlorinated dibenzo-p-dioxin (referred to as a "dioxin"), a polychlorinated dibenzofuran (referred to as a "furan"), or dioxin-like polychlorinated biphenyls (referred to as a "PCB") in emissions to air or water shall mean the concentration of that dioxin, furan or PCB multiplied by the equivalence factor for that dioxin, furan or PCB listed in Table 6.10.
- 6.5.2 Any reference to the toxic equivalent concentration of all dioxins and furans means the sum of the toxic equivalent concentrations of all the dioxins and furans listed in Table 6.10.
- 6.5.3 Whenever the toxic equivalent concentration of all dioxins is calculated, the minimum concentration for any dioxin or furan shall be the measurement technique's level of detection for that dioxin or furan.
- 6.5.4 In the report required by Condition 6.5.9, dioxins and furans shall be calculated using each of the International toxic equivalency factors (I-TEF) and World Health Organisation toxic equivalency factors (WHO-TEF) in columns 2 and 3 of Table 6.10.
- 6.5.5 In the report required by Condition 6.5.9, PCBs shall be reported as calculated using each of the World Health Organisation toxic equivalency factors (WHO-TEF) in column 3 of Table 6.10.
- 6.5.6 In the report required by Condition 6.5.9, the mass emission of poly-cyclic aromatic hydrocarbons (referred to as "PAHs") shall be calculated using the molecular masses listed in column 3 of Table 6.11, for the PAHs listed in column 1 of Table 6.11.
- 6.5.7 Whenever periodic monitoring of any substance listed in Table 6.3 or Table 6.7 is being performed, the Operator shall record, or cause or require to be recorded:
 - (a) the time and date the sampling period commenced and terminated;
 - (b) the identity of each person involved in performing the monitoring exercise, and their respective roles;
 - (c) the mass of that substance collected during the said sampling period;

- (d) for air emission monitoring, the volume of gas extracted during the sampling period;
- (e) for water emission monitoring, the volumetric flowrate of the effluents being sampled and the measuring techniques;
- (f) the types of waste being fed to the incinerator during the sampling period, and the average feed rate;
- (g) any abnormal or unusual operating conditions that occurred during the sampling period;
- (h) any deviations from the methods specified in Table 6.3 or Table 6.7, as appropriate; and
- (i) details of any relevant continuous monitoring reported values for the period contemporaneous with the sampling period.

6.5.8 The emission concentration values, standardised where appropriate to the reference condition specified in Condition 6.1.4, for those substances listed in Table 6.3 or Table 6.7 shall be calculated from the information detailed in Condition 6.5.7(c), (d) and (e).

6.5.9 The Operator shall report the results of all periodic monitoring. The report shall contain, as a minimum, the information specified in Condition 6.5.7, and the emission concentration values calculated as a consequence of Condition 6.5.8.

6.6 Residue Management

6.6.1 The residue and waste materials described in Table 6.12, shall only be stored on the Site in the location, method and quantities specified in that Table.

6.6.2 The Operator shall implement and maintain a plan ("the Residue Management Plan") such that generation of each residue generated by the incinerator shall be minimised, and that residues are stored, handled, characterised, processed, and disposed of in the most appropriate manner. The said plan shall be recorded and reviewed no less frequently than once every 2 years, and each such review shall be recorded.

6.6.3 The Residue Management Plan required by Condition 6.6.2 shall ensure that:

- (a) each residue is characterised such that accurate information on the nature, quantity, physical and chemical characteristics (including total soluble fraction and heavy metals soluble fraction) hazard category (if appropriate), polluting potential and type of the residue may be provided to those persons or companies carrying, keeping, treating or disposing of the residue;
- (b) each residue is kept separate from other residues;
- (c) each residue which is a dust, or has the potential to become a dust, shall be stored and handled in enclosed containers at all times;

