Permit with Introductory Note

Environmental Permitting (England and Wales) Regulations 2016

PyroCore Ltd

Unit 203C

Burcott Road

Avonmouth

Bristol

BS11 8AP

Permit No: EP290

Introductory Note

This introductory note does not form a part of the Permit.

The following Permit is issued under Regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016 S.I. No. 1154, as amended, ("the EP Regulations") to operate a Regulated Facility, to the extent authorised by the Permit.

The Permit includes conditions that must be complied with, limited by Regulation 2(h) to emissions to **air** and **water** only.

The Regulated Facility is subject to Industrial Emissions Directive 2010/75/EU (IED) of the European Parliament and Council of 24th November 2010, which was transposed into UK legislation by the Environmental Permitting (England and Wales) (Amendment) Regulations 2013 S.I. No. 390 (subsequently superseded by the EP Regulations 2016). For the purposes of this legislation the Regulated Facility is a small waste incineration plant, currently without dedicated UK Government guidance to local authorities.

Brief description of the installation regulated by this permit

The main purpose of the Regulated Facility is factory acceptance tests and performance validation trials using permitted waste of PyroCore's Phoenix model small waste incineration plants (specifically co-incineration plants) prior to being delivered to the clients.

Solid waste undergoes pyrolysis (effectively a cooking process in the absence of air) and gasification (change into a fuel gas) for subsequent thermal oxidation (combustion releasing heat) and energy conversion to steam and electrical power. The waste feed system is mechanically rated at 500 – 600kg per hour, equivalent to 3.2-3.6 MW_{th} rated thermal input (release of heat) from non-hazardous waste; the EP Regulations restricts the Permit's authorisation to 3 tonnes per hour of non-hazardous waste. As the potential throughput could exceed the permissible limit for hazardous waste these units can only accept non-hazardous waste under this type of permit.

Effective pollutant abatement will be achieved through the injection of a sodium bicarbonate reactant to achieve acid gas neutralisation and powdered activated carbon to abate potential dioxins, furans, volatile heavy metals, and volatile organic compounds (VOCs). A ceramic filter will facilitate removal of particulate bound heavy metals and other particulates and the reactants of the sodium bicarbonate, namely NaCl (sodium chloride), Na_2SO_4 (sodium sulphate), trace NaF (sodium fluoride) and other very minor salts.

Exhaust gases are released to atmosphere from a chimney stack 10 metres above ground level. Water is not used to clean waste gases.

The storage of waste pending use as fuel are directly associated activities.

Solid char residues will be collected and initially landfilled but in the long term this will potentially be reused/recovered as biochar. Residues from the flue gas cleaning plant will be collected separately and landfilled.

Other PPC Permits relating to this installation		
Permit Holder	Permit Number	Date of Issue
There are no other Permits relating to this installation		

Superseded Licenses/Consents/Authorisations relating to this installation		
Holder	Reference Number	Date of Issue
There are no other Permits relating to this installation		

Talking to us

If you contact the Regulator about this Permit, please quote the Permit Number.

The Operator should use the Emergency Hotline telephone number (0117 922 2050), or any other number notified to it to give a notification under Condition 5.1.1.

Confidentiality

The Permit requires the Operator to provide information to the Regulator. The Regulator will place the information onto the public registers in accordance with the requirements of the EP Regulations. If the Operator considers that any information provided is commercially confidential, it may apply to the Regulator to have such information withheld from the register as provided in the EP Regulations. To enable the Regulator to determine whether the information is commercially confidential, the Operator should clearly identify the information in question and should specify clear and precise reasons.

Variations to the Permit

This Permit may be varied in the future. The Status Log within the Introductory Note to any such variation will include summary details of this Permit, variations issued up to that point in time and state whether a consolidated version of the Permit has been issued.

Surrender of the Permit

Before this Permit can be wholly or partially surrendered, notification of the intention to cease operating the installation (in whole or in part) must be made in accordance with

Regulation 24 of the EP Regulations. For the notification to be correctly made, the date on which the Regulator receives the notification must be at least 20 working days before the date on which surrender is to take effect.

Transfer of the Permit or part of the Permit

Before the Permit can be wholly or partially transferred to another person, a joint application to transfer the Permit must be made by both the existing and proposed holders, in accordance with Regulation 21 and Schedule 5 of the EP Regulations. A transfer will be allowed unless the Regulator considers that the proposed holder will not be the person who will have control over the operation of the installation or will not ensure compliance with the conditions of the transferred Permit.

Annual Subsistence Fee

In accordance with Regulation 66 of the EP Regulations, the holder of a permit is required to pay a fee for the subsistence of the Permit. This fee is payable annually on 1st April. You are advised that under the provisions of Regulation 66 of the EP Regulations, if you fail to pay the fee due promptly, the Regulator may revoke the Permit. You will be contacted separately each year in respect to this payment.

Status Log

Detail	Date	Comment
Environmental Permitting Regulations application	31/03/2022	by PyroCore Ltd
Draft of permit sent	16/06/2022	
Permit determined	29/07/2022	Small Waste Incineration Plant Permit

End of introductory Note.