- (d) residues which require treatment prior to disposal are so treated; and
 - (e) all information pertaining to the implementation of the residue management is recorded.
- 6.6.4 As a minimum, the characterisation required by Condition 6.6.3(a) shall comprise:
- (a) the assessment of the concentration of the substances listed in Table 6.13, in a sample of those residues specified at the relevant frequency for that residue using the relevant test method prescribed in that Table for that substance; and,
 - (b) an assessment of the extent and nature of substances which may leach from a sample of each residue taken no less frequently than once per year.
- 6.6.5 Compliance with Condition 5.1.1(a) shall be assessed by performing tests to ascertain the Total Organic Carbon (TOC) content or loss on ignition of composite samples of dry slag or bottom ashes at a frequency of not less than once every 3 months. The results of the tests shall be recorded and reported.
- 6.6.6 Compliance with Condition 5.1.1(b) shall be assessed by performing tests to ascertain the chemical composition of composite samples of the residues from the fabric filter and composite samples of the residues electrostatic precipitator at a frequency of not less than once every 3 months. The results of the tests shall be recorded and reported.

ANNEX 1 TO SCHEDULE 6 - Emissions to Air

Table 6.1: Emissions to Air ELVs

Required by Condition 6.1.1

Source of Emission	Emission point number / Location on Site Plan	Emission point 1 Incinerator stack located at point A			
	Emission source	Incinerator			
	Stack height/ diameter (m)	46 metres and 0.8 metres diameter			
	NGR	HU 46894448			
Monitoring Details	Type of Monitoring	C	SS		
	Sampling Location	Main stack	Main stack		
Limits for Parameters from Emission Source	Basis of limit value	Daily average (mg/m ³)	100% of all half hourly averages (mg/m ³)	95% of all 10 minute averages (mg/m ³)	Average value over sample period(mg/m ³)
	Carbon monoxide	50	100	150	100
	Basis of limit value	Daily average (mg/m ³)	100% of all half hourly averages (mg/m ³)	97% of all half hourly averages (mg/m ³)	Average value over sample period (mg/m ³)
	Total dust	10	30	10	30
	Gaseous and vaporous organic substances, expressed as total organic carbon	10	20	10	20
	Hydrogen chloride	10	60	10	60
	Sulphur dioxide	50	200	50	200
	Nitrogen monoxide and nitrogen dioxide (expressed as NO₂)	300	-	-	400
	Cd and Tl and their compounds taken together, expressed as cadmium (Cd) and thallium (Tl)	-	-	-	0.05
	Hg and its compounds as Hg	-	-	-	0.05
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni, and V and their compounds taken together, expressed as a sum of the above metal species	-	-	-	0.5
	Dioxins and furans (I-TEF)	-	-	-	0.1 ng/m ³
	Smoke	-	-	-	Ringelmann Shade 1 to BS 2742: 1969 (as amended)
	Visible plume	-	-	-	No persistent mist droplets or fume
Ammonia if SNCR used	-	-	-	20	

Table 6.2: Emissions to Air Continuous Monitoring Requirements

Required by Condition 6.1.2 and 6.1.3

Parameter	Emission point number	Continuous (C)				
		Monitoring device type	Sample frequency	Maximum 95% confidence interval at daily average limit value	Averaging period and time span for percentage limits	Default calibration method
Oxides of nitrogen as nitrogen dioxide	1	Main stack/Immediately after boiler	At least one sample every 30 seconds	20%	Half hourly based on a calendar year	BS 14792
Total dust	1	Main stack	At least one sample every 30 seconds	30%	Half hourly based on a calendar year	ISO 10155: 1995
Total organic carbon	1	Main stack	At least one sample every 30 seconds	30%	Half hourly based on a calendar year	
Hydrogen chloride	1	Main stack	At least one sample every 30 seconds	40%	Half hourly based on a calendar year	
Sulphur dioxide	1	Main stack	At least one sample every 30 seconds	20%	Half hourly based on a calendar year	BS 6069
Carbon monoxide	1	Main stack/Immediately after boiler	At least one sample every 30 seconds	10%	10 minute and half hourly based on a rolling 24 hour period	ISO 12039
Oxygen	1	Main stack	At least one sample every 30 seconds	-	-	ISO 12039
Temperature in secondary chamber	1	ACC	At least one sample every 30 seconds	-	-	Suction pyrometer to carry out temperature traverse across the chamber
Temperature of exhaust gas	1	Main stack	At least one sample every 30 seconds	-	-	BS ISO 14146:1999
Pressure of exhaust gas	1	Main stack	At least one sample every 30 seconds	-	-	BS ISO 14146:1999
Water vapour content of exhaust gas	1	Main stack	At least one sample every 30 seconds	-	-	USEPA Method 4