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Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number **EP290**

Bristol City Council (the Regulator) in exercise of its powers under Environmental Permitting (England and Wales) Regulations 2016, hereby authorises:

PyroCore Ltd ("the Operator"),

Company registration number **11275263**

Of / whose Registered Office is

Unit 203C

Burcott Road

Avonmouth

Bristol

BS11 8AP

to operate an Installation at

Unit 203C

Burcott Road

Avonmouth

Bristol

BS11 8AP

National Grid Reference **ST52751 80117**

What Three Words: **//scan.demanding.comedians**

to the extent authorised by and subject to the conditions of this Permit.

Signed: [redacted]

[redacted]

Per pro Director of Management of Place duly authorised on behalf of Bristol City Council

Date 29/07/2022

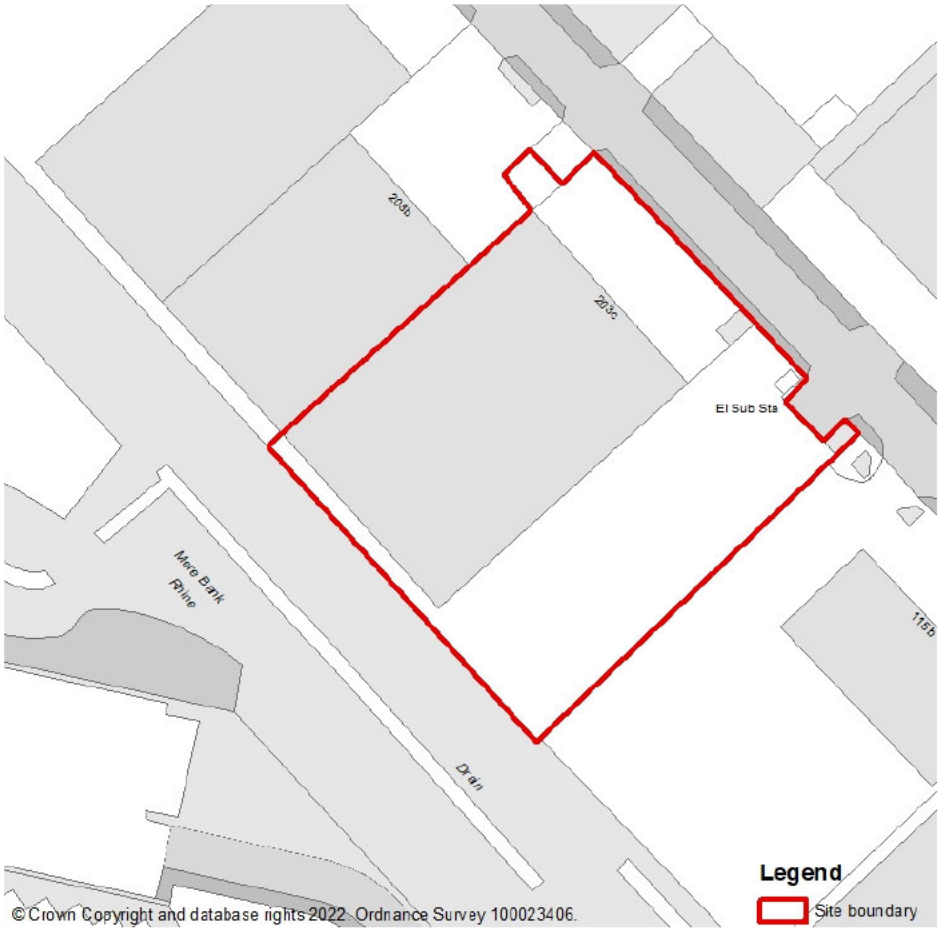
1 The Permitted Installation

1.1.1 The Operator is authorised to carry out the activities and/or the associated activities specified in Table 1.1.1.

Table 1.1.1

Activity to which the Regulations apply	Description of specified activity	Limits of specified activity
Schedule 13, Small Waste Incineration Plant (SWIP)	A small waste incineration plant, burning the gas produced by the pyrolysis of wastes	Receipt of waste to the emission of exhaust gas and disposal of waste and residues arising
Directly Associated Activity	Storage, handling, and processing of wastes	Storage of wastes within the site boundary

1.1.2 The activities authorised under Condition 1.1.1 shall not extend beyond the Site, being the area shown edged in red on the plan below.



IED Article 45(2)

1.1.3 The Regulated Facility authorised under Condition 1.1.1 shall only receive wastes that are specified in Table 1.1.3 in Schedule 1 of this permit.

Amalgam waste from dental care and batteries containing mercury or other wastes are NOT authorised by Condition 1.1.1.

1.1.4 The total waste incinerating or co-incinerating capacity of the plant shall be limited to 600 kg per hour for biomass and non-hazardous waste.

1.1.5 The maximum design throughputs for the facility are

- Non-hazardous wastes (unless specified below) – 600 kg/hour

1.1.6 Hazardous waste must not be processed under this permit as the potential 10 tonners per day threshold could be exceeded over a 24-hour period.

1.1.7 Every three months the Operator shall submit a written report to the Regulator containing the following

- Listing the quantities of the:
  - Virgin biomass
  - Different categories of waste treated,
- Their minimum and maximum mass flows,
- Their lowest and maximum calorific values
- Maximum contents of polychlorinated biphenyls, pentachlorophenol, chlorine, fluorine, sulphur, heavy metals, and other polluting substances.

2 Operational Matters

2.1 Management and Control

IED article 50(7)

2.1.1 The Regulated Facility shall, subject to the conditions of this Permit, be managed and controlled as described in the documentation specified in Table 2.1.1, or as otherwise agreed in writing by the Regulator.