Table 6.3: Emissions to Air Monitoring Spot Sampling Requirements

Required by Condition 6.1.3

Parameter	Emission point number	Spot Sampling (SS)		
		Standard	Frequency	Operational mode
Oxides of nitrogen as nitrogen dioxide	1	ISO 10849	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Carbon monoxide	1	ISO 12039	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Total dust	1		Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Total organic carbon	1	BS 13649 (speciation)	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Hydrogen chloride	1		Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Sulphur dioxide	1	ISO 7935	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Temperature of gases exiting secondary combustion chamber	1	Thermocouple located near inner wall and after last injection of combustion gases	Twice per year	Under the most unfavourable operating conditions anticipated
Oxygen	1	ISO 12039	Twice per year	Under the most unfavourable operating conditions anticipated
Pressure of exhaust gas at sampling point	1		Twice per year	Concurrent with substance sampling
Temperature of exhaust gas at sampling point	1	BS EN 13284 part 1 Calibrated thermocouple	Twice per year	Concurrent with substance sampling
Water vapour content of exhaust gas	1	prEN 14790	Twice per year	Concurrent with substance sampling
Heavy metals Cd, Tl, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, Ni, and V and their compounds taken together	1	BS EN 13211 for Hg BS EN 1948:1997	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Dioxins and furans	1	BS EN 1948:1997	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate
Dioxin-like polychlorinated biphenyls and poly-cyclic aromatic hydrocarbons	1	BS ISO 11338 pts 1 and 2 for PAH	Twice per year	At a rate representative of normal operation and not less than 70% of maximum waste loading rate

Table 6.4: Mass Emissions to Air

Required by Condition 6.1.12

Parameter	Combined emissions (number)	Method summary	Mass emissions result to be recorded as
Carbon Monoxide	1	The mass of carbon monoxide released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg carbon monoxide per tonne waste incinerated and kg carbon monoxide per year
Oxides of nitrogen (as NO ₂)	1	The mass of oxides of nitrogen released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg oxides of nitrogen per tonne waste incinerated and kg oxides of nitrogen per year
Oxides of sulphur (as SO ₂)	1	The mass of oxides of sulphur released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg oxides of sulphur per tonne waste incinerated and kg oxides of sulphur per year
Particulate matter	1	The mass of particulate matter released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg particulate matter per tonne waste incinerated and kg particulate matter per year
Hydrogen chloride	1	The mass of hydrogen chloride released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg hydrogen chloride per tonne waste incinerated and kg hydrogen chloride per year

Parameter	Combined emissions (number)	Method summary	Mass emissions result to be recorded as
Total organic carbon	1	The mass of total organic carbon released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg total organic carbon per tonne waste incinerated and kg total organic carbon per year
Total metal compounds	1	The mass of total metal compounds released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg total metal compounds per tonne waste incinerated and kg total metal compounds per year
Dioxins and furans	1	The mass of dioxins and furans released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg dioxins and furans as I-TEF per tonne waste incinerated and kg dioxins and furans as I-TEF per year
Dioxin-like polychlorinated biphenyls	1	The mass of dioxin-like polychlorinated biphenyls released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg dioxin-like polychlorinated biphenyls as WHO-TEF per tonne waste incinerated and kg dioxin-like polychlorinated biphenyls as WHO-TEF per year
Poly-cyclic aromatic hydrocarbons	1	The mass of polycyclic aromatic hydrocarbons released shall be calculated by multiplication of the measured concentration value and the contemporaneously derived volumetric flow rate of the waste combustion gases such that an instantaneous mass release rate is derived and that release rate shall be integrated in such a manner so as to quantify the mass released over a suitable time period. The emission concentrations and flowrates must be at stack conditions. Wet gas at stack temperature and pressure with no correction for the oxygen content of the flue gases.	kg poly-cyclic aromatic hydrocarbons per tonne waste incinerated and kg poly-cyclic aromatic hydrocarbons per year