Table 2.1.1 Management and Control

Description	Document Reference	Date Received
Environmental Management System	CORP-Q-0010	16/06/2022

2.1.2 The Environmental Management System will consider as a minimum the following areas:

(a) Cleaning and maintenance

(b) Training and plant operation

(c) Waste acceptance criteria

(d) Bottom ash storage and disposal

(e) Emission monitoring

(f) Plant failures, including the management of waste during plant downtime

(g) Record keeping.

2.2 Incidents and Accidents

IED Article 7 & 8(2)

2.2.1 The Operator shall notify the Regulator immediately:

(a) In the event of any incident or accident significantly affecting the environment.

(b) If there is likely to be an effect upon the local community of any emissions to atmosphere.

(c) In the event of a breach of this permit's conditions of the detection of any emission which exceeds any limit or criterion in this permit.

A telephone message shall be confirmed by an email to **pollution@bristol.gov.uk**

2.2.2 In the event of any incident or accident significantly affecting the environment the Operator shall, after informing the Regulator immediately:

(a) take the measures to limit the environmental consequences and to prevent further possible incidents or accidents.

(b) take any appropriate complementary measures that the Regulator considers necessary to limit the environmental consequences and to prevent further possible incidents or accidents

2.2.3 The Operator shall submit written confirmation to the Regulator of any notification under Condition 2.2 in accordance with Schedule 2 to this Permit, by sending the information listed in Part A of Schedule 2 to this Permit within 24 hours of such notification. The Operator shall send the more detailed information listed in Part B of that Schedule as soon as practicable thereafter.

2.3 Non compliance

IED article 8(2)

2.3.1 In the event of a breach of this permit's conditions, the Operator shall, after immediately informing the Regulator as required by Condition 2.2.3:

(a) Take the measures necessary to ensure that compliance is restored within the shortest possible time.

(b) Take any appropriate complementary measures that the Regulator considers necessary to restore compliance.

Where the breach of the permit conditions poses an immediate danger to human health or threatens to cause an immediate significant adverse effect upon the environment, and until compliance is restored in accordance with the above sub-paragraphs (a) and (b) of this Condition, the operation of the Regulated Facility shall be suspended.

2.4 Control of Emissions

IED Article 46(5)

2.4.1 The Regulated Facility, including associated storage areas for waste, shall be designed, and operated in such a way as to prevent the unauthorised and accidental release of any polluting substances into soil, surface water and groundwater.

2.4.2. Storage capacity shall be provided for contaminated rainwater run-off from the Regulated Facility or for contaminated water arising from spillage or fire-fighting operations. The storage capacity shall be adequate to ensure that such waters can be tested and treated before discharge where necessary.

IED Articles 45 & 46(6)

2.4.3 Without prejudice to Condition 2.6.3, the Regulated Facility shall under no circumstances continue to incinerate waste for a period of more than 4 hours uninterrupted where emission limit values in Condition 6.1.2 & Table 6.1.2 are exceeded, or during technically unavoidable stoppages, disturbances, or failures of the purification devices or the measurement devices. The cumulative duration of operation in such conditions for each test unit shall not exceed 8 hours.

2.5 Breakdown

IED Article 47

2.5.1 In the case of a breakdown, the Operator shall reduce or closedown operations as soon as practicable until normal operations can be restored.

2.6 Operating Conditions

IED Article 50(2)

2.6.1 The gas resulting from the incineration of waste shall be raised, after the last injection of combustion air, in a controlled and homogeneous fashion and even under the most unfavourable conditions, to a temperature of at least 850 °C for at least two seconds.

IED Article 50(3)

2.6.2 The combustion chamber shall be equipped with at least one auxiliary burner. This burner shall be switched on automatically when the temperature of the combustion gases after the last injection of combustion air falls below the 850 °C. It shall also be used during plant start-up and shut-down operations in order to ensure that those temperatures are maintained at all times during these operations and as long as unburned waste is in the pyrolyser, gasifier or combustion chamber.

The auxiliary burner shall not be fed with fuels which can cause higher emissions than those resulting from the burning of gas oil as defined in Article 2(2) of Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels, liquefied gas or natural gas.

IED Article 50(4)

2.6.3 An automatic system shall operate to prevent waste feed in the following situations:

(a) at start-up, until the temperature set out in Condition 2.6.2 has been reached.
(b) whenever the temperature set out in Condition 2.6.2 is not maintained.
(c) whenever the continuous measurements show that any emission limit value is exceeded due to disturbances or failures of the waste gas cleaning devices.
(d) when the concentration of oxygen in the gases at the outlet duct from the combustion chamber is less than:
    a. 6% if measured on a wet basis; or
    b. 3% by volume if measured dry.

IED Article 50(5)

2.6.4 Any heat generated shall be recovered as far as practicable e.g., via the waste heat boiler

IED article 50(7)

2.6.5 The plant comprising the Regulated Facility shall be operated and controlled by a natural person who is competent to manage the plant, i.e., never left unmanned while operating under automatic control.

2.6.6 The plant comprising the Regulated Facility shall only be fuelled by LPG when in idle/standby mode.

2.7 Delivery and reception of waste

IED Article 52(1)

2.7.1 The Operator shall take all necessary precautions concerning the delivery and reception of waste in order to prevent or to limit as far as practical the pollution of air, soil surface water or groundwater as well as other negative effects on the environment, odours and noise and direct risks to human health.