ANNEX 2 TO SCHEDULE 6 - Emissions to Water**Table 6.5: Emissions to Water/**

Required by Condition 6.2.1

Source of Emission	Emission number point / Location on site plan	Emission point E	Emission point D
	Emission source	On-site effluent treatment plant	On-site effluent treatment plant
	Destination	Connection into private sewer at Shetland Base Services with the final outlet the coastal water of Bressay Sound at NGR HU47034457	Connection into the treated leachate outfall from the Gremista landfill and thence into the outfall from the Waste Water treatment plant operated by Scottish Water and finally into Lerwick Harbour
	NGR	HU47154450	Grid ref HU 46804460
Monitoring Details	Sampling location	Sampling chamber on discharge line from water treatment pump at NGR HU46894448 shown as point D on location plan	Sampling chamber on discharge line from water treatment pump at NGR HU46894448 shown as point D on location plan
Limits for Parameters from Emission Source	Basis of limit value	Emission limit value (mg/l)	Emission limit value (mg/l)
	Total suspended solids	30 (IL) 45 (IU)	30 (IL) 45 (IU)
	Mercury and its compounds as Hg	0.0012 (A)	0.01 (A)
	Cadmium and its compounds as Cd	0.01 (A)	0.01 (A)
	Thallium and its compounds as Tl	0.05 (A)	0.05 (A)
	Arsenic and its compounds as As	0.15 (A)	0.15 (A)
	Lead and its compounds as Pb	0.2 (A)	0.2 (A)
	Chromium and its compounds as Cr	0.5 (A)	0.5 (A)
	Copper and its compounds as Cu	0.02(A)	0.5 (A)
	Nickel and its compounds as Ni	0.5 (A)	0.5 (A)
	Zinc and its compounds as Zn	0.16 (IL) 0.32 (UL)	0.3 (A)
	Dioxins and furans (I-TEF)	0.3 ng/l (A)	0.3 ng/l (A)
	Iron	4.0 (A)	10 (A)
	pH	No less than 6 and no greater than 9	No less than 6 and no greater than 9
	Temperature	35°C	35°C
Flow	36m ³ in any 24 hour period	36m ³ in any 24 hour period	
COD	-	No limit set	

Table 6.6: Emissions to Water Continuous Monitoring Requirements

Required by Condition 6.2.4

Parameter	Emission point number	Monitoring device type	Default calibration method
pH	2 and 3	Continuous	SCA Measurement of electric conductivity and determination of pH ISBN 0117514284
Temperature	2 and 3	Continuous	Thermometer
Flow	2 and 3	Continuous	SCA Estimation of flow and load ISBN 011752364X

Note: All analysis shall be undertaken on unfiltered samples.

Table 6.7: Emissions to Water Spot Sampling Requirements

Required by Condition 6.2.4

Parameter	Emission point number	Spot Sampling (SS)		
		Method	Frequency	Standard
Suspended solids	2 and 3	Flow proportional sampler	Daily of 24 hour flow proportional sample taken	ISO 11929:1997, EN 872
Mercury and its compounds, expressed as Hg	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Cadmium and its compounds, expressed as Cd	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Thallium and its compounds, expressed as Tl	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Arsenic and its compounds, expressed as As	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Lead and its compounds, expressed as Pb	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Chromium and its compounds, expressed as Cr	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Copper and its compounds, expressed as Cu	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Nickel and its compounds, expressed as Ni	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Zinc and its compounds, expressed as Zn	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	BS 6068 Section 2.60:1998
Dioxins and furans	2 and 3	Flow proportional sampler	Once every six months of 24 hour flow proportional sample	To be advised
COD	2 and 3	Flow proportional sampler	Monthly of 24 hour flow proportional sample	To be agreed

Note: All analysis shall be undertaken on unfiltered samples.

Table 6.8: Two Tier Consent TableRequired by Condition 6.2.3

Series of samples taken in any period of 12 consecutive months	Maximum permitted number of samples which fail to conform	Series of samples taken in any period of 12 consecutive months	Maximum permitted number of samples which fail to conform
1 - 7	1	172 - 187	14
8 - 16	2	188 - 203	15
17 - 28	3	204 - 219	16
29 - 40	4	220 - 235	17
41 - 53	5	236 - 251	18
54 - 67	6	252 - 268	19
68 - 81	7	269 - 284	20
82 - 95	8	285 - 300	21
96 - 110	9	301 - 317	22
111- 125	10	318 -334	23
126 - 140	11	335 - 350	24
141 - 155	12	351 - 365	25
156 - 171	13		

Table 6.9: Mass Emissions to WaterRequired by Condition 6.2.6

Parameter	Combined emissions (number)	Method (summary)	Mass emission result to be recorded as
Suspended solids	2 and 3	Totalised daily flow x daily analysis	kg suspended solids per tonne waste incinerated and kg suspended solids compounds per year
Mercury and its compounds, expressed as Hg	2 and 3	Totalised daily flow x daily analysis	kg mercury compounds per tonne waste incinerated and kg mercury compounds per year
Cadmium and its compounds, expressed as Cd	2 and 3	Totalised daily flow x daily analysis	kg cadmium compounds per tonne waste incinerated and kg cadmium compounds per year
All other heavy metals	2 and 3	Totalised daily flow x daily analysis	kg metal compounds per tonne waste incinerated and kg metal compounds per year
Dioxins and furans	2 and 3	Totalised daily flow x daily analysis	kg dioxins and furans as I-TEF per tonne waste incinerated and kg dioxins and furans as I-TEF per year

ANNEX 3 TO SCHEDULE 6 - Toxic Equivalence Factors**Table 6.10: Toxic Equivalence Factors for Dioxins, Furans and Dioxin-like PCBs**

Required by Condition 6.5.1

Substance	I-TEF Equivalence Factor	WHO-TEF Equivalence Factor
Dioxins		
2,3,7,8 Tetrachlordibenzodioxin (TCDD)	1	1
1,2,3,7,8 Pentachlordibenzodioxin (PeCDD)	0.5	1
1,2,3,4,7,8 Hexachlordibenzodioxin (HxCDD)	0.1	0.1
1,2,3,6,7,8 Hexachlordibenzodioxin (HxCDD)	0.1	0.1
1,2,3,7,8,9 Hexachlordibenzodioxin (HxCDD)	0.1	0.1
1,2,3,4,6,7,8 Heptachlordibenzodioxin (HpCDD)	0.01	0.01
Octachlordibenzodioxin (OCDD)	0.001	0.0001
Furans		
2,3,7,8 Tetrachlordibenzofuran (TCDF)	0.1	0.1
2,3,4,7,8 Pentachlordibenzofuran (PeCDF)	0.5	0.5
1,2,3,7,8 Pentachlordibenzofuran (PeCDF)	0.05	0.05
1,2,3,4,7,8 Hexachlordibenzofuran (HxCDF)	0.1	0.1
1,2,3,6,7,8 Hexachlordibenzofuran (HxCDF)	0.1	0.1
1,2,3,7,8,9 Hexachlordibenzofuran (HxCDF)	0.1	0.1
2,3,4,6,7,8 Hexachlordibenzofuran (HxCDF)	0.1	0.1
1,2,3,4,6,7,8 Heptachlordibenzofuran (HpCDF)	0.01	0.01
1,2,3,4,7,8,9 Heptachlordibenzofuran (HpCDF)	0.01	0.01
Octachlordibenzofuran (OCDF)	0.001	0.0001
Non-ortho PCBs		
3,4,4',5 Tetrachlorbiphenol (TCB) (81)	-	0.0001
3,3',4,4' Tetrachlorbiphenol (TCB) (77)	-	0.0001
3, 3', 4, 4', 5 Pentachlorbiphenol (PeCB) (126)	-	0.1
3, 3', 4, 4', 5, 5' Hexachlorbiphenol (HxCB) (169)	-	0.01
Mono-ortho PCBs		
2, 3, 3', 4, 4' Pentachlorbiphenol (PeCB) (105)	-	0.0001
2, 3, 4, 4', 5 Pentachlorbiphenol (PeCB) (114)	-	0.0005
2, 3', 4, 4', 5 Pentachlorbiphenol (PeCB) (118)	-	0.0001
2', 3, 4, 4', 5 Pentachlorbiphenol (PeCB) (123)	-	0.0001
2, 3, 3', 4, 4', 5 Hexachlorbiphenol (HxCB) (156)	-	0.0005
2, 3, 3', 4, 4', 5' Hexachlorbiphenol (HxCB) (157)	-	0.0005
2, 3', 4, 4', 5, 5' Hexachlorbiphenol (HxCB) (167)	-	0.00001
2, 3, 3', 4, 4', 5, 5' Heptachlorbiphenol (HpCB) (189)	-	0.0001