IED Article 52(2)

2.7.2 The operator shall determine the mass of each type of waste, if possible according to the European Waste List established by Decision 2000/532/EC, prior to accepting the waste at the Regulated Facility

2.7.3 The Operator shall adopt procedures and practices to monitor and control pests, odour, and litter.

2.8 Residues

IED Article 53(1)

2.8.2 Residues shall be minimised in their amount and harmfulness. Residues shall be recycled, where appropriate, directly in the plant or outside.

IED Article 53(2)

2.8.3 Transport and immediate storage of dry residues in the form of dust shall take place in such a way as to prevent dispersal of those residues in the environment.

IED Article 53(3)

2.8.4 Prior to determining the routes for the disposal or recycling of the residues, appropriate tests shall be carried out to establish the physical and chemical characteristics and the polluting potential of the residue. Those tests shall concern the total soluble fraction and heavy metals soluble fraction.

2.8.5 Char and air pollution control residues shall not be mixed.

2.9 Management, maintenance, training, and control

2.9.1 Without prejudice to the other conditions of this Permit, the Operator shall implement and maintain a management system, organisational structure and allocate resources that are sufficient to achieve compliance with the limits and conditions of this Permit.

2.9.2 All plant, equipment and technical means used in operating the Regulated Facility, the failure of which could lead to emissions to air having an adverse impact upon the environment, shall be maintained in good operating condition.

2.93 Essential spares and consumables, to rapidly rectify breakdowns of the plant and equipment concerned with the control of emissions to air, shall be kept on site.

2.9.4 All staff shall be fully conversant with those aspects of the Permit conditions that are relevant to their duties and shall be provided with the necessary training and written instructions. Emphasis shall be given to: -

(a) controlling the Regulated Facility and minimising emissions to air, including dealing with conditions likely to give rise to emissions of odour, e.g., spillage.
(b) procedures to minimise emissions during start-up, shut down and abnormal conditions.

2.9.5 The person having current routine operational control of the Regulated Facility shall:

(a) have received training to the standard of the Waste Management Industry Training and Advisory Board National Vocational Qualification or equivalent submitted to and as agreed in writing by the Regulator.

(b) be notified to the Regulator in writing.

2.9.6 No person shall operate the control system unless their name, dates of training and instructor's identity are included on a list displayed near the process control panel.

2.9.7 A copy of this permit shall be kept at a location where it can be conveniently read by any person having duties that are or may be affected by the matters set out in the permit.

3 Records

3.1 Compliance with emission limit values – verification

IED Article 48(4)

3.1.1 All monitoring results shall be recorded, processed, and presented in such a way as to enable the Regulator to verify compliance with the operating conditions and emission limit values which are included in this Permit.

3.1.2 The Operator shall ensure that all records required to be made by this Permit and any other records made by it in relation to the operation of the Regulated Facility shall: -

(a) be made available for inspection by the Regulator at any reasonable time

(b) be supplied to the Regulator on demand and without charge.
(c) be legible
(d) be made as soon as reasonably practicable
(e) indicate any amendments which have been made and include the original record wherever possible
(f) be kept at the Regulated Facility

3.1.3 Each record entry shall identify the person making the entry, the date and time of the entry, the date and time of the occurrence/observation and the actions taken. The records may be in electronic form, provided that a printout verified by a responsible person is provided on request.

3.1.4 The Operator shall keep and maintain written records of: -

(a) procedures for controlling the Regulated Facility and minimising emissions to air, including start-up, shut down and abnormal conditions.

(b) staff training requirements and training/instruction received; and

(c) malfunction or breakdown leading to abnormal emissions.

4 Reporting

4.1.1 The unique identifier for each SWIP unit moving onto site will be reported 7 days prior to the commencement of factory acceptance testing.

4.1.2 All reports and notifications required by this Permit, or by regulation 24 of the EP Regulations shall be sent to the Regulator at the email address notified in Condition 5.1.1

4.1.3 The results of all non-continuous emission monitoring shall be forward to the Regulator within 8 weeks of completion of the sampling.

4.1.4 A summary of all continuous emission monitoring shall be forwarded to the Regulator by 31st January (or other date agreed in writing by the Regulator) and at least once every 6 months thereafter. The summary shall include and identify the following:

(a) daily averages on each full day of operation
(b) half hourly averages of carbon monoxide emissions exceeding 100 mg/Nm³ on each day.
(c) the emission level of carbon monoxide that corresponds to the 95th percentile of 10-minute average readings on each day

4.1.5 A report on the functioning and monitoring of the incineration plant for the previous year shall be submitted to the Regulator by 31st January (or other date agreed in writing by the Regulator) each year. The report shall include as a minimum:

(a) an account of the running of the incineration process indicating the hours of normal operation, cumulative totals of the duration when emission limit

values in Condition 6.1.2 & Table 6.1.2 were exceeded and cumulative totals of the duration of breakdowns.

(b) the level of emissions into air and water, in comparison with emission limit values.

4.1.6 The Operator shall respond to any Information Notice served for the purposes of complying with an obligation to report pollutant releases and off-site waste transfers pursuant to the directly applicable to the UK Registry on industrial sites (Previously referred to as the EU Registry of industrial sites) Commission Implementing Decision (EU) 2018/11351

5 Notifications

5.1.1 Any notifications to the Regulator shall be sent to the following – please note email is the preferred method for all reporting.

Address:

Bristol City Council
Public Protection - Pollution Control
City Hall
PO BOX 3399
Bristol
BS1 9NE

Telephone:

01179 222500 Option 3 – during normal office hours

01179 222050- outside normal office hours

Email: pollution@bristol.gov.uk

5.1.2 If the Operator proposes to make a change in operation of the Regulated Facility, they must, at least 14 days before making the change, notify the Regulator in writing. The notification must contain a description of the proposed change in operation (see Interpretation in Section 9). It is not necessary to make such a notification if an application to vary this Permit has been made and the application contains a description of the proposed change.

5.1.3 The provisional time and date of any periodic non-continuous emission monitoring together with the pollutants to be tested and the methods to be used shall be notified in writing to the Regulator at least 7 days in advance. The notification shall be confirmed by email.

5.1.4 The Operator shall give written notification within 14 days of their occurrence of any of the following: -

(a) cessation of the operation of any part of or all the Regulated Facility, or subsequent resumption of operation.

(b) any change in the Operator's trading name, registered name, or registered office address.

(c) any steps taken with a view to the Operator becoming a subsidiary company, or going into administration, or entering into a company voluntary arrangement or a composition or arrangement with creditors or being wound up or dissolved or going into bankruptcy.

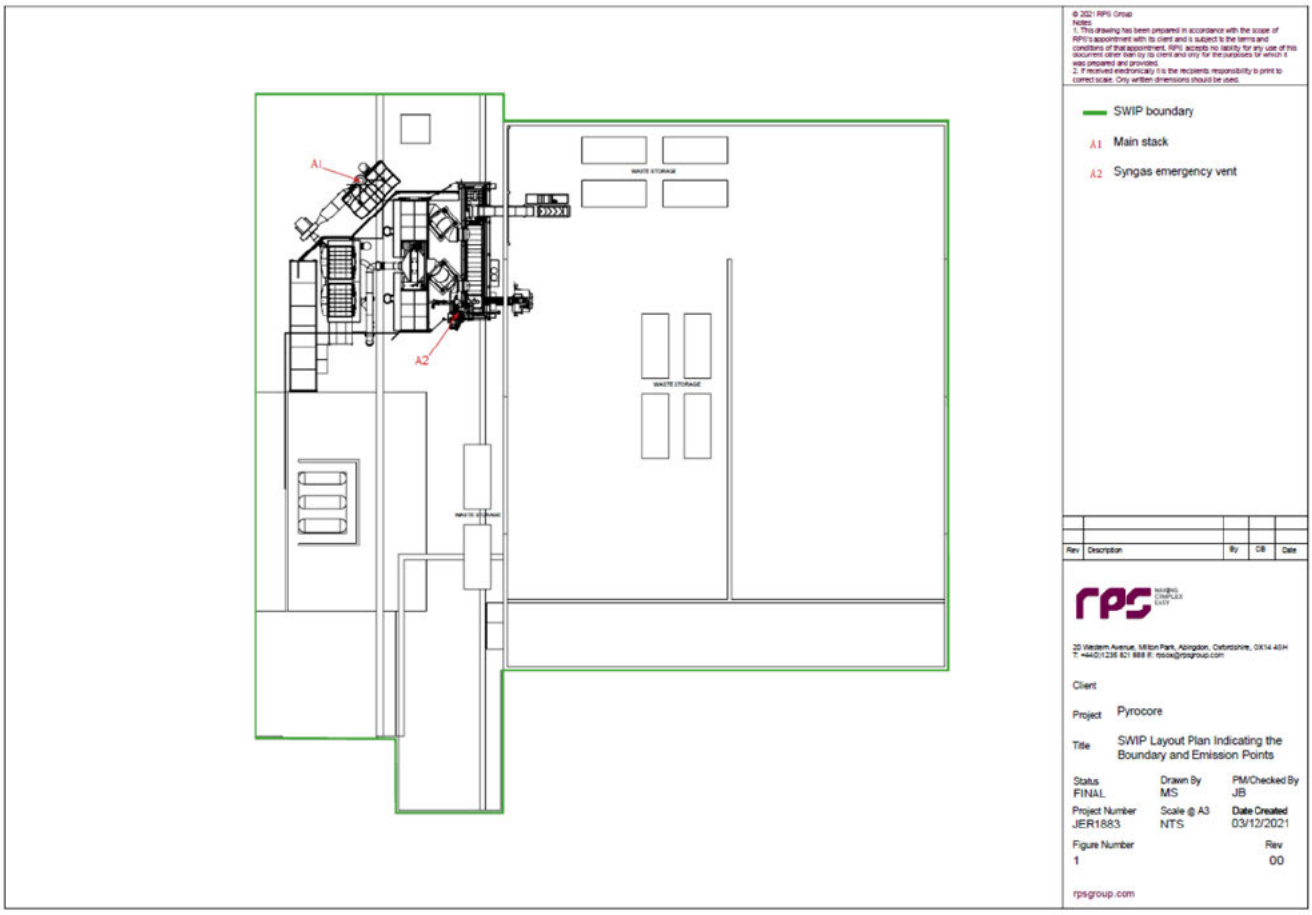
6 Emissions

6.1 Emissions to air

6.1.1 Emissions to air at the emission points specified in Table 6.1.1 shall only arise from the sources specified in Table 6.1.2 (a, b & c);