Table 6.11: Molecular Masses for PAHs

Required by Condition 6.5.6

Substance	CAS no.	Molecular Mass (g)
PAHs		
Benzo(a)pyrene	50-32-8	252.32
Benzo(ghi)perylene	191-24-2	276.34
(Benzo(k)fluoranthene	207-08-9	252.32
Fluoranthene	206-44-0	202.26
Indeno(1,2,3-cd)pyrene	193-39-5	276.34
Benzo(b)fluoranthene	205-99-2	252.32

ANNEX 4 TO SCHEDULE 6 - Waste**Table 6.12: Waste Handling and Storage**

Required by Condition 6.6.1

Description of waste	Location of storage	Method of storage	Maximum permitted quantity	Storage conditions
Bottom Ash	Bottom ash Storage area	Skips	30 tonnes	Indoors
Air pollution residues from ACC, Electrostatic precipitator and bag filter	APC Residue storage area	1 tonne nominal weight Big Bags	25 tonnes	Indoors
Metal recovered from bottom ash	Bottom as storage area	Skips	3 tonnes	Indoors

Table 6.13: Residue Waste Assessment

Required by Condition 6.6.4(a)

Substance	Residue stream	Monitoring frequency	Analytical method
Mercury	All residues	At least once in every 12 month period during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA
Cadmium	All Residues	At least once in every 12 month period during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA
All other soluble heavy metals	All residues	At least once in every quarter during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA
Dioxins, dibenzofurans, dioxin-like polychlorinated biphenyls and polycyclic aromatic hydrocarbons	All residues	At least once in every 12 month period during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA
Loss on ignition	Residues from the gas treatment filter system and bottom ash	At least once in every quarter during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA
Free lime	Residues from the gas treatment filter system	At least once in every quarter during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA
Moisture	Residues from the gas treatment filter system	At least once in every quarter during which the process has operated for a total aggregate period of 12 hours or more	As agreed in writing with SEPA

EXPLANATORY NOTES

(These Explanatory Notes do not form part of the Permit)

1. BAT

It should be noted that Regulation 9(11) & (12) of the Regulations specify that there is an implied condition in every permit that, in operating the installation or mobile plant, the Operator shall use the best available techniques (BAT) for preventing or, where that is not practicable, reducing Emissions from the installation or mobile plant.

This implied condition does not apply in relation to any aspect of the operation of the installation or mobile plant, which is regulated by a specific condition of the permit. Examples of aspects of the operation that have not been regulated by specific conditions are management and supervision systems, training and qualifications, and maintenance in general.

BAT is defined in Regulation 3 of the Regulations as follows:

"Best available techniques" means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole;

"available techniques" means those techniques which have been developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the cost and advantages, whether or not the techniques are used or produced inside the UK, as long as they are reasonably accessible to the operator;

"best" means in relation to techniques, the most effective in achieving a high general level of protection of the environment as a whole;

"techniques" includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.

Schedule 2 of the Regulations specifies the matters to be taken into account in determining BAT.

In considering BAT, SEPA would expect the Operator to have regard to all relevant PPC sectoral or other technical guidance, including BAT Reference Documents published by the European Commission and UK technical guidance published by the Environment Agency.

2. GENERAL STATUTORY REQUIREMENTS

The permit does not detract from any other statutory requirements applicable to you in respect of the Permitted Installation, such as any need to obtain planning permission or building regulations approval or any responsibilities under legislation for health, safety and welfare in the workplace.