Table 6.1.1 Emission point to air

Emission Point Reference	Source	Location of emission point
A1 being shown in red on plan below	Flue gas abatement system	10.025m high Exhaust Stack
A2 being shown in red on plan below	Syngas emergency release	10.25m high Emergency Vent



IED Articles 46(2), 48(1), 49 & Annex VI

6.1.2 The limits for emissions to air for the parameters at emission point A1 set out in Tables 6.1.2a, 6.1.2b and 6.1.2c shall not be exceeded. The Operator shall monitor for the parameters listed in Table 6.1.2a, 6.12b and 6.1.2c, at the emission point A1 and at least at the frequencies specified in that Table.

Table 6.1.2a Emission Limit Values: Continuous monitoring

Emission	Daily average mg/Nm³	Half Hour Average mg/Nm³ 100%	Frequency and method of monitoring
Total dust/particulate matter	10	30 *	Continuous EN 15267-1, -2 & -3 and EN 14181
Gaseous and vaporous organic substances, expressed as total organic carbon (TOC)	10	20 *	Continuous EN 15267-1, -2 & -3 and EN 14181

Oxides of nitrogen (NO and NO_2) expressed as nitrogen dioxide	400	400 *	Continuous EN 15267-1, -2 & -3 and EN 14181
Carbon Monoxide (CO)	50	100 *	Continuous EN 15267-1, -2 & -3 and EN 14181
Sulphur dioxide (SO_2)	50	200	Continuous EN 15267-1, -2 & -3 and EN 14181
Hydrogen chloride (HCl)	10	60	Continuous EN 15267-1, -2 & -3 and EN 14181
*** = ELV for biomass testing as well as waste**			

Table 6.1.2b Emission Limit Values: Periodic Monitoring,		
Emission	**Average emission limit values (mg/Nm3) for the following heavy metals over a sampling period of a minimum of 30 minutes and a maximum of 8 hours [3]**	**Frequency and method of monitoring**
Cadmium and its compounds, expressed as cadmium (Cd)	Total: 0.05 mg/Nm^3	Extractive quarterly year 1 (August 2023), to be reviewed in year 2. EN 14385 and EN 13211
Thallium and its compounds, expressed as thallium (Tl)		
Mercury and its compounds, expressed as mercury (Hg)	0.05 mg/Nm^3	Extractive quarterly year 1 (August 2023),, to be reviewed in year 2. EN 14385 and EN 13211
Antimony and its compounds, expressed as antimony (Sb)	Total: 0.5 mg/Nm^3	Extractive quarterly year 1 (August 2023),, to be reviewed in year 2. EN 1948 parts 1, 2 and 3
Arsenic and its compounds expressed as arsenic (As)		
Lead and its compounds, expressed as lead (Pb)		

Chromium and its compounds, expressed as chromium (Cr)		
Cobalt and its compounds, expressed as cobalt (Co)		
Copper and its compounds, expressed as copper (Cu)		
Manganese and its compounds, expressed as manganese (Mn)		
Nickel and its compounds, expressed as nickel (Ni)		
Vanadium and its compounds, expressed as vanadium (V)		

Table 6.1.2c Emission Limit Values: Periodic Monitoring, dioxins		
Emission	**Average emission limit value (ng/Nm^3) for dioxins and furans over a sampling period of a minimum of 6 hours and a maximum of 8 hours.**	**Frequency and method of monitoring**
Dioxins and furans	Total: 0.1 ITEQ ng/Nm^3	Extractive quarterly to be reviewed in year 2 (August 2024). EN 1948 parts 1, 2 and 3

Table 6.1.2d Emission Limit Values: Periodic Monitoring, Hydrogen Fluoride		
Emission	Average over the sampling period i.e. the average of three consecutive measurements of at least 30 minutes each	**Frequency and method of monitoring**
Hydrogen Fluoride	Total: 3 mg/Nm^3	Extractive quarterly to be reviewed in year 2 (August 2023). EN 15267-1, -2 & -3 and EN 14181

6.1.3 All emission limit values shall be calculated at a temperature of 273.15K, a pressure of 101.325 kPA and after correcting for the water vapour content of the waste gases; they shall be standardised at 11% oxygen in waste gas.

6.2 Emissions during permissible abnormal operation

IED Article 45 & Annex VI Part 3 (2)

6.2.1 In the circumstances described in conditions 2.4.3 and 2.5.1 the emissions into the air shall under no circumstances exceed:

(a) 150 mg/Nm^3 total dust concentration expressed as a half-hourly average
(b) The half-hourly average Total Organic Carbon (TOC) and Carbon Monoxide (CO) concentrations in Table 6.1.2a

6.3 Monitoring of emissions – measurement techniques

IED Article 48(1) & Annex VI

6.3.1 Measurements for the determination of concentrations of air pollution substances in Tables 6.1.2a – 6.1.2d shall be carried out representatively, i.e. taking into account only Effective Operating Time. Due to the nature of the activity at the site there will be greater reliance on the half hourly emission limit values (daily averages are unlikely to be meaningful as maximum operating test time is 48 hours).

6.3.2 Sampling and analysis of all polluting substance including dioxins and furans as well as the quality assurance of automated measuring systems and the reference measurement methods to calibrate them shall be carried out according to European Committee for Standardisation (CEN) standards. If CEN standards are not available, ISO, national or other international standards which ensure the provision of data of an equivalent scientific quality shall apply. Automated measuring systems shall be subject to control (calibrated) by means of parallel measurements with the reference methods at least once per year.

6.3.3 With regard to the continuous emission monitors, at the daily average emission limit value level in Table 6.1.2a, the values of the 95% confidence intervals of a single measured results shall not exceed the following percentages of the emission limit values in Table 6.1.3:

Table 6.1.3 – Daily emission limits into air – confidence intervals

Parameters	Confidence Level
Carbon monoxide	10%
Sulphur dioxide	20%
Nitrogen dioxide	20%
Total dust / particulate matter	30%

Total organic carbon (TOC)	30%
Hydrogen chloride	40%

Periodic measurements of the emissions into air shall be carried out in accordance with Conditions 6.1.1 and 6.1.2.

6.4 Monitoring of emissions – measurements

IED Article 48 (1) & Annex VI

6.4.1 Continuous measurements of the following process operation parameters relating to air polluting substances shall be carried out:

- Oxides of nitrogen (NO_x)
- Carbon monoxide (CO)
- Total dust
- Total organic carbon (TOC)
- Hydrogen chloride (HCl)
- Sulphur Dioxide (SO_2)
- Temperature at the combustion chamber outlet
- Concentration of oxygen
- Pressure
- Temperature
- Water vapour content of the waste gas
- Gas Flow

IED Article 48 (2)

6.4.2 The installation and function of the automated measuring systems shall be subject to control and annual surveillance tests as set out in section 6.2 of this Permit.

6.5 Visible Emissions

6.5.1 All emissions to air shall be free from visible smoke and in any event shall not exceed the equivalent of Ringelmann Shade 1 as described in British Standard BS2742:2009 (with the exception of emergency conditions).

6.6 Chimneys and vents

6.6.1 The emission point A1 set out in Section 6.1 shall discharge vertically upwards and shall neither: -

(a) Be fitted with any restriction at the final opening, with the exception of a cone necessary to increase the exit velocity; nor
(b) Discharge at a velocity of less than 19.94 m/s

6.7 Emissions to water & sewer

6.7.1 There shall be no emissions to water from the operation of the Regulated Facility, except for

- Foul and grey waters
- Clean rainwater drainage from the site yard via an oil interceptor/grit separator and from roofs via raised gullies.

6.7.2 In the event of a fire poly booms will be used to contain all firefighting water on site. Spent firewater will be disposed of using a specialist third party contractor, subject to condition 2.4.2

6.7.3 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measure have been taken to prevent or where that is not practicable, to minimise, those emissions.

7 Off-site conditions

7.1 Offensive Odour

7.1.1 There shall be no offensive odour from the Regulated Facility beyond the Site boundary, as perceived by the Regulator.

7.1.2 The Operator shall monitor odour by olfactory assessment downwind of the permitted installation at least once every day of operation (as per the requirements of conditions 2.9.2 and 2.9.3). A record should be maintained of these observations and retained on site for inspection.

7.2 Fugitive emissions

7.2.1 Fugitive emissions from the Regulated Facility of substances not controlled by emission limits, including, dust, steam, smell or other effluvia, shall not be observed outside the boundary of the site, as perceived by the Regulator.

8 Improvement Programme

8.1 Improvement programme requirements

8.1.1 The Operator shall complete the requirements specified in Table 8.1.1 by the date specified in this Table, and shall send written notification of the date of completion of each requirement to the Council, at the Reporting Address, within 14 days of the completion of each such requirement.

Table 8.1.1 Improvement programme requirements

Reference	Requirement	Date and/or frequency
Tables 6.1.2b and 6.1.2c	Review results of periodic monitoring after year 1 and year 2 with a view to making sampling annual (if the model of the unit being tested remains the same)	August 2023.

9 Interpretation

9.1.1 In this Permit, the following expressions shall have the following meanings:

"Accident"

means an accident that may result in pollution.

"Air pollution control residues"

means residues arising from the cleaning of the waste / flue gases including the waste heat boiler and bag filter.

"Bottom ash"

means ash from the gasifier and the impingement column.

"Combustion chamber"

means the thermal oxidiser (high temperature oxidation reactor) described in the response to question 5 given in Sections CPL-LAPC-03 of the application.

"Change in operation" (Condition 5.1.2)

means a change in the nature or functioning, or an extension, of the Regulated Facility, which may have consequences for the environment.

"Confidence intervals"

have the meaning given in the Department for Environment Food and Rural Affairs Secretary of State's Environmental Permitting Guidance on the Waste Incineration Directive updated March 2010.

"Council"

means Bristol City Council.

"Council Directive 1999/32/EC"

means Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels, published OJ L 121, 11.5.1999, (Article 2.2 - p. 13).

"Dioxins and furans"

means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

"Effective operating time"

means excluding the start-up and shut-down periods if no waste is being incinerated.

"Emission"

has the meaning given in Regulation 2(1)(h) of the EP Regulations, i.e., "in relation to a small waste incineration plant direct or indirect release of substances from individual or diffuse sources in the regulated facility to air or water."