3. APPEALS

If you are aggrieved by any of the conditions of the permit, you should initially contact the local SEPA Office at the address or telephone number below. Further information on your right of appeal and the appeals procedure is contained Regulation 22 and Schedule 8 of the Regulations.

4. SUBSISTENCE CHARGES

An annual subsistence charge will be payable in respect of the permit in terms of the Pollution Prevention and Control (Scotland) Charging Scheme 2002 or any relevant charging scheme made under Section 41 of the Environment Act 1995, copies of which are available from SEPA.

5. ADDRESS AND TELEPHONE NUMBERS

The contact address and telephone number for all information to be reported in terms of the permit is as follows: -

Scottish Environment Protection Agency
Greyhope House
Greyhope Road
Aberdeen
AB11 9RD

Tel No: 01224 248338

Fax No: 01224 248591

All reports and notifications should also be copied to the SEPA Lerwick Office at:

Scottish Environment Protection Agency
Shetland Office
The Espalande
Lerwick
ZE1 0LL

Tel No: 01595 696926

Fax No: 01595 696946

6. REVIEW OF CONDITIONS

The conditions of the permit will be periodically reviewed by SEPA.

7. PROPOSED CHANGE IN OPERATION OF INSTALLATION

It is a requirement of Regulation 12 of the Regulations that, if you propose to make a change in the operation of the installation, you must notify SEPA at least 14 days before making the change. The requirement under Regulation 12 does not apply if you have already made an application to SEPA for the variation of the conditions of the permit containing a description of the proposed change.

N.B. the requirements of Regulation 12 are in addition to any obligations you may have under the permit itself to only operate the Permitted Installation in the manner set out in the permit and to notify SEPA of proposed changes to the Permitted Installation.

Regulation 13 and Schedule 7 of the Regulations provide details on applications for variation of the permit in respect of proposed changes and substantial changes in operation.

"Change in operation" and "substantial change in operation" are defined in Regulation 2 of the Regulations.

8. ENFORCEMENT & OFFENCES

If SEPA is of the opinion that you have contravened, or are contravening or are likely to contravene a condition of the permit it may serve an Enforcement Notice. Further details on Enforcement Notices are provided in Regulation 19 of the Regulations.

If SEPA is of the opinion that the operation of an installation or mobile plant involves a risk of serious pollution it must, in certain circumstances, serve a Suspension Notice on you. Further details on Suspension Notices are provided in Regulation 20 of the Regulations.

It is an offence to operate an installation or mobile plant covered by the Regulations without a permit or in breach of the conditions of the permit. It is an offence to fail to comply with the requirements of an Enforcement or Suspension Notice. It is an offence to intentionally make a false entry in any record required to be kept under a condition of a permit. Further details on offences and on penalties liable to be imposed upon conviction of an offence are provided in Regulation 30 of the Regulations.

Directors, managers and other individuals within a company may be held personally liable for offences under the Regulations.

All personnel who are responsible for fulfilling any condition of the permit should be made aware of these facts.

9. RECORDED SYSTEMS, PROCEDURES OR INFORMATION RECORDING/ RETURN REQUIREMENTS

Where a condition requires any system, procedure or information record/return, the Operator may demonstrate compliance by making use of any relevant existing written system used for any other purpose and which meets the requirements of the relevant condition.

10. SYSTEMATIC ASSESSMENT (AND REVIEW)

Where a condition of the permit requires a "systematic assessment (and review)", the assessment should be undertaken in a methodical and arranged manner. If you require guidance on the scope or extent of any assessment (and review) required to be undertaken, you should contact your local SEPA office at the address or telephone number given above.

11. COMMERCIAL CONFIDENTIALITY

Regulation 27 of the Regulations requires that SEPA maintain a register ("a Public Register"), whilst Schedule 9 of the Regulations sets out what the Public Register shall contain. Regulation 29(2) provides you with an opportunity to apply for exclusion from the Public Register for certain confidential information. Where you are required to supply SEPA with information whether via a condition in this permit, or otherwise, and that information falls under Schedule 9, if you wish it to be excluded from the public register as confidential information, then such a submission must include an application made under Regulation 29(2).