"EP Regulations"

means the Environmental Permitting (England Wales) Regulations 2016 and words and expressions defined in the EP Regulations shall have the same meanings when used in this Permit.

"European Waste Catalogue" and "European Waste List"

means the List of Wastes Decision (2000/532/EC) as amended, often called the European Waste Catalogue. The current official guidance document is often referred to as "WM3"

Environment Agency et al (May 2015). Waste Classification – Technical Guidance WM3. Guidance on the classification and assessment of waste. LT 10121. 1st Edition. *"Foul water"*

means wastewater containing human or animal waste.

"Furnace"

means the pyrolyser (high temperature heat exchanger).

"Grey water"

means wastewater (sullage) generated from laundry, dishwashers, kitchen sinks, wash hand basins, showers, and baths.

"Hazardous waste"

means waste which displays any of the characteristics listed in Annex III to the Waste Framework Directive.

"Incinerate" and "incineration"

includes pyrolysis and gasification.

"Infectious clinical waste"

means clinical waste incorporating substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms.

"Industrial Emissions Directive" and "IED"

means Council Directive 2010/75/EU of the European Parliament and Council of 24th November 2010, which was transposed into UK legislation by the Environmental Permitting (England and Wales) (Amendment) Regulations 2013 SI 390.

"*Maintenance"*

includes the maintenance, inspection and replacement of extract air filters and preventative maintenance on all aspects of the Regulated Facility including all plant, buildings and the equipment concerned with the control of emissions to air.

"Monitoring"

includes the taking and analysis of samples, instrumental measurements (periodic and continual), calibrations, examinations, tests, and surveys.

"PPC Regulations"

means the Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I. 2000 No. 1973, as amended) revoked by the EP Regulations.

"Purification devices"

means plant and equipment used for the abatement of emissions. This includes the dust collection impingement column and bag filters, the sodium bicarbonate dosing and selective catalytic reduction.

"Regulated facility"

means the facility and the limits to the facility described in Conditions 1.1.1, 1.1.2, and 1.1.3.

"Regulator"

means a duly authorised officer of Bristol City Council

"Residue"

means any liquid or solid waste which is generated by the Regulated Facility.

"Small waste incineration plant"

has the meaning given in Schedule 8 paragraph 8.2(a) of the Environmental Permitting (England and Wales) (Amendment) Regulations 2013 SI No. 390, i.e., "a waste incineration plant or waste co-incineration plant with a capacity less than or equal to 10 tonnes per day for hazardous waste or 3 tonnes per hour for non-hazardous waste."

"Staff"

includes employees, directors or other officers of the Operator, and any other person under the Operator's direct or indirect control, including contractors.

"TOC"

means gaseous and vaporous organic substances, expressed as total organic carbon.

"Waste"

has the meaning given in Article 3(37) of the IED, i.e., any substance or object which the holder discards or intends or is required to discard.

"Waste gas cleaning devices"

means plant used for the abatement of emissions. This includes the dust collection impingement column and bag filters, the sodium bicarbonate dosing and selective catalytic reduction.

9.1.2 Where any Condition of this Permit refers to the whole or parts of different documents, in the event of any conflict between the wording of such documents, the wording of the document(s) with the most recent date shall prevail to the extent of such conflict.

Schedule 1: Permitted Waste Types

The Regulated Facility shall only receive wastes that are specified in Schedule 1 Table 1.1.3.

The European Waste Catalogue Number's and descriptions are derived from Environment Agency Technical guidance WM3.

Schedule 1 Table 1.1.3 Permitted Waste Types	
EWC Number	**Description**
02 01	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 04	waste plastics (except packaging)
04 02	**Wastes from the textile industry**
04 02 09	wastes from composite materials (impregnated textile, elastomer, plastomer)
07 02	**Wastes from MFSU of plastics, synthetic rubber, and man-made fibres**
07 02 13	waste plastic
10 11	**Wastes from manufacture of glass and glass products**
10 11 03	Waste glass-based fibrous materials
12 01	**Wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01 05	plastic shavings and turnings
15 01	**Packaging (including separately collected municipal packaging waste)**
15 01 02	plastic packaging
16 01	**end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)**
16 01 19	plastic
17 02	**Wood glass and plastic**
17 02 03	plastic

17 09	**Other construction and demolition wastes**
17 09 04	mixed construction and demolition waste other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
19 12	**Wastes from mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 04	plastic and rubber
20 01	**Municipal wastes, separately collected fractions (except 15 01)**
20 01 39	plastics

Schedule 2

Confirmation of condition 5.1.3 notifications, in accordance with condition 5.1.4

This Schedule outlines the information that the Operator must provide to the Regulator to satisfy Condition 5.1.4 of this Permit. An editable copy will be supplied upon request.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison shall be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet, and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	EP290
Name of Operator	PyroCore Ltd
Location of Facility	203C Burcott Road, Avonmouth
Location of the emission	
Time and date of the emission	

Substance Emitted	Best estimate of the quantity or the rate of emission	Time during which the emission took place

Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters notified under Part A	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment or harm which has been or may be caused by this emission	
The dates of any unauthorised emissions from the Regulated Facility in the preceding 24 months	

Name	
Post / Job Title	
Signature	
Date	

Authorised to sign on behalf of PyroCore Ltd

End of Permit